SUSTAINABILITY REPORT 2024

YENEPOYA
(Deemed to be University)

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Centre For
Environmental Studies

SUSTAINABILITY REPORT 2024

YENEPOYA
(DEEMED TO BE UNIVERSITY)

University Road, Deralakatte, Mangalore – 575018, India
Ph: 0824 2204668 Fax: 0824 2204667
Email: registrar@yenepoya.edu.in Website: www.yenepoya.edu.in

Sustainability report committee

1) Dr. Bhagya B. Sharma
   Deputy Director, CES

2) Mr. Walter Castelino
   Manager, Maintenance Dept.

3) Mr. Vinayaka Bhatta
   Environmental Engineer, Maintenance Dept.

4) Mr. Sayyad M. I.
   Electrical Engineer, Maintenance Dept.

5) Mr. Joy Nelson Monteiro
   Supervisor, Maintenance Dept.

Executive Summary

Yenepoya (Deemed to be University) [YDU], established in 2008, has grown into a vibrant academic hub with over 16,000 students across eleven constituent units and eighteen specialized centres. The University has earned national recognition for its academic excellence, securing accreditation with a CGPA of 3.47/4 and an A+ grade by the National Assessment and Accreditation Council (NAAC). Beyond academics, YDU has emerged as a leader in sustainability, recognized for its 'Green Campus' initiatives encompassing extensive green cover, rainwater harvesting, solar energy adoption, and promotion of eco-friendly transport solutions.

The University has instituted an Environmental Management System (EMS) to integrate environmental responsibility across its operations. Guided by its environmental policy, YDU fosters eco-conscious practices among staff and students through clean and green campus initiatives, no-smoking and plastic-free policies, water conservation measures, sustainable architecture, and responsible waste management. Oversight is ensured by committees such as the Environmental Advisory Council, Campus Sustainability Committee, Green Audit Committee, and Environmental Compliance Committee, which monitor audits, statutory compliance, and sustainability action plans.

Spread across 93.74 acres, the University demonstrates a holistic approach to environmental stewardship. Water management is a key focus, with a daily demand of approximately 1,400 KL and per capita consumption of about 46.26 litres/person/day. Drinking water quality meets prescribed standards, while wastewater treatment strictly follows Karnataka State Pollution Control Board (KSPCB) norms, with over 5,60,310 KL of wastewater treated in 2024.

Solid waste management follows the 3R principle - Reduce, Reuse, Recycle. Biodegradable waste is converted into compost, including 4,191 kg of vermicompost produced in 2024, while approximately 800 kg of food waste is composted daily. Hazardous wastes are disposed of responsibly: 800 L of spent oil, 1,891.42 kg of e-waste, and 12 used batteries were handed over to authorized vendors; biomedical waste amounted to 1,99,050 kg.

Transportation and energy management are central to YDU's sustainability strategy. The transport department consumes around 4,030 litres of petrol and 22,256 litres of diesel per month, with initiatives underway to reduce carbon emissions through the use of electric vehicles. Energy requirements are largely met through MESCOM, supplemented by solar power installations and conservation measures to optimize energy use.

The University also invests significantly in Institutional Social Responsibility (ISR), with expenditures amounting to Rs. 84,75,179 in 2024. Biodiversity audits underscore the ecological richness of the campus, which is home to diverse flora, fauna, and macro fungi. Environmental literacy is embedded into the curriculum, complemented by field visits, tree planting drives, eco-club activities, and awareness programmes that nurture sustainable lifestyles among students.

In sum, Yenepoya (Deemed to be University) exemplifies a comprehensive and proactive approach to environmental management, positioning itself as a benchmark institution for sustainable practices in higher education.

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Abbreviations

ARL	Above Roof Level
AGB	Above Ground Biomas
BGB	Below Ground Biomas
CETP	Common Effluent Treatment Plant
CFL	Compact Fluorescent Lamp
CSC	Campus Sustainability committee
CSP	Carbon Sequestration Potential
CTO	Chief Technology Officer
DG	Diesel Generators
DKZP	Dakshina Kannada Zilla Panchayat
DSIA	District Small Industries Association
EAC	Environment Advisory Council
EC	Environmental Clearance
ETP	Treatment of Effluent
GNM	General Nursing and Midwifery
KL	Kilo Liters
KLD	Kilo Liter per Day
KSPCB	Karnataka State Pollution Control Board
KVA	Kilovolt Amperes
LBMW	Liquid Biomedical Waste Treatment
LED	Light Emitting Diode
LPG	Liquefied Petroleum Gas
LPH	Liters per hour
MESCOM	Mangalore Electricity Supply Company Limited
MOEFCC	Ministry of Environment, Forest and Climate Change
MSW	Master of Social Work
NABL	National Accreditation Board for Testing and Calibration Laboratories
RO	Reverse Osmosis
SDG	Sustainable Development Goal
SDMC	School Development and Monitoring Committee
STP	Sewage Treatment Plants
TPH	Tones per hour
UPS	Uninterruptible Power Supply
UN	United Nations
YAMCH	Yenepoya Ayurveda Medical College & Hospital
YDC	Yenepoya Dental College
YDU	Yenepoya (Deemed to be University)
YFTI	Yenepoya Foundation for Technology Incubation
YHMCH	Yenepoya Homeopathic Medical College & Hospital
YIASCM	Yenepoya Institute of Arts Science Commerce & Management
YMC	Yenepoya Medical College
YMCH	Yenepoya Medical College Hospital
YNC	Yenepoya Nursing College
YNYSCH	Yenepoya Naturopathy & Yogic Science College & Hospital
YPC	Yenepoya Physiotherapy College
YPCRC	Yenepoya Pharmacy College & Research Centre
YRC	Yenepoya Research Center
YSAHS	Yenepoya School of Allied Health Sciences
YSET	Yenepoya School of Engineering & Technology

A. OVERVIEW

1) INTRODUCTION

The Yenepoya (Deemed to be University) gained University status under section 3A of the UGC Act 1956 in 2008 from the Government of India's Ministry of Human Resource Development based on a recommendation made by the University Grants Commission. The institution traces its genesis to Islamic Academy of Education, a not-for-profit trust founded in 1991 for the upliftment of minorities in general and Muslims in particular, with entrepreneur Mr. Yenepoya Abdulla Kunhi as its Chairman.

Beginning with a Dental college in the same year, it launched the Yenepoya Medical College (1999), the Yenepoya Nursing College (2002) and the Yenepoya Physiotherapy College (2003) in rapid succession. With the opening up of the education sector, a new Trust was formed in the year 2007 with the sole purpose of gaining Deemed to be University status under the government regulations. Subsequently, The Yenepoya Institute of Arts, Science, Commerce and Management was added in 2017, The Yenepoya Ayurveda Medical College and Hospital in 2018, The Yenepoya Homeopathy Medical College and Hospital in 2018, The Yenepoya School of Allied Health Sciences in 2020 and The Yenepoya School of Engineering and Technology in 2024. Today the institution has eleven constituent colleges catering to 14,232 undergraduate students, 1859 postgraduate students, 54 postgraduate diplomas and 346 PhD scholars. There are twelve academic faculties offering over 130 courses. 1096 faculty members and 4146 auxiliary staff make up the quorum of the institution.

The institution is spread over five premises (Fig 1), situated in the periphery of the coastal city of Mangalore in Karnataka. The mother campus housing two constituent colleges and hostels is situated in 26.9 acres of natural terrain in Nithyananda Nagar, Deralakatte, while the second campus housing the Yenepoya Institute of Allied Health Sciences is situated in 1.3 acres at Mudipu, the third campus housing the Yenepoya Institute of Arts Science Commerce and Management is situated in 1.9 acres at Balmatta, Mangalore and in 2.5 acres at Kulur along with The Yenepoya School of Engineering and Technology, The Yenepoya Ayurveda Medical College and Hospital, The Yenepoya Homeopathy Medical College and Hospital, The Yenepoya Naturopathy & Yogic Science College & Hospital, The Yenepoya Pharmacy College and Research Centre, Yenepoya Nursing College is situated at Naringana, Kinya spread over 63.6 acres.

The Yenepoya (Deemed to be University) boasts of 18 specialized centres and units. The institution has modern infrastructure and facilities such as well-furnished classrooms, full-fledged science laboratories, libraries, sports facilities, residential quarters for staff, hostels and transportation for boys and girls. It has adapted to all modern modes of learning including e-learning and distance education. Placement services and alumni network forms a part of the institution's organization profile.

The Yenepoya (Deemed to be University) has been accredited with a 3.47 CGPA out of 4 and awarded an A+ grade by the National Assessment and Accreditation Council. The University has been ranked 95 among the top 100 universities in the country as per the NIRF Rankings 2024 published by the Ministry of Human Resource Development, Government of India on 12th August 2024. Yenepoya Dental College has secured 26th rank among the top Dental Institutions in the country by NIRF. The Yenepoya Medical College Hospital holds NABH accreditation valid through March 2026.

The Yenepoya (Deemed to be University) is proud of its commitment to the creation of 'Green Campus' exhibiting exemplary standards of environment friendly features like lush green garden, abundant rain water harvesting, adoption of solar power and e-vehicles. The institution is continuously growing in its scope and registering all round progress year after year with addition of new courses and campus facilities, innovation and improvisation initiatives. The University is aware of its environmental commitments. It has a number of initiatives in place to foster positive environmental impact on the campus and the community. Comprehensive environmental audit is conducted annually, covering all units of the university. This report provides details of the environmental performance of the University, its best practices and targets for environmental improvement in its journey towards a sustainable university.

2) SCOPE

The University has several programmes within its fold, imparting education in the Medical and Allied fields. The scope of the environmental audit encompasses the various components of the university, including the colleges, hospitals, research centres, hostels, and laundry facilities. The audit focuses on key environmental parameters such as water consumption, energy usage, waste management, and associated sustainability practices across these functional areas.

The following units have been covered in this audit report–

- Yenepoya Medical College
- Yenepoya Medical College Hospital
- Yenepoya Dental College
- Yenepoya Nursing College
- Yenepoya Physiotherapy College
- Yenepoya Ayurveda Medical College Hospital
- Yenepoya Homeopathic Medical College Hospital
- Yenepoya Pharmacy College and Research Centre
- Yenepoya Naturopathy and Yogic Science College and Hospital
- Yenepoya School of Allied Health Sciences
- Yenepoya Institute of Arts, Science, Commerce and Management
- Yenepoya School of Engineering and Technology
- University Centres/Units
- University Hostels
- Central Kitchen, Central Laundry, Canteen and Cafeteria

Date of Audit: 18th to 20th December 2024

3) OBJECTIVES

- To assess the environmental performance of the University
- To ascertain whether all the institutions and units complies with the statutory requirements
- To assess whether the activities are economical, efficient and effective
- To enhance the institutional profile through demonstration of commitment towards environment
- To develop environmental ethics and value systems among stakeholders
- To strive towards environmentally sustainable institution of higher education
- To encourage Reduction, Recycling and Reuse practices
- To improve the environmental standards

4) AUDIT PLAN

4.1 Audit methodology

- The various activities of the university campus that have a bearing on the environment are identified, and assessed for compliance with respect to applicable standards.
- Identification of activities that have an impact on the environment
- Identify sources of pollution and adequacy of the control systems in place
- Identification of resources and utilities required for the university
- Identify applicable environmental legislation
- Identify and suggest corrective and preventive actions for the short comings
- Review and recommend actions for continual improvement
- Conclusions from the audit

4.2 Audit criteria

Audit is carried out with respect to applicable environmental legislation which includes

- Water and waste water management
- Energy needs and utilization
- Air pollution and control method
- Waste management
- Conservation of biodiversity
- Education and awareness training
- Safety and Healthcare practices

4.3 Audit team

1) Dr. Bhagya B. Sharma	- Deputy Director, Centre for Environmental Studies
2) Mr. Walter Castelino	- Manager, Maintenance Department
3) Mr. Vinayaka Bhatta	- Environmental Engineer
4) Mr. Sayyad M. I.	- Electrical Engineer
5) Mr. Joy Nelson Monterio	- Supervisor

4.4 Applicable legislations

The University is governed by different laws with respect to the activities that have a bearing on the environment. The Ministry of Environment and Forest has enacted various Acts and issued various Rules under the acts to monitor such activities. As a responsible organization, the university believes in maintaining the activities within the guidelines of statutory agencies. The Environmental Policy emphasizes compliance as a key element of the Environmental Management System.

List of applicable Environmental Acts and rules for the University

- Water (Prevention and Control of Pollution) Act, 1974
- The Water (Prevention and Control of Pollution) Rules, 1976
- The Water (Prevention and Control of Pollution) Cess Act, 1977
- The Water (Prevention and Control of Pollution) Cess Rules, 1978
- Air (Prevention and Control of Pollution) Act, 1981
- Air (Prevention and Control of Pollution) Rules, 1983
- Environment (Protection) Act, 1986
- Hazardous Waste (Management, Handling and Trans boundary Movement) Rules, 2008

- Environmental Impact Assessment Notification, 2006
- The Bio-Medical Waste (Management and Handling) Rules, 2016
- Municipal Solid Waste (Management and Handling) Rules, 2000
- The Noise Pollution (Regulation and control) Rules, 2000
- Batteries (Management and Handling) Rules, 2001
- Plastic Waste(Management and Handling)Rules, 2011
- E-Waste (Management and Handling) Rules, 2011

5) AUDIT PROCESS

5.1 Pre-Audit

An audit preparation meeting, led by the Lead Auditor and attended by all the Audit team members, was held on 13.12.2024. The purpose of the meeting was to align team roles and responsibilities. The preliminary interview schedule (who interviews whom and when) was also reviewed. The Lead Auditor then reviewed the documents and records with the Audit team to ensure each Auditor understands their role, conduct and responsibilities during the course of the Audit as well as what is expected in terms of their output. The team discussed the audit plan and the arrangements needed for the audit.

5.2 On-site Audit

Date	18.12.2024	19.12.2024	20.12.2024
Day	Wednesday	Thursday	Friday
Venue	Deralakatte campus	Mudipu campus	Balmatta and Kulur campus

Audit team: Dr. Bhagya, Mr. Walter, Mr. Vinayaka, Mr. Sayyad, and Mr. Joy

Audit type: Performance audit

An orientation tour was conducted to observe general, physical and working conditions of the facility layout and key operations. The team had a walk-through of all buildings and operations for observation, review and documentation of the processes.

5.3 Post-Audit

The audit team met at the end of site-visit for exchanging information and gauge the Audit's progress. The Audit team discussed the findings, interviewed key persons, the management representative by reviewing the facts and supporting evidence. Major findings were communicated to the auditee and a draft report was prepared.

6. SUSTAINABILITY @YDU

6.1 Yenepoya Environmental Nexus (YEN) Model

Yenepoya University is deeply committed to fostering environmental stewardship through its integrated approach to waste management, sustainability, and education. With the implementation of the ***Yenepoya Environmental Nexus (YEN) Model,*** the university has established robust solid and liquid waste management systems that promote resource recovery, pollution reduction, and circular practices. Guided by the principles of environmental responsibility, the campus operates as a living laboratory for sustainable development demonstrating clean energy use, ecological sanitation, and green infrastructure. Beyond infrastructure, the university emphasizes environmental education by integrating sustainability themes into academic curricula, research, and outreach programs, thereby empowering students, faculty, and the wider community to become active participants in protecting and nurturing the environment. This holistic commitment ensures that the university not only minimizes its ecological footprint but also cultivates a culture of sustainability for future generations.

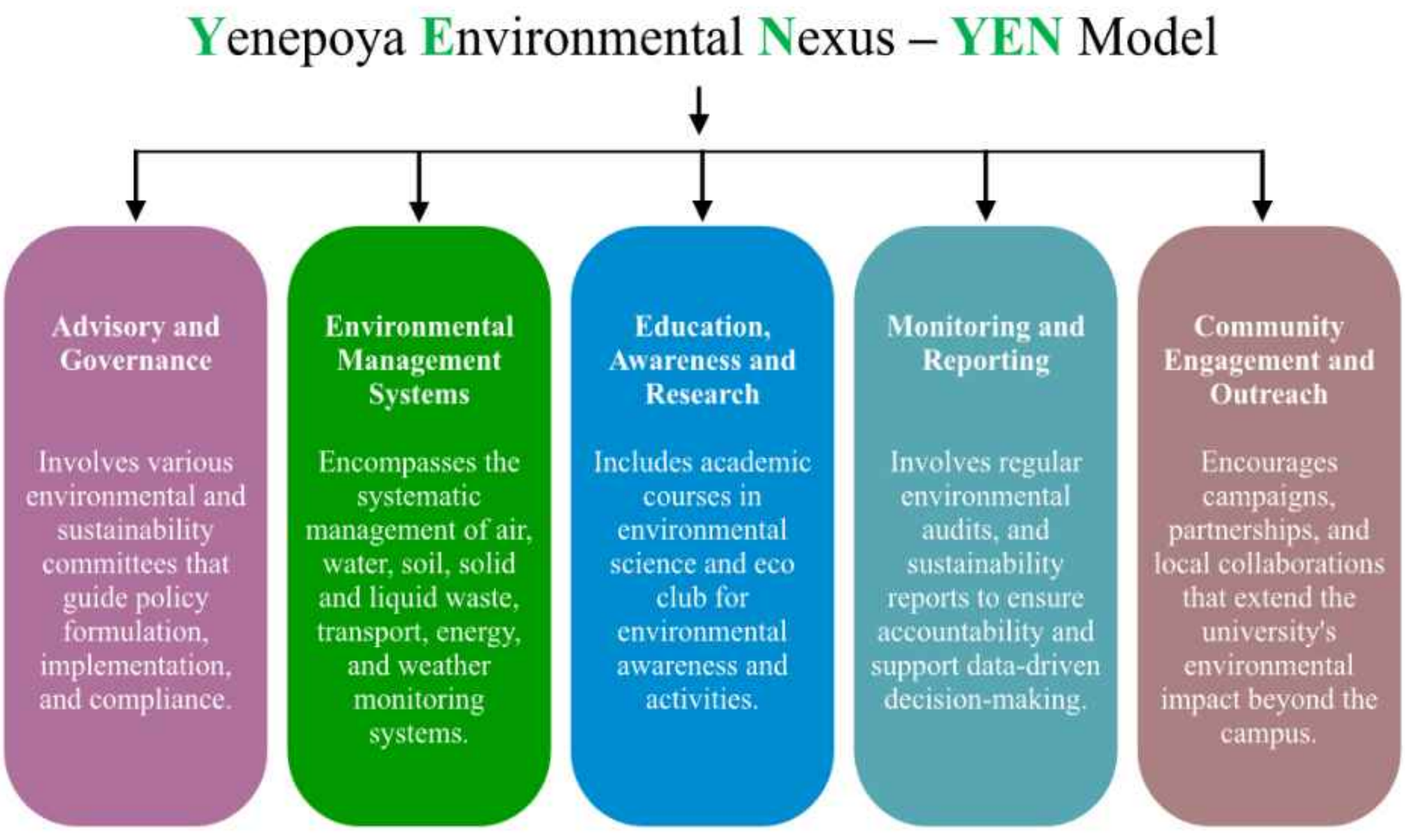


Fig. 1: Environmental management model of the university

6.2 Advisory Board

A sustainable university educates its staff and students for sustainable development, offers training on environmental and social footprints of its campus operations, and empowers them to act and make sustainability a central priority. The university has constituted an Environment Advisory Council (EAC) and appoints experts for three-year terms. The advisory council provides tailored advice that focuses on specific areas of sustainable development. The members also provide university with advice on environmental education.

Environmental Advisory Council

1.	Vice Chancellor	: Chairman
2.	Pro Vice-Chancellor	: Co-Chairman
3.	Registrar	: Member
4.	Finance Officer	: Member
5.	Campus Administrative Officer	: Member
6.	Manager, Maintenance Department	: Member
7.	Environmental Engineer	: Member
8.	Dr. T. V Ramachandra Coordinator Energy and Wetland Research Group The India Institute of Science, Bangalore	: External Member
9.	Dr. R. Mary Josephine Nature Science Foundation, Coimbatore, Tamil Nadu	: External Member
10.	Deputy Director, Centre for Environmental Studies	: Member Secretary

Meeting held on 18.12.2024

The term "Green Audit" refers to an environmental audit. This audit examines several aspects of organizational/institutional activities. Audits evaluate whether a company's operations have any effect on the air, water, or soil. These audits aid in avoiding compliance difficulties.

Green Audit Committee

1.	Vice Chancellor	: Chairman
2.	Pro Vice Chancellor	: Co-Chairman
3.	Registrar	: Member
4.	Finance Officer	: Member
5.	Campus Administration Officer	: Member
6.	Maintenance Manager	: Member
7.	Environmental Engineer	: Member
8.	Deputy Director, Centre for Environmental Studies	: Member Secretary

Meeting held on 25.06.2024

A Campus Sustainability Committee (CSC) is constituted to oversee the implementation of the Sustainability Action Plan (SAP) developed under SATAT, a UGC Framework for Eco-friendly and Sustainable Campus development in Higher Educational Institutions.

Campus Sustainability Committee

1.	Vice Chancellor	: Chair Person
2.	Pro Vice-Chancellor	: Co-Chairman
3.	Registrar	: Member
4.	Director, Purchase	: Member
5.	Director, IT	: Member
6.	Finance Officer	: Member
7.	Campus Administration Officer	: Member
8.	Hospital Superintendent	: Member
9.	Maintenance Manager	: Member
10.	Environmental Engineer	: Member
11.	Transport Superintendent	: Member
12.	Manager, Food Craft	: Member
13.	Deputy Director, Centre for Environmental Studies	: Member Secretary

Meeting held on 18.12.2024

The environmental compliance committee ensures statutory compliances related to Karnataka State Pollution Control Board and performs compliance and internal audits in accordance with the annual audit plans and helps to ensure that external scientific audits occur as planned.

Environmental Compliance Committee

1.	Vice Chancellor	: Chairman
2.	Pro Vice Chancellor	: Co-Chairman
3.	Registrar	: Member
4.	Maintenance Manager	: Member
5.	Environmental Engineer	: Member
6.	Hospital Superintendent	: Member
7.	Mr. Joy, Dept. of Maintenance	: Member
8.	Deputy Director, Centre for Environmental Studies	: Member Secretary

Meeting held on 25.06.2024

6.3 Environmental Management Systems

The university has established an Environmental Management System (EMS), to provide a framework for managing our environmental responsibilities efficiently in a way that is integrated into all our operations. Our environmental policy reflects the commitment of the University towards the environment.

YENEPOYA

ENVIRONMENTAL POLICY

The Management and Staff of Yenepoya (Deemed to be University) recognises and accepts the accountability for environment as among the highest priorities to ensure sustainable development. This commitment is reflected in our policies, programmes, and practices we follow. It is our endeavour to respect and protect the local environment and support sustainable social and economic development while fulfilling our mission of healthcare and health professional education. We believe having Zero tolerance is the start to establishing a good environmental system. To achieve these objectives, we

- Say NO to Single use plastic in the entire campus which impacts our environment.
- Follow Protection Practice leading to Enhanced Performance.
- Will Eliminate or reduce that which impacts our environment.
- Conserve natural resources by adopting resource conservation techniques.
- Promote sustainable procurement, internally and through the University's supply chains
- Protect and support biodiversity by establishing favourable environment.
- Adopt '3 Rs' (Reduce, Reuse, Recycle) philosophy to minimize or mitigate impact from waste generation, consumption of natural resources, etc.
- Educate all stakeholders' through programs that will enable us to jointly carry out sustainable development practices.
- Will carry out our activities in compliance with all statutory requirements.
- Will strive for continual improvement by periodic audit review of our operations and provide adequate support to fulfill our policy objectives.

Mangaluru
20.12.2019

Registrar

Fig. 2: Environmental Policy

Table 1: Aspect-Impact register for University EMS

Sl. No.	Aspect	Activity/Source	Environmental Impact	Impact Type	Control Measures
1	Biomedical Waste	Medical College and Hospital, Dental College	Pollution of soil and water, health hazards	Negative	Proper segregation, color-coded bins, disposal through authorised agencies, and periodic staff training.
2	Pharmaceutical Waste	Pharmacy College, Hospital	Soil and water contamination	Negative	Secure storage, compliance with hazardous waste regulations, and return to manufacturers where applicable.
3	Energy Consumption	Entire Campus	Increased carbon footprint, resource depletion	Negative	Energy audits, use of energy-efficient equipment, and renewable energy sources like solar panels.
4	Air Emissions	Boilers, DG sets in Hospitals, Hostels, and Kitchens	Air pollution, contribution to climate change	Negative	Regular maintenance, installation of scrubbers, and use of cleaner fuels like natural gas.
5	Water Usage	Entire Campus	Resource depletion, reduced groundwater levels	Negative	Rainwater harvesting, installation of low-flow fixtures, monitoring consumption, and water reuse systems.
6	Wastewater Generation	Hospital, Hostels, Kitchens	Water pollution	Negative	Effluent treatment plants (ETPs) and Sewage Treatment Plants (STPs) with treated water reuse.
7	Hazardous Chemical Usage	Research Center, Pharmacy College	Soil and water contamination, health risks	Negative	Inventory management, proper storage, and disposal through authorized vendors.
8	Solid Waste	Hostels, Kitchens, Cafes, and General Campus Activities	Land pollution, increased landfill pressure	Negative	Segregation at source, composting organic waste, and recycling initiatives.
9	Food Waste	Kitchens, Hostels, Cafes	Methane emissions, resource wastage	Negative	Biogas plants, composting, and donation of excess food.
10	Noise Pollution	DG sets, construction activities	Disturbance to surrounding areas and campus community	Negative	Acoustic enclosures, use of low-noise equipment, and scheduling noisy activities during non-peak hours.

11	E-Waste	Entire Campus	Soil and water contamination due to heavy metals	Negative	Collection and disposal through authorized e-waste recyclers.
12	Radiation Exposure	Medical and Dental Colleges	Health risks, environmental contamination	Negative	Lead shielding in radiology rooms, periodic monitoring, and compliance with radiation safety standards.
13	Plastic Usage	Entire Campus	Non-biodegradable pollution	Negative	Ban/reduce single-use plastics, promote alternatives like paper or metal, and proper recycling programs.
14	Biodiversity Impact	Campus Landscaping, Research Activities	Loss of native flora/fauna	Negative	Conservation of green spaces, use of native plants, and monitoring biodiversity regularly.
15	Greenhouse Gas Emissions	Vehicle Use, Energy Systems	Contribution to climate change	Negative	Encourage public transport, cycling, and walking; establish carpooling systems.
16	Use of Natural Resources	Ayurveda and Homoeopathy Colleges	Resource depletion	Negative	Sustainable sourcing and use of natural materials, regular audits, and supplier evaluations.
17	Infection Spread	Medical and Dental Colleges, Hospitals	Public health risks	Negative	Infection control protocols, use of PPE, and awareness programs for staff and students.
18	Community Engagement	Research, Medical Camps	Awareness and knowledge transfer	Positive	Collaborate with local communities to share best practices and knowledge on environmental conservation.

B. ENVIRONMENTAL AUDIT

1) KEY FINDINGS AND OBSERVATIONS OF THE ENVIRONMENTAL AUDIT

1.1 University map

The University is spread over an area of 93.74 acres with eleven constituent units and eighteen specialized Centres/Units (Fig 1).

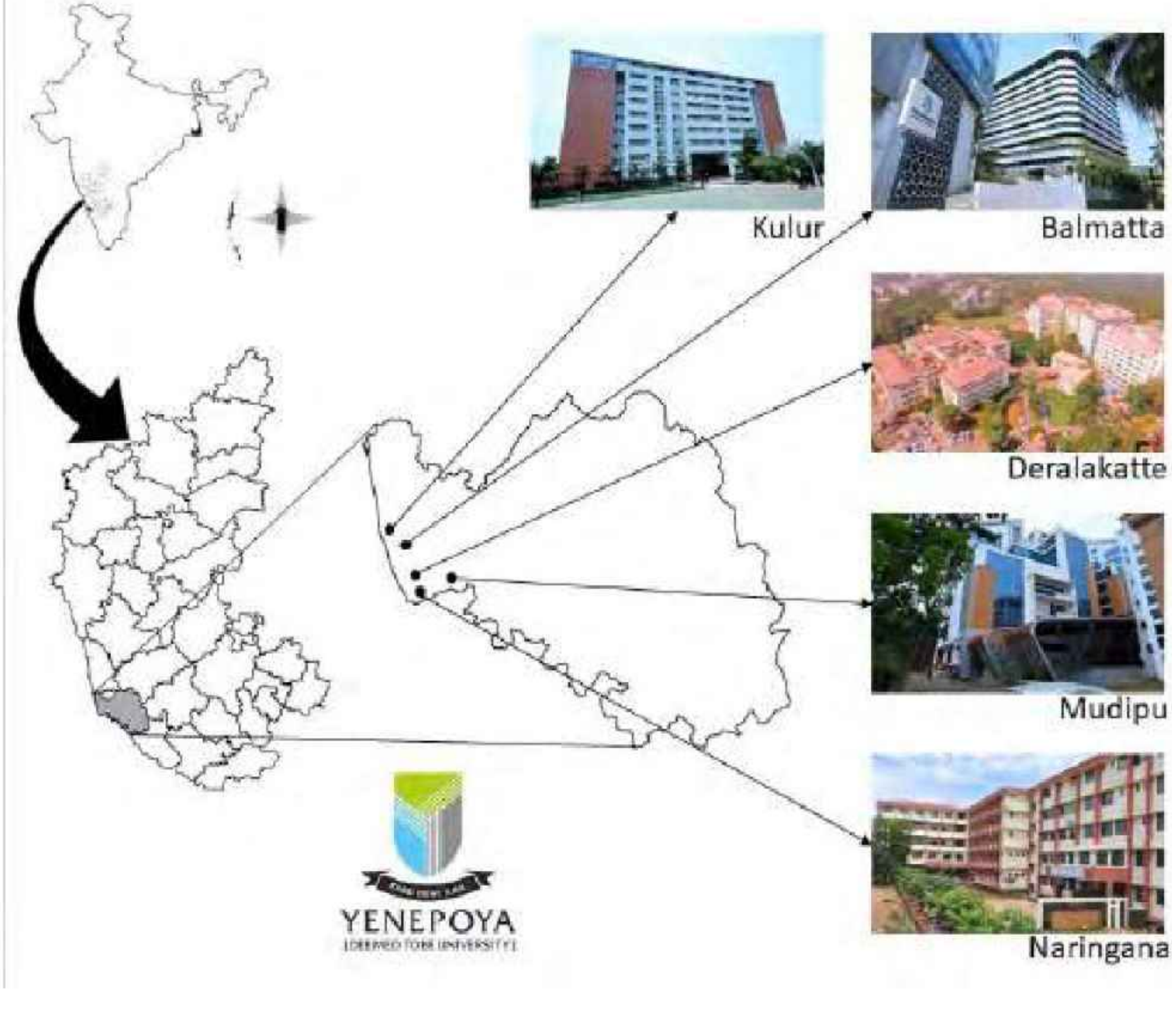


Fig. 1: Map of Yenepoya (Deemed to be University)

The aerial images of the university campus is shown in Fig 2.

Deralakatte premises

Naringana premises

Balmatta premises

Mudipu premises

Kulur premises

Fig 2: Aerial images of the university campus

Table 1 and 2 present the detailed land use distribution of the university campus. The layout of Deralakatte premises is shown in Fig. 3 and the extent of green cover across the campus in shown in Fig. 4.

Table 1: Land use pattern of university campus

	Particulars	Area
Deralakatte premises (DC)	Campus area	29.05 acre
	Built up area	119835 m^2
	Greenbelt area	13 acre
	Green cover	48 %
Naringana premises (NC)	Campus area	63.6 acre
	Built up area	33980.70 m^2
	Greenbelt area	45 acre
	Green cover	71 %
Mudipu premises (MC)	Campus area	1.314 acre
	Built up area	5318.20 m^2
	Greenbelt area	0.3 acre
	Green cover	23 %
Balmatta (BC) and Kulur premises (KC)	Campus area	1.91 acre
	Built up area	5520.1 m^2
	Greenbelt area	0.1 acre
	Green cover	5 %

Table 2: List of buildings and built up area

	Name of the building	Total area (m^2)
Deralakatte premises	Yenepoya Medical College	12659
	Yenepoya Medical College Hospital	30760
	Yenepoya Dental College	12473
	Yenepoya Centres	4767
	University Library	3859
	Gardyenia hostels	17257
	Staff quarters	15535
	Ladies hostel	8627
	Gents hostel	5127
	Administrative building	1163
	Sports complex	3455
	Central Kitchen & Central Laundry	2883
	Canteen, Central stores and Cafeteria	1270
	Total built-up area	1,19,835
Naringana premises	Yenepoya Nursing College	3625.79
	Yenepoya Pharmacy College	9064.47
	Yenepoya Homeopathic College Hospital	5870.13
	Yenepoya Physiotherapy College Hospital	1812.89
	Yenepoya Ayurvedic College Hospital	12423.75
	Yenepoya Naturopathy College Hospital	1183.66
	Total built-up area	33980.70
Mudipu premises	Yenepoya School of Allied Health Sciences	5,318.20
	Total built-up area	5,318.20
Balmatta and Kulur premises	K R Hostel	2950.89
	Degree College Building	2569.21
	Total built-up area	5520.10

Fig. 3: Layout of land use pattern of Deralakatte premises

Trees on roadside

Garden near Library

Arecanut plantations

Campus pathways

Campus pathways

Pocket forest

Fig 4: Green cover and gardens of the Deralakatte premises

1.2 Campus population

The campus population includes students, staff, patients, their attendants and floating population among others. Average population on the campuses per day is approximately 28,969 and details are given in Table 3.

Table 3: Population on the campus

	Building	Population
Deralakatte premises	Yenepoya Medical College	Students 1673 Teaching staff 387 Non-teaching staff 93
	Yenepoya Medical College Hospital	Non-teaching staff 1563 Inpatients/day 852 Out patients/day 2158
	Yenepoya Dental College	Students 684 Teaching staff 133 Non-teaching staff 130 Out patients/day 618
	Ladies hostels	Students 874
	Men's hostels	Students 1070
	University Administration	Teaching staff 58 Non-teaching staff 678
	House-keeping staff	Staff 412
	Central Kitchen & Central Laundry	Staff 1030
	Moving population	2000
	Total population	**~14413**
Naringana premises	Yenepoya Nursing College	Students 716 Teaching staff 45 Non-teaching staff 8
	Yenepoya Pharmacy College and Research Centre	Students 425 Teaching staff 41 Non-teaching staff 37 Others ~ 33
	Yenepoya Homeopathic Medical College Hospital	Students 424 Teaching staff 28 Non-teaching staff 17 Inpatients/day 12 Out patients/day 180
	Yenepoya Ayurvedic Medical College Hospital	Students 598 Teaching staff 50 Non-teaching staff 27 Inpatients/day 60 Out patients/day 210
	Yenepoya Physiotherapy College	Students 636 Teaching staff 25 Non-teaching staff 9

	Yenepoya Naturopathy Yogic Science College and Hospital	Students 238 Teaching staff 16 Non-teaching staff 11 Inpatients/day 30 Out patients/day 60
	Total population	**~3936**
Mudipu premises	Yenepoya School of Allied Health Sciences	Students 3897 Teaching staff 116 Non-teaching staff 33
	Total population	**~ 4046**
Balmatta and Kulur premises	Yenepoya Institute of Arts Science Commerce & Management	Students 6092 Teaching staff 194 Non-teaching staff 93 Other 4
	Yenepoya School of Engineering Technology	Students 186 Teaching staff 3 Non-teaching staff 2
	Total population	**~ 6574**

1.3 Environmental Compliances

Yenepoya (Deemed to be University) is committed to upholding strict environmental compliance standards. An Environmental Compliance Cell is constituted with a Compliance Officer to monitor all operational processes and procedures using a compliance management platform to ensure that the university complies with all legal regulations and ethical standards. The Compliance Officer manages the flow of information by researching, recording and analyzing data and information. The university takes the required actions to obtain necessary compliances, such as Environmental Clearance (EC), Consent for Operation, Biomedical Waste Authorization, and Hazardous Waste Authorization. Regular monitoring and reporting of compliance activities, including the submission of documents and six-monthly reports, are diligently carried out to the corresponding agencies, such as the Ministry of Environment, Forest and Climate Change (MOEFCC), and Karnataka State Pollution Control Board (KSPCB). By adhering to these compliances the university ensures its dedication to environmental preservation and responsible operations. The list of university compliances is given in Table 4.

Table 4: List of university environmental compliances

Sl. No	Compliance	Agency	Obtained date	End date	Status
1	Environmental Compliance – Deralakatte premises	Ministry of Environment, Forest and Climate Change (MOEFCC)	15/10/2022	15/10/2032	EC is obtained for maximum limit
2	Environmental Compliance – Naringana premises		19/11/2019	19/11/2029	EC is obtained for maximum limit

3	Consent for operation for STP of Hospital*	Karnataka State Pollution Control Board (KSPCB)	01/07/2021	30/06/2026	Renewal has been done
4	Consent for operation for STP of Hostel*		01/07/2021	30/06/2026	Renewal has been done
5	Consent for operation for ETP of Central Kitchen		01/07/2021	30/06/2026	Renewal has been done
6	Consent for operation for Gardenia STP		01/07/2020	30/06/2025	Renewal has been done
7	Consent for operation for Naringana premises		15/07/2024	30/06/2029	CFO has been granted
8	Bio Medical waste Authorization	KSPCB	01/07/2021	30/06/2026	Renewal has been done
9	Hazardous Waste Authorization	KSPCB	29/12/2022	30/06/2026	Renewal has been done

*Applied for the expansion of STP

2) WATER MANAGEMENT

Water is used for drinking, sanitation, kitchen, laundry, housekeeping, gardening, and healthcare related activities. The university has a water collection, storage and distribution network for the supply of fresh water within the campus. An efficient water management system ensures all users receive water of desired quality with uninterrupted supply and no wastage in the transit.

2.1 Fresh water sources

The sources of fresh water are bore wells, open wells and ponds from the campus, corporation water supply and water tankers. There are 14 bore wells on the campus which are the main sources of water. Four open wells are used for pumping the water through shallow aquifers. There are a total of 4 ponds, of which 3 are in Naringana premises one is at Deralakatte premises. Mudipu, Balmatta and Kulur premises are using the Corporation water supply while, tankers collect water from outside sources during lean periods. The total quantity of water drawn from different sources is given in Table 5. The university is heavily dependent on the ground water for its water needs.

Table 5: Details of freshwater drawn from different sources in 2024

Sl. No.	Sources	Quantity of water drawn (KL)
1	Open wells	1,36,664 KL – 27.94%
2	Bore wells	1,43,163 KL – 29.27%
3	Pond	1,38,282 KL – 28.27%
4	External source	71,046 KL – 14.52%
	Total	4,89,155 KL

2.2 Fresh water storage and treatment

Water, drawn from various sources, is stored at different locations in the collection tanks of different capacities. There are eight collection tanks at different locations for storage and further treatment (Table 6).

Table 6: Details of storage tanks and their capacities

Water Storage			
Sl. No.	**User Locations**	**Number**	**Capacity in KL**
1	Zulekha & YMK Men's Hostel sump	2 x100KL	200KL
2	YMCH sump	1 x100KL	100KL
3	Central kitchen sump	1 x150KL	150KL
4	YMCH filter sump	1 x200KL	200KL
5	Gardyenia hostels	2 x100KL	200KL
6	Naringana premises sump	1 x 100 KL	100 KL
7	Naringana girls hostel sump	1 x 300 KL	300 KL
7	Balmatta premises sump	1 x 100 KL	100 KL
8	Mudipu premises sump	1 x 150 KL	150 KL
		TOTAL	**1500KL**

The water is treated to meet the acceptable quality standards and to remove unwanted matter like suspended solids present. There are four Water Treatment Plants (WTP) (Fig. 5), one each in the hospital, campus hostel, central kitchen and Gardyenia hostels and Naringana campus with a treatment capacity of $15m^3$/hr each. The treated water is then collected in storage tanks and pumped to various user locations such as Hospital, Hostel, Laundry, Boiler, Central Kitchen and Colleges through a network of pipelines.

Fig. 5: Water treatment plant

Water is supplied from water sumps designated to each user location as per the demand. For non-potable applications, water is filtered through sand filter and carbon filter to remove fine suspended solids. For critical applications in hospital and potable water requirements, water is purified through

Reverse Osmosis (RO) plants. All the hostel blocks have RO plants to treat the water. There are two RO plants of 250 LPH capacity installed at boy's hostels, two in girl's hostels, three at Gardyenia hostels, one in Meridyen quarters, two in YMC, one in EMD building and one in the Incubation Technology building at the Deralakatte premises, two RO at Naringana premises, two RO at Mudipu premises and one at Kulur premises. The university also provides drinking water facilities at designated locations in the hospital, administrative blocks, and college building with 190 water purifiers of different capacities.

2.3 Fresh water consumption

Water consumption for the year 2024 is given in Table 7. Average water consumption of the university per day is 1340 KL.

Table 7: Water consumption on the campus

Month	Deralakatte KL	Meridyen quarters KL	Naringana KL	Mudipu KL	Balmatta KL	Kulur KL
January	34055	1599	2133	753	300	360
February	33784	1609	2294	583	310	405
March	35346	1660	2380	620	305	540
April	30873	1411	1963	593	325	336
May	37370	1580	2302	839	330	774
June	34193	1562	2383	933	280	660
July	35054	1593	2880	938	290	816
August	34368	1689	3145	696	300	1116
September	32912	1613	3218	748	310	1068
October	33817	1681	4425	883	315	876
November	34151	1654	7112	1033	300	492
December	34044	1578	4236	1041	300	720
Total	**409967**	**19229**	**38471**	**9660**	**3665**	**8163**
Total water consumption: 4,89,155 KL						
Water consumption per day: 1340 KLD						

The water consumption pattern changes with each location, depending on the type of activities. The raw water drawn from the bore wells after treatment is tested for physical and chemical parameters. The test reports are found satisfactory (APHA, 2017) (Table 8) (Fig. 6).

Table 8: Drinking water analysis report of various locations (November 2024)

Location		Parameters (IS 10500 2012)									
Site		Color	Turbidity	pH	Fluoride	R. Chlorine	Chloride	Total Hardness	TS	TDS	TSS
Gardenia	A block	No Color	No Turbidity	7.26	0	0	0	60	0	0	0
	B block			6.98	0	0	0	30	0	0	0
	C block			7.41	0	0	0	60	30		30
Hospital	Sump			6.12	0	2	0	400	680	560	120
Hostel	Hostel sump water			6.32	0	1.0	0	150	440	300	140
	Bru Hostel			7.77	0	0	0	40	0	0	0
	Aysha ladies hostel			7.40	0	0	0	60	190	130	60
	Hasan Enclave			7.50	0	0	0	60	0	0	0
	Hasan Chamber			7.85	0	0	0	40	0	0	0
	Meridian			7.32	0	0	0	60			
	Fathima Hostel			7.54	0	0	0	50	50	30	20
	M.M. Residency			7.30	0	0	0	40	0	0	0
	New Boys Hostel			7.20	0	0	0	80	0	0	0
	Zulekha Ladies Hostel			7.44	0	0	0	30	0	0	0
	Old Boys Hostel			7.42	0	0	0	60	50	40	10
	Jeppu Hostel A block			7.84	0	0	0	40	0	0	0
	Jeppu Hostel B block			7.86	0	0	0	50	0	0	0
	Annex Ladies Hostel			7.68	0	0	0	40	0	0	0
	Ayush Ladies Hostel			7.28	0	0	0	60	0	0	0
	Baliyoor Hostel			6.32	0	0	0	40	0	0	0
	Incubator Dept.			7.00	0	0	0	80	0	0	0
	YMC College			6.71	0	0	0	40	0	0	0
College	Pharmacy			6.70	0	0	0	50	30	0	30
	Mudipu			7.03	0	0	0	40	0	0	0
	Ayurveda			7.00	0	0	0	30	0	0	0
	Kulur			6.74	0	0	0	60	0	0	0

Annexure–VII

Sample name: Gardeniya hostel B block R.O

Sl. No	Test	Result	Reference limit (IS 11500:2012)	Inference
1	Color	No obvious color	-	Acceptable
2	Turbidity	No Turbidity	-	Acceptable
3	pH	6.98	6.5 – 8.5	Within the limit
4	Total solids (TS) (mg/L)	0	500	Within the limit
5	Total dissolved solids (TDS) (mg/L)	0	500	Within the limit
6	Total suspended solids (TSS) (mg/L)	0	500	Within the limit
7	Fluoride (mg/L)	0	1	Within the limit
8	Residual chlorine (mg/L)	0	0.2	Within the limit
9	Total hardness (mg/L)	30	200	Within the limit

Analyzed By:
Date: 23.11.2024

Verified By:
Date: 23.11.2024

Approved By:
Date: 23.11.2024

Fig 6: Water analysis report

$$\text{Per capita water consumption (litres/day)} = \frac{\text{Total water consumption per day (litres)}}{\text{Total Number of People}}$$

Per Capita Water Consumption=1,340,000/28,969 ≈46.26 litres/person/day

The per capita water consumption on campus is approximately **46.26 litres per person per day**, which is significantly lower than the IS 1172 – 1993 standard (Table 9).

Table 9: Per capita water consumption

Category	Per capita IS 1172-1993 (LD)
Inpatients	450
Students	135
Staff / Outpatients / Visitors / Central Kitchen & Laundry	45

2.4 Wastewater management

Wastewater generated from all the user locations with varied degree of pollution is handled scientifically, as per the statutory requirements. Water consumption at various places may generate different quantum of wastewater. The hostels accommodate around high population of students which is one of the major contributors of wastewater generated in the campus.

2.5 Types of wastewater generated

Depending on the characteristics and source of wastewater generated in the campus, it is divided into following types as given in Table10.

Table 10: Types of wastewater generated on the campus

Sl. No.	Types of wastewater	Sources of generation
1	Liquid Biomedical effluent	Hospitals & Colleges
2	Kitchen wastewater	Central kitchen
3	Laundry effluent	Central laundry
4	Sewage and sullage	Hospital, College, Administration block, Hostels, Staff quarters and central Kitchen
5	Black water	Hospital, College, Administration block, Hostels, Staff quarters and Central kitchen

2.6 Wastewater treatment facilities

The treatment and disposal of wastewater is carried out as per the applicable discharge norms. There are four Sewage Treatment Plants (STP) and two Effluent Treatment Plants (ETP) which are being operated. Details of treatment facilities provided for these wastewater streams are given in the Table 11.

Table 11: Treatment plants and disposal methods

Sl. No.	Types of wastewater	Treatment plant	Disposal Method
1	Liquid biomedical effluent	ETP of 10 KLD capacity	To hospital Common Effluent Treatment Plant
2	Kitchen effluent	ETP 300 KLD capacity	Toilet flushing, irrigation, etc
3	Laundry effluent		
4	Sewage and Sullage from YMCH	STP 500 KLD capacity	Toilet flushing, irrigation, etc
5	Sewage and Sullage from Deralakatte campus hostels	STP of 200 KLD capacity	Toilet flushing, irrigation, etc
6	Sewage and Sullage from Gardyenia hostels	STP of 300 KLD capacity	Toilet flushing, irrigation, etc
7	Sewage and Sullage from Naringana campus	STP of 300 KLD capacity	Toilet flushing, irrigation, etc

2.7 Treatment of effluent in ETP

Fig 7: Effluent treatment plant

The wastewater from kitchen and laundry is treated in ETP of 300 KLD with primary and secondary treatment. The effluent and sewage from YMCH are channelized to separate collection tanks at the ETP and STP. The LBMW is treated in the ETP and discharged into STP for further treatment. The effluent is dosed with sodium hypochlorite with continuous mixing. Effluent with sodium hypochlorite disinfects the effluent by transfer of chlorine. Chlorinated effluent is then pumped to the reaction tank attain complete reaction over a preset retention time. The treated effluent is let into STP for further treatment with sewage. The STP works with activated sludge process with extended aeration method. The treated discharge is dosed with sodium hypochlorite for disinfection and used for flushing and irrigation.

2.8 Treatment of sewage and sullage in STP

All the four STPs are designed with sequential batch process (SBR) (Fig. 8). Wastewater generated from all the user locations with varied degree of pollution is handled scientifically, as per the statutory requirements. Approximately 1535 KL of wastewater is treated daily (Table 12) of which about 365KLD is used for flushing and about 1170 KLD for irrigation (Fig 9).

Fig. 8: Sewage treatment plant

Table 12: Summary of treated wastewater

Month	Hospital CETP* (500 KLD)	Hostel STP* (200 KLD)	Gardyenia hostel STP (300 KLD)	Central kitchen ETP (300 KLD)	Naringana premises STP (300 KLD)
January	16992	14933	5094	7173	960
February	16630	14937	5170	7181	1222
March	17585	14371	5725	8268	1405
April	18405	14850	5650	8150	1191
May	19286	15589	5683	8021	1480
June	17637	15662	5396	6867	1456
July	15662	17635	5396	6856	1380
August	15112	17469	5378	6718	1726
September	14631	16792	4777	6584	1596
October	15138	17108	5708	6007	2416
November	15921	16805	5864	5805	2265
December	16907	14038	5982	6528	3137
Total	**199906**	**190189**	**65823**	**84158**	**20234**
Total water recycled:560310KL Total water recycled per day : 1535KLD					

*Applied for the expansion of STP

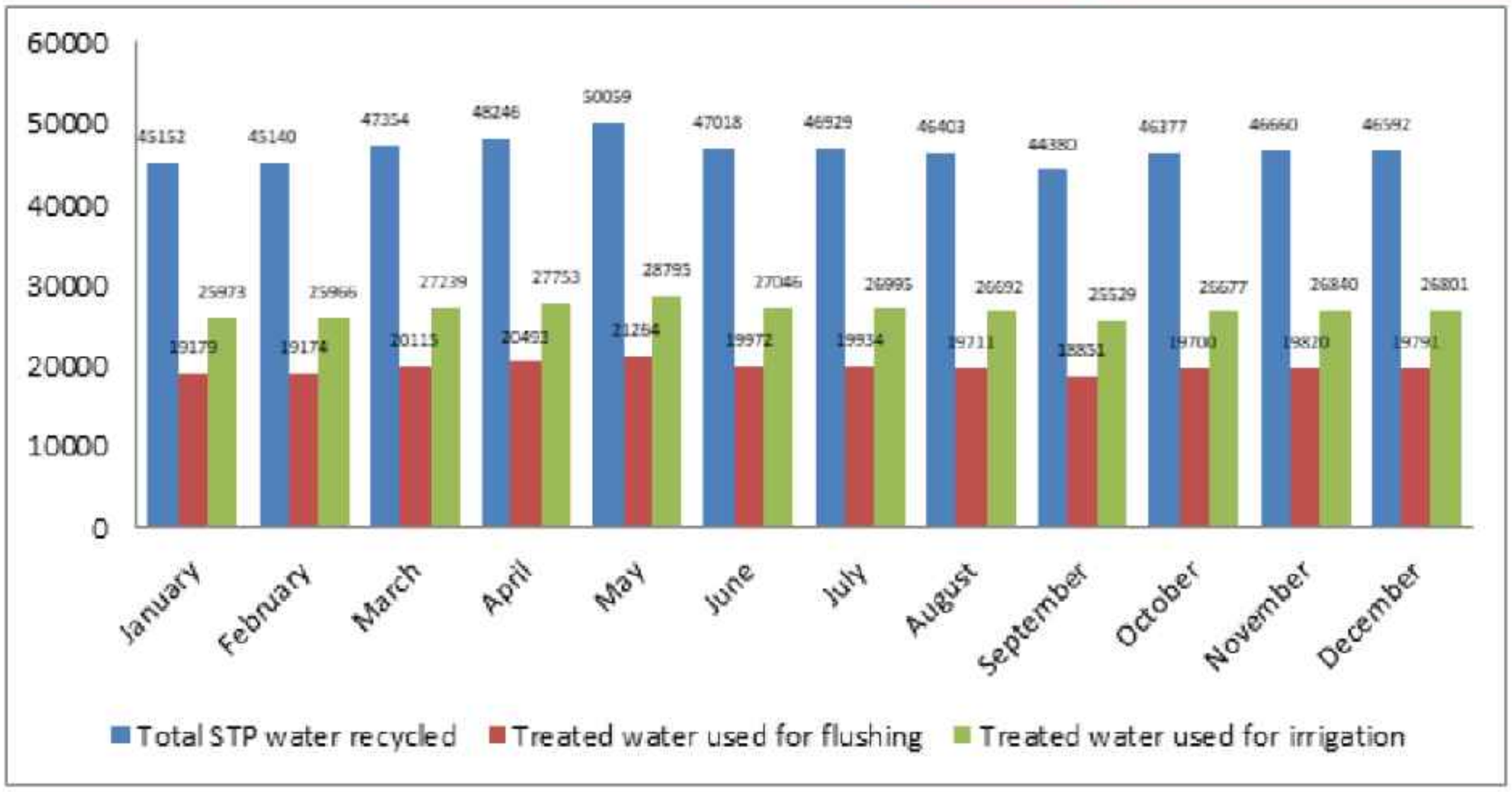


Fig 9: Water consumption and reused water quantity

The treated wastewater samples are collected by MoEF-NABL accredited laboratory for analysis with reference to the prescribed standards on monthly basis. The treated effluent confirms to the standards prescribed (Table 13) (Fig 10)

Table 13: Recycled water analysis reports of all STP's for the month of August 2024

Sl. No.	Parameter	KSPCB limits	YMCH CETP	Deralakatte Hostel STP	Gardyenia STP	Central Kitchen ETP	Naringana STP	Kulur STP
1	pH	6.5-8.5	6.87	7.88	6.76	7.05	8.62	6.80
2	BOD	<10 mg/l	5.0	4.0	3.0	19.0	2.5	3.2
3	COD	<50 mg/l	20.0	20.0	16.0	72.0	12.0	12.0
4	Suspended Solids	<10 mg/l	4.5	2.4	3.8	18.6	-	5.6
5	Dissolved Solids	-	-	-	-	550	-	-
6	Sodium Adsorption Ratio	-	-	-	-	9.0	-	-
7	Chloride as CI	-	-	-	-	57.48	-	-
8	Sulphate as SO_4	-	-	-	-	75.71	-	-
9	Ammoniacal Nitrogen	<5 mg/l	3.46	3.07	3.34	-	3.74	3.48
10	Total Nitrogen	<10 mg/l	5.8	3.8	4.7	-	5.6	5.3
11	Faecal Coliform	<100 MPN/100 ml	58	63	58	-	70	70

Hubert Enviro Care Systems Private Limited
TC-45, Industrial Estate, Baikampady, Mangaluru,
Dakshina Kannada Dt., Karnataka - 575011, India.
Ph: 0824 - 2409111, Email: lmsm@hecs.in Web: www.hecs.in

TC-7820

Laboratory Services Division
Accredited by NABL in the field of Chemical Testing
Recognized by MoEF & CC
ISO 9001, 14001 & 45001 Certified.

TEST REPORT

Page No: 1 of

Customer Name	**M/s. YENEPOYA (DEEMED TO BE UNIVERSITY)**
Project Site/ Address	University Road, Deralakatte, Mangalore - 575018, Karnataka, India
Sample Description	Waste Water
Sample Mark	**Gardenia Hostel STP Outlet**
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited, Mangaluru Laboratory
Sampling Plan and Method	U.S. Environmental Protection Agency - Wastewater Sampling ID: USAEPAOC 306 R6, Effective Date: April 27, 2021
Sampling Date	05.02.2025
Quantity of Sample Received	2 L in HDPE Can + 150 ml in Sterile Container
Received Date	05.02.2025
Analysis Commenced On	06.02.2025
Completed On	12.02.2025
Report Date	13.02.2025
Report No	HECSM/WW/004/050225

RESULTS

S.No.	Parameters	Units	Results	KSPCB Standard	Test Method
1.	pH at 25°C	-	7.46	5.5 - 9.0	IS 3025 : Part 11 Clause 2
2.	Total Suspended Solids	mg/L	8.3	≤ 100	IS 3025 : Part 17
3.	BOD, 3 days at 27°C	mg/L	4.7	≤ 30	IS 3025 : Part 44
4.	COD as O_2	mg/L	24.19	≤ 250	IS 3025 : Part 58
5.	Ammoniacal Nitrogen	mg/L	3.49	≤ 5	IS 3025 : Part 34 : 1988
6.	Total Nitrogen	mg/L	5.24	≤ 10	HECSM/ENV/WW/SOP/004 Issue No 01 Dt:02.01.2018

Note: mg/L - milligram per litre; IS – Indian Standard; KSPCB – Karnataka State Pollution Control Board

INFERENCE	AS PER KSPCB STANDARD, THE ANALYZED PARAMETERS ARE WITHIN THE PRESCRIBED LIMIT

******End of Report******

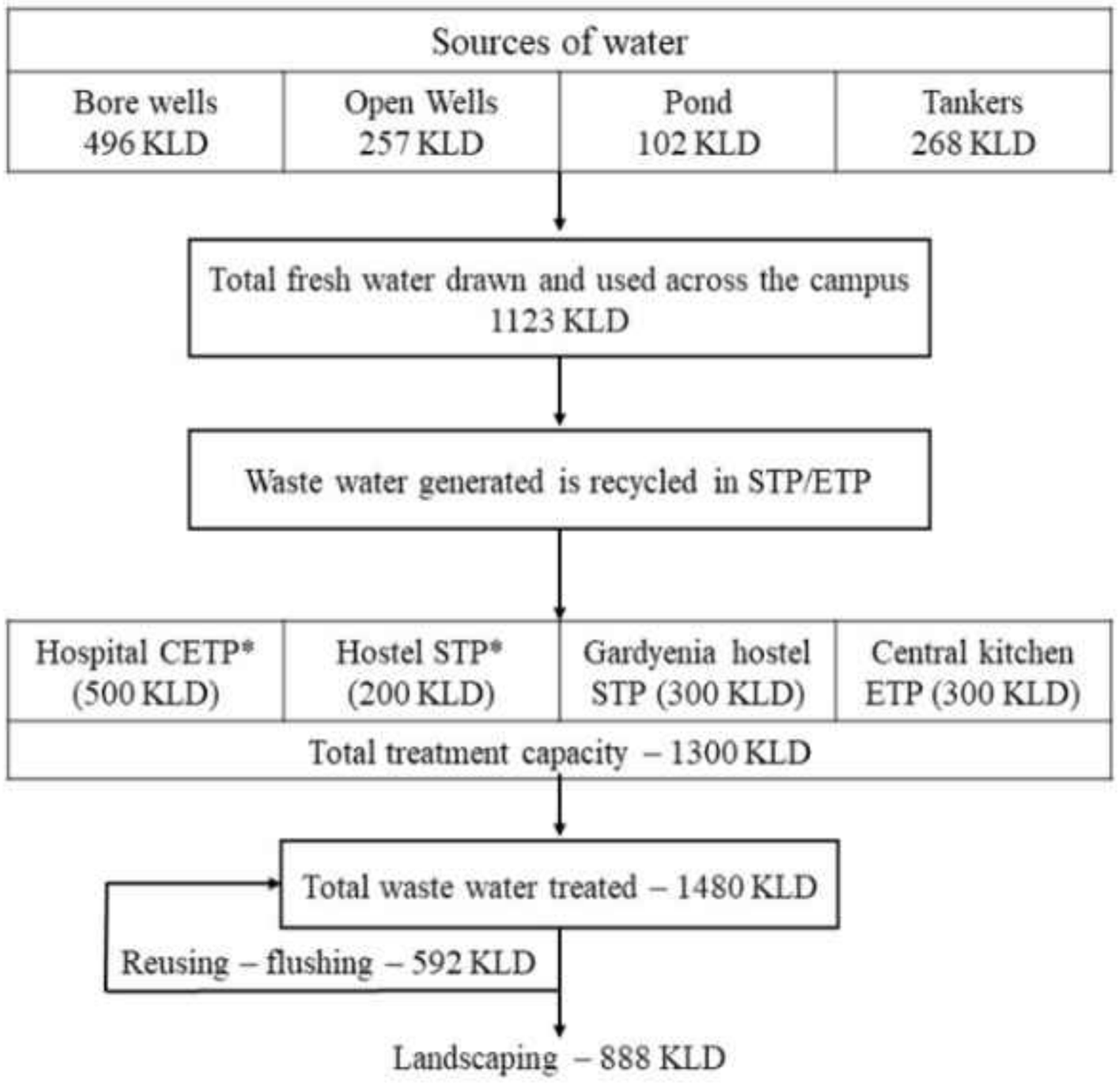
Authorized Signatory
(Dr. K. GANESAN)
Laboratory and Quality Manager

1. This report is for the exclusive use of the client named and is not to be reproduced in full or part without the written consent of HECS organization. 2. Samples are collected by HECS unless otherwise mentioned. 3. Unless otherwise stated, the tests were performed in the laboratory. 4. Any discrepancy in the report should be informed within 10 days from the date of issue of the report. 5. HECS is not responsible for any damage caused to the customer's property or loss of life during the collection of samples.

Fig10: Recycled water analysis report

2.9 Water balance chart

As can be seen from the water balance chart (Fig. 11) a total of 1123 KL of water is consumed and a total of 1480 KL of wastewater is recycled daily.



*Applied for the expansion of STP

Fig.11: Water balance chart of Deralakatte premises

As can be seen from the water balance chart of Naringana campus (Fig.12) a total of 105 KL of water is consumed and a total of 55.4 KL of wastewater is recycled daily.

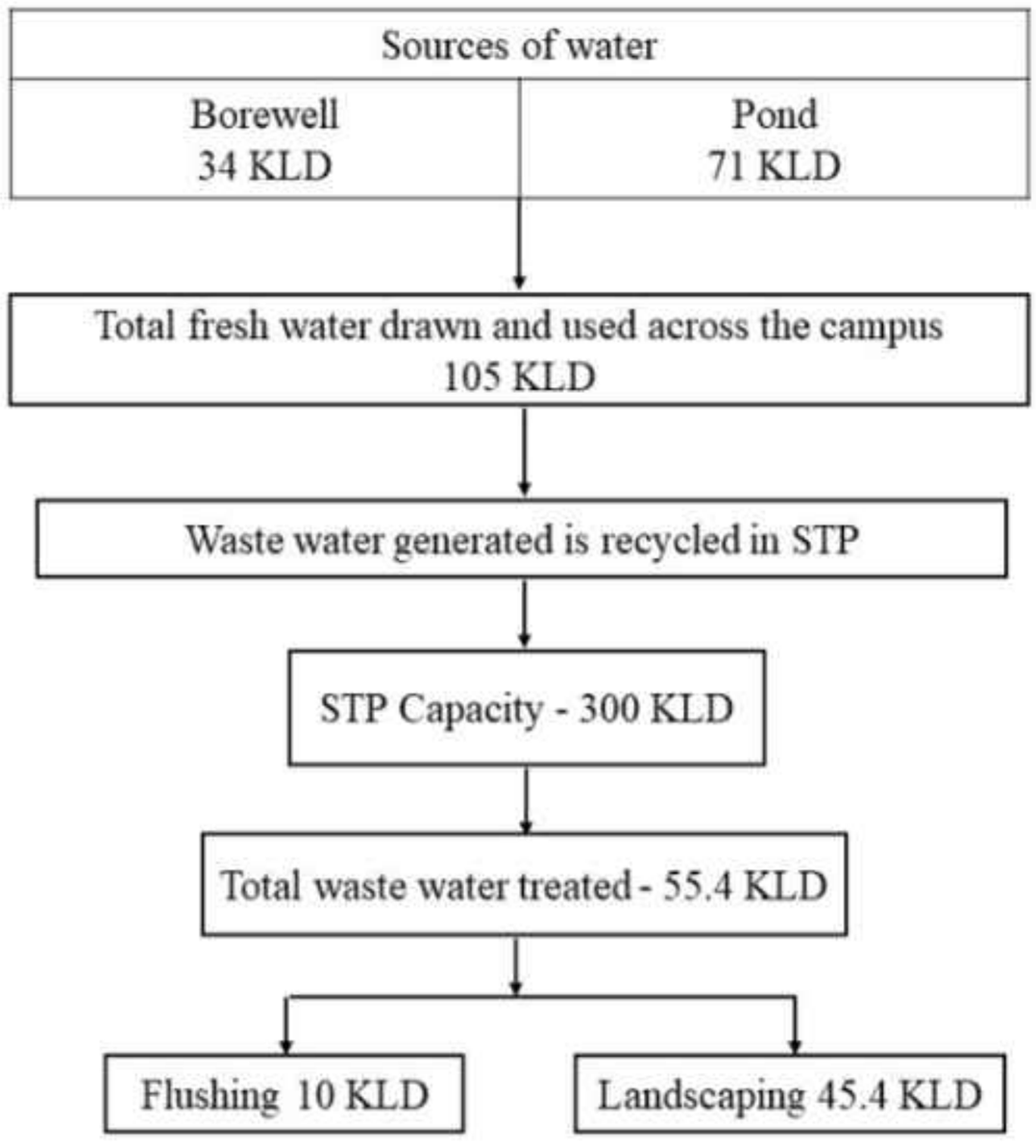


Fig 12: Water balance chart of Naringana premises

2.10 Water Conservation

Rainwater harvesting is being carried out on the premises to conserve water for internal use. There are two rainwater collection ponds (Fig. 13) having a combined water storage capacity of 5.3 crore liters. The ponds have helped to revive the underground water table and provide water during the lean period. This helps to meet about 80 percent of the water requirement of the campus. Percolation trenches are used to treat runoff from impervious surfaces to allow rainwater soak into the ground. The University has a daily water requirement of 1400 KL.

Fig.13: Rain water harvesting pond and percolation trenches

Roof rainwater harvesting units (Fig. 14) are installed in eleven buildings and the water is channeled to recharge bore wells (Table 14).

Table 14: Location of Roof rain water harvesting systems

Unit No.	Location
1	Bore well behind the library building
2	Bore well behind the Medical College building
3	Bore well beside the Yendurance zone
4	Bore well beside Vermicompost unit
5	Bore well near the YMK men's hostel
6	Bore well near the Zulekha ladies hostel
7	Bore well beside the Central Kitchen
8	Open well in front of Gardyenia B block
9	Bore well behind the Gardyenia B block
10	Bore well beside Campus hostel
11	Bore well behind the Lotus cafe

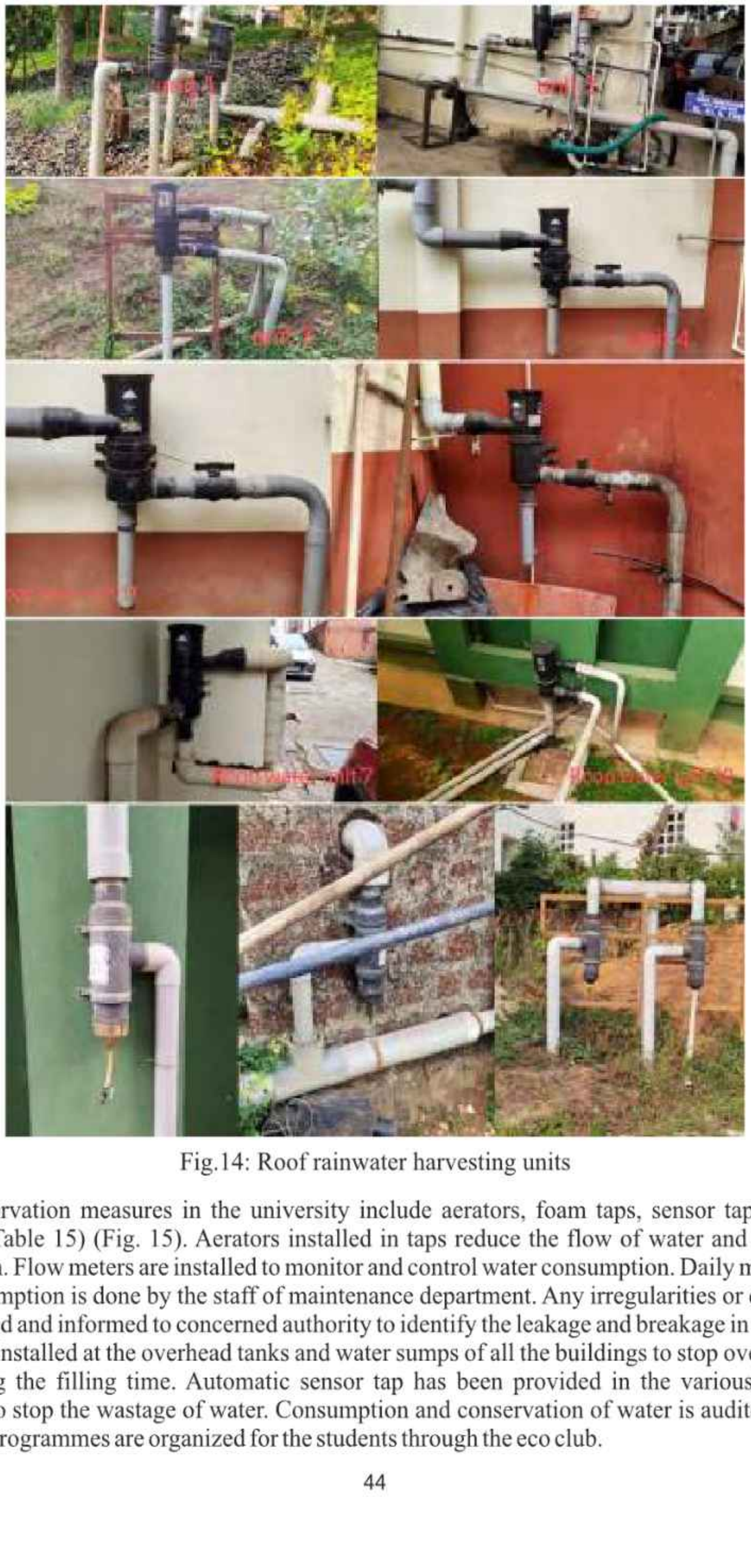


Fig.14: Roof rainwater harvesting units

Water conservation measures in the university include aerators, foam taps, sensor taps and water sprinklers (Table 15) (Fig. 15). Aerators installed in taps reduce the flow of water and thus help in conservation. Flow meters are installed to monitor and control water consumption. Daily monitoring of water consumption is done by the staff of maintenance department. Any irregularities or excess water usage is noted and informed to concerned authority to identify the leakage and breakage in the pipeline. Sensors are installed at the overhead tanks and water sumps of all the buildings to stop overflow of the water during the filling time. Automatic sensor tap has been provided in the various location of University to stop the wastage of water. Consumption and conservation of water is audited regularly. Awareness programmes are organized for the students through the eco club.

Table 15: Water conservation devices used

Water efficient device	Total Number	Total number installed
Taps	4250	Aerators - 1300
		Sensor taps - 28
		Foam taps - 2872
Sprinklers	250	-

Aerators

Sensor taps

Sprinklers

Float switch

Fig. 15: Water conservation devices

2.11 Onward Actions Towards SDG 6: Clean Water and Sanitation

GOAL

Ensure access to water and sanitation for all

ONWARD ACTIONS

- Water purificationsystems are installed across campus to ensure safe and clean drinking water is accessible to all.
- Water sources such as tube wells, open wells, and rainwater harvesting ponds are routinely cleaned, maintained, and monitored for water quality.
- Posters and signage's promoting water conservation practices are displayed throughout the campus to encourage responsible usage.
- Wastewater generated on campus is treated in on-site Sewage Treatment Plants (STPs) and the recycled water is reused for landscape irrigation and maintenance.
- Rainwater harvesting systems are impl

3) SOLID WASTE MANAGEMENT

Solid waste is generated from various activities and broadly classified into hazardous and non-hazardous waste (Table 16). Management of waste essentially includes the 3R concepts of Reduce, Reuse and Recycle. The domestic waste is segregated as biodegradable and non-biodegradable waste.

Table 16: Solid waste categories

Sl. No.	Type of Waste	Activity	Description	Disposal Method
1	Domestic Waste	Consumer products – Bio degradable waste generation	Garden/Kitchen waste Vegetable waste and Food waste	Composting/ Vermicomposting Sent to piggery/Composting
		Consumer products – Non-biodegradable Waste generation	Waste that ends up in landfill–like plastic, Office waste etc	Saleable waste sold to recyclers (Scrap metal, paper etc) Non salable waste disposed municipal solid waste agency
		Gardening & Horticulture waste	Waste generated due to pruning, dry leaves etc	Composting/ Vermicomposting
2	Biomedical Waste	Hospital activities and Medical college activities	Biomedical waste of different categories like used PPE's, Contaminated cotton, expired medicines etc	Disposed through authorized biomedical waste handling agency
3	E-waste	Discarded electronic items and instruments	IT, Diagnosis related electronic equipment	Sold to authorized e-waste recycler
4	Hazardous waste	DG Operations & Transformer	Used Lube Oil Battery	Sold to authorized oil Recyclers

3.1 Domestic waste segregation and disposal

Segregation of waste is an essential component of waste management. It is the process by which waste is separated as per the common characteristics, reuse potential and disposal method. Separate bins are kept to collect biodegradable and non-biodegradable waste items at different locations in solid PVC bins with labeling (Fig. 16).

Fig. 16: Bins to collect domestic waste on the campus

The total number of bins placed in different locations is shown in Table 17, based on the generation and frequency of clearing. Waste from the dustbins is collected on daily basis in respective buildings to a common collection point in the ground floor. From these areas, the collected domestic waste is packed in black bags and taken to a common storage area for disposal. The waste is collected by authorized vendors from the Municipal Corporation.

Table 17: Number of waste collection bins

Deralakatte premises	Naringana Premises	Mudipu premises	Balmatta premises
2775	376	112	73

The biodegradable waste such as garden waste and some quantity of kitchen waste is used in vermicomposting. Approximately 800 kg of food waste daily is composted in food waste management units using microorganisms.

3.2 Hazardous waste segregation and disposal

The university generates Hazardous waste governed by various statutes. Hazardous waste is considered as hazard to the environment as well as health. Hazardous waste generation, handling, transport and disposal are governed by Hazardous and Other Wastes (Management and Tran's boundary Movement) Rules, 2016. The university has taken appropriate steps for scientific disposal of waste. These wastes are collected separately and stored in a designated location depending on the nature of the waste. Appropriate records are maintained for accounting the quantity of waste generated and disposed. The hazardous wastes cannot be mixed or disposed as one block, as the waste characteristics differ from one to another. The hazardous waste other than biomedical waste that is generated on the campus is:

3.2.1 Used/Waste oil:

Oil is used in generators and transformers. Oil is hydrocarbon in nature. Waste oil is generated during maintenance or replacement with fresh oil. The used and waste oil are collected in solid containers and stored in a designated area with display boards. It is sold to authorized vendors. This year about 800 L of waste/spent oil was disposed to KarRecycle Centre LLP.

3.2.2 Electronic Waste:

The items like compact discs, desktops, printers, toner cartridges etc form thee-waste. Majority of thee-wastes are generated by the Department of Information and Technology. It is sold to the authorized vendors for safe disposal. This year about 1891.42 kg of e-waste is disposed of scientifically to PCB approved vendors, Moogambigai Metal Refineries.

3.2.3 Used Batteries:

The lead content in the used battery is hazardous. The buy back arrangement with the suppliers helps the university to dispose the used batteries. The suppliers who buy back the used batteries further send the used batteries to recycler are who are registered with Karnataka State Pollution Control Board. This year about 12 batteries were disposed to Bright Power Solutions.

3.3 Biomedical waste management:

Any waste which is generated during the diagnosis, treatment of human beings or animals or in research activities are referred as biomedical waste. The hospital waste comprises both solid and liquid wastes. The liquid waste is treated in CETP and solid wastes are disposed through authorized vendor.

Biomedical waste generated from the hospital is infectious in nature. Therefore, the infectious waste is segregated and handled separately. The house keeping staff is well trained to work in the hospital to handle waste. The biomedical wastes are handled as per the guidelines of new Biomedical Waste (Management and Handling) Rules 2016. The rules layout the procedures and methodology for segregation, collection, treatment and disposal.

The display boards (Fig. 17) are kept in the hospital to create awareness on the appropriate disposal of biomedical waste in the hospital.

Fig. 17: Display board on biomedical waste management

The waste generated from the hospital is segregated separately and collected in a color coded bins and sent for disposal. The waste is collected at different locations in colored PVC bins with non-chlorinated color bags provided for each type of waste (Fig. 18). Each centre is given bins as per the generation and frequency of shifting.

Fig. 18: Color coded bins to collect biomedical waste in hospital

The waste generated at source is segregated, filled in bags with the representative color bags, tied to avoid spillages and sent to final disposal site. At the site, waste in different bags is inspected for conformance to the norms by a competent person. Details are noted in the register. The details of biomedical waste generated during this year is given in table 18.

Table 18: Biomedical waste generated in the university

Sl. No.	Month	Yellow bags (kg)	Red bags (kg)	Bluebags (kg)	Sharps (kg)	Total (kg)
1	January	6448.27	7177.71	1627.07	235.6	**15488.7**
2	February	6376.84	6906.25	1245.8	267.42	**14796.3**
3	March	6901.75	7655.21	1499.3	354.38	**16410.6**
4	April	6604.66	7041.13	1560.01	241.95	**15447.8**
5	May	7280.73	7948.84	1502.31	302.34	**17034.2**
6	June	6888.27	7139.82	951.19	176.28	**15155.6**
7	July	7454.65	7868.94	1536.59	482.77	**17343**
8	August	8297.01	8423.26	1586.53	252.56	**18559.4**
9	September	7405.9	7473.56	1857.92	264.28	**17001.7**
10	October	8080.28	7822.18	2114.66	354.38	**18371.5**
11	November	8292.02	6428.94	1926.5	383.26	**17030.7**
12	December	7312.51	7282.79	1586.34	229.03	**16410.7**
Total						**199050**

Yenepoya Medical College Hospital is a 985 bedded hospital and the hazardous biomedical wastes generated are handled as per the guidelines of the new Biomedical waste (Management & Handling) Rules 2016. The biomedical waste is stored in common collection site and disposed daily (545 kg/day) through the authorized vendor (Re Sustainability Healthcare Solutions Ltd.)

3.4 Recycling of biodegradable waste

Biodegradable waste management is important because it helps us to protect the environment. It also helps us to reduce our reliance on landfill, which can be a harmful process. By composting and recycling biodegradable materials, we are able to create products that are beneficial to the environment.

3.4.1 Vermicomposting

Garden waste along with vegetable waste from central kitchen is subjected to Vermicomposting using earthworms (Fig. 19). The Vermicomposting unit is operated throughout the year as the raw material is available for composting. The compost, rich in nutrients, is used in campus gardens and also sold to generate value for the produce. There are six Vermicompost units on the campus with a capacity of 400kg each. The total amount of vermicompost produced in the year 2024 is 4191 kg (Table 19).

Fig. 19: Vermicompost Unit and composting process

Table 19: Summary of Vermicompost generated

Date of harvest	Unit No.	Harvest(Kg)
13.02.2024	2	288
20.02.2024	4	309
28.02.2024	6	319
23.04.2024	1	295
04.05.2024	3	300
11.05.2024	5	325
18.07.2024	2	182
18.07.2024	4	175
23.07.2024	6	224
12.09.2024	1	331
26.09.2024	3	302
04.10.2024	5	304
29.11.2024	2	324
04.12.2024	4	245
10.12.2024	6	268
Total		**4191**

Composting leaves makes a dark, rich, earthy, organic matter that can be used like soil. It adds nutrients to the garden soil and the larger particle size helps enhance the filth and loosen compacted earth. Compost retains moisture and repels weeds when used as a top dressing or mulch. The garden waste of the campus mainly the leaves are composted using mesh and sprinkling vermiwash to facilitate the degradation process (Fig. 20). The Analysis report of Vermicompost and Vermiwash is given in (Table 20).

Fig. 20: Mesh composting

Table 20: Analysis report of Vermicompost and Vermiwash

Sl. No.	Vermicompost			Vermiwash		
	Parameter	**Unit**	**Result**	**Parameter**	**Unit**	**Result**
1	pH @25°c	Value	7.17	Ph @25°c	Value	7.35
2	Color	-	Black	Conductivity	uS/cm	5199.79
3	Odor	-	UO	Total Solids	mg/L	3912
4	Moisture	%	69.84	Total Dissolved Solids	mg/L	3276
5	Potassium	g/100g	0.53	Carbon	mg/L	816
6	Total Nitrogen	g/100g	1.70	Total Nitrogen	mg/L	3.46
7	Calcium	g/100g	2.39	Calcium as Ca	mg/L	159.36
8	Cadmium	mg/kg	ND	Magnesium as Mg	mg/L	84.71
9	Copper	mg/kg	2	Carbon Nitrogen Ratio	Ratio	236.1
10	Lead	mg/kg	10	Phosphate	mg/L	45.5
11	Mercury	mg/kg	ND	Potasium	mg/L	781.75
12	Nickel	mg/kg	10	Ammoniacal Nitrogen	mg/L	2.89
13	Zinc	mg/kg	75.39	Iron	mg/L	9
14	Bulk Density	gm/cc	0.49	Lead	mg/L	ND
15	Arsenic	mg/kg	ND	Cadmium	mg/L	ND
16	Total Organic Carbon	%	27.35	Copper	mg/L	0.02
17	Carbon nitrogen ratio	Ratio	16.1	Mercury	mg/L	ND
18	Conductivity	uS/cm	5626.42	Nickel	mg/L	ND
19	Phosphate	%	6.75	Zinc	mg/L	0.094
20	Sodium	g/100g	0.076	Arsenic	mg/L	ND
21	Magnesium	g/100g	1.45	Phenols	mg/L	0.12
22				Chloride	mg/L	965.02
23				Turbidity	NTU	1
24				Color	Hazen	5

3.4.2 Food waste recycling

Food waste processing is an essential component of a sustainable environment, and it plays a critical role in conserving resources, reducing pollution, and minimizing landfill space.

Fig. 21: Food waste composting unit

Fig. 22: Food waste shredder

Fig. 23: Food waste composting process

The food waste of the campus is collected at a common collection point and transferred to food recycling unit (Fig. 21). The waste is first treated in a shredder (Fig. 22) and later composted using microbes. The shredders play a crucial role in food waste processing by reducing the size of waste materials, which allows for more efficient handling, transportation, and disposal. Shredded food waste provides a more uniform particle size, which is advantageous for composting processes. The reduced particle size increases the surface area for microbial activity, resulting in a faster and more efficient composting process. The process converts organic materials into nutrient-rich soil amendment through natural decomposition (Fig. 23). The analysis report of food compost is given in (Table 21). Approximately 800kg of vegetable and food waste is composted daily in the food recycling unit.

Table 21: Analysis report of food compost

Sl. No.	Parameter	Unit	Compost
1	pH @25°c	Value	8.01
2	Color	-	Black
3	Odor	-	UO
4	Moisture	%	35.93
5	Potassium	g/100g	1.55
6	Total Nitrogen	g/100g	3.10
7	Calcium	g/100g	6.37
8	Cadmium	mg/kg	ND
9	Copper	mg/kg	11
10	Lead	mg/kg	12
11	Mercury	mg/kg	ND
12	Nickel	mg/kg	12
13	Zinc	mg/kg	85
14	Bulk Density	gm/cc	0.53
15	Arsenic	mg/kg	ND
16	Total Organic Carbon	%	26.48
17	Carbon nitrogen ratio	Ratio	9.1
18	Conductivity	uS/cm	21705.47
19	Phosphate	%	16.68
20	Sodium	g/100g	1.36
21	Magnesium	g/100g	1.45

3.5. Going plastic free

The university is committed for a journey towards plastic free campus. Many policies and measures are taken to replace single use plastic and reduce plastic waste and pollution on the campus (Fig. 24 and 25).

Fig. 24: Patients and their attendants are encouraged to use cloth bags and steel containers for carrying food

Fig. 25. Display boards to discourage the use of plastic

3.6. Paper reduction policy

IT department can contribute substantially to reduce environmental impact. In collaboration with Centre for Environmental Studies, the department strives to reduce pollution load. Such actions not only reduce environmental impact but also beneficial by cost reduction, time management, fasten communication etc. The daily practices have an attributed carbon footprint, while excess carbon dioxide negatively impacts the natural environment. By becoming greener the carbon foot print may be reduced.

E-Governance

- E-Governance is managed in the university at administration, services and support areas. It reduces the paper trail and also makes information tracking online with the click of a button.
- Management of human resources and communications are online including the leave application and approvals. Salary processing, as well as salary-slip decimation, happens online. Staff attendance is captured using biometric devices.
- University hospital operations are computerized and as a part of this, all patient medical records are managed in digital form. Patient care including IP/OP and ordering of lab and radiology tests and reporting, are processed and delivered digitally. Pharmacy prescriptions ordered online.
- All student data is managed online including the examination and result generation processes. Students' attendance captured through biometric devices and summary of attendances sent to parents using SMS and email services. Student course work is delivered to students using the learning management system.
- An online issue tracking and reporting mechanism implemented which takes care of issues raised to IT, Maintenance and biomedical sections of the university. All inventory of stock is managed on centralized software through which indenting for items and purchase is handled. Inventory, stock and asset control is managed through the software system.

IT Services section has successfully implemented the following initiatives:

1) Implementation of Electronic Medical Records
2) Sustainable Print Service
3) Computer system sleep management
4) Remote Access
5) Online learning/E-Learning
6) Procurement
7) PACS

1) Implementation of Electronic Medical Records
   - The use of an electronic medical records system offers these clinical advantages:
   - No bulky paper records to store.

- Easier access to clinical data.
- The ability to establish and maintain effective clinical workflows.
- Fewer medical errors, improved patient safety and stronger support for clinical decision-making.
- Enhancing privacy and security of patient data.
- Securely sharing electronic information with patients and other clinicians.
- Ability to gather and analyze patient data that enables outreach to discreet populations.
- The opportunity to interact seamlessly with affiliated hospitals, clinics, labs and pharmacies.

2) The Sustainable Print Service (SPS) has been implemented in various departments where the confidentiality of the document is confined to a designated group of employees. Shared printing services are used wherever possible.

3) Most of the University PCs will go in to sleep mode after a defined period of inactivity based on the type of work assigned to them, reducing their energy usage.

4) All computer systems in the campus are remotely accessible using VNC software and computer sleep policies are in place during operational hours. Wake on LAN allows our staff to switch on any PC in our network remotely, for remote working or troubleshooting wherever and whenever they want. Remote connection to university computer services and applications allows flexible access without the need to travel or keep PCs powered on.

5) The ILIAS based online learning portal, offers opportunities to reduce the amount of printed material by viewing materials online. All the course content which used to be distributed using the paper has been replaced with online content. Assignments can be produced, submitted, marked and feedback given without the need to be printed out. Results and notices are put up online instead of paper-based notices. These initiatives have also reduced paper consumption. University email accounts can be accessed using mail.yenepoya.edu.in and the full Outlook client can be configured for staff working from home. A shared file to access a shared content in the university network wherever required. VPN (virtual private network) allows user's access to university restricted services and applications that are not otherwise available.

6) Procurement: Requests are sent On-line to the Purchase department for procurement of various items from by all departments, thus reducing the use of paper.

7) Implementation of PACS (picture archiving and communication systems):
A picture archiving and communication system (PACS) is a computerised means of replacing the roles of conventional radiological film: images are acquired, stored, transmitted, and displayed digitally. When such a system is installed throughout the hospital, a filmless clinical environment is maintained. Once an image has been acquired onto PACS it cannot be lost, stolen, or misfiled. The numerous PACS terminals throughout the hospital allow simultaneous multi-location viewing of the same image, if desired, whereas conventional film can only physically exist in one place at any one time. PACS does allow some direct economic savings from the lack of expenditure on film, film packets, and film processing chemicals.

3.7. Onward actions towards SDG 12: Responsible consumption and production

12 RESPONSIBLE CONSUMPTION AND PRODUCTION 	**GOAL** Ensure sustainable consumption and production patterns	• The university follows a sustainable procurement policy, which includes evaluating suppliers and their supply chains for compliance with environmentally responsible practices. • The university maintains a comprehensive waste tracking system to monitor waste generation and ensure it is managed and disposed of in accordance with environmental regulations. • Biodegradable waste is recycled on campus through methods such as vermicomposting and food waste composting, supporting nutrient cycling and waste reduction. • A 'Zero Paper Office' initiative and an integrated online Data Management System have been implemented to promote the principles of reduce, reuse, and recycle. • The campus is committed to phasing out single-use plastics: plastic cutlery has been replaced with wooden alternatives, and plastic carry bags are completely banned, with paper bags and reusable options provided as substitutes. • For electronic and laboratory equipment, the university has adopted a buy-back policy to reduce e-waste and encourage circular practices. • Hazardous waste, including biomedical and chemical waste, is strictly handled and disposed of through authorized vendors as per compliance standards.

4) NOISE POLLUTION AND CONTROL

Noise generated from machines and equipment's should be within the Karnataka State Pollution Control Board specified limits. Diesel Generators are potential source of noise in the campus. The DG Sets are provided with acoustic enclosures to control the noise within the stipulated norms under The Noise Pollution (Regulation and control) Rules, 2000. Noise levels recorded on the campus is presented in Table 22.

Table 22: Noise levels recorded

Noise level limit as per rules	Noise levels measured
<75 dB(A)	<35dB(A) during day
	<30 dB(A) during night

5) AIR EMISSION SOURCES AND CONTROL

The sources which emit flue gas are Boilers in the Central Kitchen and Diesel Generators. Air emission sources are monitored periodically and records maintained with details of fuel consumptions and power generated. Both the boilers are connected to a common chimney of 30.5 meters' height above ground level as per the statutory requirement (Fig.26).

Fig 26: Chimney

5.1 Boiler operation

Central Kitchen prepares meals in bulk and requires steam for cooking. Two Boilers (Fig. 27) of 1TPH are installed with one working and one as standby. Boiler of capacity 1 ton/hour uses agro based fuel briquettes at a rate of 120 Kg/hr. In order to control air pollution, wet scrubber is provided to control emissions within the norms. The flue gas, before exiting the chimney, passes through the scrubber. Both the boilers are connected to a common chimney of 30.5 meters height above ground level as per the statutory requirement.

Fig. 27: Boiler

6) TRANSPORT SERVICES

The transport department operates all transit services to and within the university campus. The university provides transportation facility for the campus community through a network of routes to reach the university. The university owns 34 small vehicles, 57 buses, 7 tankers and 10 ambulances which provide service for travel within the campus, field visits, patient care and other services (Fig.28). The transport department is utilizing approximately 4030 liters/month of petrol and 22,256 liters of diesel/month. The University has introduced a fleet of electric vehicles (25 bicycles, 10 bikes, 2 cars and 1buggy) for meeting its in-house transportation requirements. The department is developing strategies to reduce greenhouse gas emissions and strive towards sustainable transport.

Fig. 28: Campus vehicles

6.1 Eco-friendly transportation

Fig.29: E- Vehicles

The university has introduced a fleet of electric vehicles (Fig. 29) for meeting its in-house transportation requirements. These vehicles enable the movement of staff and students within the campus in a manner that is convenient, fun and eco-friendly at the same time. The vehicles are provided along with charging infrastructure and docking points that have been created at multiple locations across the campus thereby enabling students to pick up the vehicles at one location and drop them off at another.

7) FIRE SAFETY

Employees are provided with adequate fire safety training. To comply with this statutory requirement, Heads of Management Units shall ensure that all employees within their management control receive regular fire safety training and all new employees undertake the training as soon as it is practicable after commencement of employment. All new employees are informed of the fire safety provisions that are relevant to the work place. The department HOD is responsible for ensuring that arrangements are made to ensure new employees is advised of the following; action arrangements, including the Fire Safety Policy of escape within the premise of fire exits, location of firefighting equipment's. The Quality office in collaboration with Fire safety department organized mock drills as a part of awareness activity (Fig 30). The details of the activities held are presented in table 23.

Table 23: Code Red Mock Drill Report

Sl. No.	Date	Location	No. of Participants	Participants
1	11.01.2024	7th Floor B wing	20	HIC Staff, Nursing Staff and Student, Housekeeping Supervisor & Staff, FNO, AHOO, Security, Quality, Maintenance Staff
2	08.05.2024	Central lab, ground floor, Old Building	15	Blood bank staff, Nursing Staff, Security Staff, Housekeeping Supervisor & Staff , Nursing Supervisor, FNO, AHOO, Maintenance Staff
3	18.07.2024	5th Floor F wing	25	Housekeeping Staff, Security Staff, ANS, Nursing Officers & Supervisors, AHOO, Doctors and PGs, Maintenance Staff
4	28.10.2024	EPBX room	25	Nursing Supervisor, Hospital Staff, Security & Maintenance Staff, Maintenance Staff

Fig. 30: Mock drill exercise

8) PARTNERSHIPS AND COLLABORATIONS

The YDU has forged collaborations with numerous premier institutions to effectively manage various types of waste, promote sustainable energy usage, and safeguard the environment. Through these partnerships, the university aims to implement robust waste management practices, ensuring responsible disposal and recycling. Emphasizing sustainable energy practices, Yenepoya strives to minimize its carbon footprint and optimize energy consumption. By joining hands with other esteemed institutions, the university is committed to creating a greener and more eco-conscious campus, contributing to environmental preservation and fostering a culture of environmental stewardship. The list of collaborations is given in Table 24.

Table 24: Partnerships and Collaborations

Sl. No.	Partnership/Collaboration	Organization
1.	Resustainability Healthcare Solutions Ltd. Biomedical waste management	
2.	4PEL Solar Energy private limited for Roof top solar clean energy	
3.	Indus trust, Bangalore Clean energy	
4.	Brinadavan hydro power, Bangalore Energy wheeling	
5.	Moogambigai Metal Refineries e-waste	
6.	Maniranjan Pvt. Ltd., Mangalore	
7.	Hubert Enviro, Mangalore Water analysis	
8.	Aqua blue water system, Bangalore Water management services	
9.	KarRecycle, Bangalore Hazardous waste	

8.1 MoU Copies

HECS

Hubert Enviro Care Systems P Ltd
A21, 3rd Phase, TVK Industrial Estate,
Guindy, Chennai - 600032
GST: 33AABCH5835N1ZD

QUOTE

PSTP53602
May 15, 2023

Stage	Budgetary
Valid Till	Sep 15, 2023
Sales Person	Sowbakya V labsales
Amount	₹ 16,245.00

Bill To
M/s Yenepoya University, Mangalore
Kind Attn :Mr.Vinayaka Bhatta .
Contact No: (966) 363-3242
University Road, Deralakatte | Mangalore - 575018 | Karnataka | India
GST:

Ship To
M/s Yenepoya University, Mangalore
Kind Attn : Mr. Vinayaka Bhatta .
Contact No : (966) 363-3242
University Road, Deralakatte | Mangalore - 575018 | Karnataka | India
GST:

Scope of Work:

Hubert Enviro Care Systems P Ltd seeks to provide testing and analytical services mentioned below in line with your requirement.

Commercial Remuneration:

Item & Description	List Price	Qty	Discount	Amount
STP Treated Water Parameters 1) pH 2) Ammonical Nitrogen - mg/l 3) Total Nitrogen - mg/ 4) Total Suspended solids - mg/ 5) COD - mg/l 6) BOD - mg/l 7) Fecal coliform - MPN/100 ml Frequency: Monthly 3 samples (April to September)	₹ 950.00	18	₹ 855.00	₹ 16,245.00
NOTE: Sample will be couriered by the client As per our terms & conditions, 100% payment has to be made in advance for proceeding with sample collection. Mode of payment: A Cheque in favour of Hubert Enviro Care SystemsP Ltd. NEFT Account Name: Hubert Enviro Care Systems P Ltd B ank Account number: 0211648534 IFSC Code:KKBK0008479 Bank Name:KOTAK MA HINDRA BANK	₹ 0.00	1	₹ 0.00	₹ 0.00

Sub Total	**₹ 16,245.00**
GST	**₹ 2,924.10**

Accreditation and Certifications: MoEF Recognized, NABL, FSSAI Notified,
ISO 9001, ISO 14001, ISO 45001

KarRecycle Center LLP

AUTHORISED COMMON COLLECTION CENTER FOR USED OILS & WASTE OILS

AGREEMENT

This agreement made and executed at Bangalore this 31st day of May in the year Two Thousand and Twenty Two, (31-05-2022)

Between:

M/S Yenepoya University Medical College and Hospital... having its facility at Nityanandra Nagar, Derelakatte Post, Mangaluru -Talur, Dakshina Kannada District - 575018, hereinafter called as **FIRST PARTY.**

AND

M/S. KARRECYCLE CENTRE LLP having its facility at No. 114 C 1st cross, 5th Main, Yeshwanthpur Industrial Area, Opposite Peenya Metro Station, Tumkur Road, Bangalore-560 022 is the common collection centre for collecting the Hazardous waste authorized by Karnataka State Pollution Control Board is hereinafter called as **SECOND PARTY.**

I **SECOND PARTY** agrees that they will:

1) Collect & dispose the Hazardous waste mentioned in the agreement as per the Hazardous Waste (Management, Handling & Transboundary) Rules 2008 and its amended thereof.
2) Ensure that there is no spillage in the areas of collection or the areas where the movement of the waste takes place and also proper housekeeping of the area where hazardous waste is transported timely.
3) Hazardous waste shall be collected by the representative with proper authority.
4) Shall ensure that incase of accident on road, the waste should not be mixed, the entire quantity shall be transferred to another vehicle and transported to their site safely at the cost of SECOND PARTY.
5) Form 10 shall be provided during the time of collection of waste.
6) The hazardous waste shall be collected from the units as mentioned in Annexure - I.
7) Transport emergency card as per Form-11 and hazardous waste manifest as per Form-10 to be sent along with every consignment.

II **FIRST PARTY** agrees that;

1) All Hazardous Waste generated shall be packed in leak proof containers to avoid any kind of leakages during its transportation. It is to be disposed off along with its packing material, containers etc. It is the responsibility of generator to store the material in proper manner.
2) They will pack the HW Waste preferably stored in sealed, leak proof containers and ensures that there is no spillage of Hazardous Waste en-route during its transportation to its final destination.
3) **FIRST PARTY** shall ensure that all the Hazardous Waste must be weighed and tagged before its disposal to the KarRecycle's local facility.
4) The containers should be labeled as per Form- 12, Provide only the appropriate Waste mentioned in agreement.

No. 114/C, 1st Cross, 5th Main, Yeshwanthpur Industrial Area, Opp. Peenya Metro Station, Tumkur Road, Bangalore 560 022. ✆ 080 2839 5222, Mob : 7090261555
e-mail : info@karrecycle.com
VISIT US @ www.karrecycle.com

9) INSTITUTIONAL SOCIAL RESPONSIBILITY

Yenepoya (Deemed to be University) is committed to encourage students, and staff to provide social services to their local communities. The university indulges in a plethora of social activities to benefit the local population. The ISR activities for the year 2024 is about Rs. 84,75,179 as given in table 25.

Table 25: ISR activities of the University during 2024

Activities	Description	Date of completion	Amount in Rs.
Plantations	450 saplings planted in various locations	25.12.2024	25,000
Animal adoption programme in Biological park at Pilikula Nisargadhama	Animal welfare facilities for a year	18.12.2024	1,00,000
Mosque construction at Naringana	New mosques was constructed for public of Naringana	10.10.2024	30,00,000
Circle construction at Natekal	Fountain along with circle structures constructed at Natekal junction	15.08.2024	45,00,000
Computer systems donated to:	To Ullal Police Station: 4 computers are provided	19.01.2024	88,000
Printer system donated to:	Traffic South Police Station: 1 color printer is provided	31.05.2024	45,000
Computer systems donated to:	Pavoor govt. school: 5 computers are provided	24.01.2024	1,10,000
Computer systems donated to:	Blossom school Ballupet: 2 computers are provided	22.03.2024	44,000
Borewell drilled and installed pump, provided water for public use with piping	Baliyoor	01.05.2024	5,25,179
Inverter 1.5kva Exide start 24v 1625 with Battery 12v 150ah	Office of the Deputy Director Women's & Child Development	15.07.2024	38,000
Total			**84,75,179**

10) ONWARD ACTIONS TOWARDS SDG 17: Partnerships for the Goals

GOAL

Strengthen the means of implementation and revitalize the global partnership for Sustainable Development

- The university has developed a comprehensive5-Year Sustainable Action Plan (SAP) and established a dedicated Campus Sustainability Committee to oversee, monitor, and drive its implementation across departments.
- The university actively engages in collaborations and partnerships with national and international institutions, organizations, and networks to exchange knowledge, share best practices, and strengthen collective action towards achieving the Sustainable Development Goals (SDGs).
- Participation in joint research projects, conferences, workshops, and sustainability forums further reinforces the university's commitment to global partnerships for sustainable development.
- The university also encourages inter-departmental cooperation and community engagement to foster a collaborative approach to sustainability.

ENERGY AUDIT

1. EXECUTIVE SUMMARY

The audit team conducted an energy efficiency assessment of Yenepoya (Deemed to be University) campus on 15th December, 2024. The university administrative campus is located at 12.8117°N, 74.8811°E. The university is spread over an area of 95.87 acres with eleven constituent units and eighteen specialized Centers/Units. It was established in the year 2008 and this year the campuses population is around 28,969 staff, students and patients. The university consumed 1,61,20,168kWh of electricity from MESCOM costing Rs.13,32,76,061 during the calendar year 2024.

The purpose of the assessment was to evaluate existing energy-consuming systems and help identify opportunities for the university to become more energy efficient. The assessment includes an analysis of the following: utility rates, energy intensity bench marking, retro-commissioning opportunities, operations and maintenance (O&M), heating, ventilation and air-conditioning (HVAC) system and controls, lighting, plug load, computer power management, water heating and water consumption. The aim of the survey was to identify and suggest areas for future management in order to accelerate energy efficiency in the university. The university has implemented a robust Energy Management System (EMS) supported by dedicated electrical engineers who conduct regular reviews, guided by well-defined Standard Operating Procedures (SOPs) for efficient and sustainable energy use across all operations.

2. INTRODUCTION

Comprehensive energy audit is conducted annually to review and identify the scope of reducing energy consumption as a part of the ongoing objective of minimizing the university emissions in all its units. The audit work was undertaken in December 2024 and the report was verified by SANS Associates, consulting agency for energy audit is gratefully acknowledged. The energy audit includes TPM, power quality measurements as maybe applicable for this project and their effects on sensitive electronics & other plan equipment. All readings are therefore scaled to the conditions existed during the site study, which included taking various electrical/mechanical/thermal related measurements, as applicable, using most advanced recorders/loggers as per the requirements of relevant national & international standards namely IEEE.

3. ENERGY MANAGEMENT SYSTEM

An Energy Management System (EMS) is a structured framework that enables institutions to monitor, control, and optimize energy usage across various operations. The EMS at Yenepoya (Deemed to be University) ensures efficient energy utilization in critical areas such as colleges, hospitals, hostels, canteens, laundry services, street lighting, UPS systems, internet infrastructure, and security operations. By integrating conservation techniques, promoting energy-efficient appliances, and adopting renewable energy sources, the EMS supports the dual goal of reducing overall energy demand and enhancing sustainability. Continuous monitoring and periodic audits further help identify areas for improvement and drive informed decision-making for long-term energy savings. The energy demand comes from the operations of colleges, hospital, hostel, canteen, laundry, street lightings, energy storage (UPS), internet usage, security systems etc.

4. SOURCES OF ENERGY

4.1 Power supply at Deralakatte premises

There are three main sources of energy used on site:

- The university is connected to a power grid (33kV) from Mangalore Electricity Supply Company Limited (MESCOM) (Fig. 1, 2 and 3).
- Diesel generators are installed as alternate or standby power source (Table 1, Fig.4).
- Renewable energy from solar (Table 2, Fig. 5 and 6)

4.1.1 MESCOM power supply

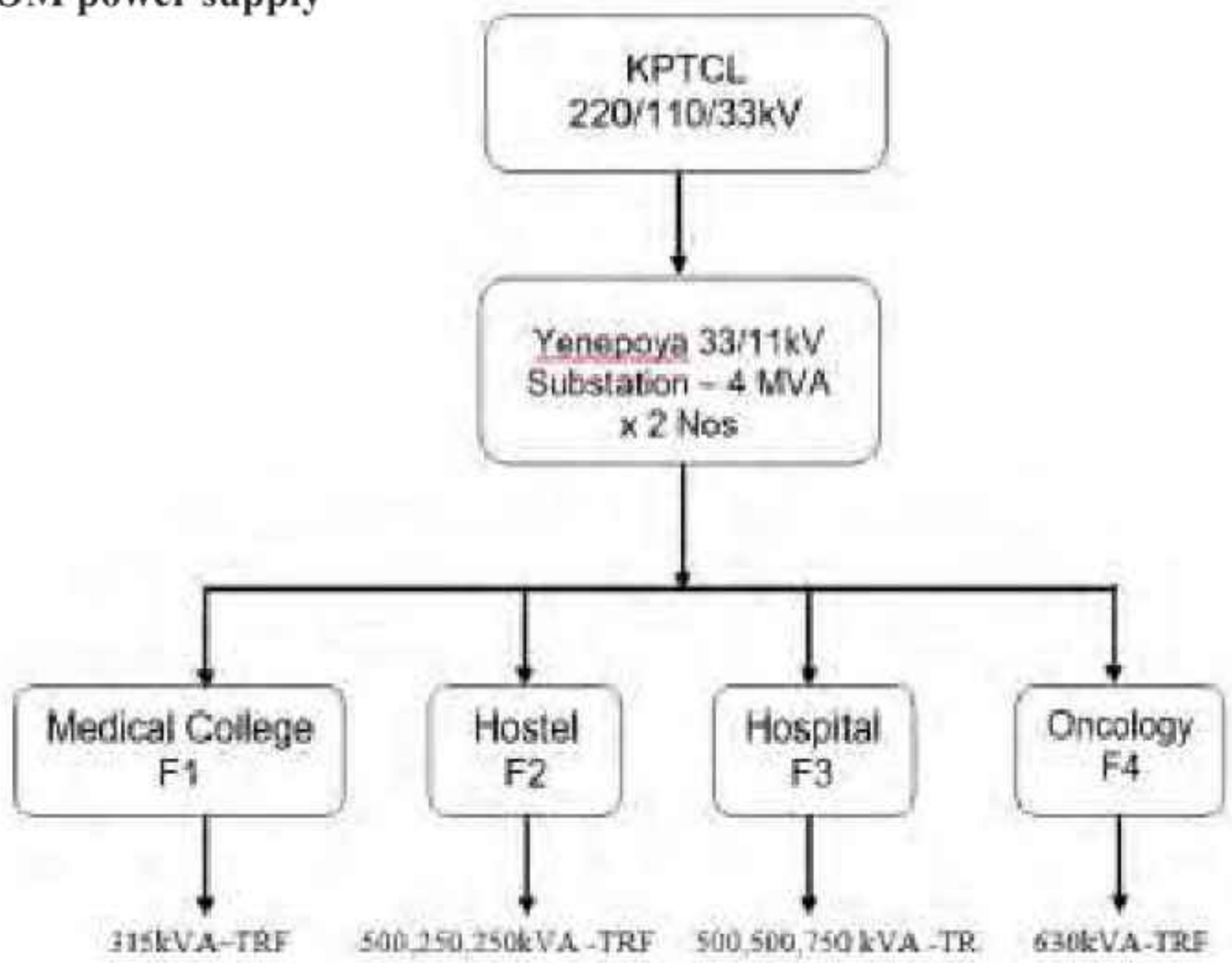


Fig. 1: Flow chart of power distribution on Deralakatte campus

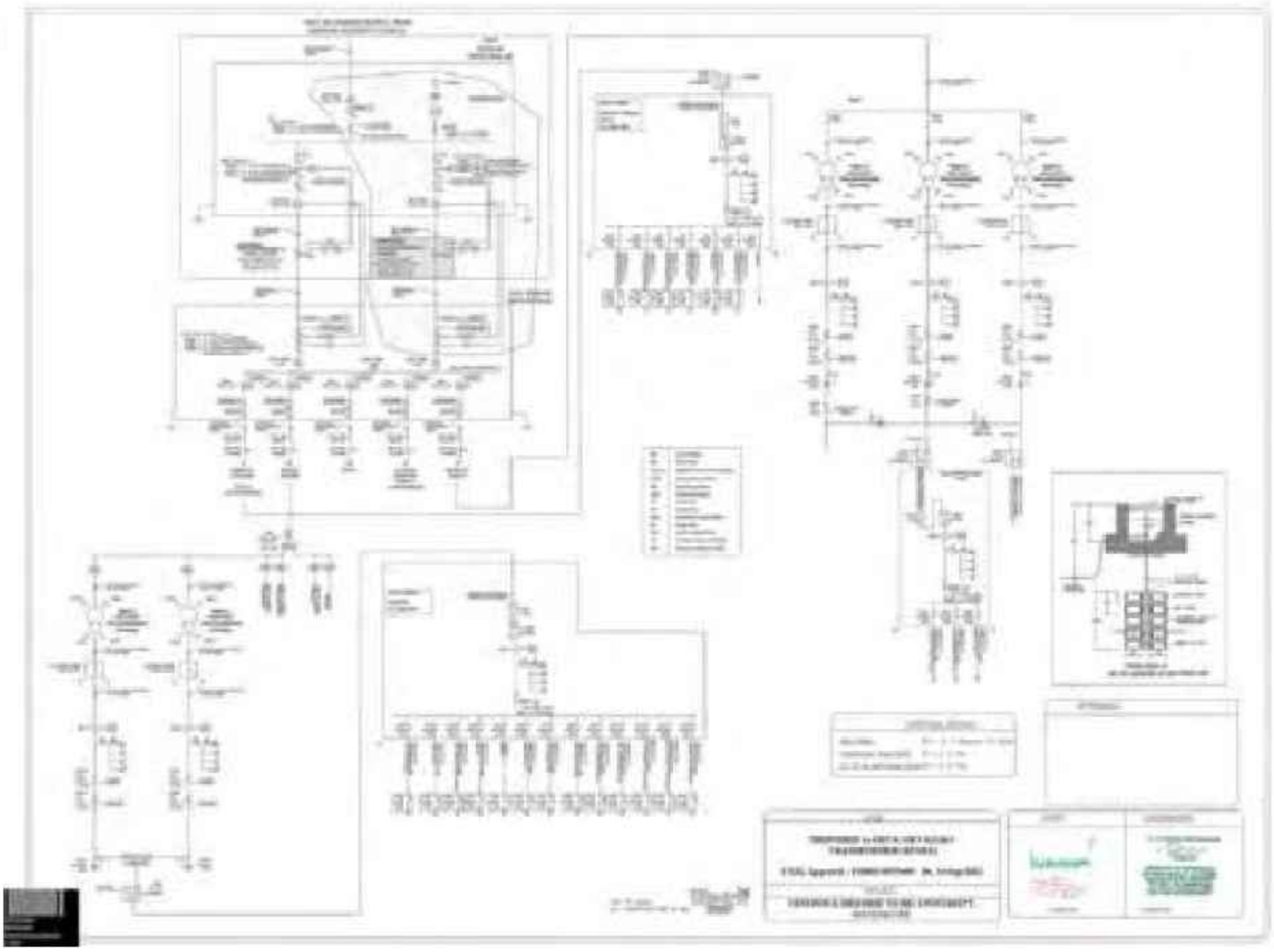


Fig. 2: SLD of 33/11KV Sub-Station

Fig 3: 33/11KV Sub Station

4.1.2 Diesel Generators (DG)

Table 1: Details of Diesel Generators (DG) with fuel capacity and chimney height

Sl. No	DG capacity	Location	Standard fuel consumption (Liters/Hour)	Recommended chimney height Above Roof Level (ARL)
1	DG 1 1250 kVA	Hospital	145	10 m ARL
2	DG 2 750 kVA	Hospital	110	10 m ARL
3	DG 3 625 kVA	Oncology	44	10 m ARL
4	DG 4 625 kVA	College	45	10 m ARL
5	DG 5 380 kVA	Mobile DG	48	10 m ARL
6	DG 6 250 kVA	Hostel	52	3.5 m ARL
7	DG 7 380 kVA	Hostel	53	4.0 m ARL
8	DG 8 250 kVA	Central Kitchen	39	3.5 m ARL
9	DG 9 125 kVA	Central Kitchen	24	2.5 m ARL
10	DG 10 380 kVA	Gardyenia Hostel	46	4.0 m ARL
11	DG 11 160 kVA	Yendurance zone	13	3.0 m ARL

Fig. 4: Diesel Generators and chimney on Deralakatte premises

4.1.3 Renewable energy from Solar

Solar PV Panels: Connected to Respective Block – (Total: 454.675kWp Panels).

Table 2: Area and capacity of solar panels in Deralakatte premises

Sl. No	Location	Area	Capacity in kWp	Qty
1	Medical College	772 sq.mts	125.45	1
2	Dental College	412 sq.mts	66.95	1
3	Teaching Hospital	702 sq.mts	114.075	1
4	Boys Hostel	564 sq.mts	91.65	1
5	Ladies Hostel	380 sq.mts	56.55	1
		Total	**454.675**	**5**

Fig. 5: Roof top solar panels for generating electricity

Fig 6: Solar panels for generation of hot water

4.2 Power supply at Naringana premises

There are two main sources of energy used on Naringana site:

- This premises have 11kV supply from MESCOM (Fig. 7 and 8).
- Diesel generators are installed as alternate or standby power source (Table 3, Fig. 9).

4.2.1 MESCOM power supply

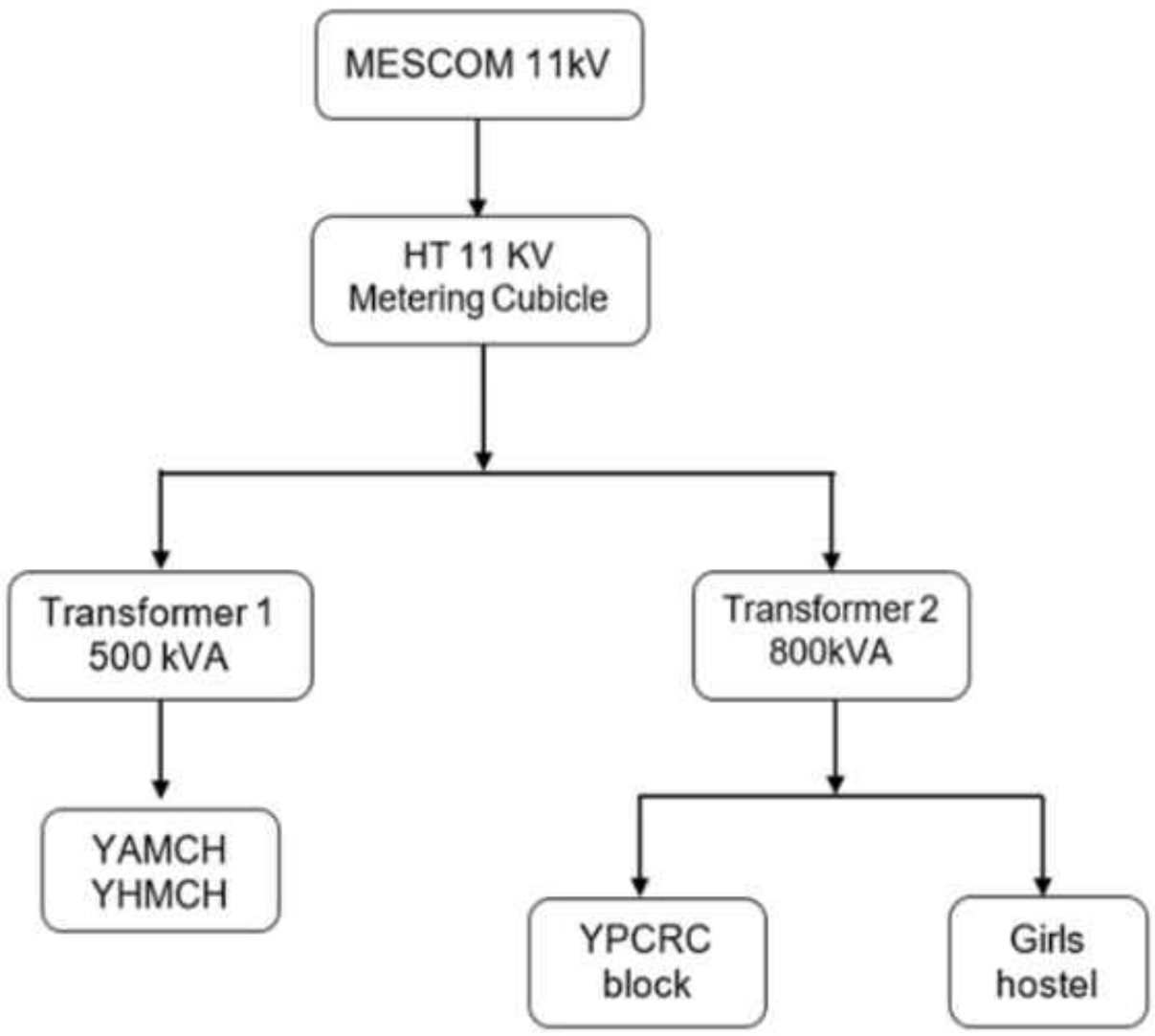


Fig. 7: Flow chart of power distribution on Naringana premises

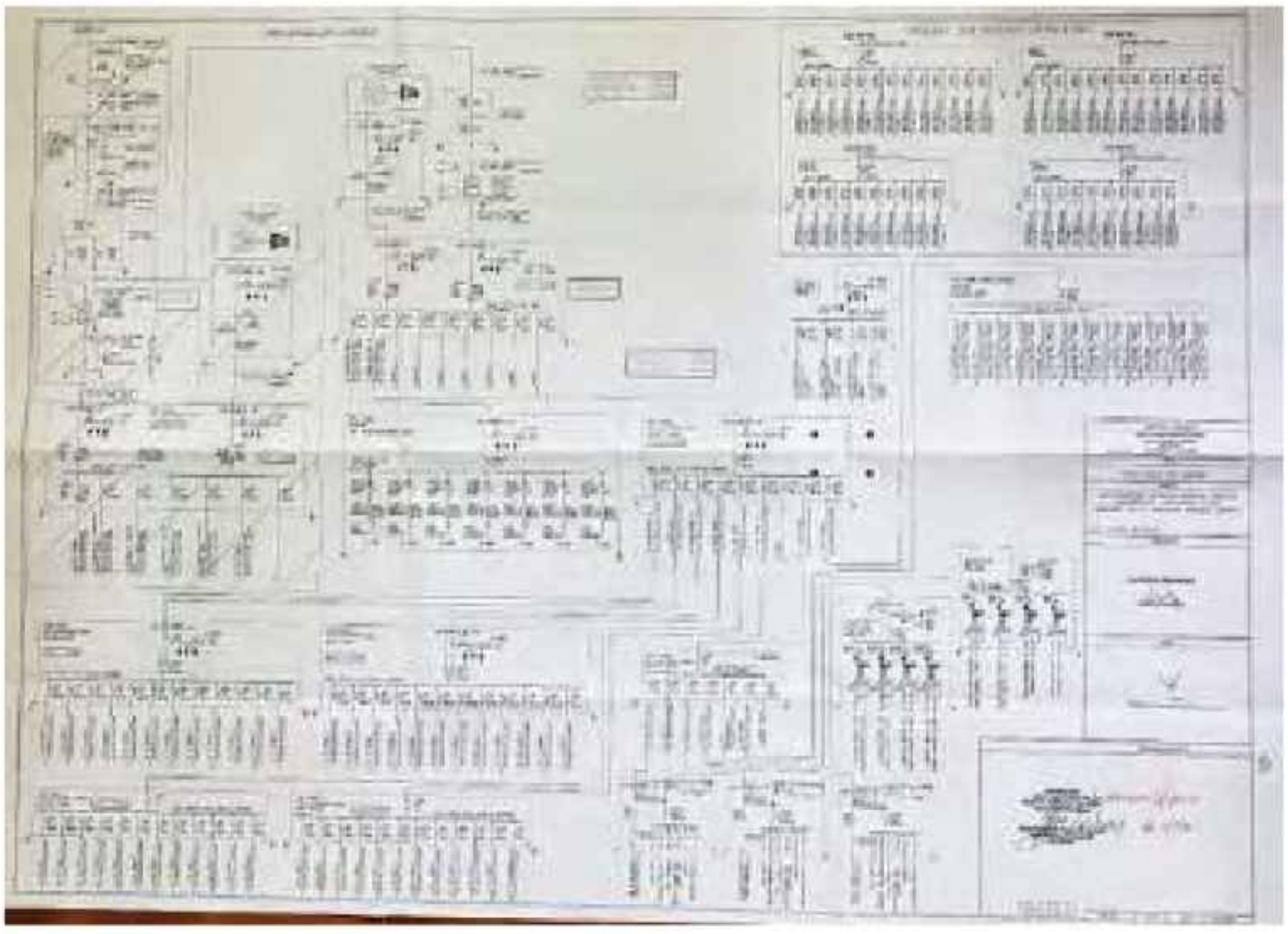


Fig. 8: SLD of 11KV supply

4.2.2 Diesel Generators (DG)

Table 3: Details of Diesel Generators (DG) with fuel capacity and chimney height

Sl. No	DG capacity	Location	Standard fuel consumption (Liters/Hour)	Recommended chimney height Above Roof Level (ARL)
1	DG 12 320 kVA	Naringana Campus	49	4.0 m ARL
2	DG 13 400 kVA	Naringana Campus	30	4.0 m ARL

Fig 9: Diesel Generators on Naringana premises

4.3 Power supply at Balmatta premises

There are two main sources of energy used on Balmatta site:

- This premises are connected to a power grid from MESCOM (Fig. 10).
- Diesel generators are installed as alternate or standby power source (Table 4, Fig. 11).

4.3.1 MESCOM power supply

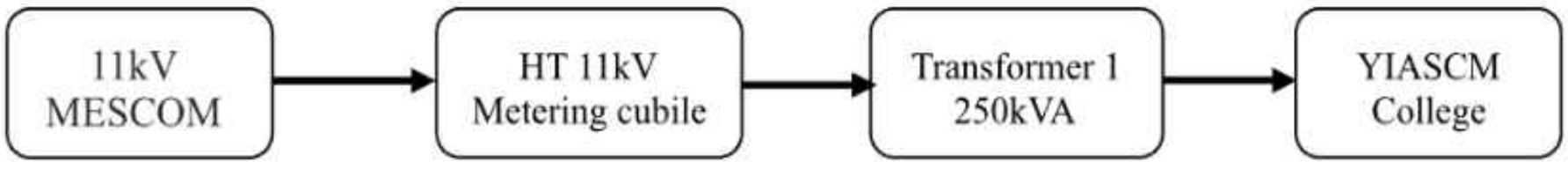


Fig. 10: Flow chart of power distribution on Balmatta premises

4.3.2 Diesel Generators (DG)

Table 4: Details of Diesel Generators (DG) with fuel capacity and chimney height

Sl. No	DG capacity	Location	Standard fuel consumption (Liters/Hour)	Recommended chimney height Above Roof Level (ARL)
1	DG 15 160 kVA	Balmatta Campus	12	4.0 m ARL
2	DG 16 65 kVA	Balmatta Campus	8	4.0 m ARL

Fig 11: Diesel Generators on Balmatta premises

4.4 Power supply at Kulur premises

There are two main sources of energy used on Kulur site:

- This premises are connected to a power grid from MESCOM (Fig. 12 and 13).
- Diesel generators are installed as alternate or standby power source (Table 5, Fig. 14).

4.4.1 MESCOM power supply

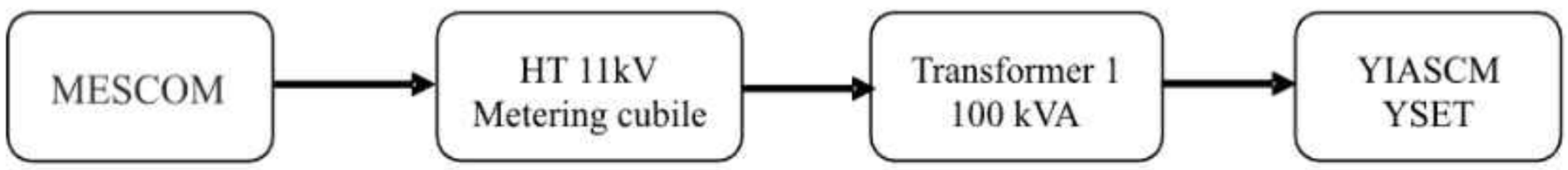


Fig. 12: Flow chart of power distribution on Kulur premises

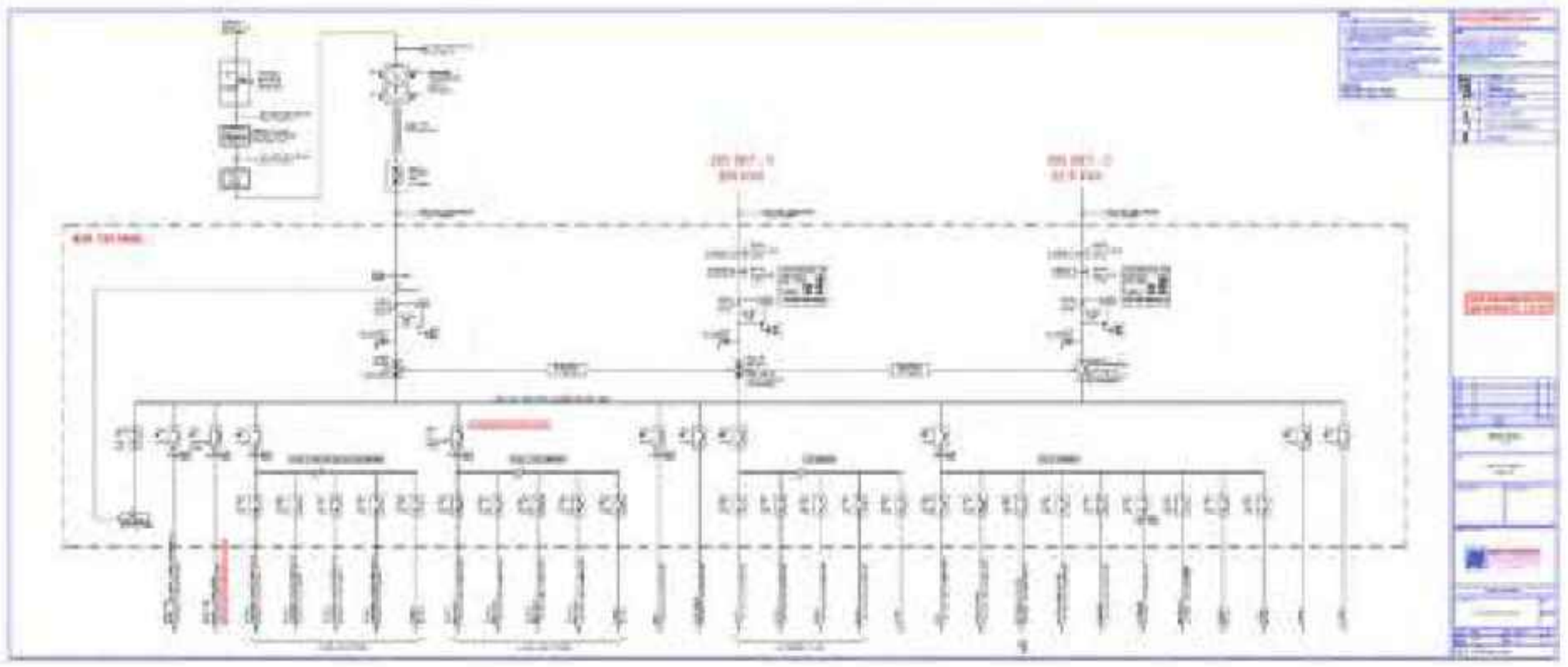


Fig. 13: SLD of 11KV supply

4.4.2 Diesel Generators (DG)

Table 5: Details of Diesel Generators (DG) with fuel capacity and chimney height

Sl. No	DG capacity	Location	Standard fuel consumption (Liters/Hour)	Recommended chimney height Above Roof Level (ARL)
1	DG 17 250 kVA	Kulur Campus	35	4.0 m ARL

Fig 14: Diesel Generators on Kulur premises

5. MAJOR ENERGY CONSUMING EQUIPMENT'S

The major areas of power consumption on all premises are the elevators, air conditioners, uninterruptible power supply (UPS) and heat pump (Table 6,7,8 and 9)

Table 6: Elevator details with location, capacity and quantity

Elevators					
Sl. No	**Company**	**Location**	**Floor**	**Passenger quantity**	**Qty**
1	Swift elevators	Yenepoya Medical College	4	8	1
2	Dan-A to Z	Yenepoya Dental College	8	16	1
3	Johnson		8	16	1
4	ThyssenKrupp	Yenepoya Medical College Teaching Hospital	11	10	1
5			11	20	1
6	OTIS		11	20	1
7	Johnson		11	8	2
8			11	8	1
9	Johnson	Department of Emergency Medicine (EMD)	8	20	2

10	Johnson	Yenepoya Gardyenia A -Block Hostel	8	8	1
11			8	8	1
12	Johnson	Yenepoya Gardyenia B -Block Hostel	10	8	1
13			10	8	1
14	Johnson	Yenepoya Gardyenia D- Block Hostel	9	10	1
15			9	13	1
16	Johnson	Yenepoya Meridyen Hostel	9	10	1
17			9	13	1
18	Johnson	Yenepoya Central Kitchen	4	Goods	1
19	Dan-A to Z		4	Goods	1
20	Golden Wings	Deralakatte campus new boys hostel	11	16	1
21	Golden Wings	Deralakatte campus new boys hostel	11	8	1
22	Unitec elevators	Yenepoya Ayurveda and Homoeopathy Medical College	6	16	1
23	Unitec elevators	Yenepoya Pharmacy & Nursing College	5	15	2
24	Unitec elevators	Ayush campus girls hostel	14	13	2
25	Unitec elevators	Yenepoya Institute of Arts, Science, Commerce and Management Balmatta Block-A	8	8	1
26		Yenepoya Institute of Arts, Science, Commerce and Management Balmatta Block-B	7	10	1
27	Dan-A toZ	Yenepoya Institute of Arts, Science, Commerce and Management Balmatta Block-C	7	8	1
28	Unitec elevators	Yenepoya Incubator Building	5	13	1
29	Unitec elevators	Yenepoya Institute of Arts, Science, Commerce and Management Kuloor	7	20	1
30	Swift elevators	Yenepoya Institute of Arts, Science, Commerce and Management Kuloor	7	20	1
31	Toshiba Johnson elevators	Yenepoya Zulekha Oncology	5	22	2
Total No of elevators					**37**

Table 7: List of air conditioners

Sl. No.	Location	Qty
1	Academic & Library block	235
2	Administration block	26
3	Dental block	70
4	Hospital block	337
5	E.M.D block	111
6	Nursing block	57
7	Yendurance block	29
8	Deralakatte campus boys hostel	198
9	Deralakatte campus ladies hostel	54
10	Gardyenia block	594
11	Central kitchen	04
12	Ayush campus	137
13	Kulur campus	328
14	Balmatta campus	209
Total		**2389**

Table 8: Uninterruptible Power Supply (UPS)

Sl. No.	RATING	MAKE	SERIAL NUMBER	Block
1	160 KVA	EATON	DL054LXX01	Teaching Hospital
2	120 KVA	EATON	DK426LXX01	Teaching Hospital
3	90 KVA	EMERSON	201709AP0838	Teaching Hospital
4	90 KVA	EMERSON	201505AP0399	EMD
5	30 KVA	EMERSON	2015057M1852	Teaching Hospital
6	20 KVA	EMERSON	210120078221510/20011	EMD
7	10 KVA	EATON	914510KINXL31	Teaching Hospital
8	120 KVA	Fuji Electric	P1202115214844	Teaching Hospital
9	20 KVA	EATON	4J023LXX14	Medical College
10	20 KVA	EATON	4J045LXX14	Medical College
11	20 KVA	EATON	4K023LXX37	Medical College
12	20 KVA	EATON	4K021LXX17	Medical College
13	20KVA	TECHSER	2K6/10/22	Admin Block
14	10KVA	TECHSER	2010.04.27	Lecturer Hall
15	30KVA	TECHSER	2010.05.15	Digital Library
16	30KVA	TECHSER	2012.07.MY27	New Lecturer Hall

17	20KVA	TECHSER	1305MY011	Admin Block
18	30KVA	TECHSER	2012.10.MY54	Academic Block
19	10KVA	TECHSER	MY1401089	Academic Block
20	15KVA	TECHSER	MY1501007	Dental College
21	20KVA	TECHSER	B2109236	Incubator Block
22	30KVA	TECHSER	MY2201116	Dental College
23	10KVA	TECHSER	MY2301103	Yendurance Block
24	20KVA	TECHSER	MY2009123	YRC (IOB)
25	5 KVA	TECHSER	MY2005053	Dental College
26	20KVA	TECHSER	MY2009135	Incubator Block
27	20KVA	HYKON	AEBTS	Digital Library
28	20KVA	EATON	DX20000HXL31	Incubator Block
29	7.5KVA	TECHSER	MY240118242	Incubator Block
30	20KVA	SOCOMEC	Q210217215	Zulekha Oncology Hospital
31	10KVA	SOCOMEC	AI20450030	Zulekha Oncology Hospital
32	6KVA	SOCOMEC	4120400016	Zulekha Oncology Hospital
34	60 KVA	RIELLO	2101PMPT0002192	Zulekha Oncology Hospital
35	40KVA	NUMERIC	XII220901383	Teaching Hospital
36	20 KVA	EMERSON	2101200782215/720067	Ayush Campus
37	20 KVA	UNILINE	UL-K-15-523	Ayush Campus

Table 9: Heat Pumps

Sl. No.	Location	Quantity
1	EMD Hospital	2
2	New Boys hostel-Deralakatte Campus	4
3	Boys Hostel - Deralakatte Campus	1
4	Zulekha Ladies Hostel - Deralakatte Campus	6
5	Annex Ladies Hostel - Deralakatte Campus	2
6	Girls hostel- Naringana Campus	8
Total		**23**

6. ENERGY CONSUMPTION AND COST ANALYSIS

6.1 MESCOM

The average price of electricity over the above period was Rs.9.5/kWh. The consumption of the power across various campuses is summarized in Table 10

Table 10: Power consumption from MESCOM in different premises

	Deralakatte 33/11 KV		**Naringana 11 KV**		**Mudipu 11 KV**		**Balmatta 11 KV**		**Kulur 11 KV**	
Month	Total Units	Total Amount 33/11KV	Total Units	Total Amount 11 KV	Total Units	Total Amount 11 KV	Total Units	Total Amou nt 11 KV	Total Units	Total Amount 11 KV
Jan	1147125	105.5	47100	5.2	14152	3.0	60630	8.0	-	-
Feb	1031205	94.5	46162	5.1	11979	2.8	61935	7.8	28100	4.3
Mar	1228710	112.8	55800	6.5	14474	3.1	68350	8.5	60740	7.6
Apr	1211280	84.8	56575	6.7	17436	3.4	54845	5.8	51740	6.7
May	1376400	96.8	67650	8.1	18540	2.9	49995	7.2	47720	6.0
Jun	1070700	79.4	52187	6.4	12591	2.6	29765	3.1	31060	4.1
July	1093950	77.5	49037	5.8	13566	2.7	43325	4.3	42094	5.5
Aug	1105200	78.3	58275	6.7	12856	2.7	54260	5.0	59342	7.4
Sep	1069200	78.0	68037	8.2	13737	2.7	44100	4.3	58488	7.1
Oct	1187250	82.7	115350	12.8	18745	3.2	49885	5.0	62362	7.9
Nov	1208100	84.9	123375	14.0	21048	3.4	48765	4.9	63700	7.9
Dec	1194750	84.1	124163	14.0	19863	3.3	31565	4.0	40834	5.7
Total	**13923870**	**1059.4**	**863711**	**99.4**	**188987**	**35.8**	**597420**	**67.9**	**546180**	**70.2**

6.2 Electrical Roof top Solar Panels - Deralakatte Premises

In the Yenepoya (Deemed to be university) Deralakatte premises have roof top solar system. Units of electricity generated are tabulated in Table 11 and Fig. 15.

Table 11: Units of electricity generated by rooftop solar panels

Months	**Hospital**	**College**	**Dental**	**Boys Hostel**	**Ladies Hostel**	**Total Units**
January	11520	13000	7460	10620	6340	**48940**
February	12000	13960	7820	11040	6420	**51240**
March	13500	16160	9040	12780	7680	**59160**
April	13110	15560	8740	12090	7460	**56960**
May	10860	12280	7340	9570	6240	**46290**
June	7920	9360	5400	7050	4480	**34210**
July	4890	6400	3580	4830	2960	**22660**
August	8130	0	6020	7590	4980	**26720**
September	10380	0	7140	10200	6160	**33880**
October	10560	0	7220	10440	6200	**34420**
November	11190	0	7640	11370	6500	**36700**
December	9900	0	6840	9780	5840	**32360**
Total	**123960**	**86720**	**84240**	**117360**	**71260**	**483540**

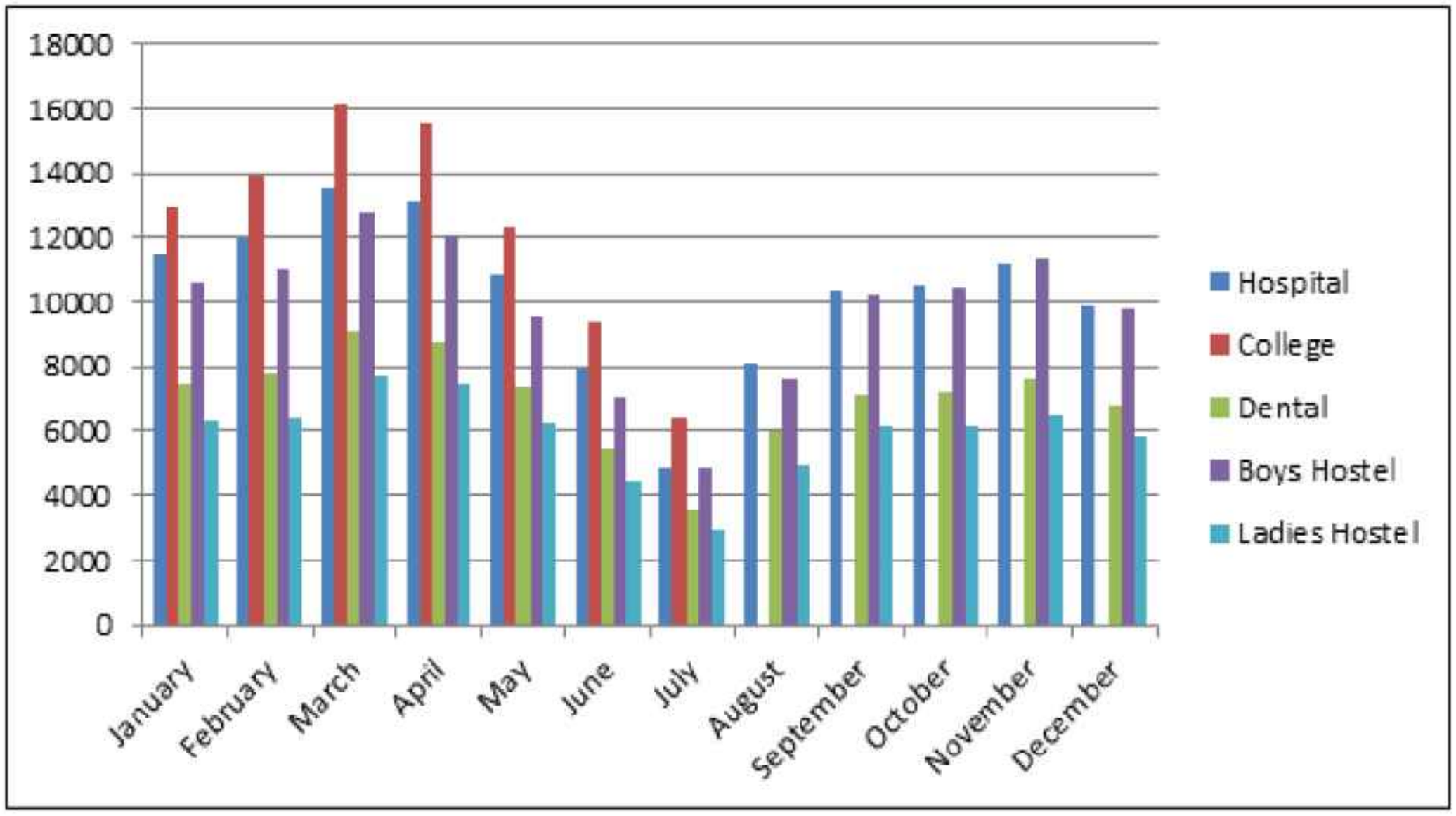


Fig. 15: Solar power generation (in Units) across campus buildings

6.3 Diesel Generators

Diesel generators are operated when the MESCOM power supply fails and is essential to maintain continuous power supply for the hospital and other critical facilities, including research laboratories. The diesel generators are an essential alternate power source for the hospital. The diesel generators are housed in separate sheds away from the buildings. Chimneys with adequate height are provided for the generators as per the statutory requirements. The generators are provided with acoustic control units for control of noise. The power generated from DG is given in table 12.

Table 12: Total units generated by various diesel generators

DG	Premise	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
DG 1	Deralakatte	1000	13500	4000	12000	9500	15500	14500	9000	8000	5000	2500	400
DG 2		500	7840	2560	4960	5600	8320	6400	4960	4480	2720	1600	2240
DG 3		500	4160	160	3840	3520	5760	4480	3200	3360	2240	640	1760
DG 4		500	2800	640	1120	1120	3040	2080	1600	1280	640	480	640
DG 5		0	480	360	0	0	0	0	0	0	0	0	0
DG 6		0	880	480	1280	1120	3040	2960	3360	1680	800	880	960
DG 7		12500	2856	300	1560	1200	2280	2040	2160	1320	1080	600	720
DG 8		120	1040	240	560	320	0	0	0	0	0	0	0
DG 9		120	1600	400	560	720	640	1040	400	720	240	160	480
DG 10		360	3120	1080	2400	2040	3960	4440	5040	2280	1080	1200	1080
DG11		0	250	0	0	200	600	1900	600	700	700	0	200

DG12	Ayush campus colleges	3920	4860	3950	5890	5120	8170	9040	7530	5770	630	4710	4600
DG 13	Ayush campus hostel	0	0	0	0	0	0	0	0	800	640	1440	1120
DG 14	Mudipu	1505	853	899	1099	1978	1969	1529	1337	1495	1098	1794	327
DG 15 &16	Balmatta	0	850	500	1240	1140	3090	3150	3380	1650	860	880	910
DG 17	Kulur	560	800	480	1520	240	1640	480	840	1080	560	240	1440
Total units generated		**21585**	**45039**	**15549**	**36789**	**32678**	**54919**	**50889**	**40027**	**32965**	**17428**	**16244**	**15967**

The total units of energy consumed in a month is 14,15,315 Kwh. The total units used from MESCOM is 13,43,347/month and from diesel generators is 31,673 units per month. Approximately 5% of energy is generated from solar panels i.e., 40,295 units per month.
The university is replacing old incandescent bulbs with LED bulbs.

7. ENERGY STATEMENT

The energy consumption of the university is summarized and presented in Table 13.

Table 13: Energy Statement

Source	Total units (kWh)	Total amount (Rs.)	Electricity Tax Rs.0.10/ 0.20 (Rs.)
MESCOM	16120168	133276061	-
Rooftop solar panels	483540	2175930	96708
DG	380079	6081264	76016
Total	16983787	141533255	-

8. FUEL CONSUMPTION BY DG

Bharat stage III (BSIII) compliant high speed diesel is used as fuel for the generators. The diesel is blended with 5% ethanol. Chimneys with suitable heights are provided as per the statutory requirements. Fuel consumption by DG is given in Table 14.

Table14: Diesel consumption (Litres) by DG

Month	Deralakatte	Naringana	Balmatta	Kulur	Total
January	1400	1200	200	600	**3400**
February	8200	1350	200	0	**9750**
March	9400	1750	200	0	**11350**
April	8600	2200	0	400	**11200**
May	4400	1800	0	0	**6200**
June	21200	3510	0	400	**25110**
July	14900	2600	200	400	**18100**
August	12550	2400	200	0	**15150**
September	7800	4100	0	0	**11900**
October	6200	2600	0	0	**8800**
November	3200	1400	0	600	**5200**
December	5400	2800	0	0	**8200**
TOTAL					**134360**

9. FUEL CONSUMPTION BY BOILERS

Agro fuel in the form of briquettes is used in the boilers. The pollutants load is lesser in the flue gas with agro fuel. An average of 1,60,314 Kg of briquettes is used per month (Table 15).

Table 15: Summary of agro-fuel used

Month	Weight of briquettes (Kg)	Cost (Rs.)
January	139711	977977
February	134307	940149
March	158998	1112986
April	175329	1227303
May	179801	1258607
June	172797	1209579
July	140518	948059
August	160593	1086253
September	158506	1109542
October	165861	1161027
November	161380	1129660
December	175962	1231734
Total	**19,23,763**	**1,33,92,876**

10. LIQUEFIED PETROLEUM GAS (LPG)

Commercial LPG cylinders are utilized for cooking purpose in the central kitchen. Approximately 30,000 meals per day are cooked at the central kitchen. About 642 LPG cylinders of 19.5kg and 47kg capacity are used per month.

11. ENERGY CONSERVATION

The conservation of energy includes reducing the consumption of non-renewable resources, increasing the consumption from renewable resources and using energy efficient appliances which creates sustainable energy management. As the activities in the university increase, energy needs also grow substantially. It is very essential that there is enhanced attention towards energy conservation. The university is harnessing solar energy for its energy needs in addition to conventional sources. Solar plant is installed for generation of electricity in 2830 m^2 area with a capacity of 454.675 kw plant and solar water heating systems is hostels generate 45,000L of hot water at Deralakatte campus. Briquettes (made up of agro-waste) have good calorific value and are used for generation of steam in central Kitchen. Energy efficient lighting helps lower electricity bills and carbon dioxide emissions, all without reducing the quality of light. University is in the process of replacing CFL bulbs with LED bulbs (Fig. 16).

Fig. 16: Sensor for Lighting and LED bulbs

Posters creating awareness on energy-saving practices were released and displayed on the campus. (Fig. 17) (Report under eco club activities)

Fig. 17: Display of energy conservation posters

A guest lecture was delivered by Mr. Sudesh Martis, Additional Chief Electrical Inspector, Mangalore on the topic 'Energy conservation' on 12.12.2024 (Fig. 18). (Report under eco club activities)

Fig. 18: Guest talk by Mr. Sudesh Martis

12. ONWARD ACTIONS TOWARDS SDG 7: AFFORDABLE AND CLEAN ENERGY

GOAL

Ensure access to affordable, reliable, sustainable and modern energy for all

ONWARD ACTIONS

- Energy-efficient LED lighting and star-rated appliances are installed across campus to reduce energy consumption.
- Renewable energy sources, particularly solar power, are harnessed through the installation of solar panels on rooftops and other suitable locations.
- Energy conservation posters and signage are prominently displayed to encourage switching off lights, fans, and electronic devices when not in use.
- Awareness initiatives, such as guest lectures, student competitions, quizzes, and campaigns, are regularly conducted to promote energy literacy and responsible energy use.
- Energy audits are conducted periodically to assess consumption patterns and identify areas for further efficiency improvements.
- Buildings are designed or retrofitted to incorporate natural lighting and ventilation, reducing reliance on artificial energy sources.
- Training programs are organized for staff and students on sustainable energy practices and energy management.

13. CONCLUSION

Energy audit is an effective tool in identifying and perusing a comprehensive energy management program. The audit identified that the university's electricity cost from MESCOM is more than 13 lakhs, which incurs significant expenses for the university. The elevators, air conditioners, UPS and heat pumps are the highest electricity using devices. University is using all the opportunities for upgrading lighting systems and managing plug loads. Transitioning from conventional lighting to LED bulbs and implementing sensor systems to prevent unnecessary energy consumption has been done. Improvements in water heating systems and overall water consumption were taken care for a comprehensive approach to resource management. University has explored alternative energy source like solar panels for electricity generation and water heating to reduce dependency on conventional power.

To enhance cost-effectiveness, exploring opportunities for renegotiating utility rates or adopting energy-intensive benchmarking strategies could be beneficial. Institute has to look upon potential retro-commissioning opportunities, emphasizing the need to optimize existing systems for better performance and efficiency. This could involve fine-tuning HVAC systems, lighting controls, and other energy-consuming systems. The operation and maintenance practices need to be evaluated, and recommendations for improving maintenance efficiency have to be provided. Regular upkeep of equipment, especially critical facilities like research laboratories, is crucial for sustained energy performance. The assessment needs to focus on HVAC systems, suggesting enhancements for better energy efficiency. Implementing energy-efficient HVAC technologies and controls could significantly reduce energy consumption.

The recent energy audit has identified areas where the university can enhance energy efficiency. Specifically, it recommends the replacement of transformers with preferably 5-star rating transformers to increase power efficiency. Moreover, upgrading other equipment, particularly air conditioners, to higher-rated models is advised. In addition to these measures, it's suggested to expand solar panel installations in new buildings to augment alternative energy resources. Furthermore, the initiatives like organizing workshops on energy-efficient practices, hosting community events centered around sustainable living, and utilizing social media platforms to disseminate tips, facts, and info-graphics related to energy conservations can be done. Additionally, innovative ideas like celebrating an 'AC-free day' could play a pivotal role in promoting sustainable practices.

The implementation of recommended measures is estimated to result in a significant reduction in energy consumption, translating into substantial cost savings. Apart from economic advantages, the suggested measures contribute to environmental sustainability. Reduction in carbon footprint, enhanced reliability of equipment, and overall operational efficiency are essential outcomes.

This energy audit provides a roadmap for Yenepoya (Deemed to be University) to achieve substantial improvements in energy efficiency. The potential benefits extend beyond cost savings to environmental and operational enhancements. The commitment to celebrating energy-related awareness days and embracing sustainable technologies showcases the institution's dedication to a greener and more efficient future. The audit's positive findings install confidence in the university's ability to lead the way in energy conservation and environmental stewardship.

14. ANNEXURES

TRANSFORMER OIL TEST REPORT

VENKATESHWARA ELECTRICALS

Class - I, I A Grade) Electrical Contractor

Holder of Govt. Approval to Filter and to Test Transformer Oil

[illegible]

PAN : ACVP0577H

Ref. No. : 84/0624

Date : 06.05.2024.

OIL TEST REPORT

Name of the Party	:	M/S. YENEPOYA UNIVERSITY, (DEEMED TO BE UNIVERSITY) DERLAKATTE, MANGALORE, KARNATAKA.
Site	:	UNIVERSITY – 33KV/11KV – TR. S. S.
O.L.T.C of Transformer Make	:	C T R.
Type	:	2016
Normal Working Current	:	48 A.
Service Voltage	:	33000 V.
Step Voltage	:	413 V.
Serial No.	:	1527393.
Oil Quantity	:	300 Litres.
Date of Test	:	06. 05. 2024.

TEST RESULTS

Di Electric Strength

Sample 1	:	Stood at 58 K.V (rms) in 2.5 mm Sphere Gap.
Sample 2	:	Stood at 60 K.V (rms) in 2.5 mm Sphere Gap.
Remarks	:	The Oil in the above Transformer's O.L.T.C is Tested and it is in Good Condition.

For VENKATESHWARA ELECTRICALS

[illegible]

[illegible]

VENKATESHWARA ELECTRICALS

Class - I, (A Grade) Electrical Contractor

Holder of Govt. Approval to Filter and To Test Transformer Oil

"Madhura Gaana", Gokul Dairy Road, 2nd Cross Left, D.No. 5-151/18-B, 19,
Ashoknagara Post, Mangaluru - 575 006
Cell: +91 9845949409, Ph: 0824-4266406, E mail: venkateshlt@gmail.com, venkateshlts@rediffmail.com

PAN : ACYPD5775D
Rama Bhat Damodara Bhat

GSTIN : 29ACYPD5775D1Z2
SAC : 9987

Ref. No. : 85/24.

Date : 06.01.2024.

OIL TEST REPORT

Name of the Party	:	M/S. YENEPOYA UNIVERSITY, [DEEMED TO BE UNIVERSITY] DERLAKATTE, MANGALORE, KARNATAKA.
Site	:	UNIVERSITY – 33KV/11KV – TR. S. S.
Transformer Make	:	PROLEC [G E] TRANSFORMERS.
Capacity	:	4000 KVA.
H. T. Voltage	:	33000 V.
L. T. Voltage	:	11000 V.
Serial No.	:	I T - 31853.
Oil Quantity	:	2861 Litres.
Date of Test	:	06. 05. 2024.
TEST RESULTS		
Oil Electric Strength		
Sample 1	:	Stood at 59 K.V (rms) in 2.5 mm Sphere Gap.
Sample 2	:	Stood at 60 K.V (rms) in 2.5 mm Sphere Gap.
Remarks	:	The Oil in the above Transformer is Tested and it is in Good Condition.

For VENKATESHWARA ELECTRICALS

Resi. Flat No. 104, Golden Spring Apartment, Chilimbi, Ashoknagar Post, Mangaluru - 575 006

UPS SERVICE REPORT

Oncology PET-CT UPS 100 KVA

Fuji Electric

FIELD SERVICE REPORT
THREE PHASE UPS

Doc #	CONSUL-FOR-SER-016
Rev #	01(25-Sep-15)
Page #	1 Of 1

Service Request No: **1102255118**

Order No: **6001521148**

Call Received ON & Time: **16-DEC-2024 02:17**

Customer Name & Address:
YENEPOYAMEDICALCOLLEGEUNIVERSITY
ROADDERALAKATTE, MANGALOREKARNATAKA, , ,
KARANATAKA
575018

Contact Person: **ASHOK**
Contact Number: **7795575480**
Mail Id: **MAIN@YENEPOYA.EDU.IN**
Web Site:
AMC Period: **FROM 01-JUL-2024 TO 30-JUN-2025**

Product Name	Model	Sub Model	Serial Number	Capacity	Unit Status
THREE PHASE UPS	FALCON 7K		P12021138235030	100 KVA	AMC

Battery Make	AH	Model	Battery Bank	Quantity	Batch code
QUANTA	130	SMF	1	64	MOQ 41 V

Call category: **AMC PM CALL**

Customer Complaint: **AUTOMATED - AM FOR PM SERVICE REQUEST**

Call Status: **COMPLETED**

Engineer Diagnosis / Observation: **UPS WORKING FINE WITH LOAD**

Corrective Action: **UPS DUST REMOVED FANS WORKING NORMAL ALL MODULE PHYSICALLY CHECKED DISPLAY PARAMTER CHECKED ALL BATTERY CHECKED AND THE BATTERIES IS WEEK, NEED TO BE REPLACE NEW NOW UPS WORKING FINE WITH LOAD**

Technical Suggestion if any: **THE BATTERIES IS WEEK, NEED TO BE REPLACE ALL (130AH, 64NO)**

Spares Replaced if Any:

Spares Need to Replace if Any:

Important Parameters	I/P Volts				I/P Current			Rectifier DC Volts			Battery		O/P Volts			O/P Current			Frequency		Temperature	
	RN	YN	BN	NE	RA	YA	BA	PN	+VeE	-VeE	Volt	Amps	UN	VN	WN	UA	VA	WA	I/P	O/P	Ambi	HS
	246	246	245	0.5	9.4	9.0	8.8	836	418	418	836	0.8	231	231	231	5.2	6.2	6.0	50	50	30	33

Application:**PET-CT** , Connected Equipment Details: **PET CT**

Customer Remarks:

Reported Complaints Have Been Rectified,Servicing Done to Our Satisfaction. We agree to pay your Charges for the same if applicable

Call Attended Date Time: **10-JAN-2025 15:49**
Call completed Date Time: **10-JAN-2025 15:50**

Unit Working Status: **WORKING OK**

Engineer Signature:

10-JAN-2025 13:49

Engineer Name: **RAKSHITH R SUVARNA**

Customer Photo	Customer Sign	Unit Serial Number	Display	Site
	**PRASHANTH(MAINTENANCE)**			
10-JAN-2025 13:59	10-JAN-2025 13:58	10-JAN-2025 13:44	10-JAN-2025 13:45	10-JAN-2025 13:45

Branch / ASP : **NO F-6 C 1ST STAGE, CHAMPAK BUILDING, VIVEKANANDA NAGAR, PEENYA, BENGALURU, KARNATAKA 560058**

Corporate Office : **Fuji Electric India Pvt Ltd., 119, 120, 120 A Electrical and Electronics Industrial Estate, Perungudi, Chennai-600 096, Tamil Nadu, India**

Customer Care Number : **+91 781000 9955** Email: **support.fei@fujielectric.com** Web: **fujielectric.co.in & india.fujielectric.com**

PRODUCTS OFFERING

Three Phase UPS / Single Phase UPS / Harmonic Filters / Servo Stabilizers / Solar Inverter / AC Low Voltage Drives / AC Medium Voltage Drives / Servo Systems / HMI / Motion Control / Instrumentation / Automation / Control Panels / Power Semiconductors

SERVICES OFFERING

Annual Maintenance Contracts (CAMC & LAMC) / Battery Monitoring System / Battery Replacement/ Commissioning/ Engineering/ Power Audits / Remote Monitoring/ Rental UPS And Stabilizers / Repairs/ Replacements / Retrofits/ Stabilizer Oil Replacement / Training

D. G. SERVICE REPORT

Cummins	**Distribution Business Unit** **Cummins Field Service Report** **MANIRANJAN DIESEL SALES SERVICE PRIVATE LIMITED COIMBATORE**	**Dealership Branch :** Maniranjan - Mangalore **Single Point Contact No.:** 9844957270 **Customer care email ID** mdsserver@maniranjan.com		
Service Order Type : AMC Service	**Sub Type :** B-Check	**Service Order Number :** SON-MS-MG-2324-00472	**FSR No :** FSR-SA-4228362	**Date :** 16-03-2024
Customer Name : YENEPOYA UNIVERSITY		**Contact Person Name :** Yenepoya deemed university	**Designation :** Engineer	**Contact No :** 8105781588
Customer Address : YENEPOYA UNIVERSITY				
eMail Id: main@yenepoya.edu.in				

ESN : 25424182	**Gen/Equp Model :**	**Alternator Sr. No :** N17A020506	**Equp Sr. No :**	**Current Hours :**			**Cumulative Hours :** 1093.0000 **Component Hours :**
Engine Model : KTA38-G13 **kVA Rating :** 750	**OEM :** Powerica	**Avg. Monthly Running Hrs :**	**Last B Check done at Hrs & Date :** **Last D Check done at Hrs & Date :** **Battery replaced Date :** **Coolant replaced Date :** **Air Cleaner element replaced Hrs and Date:**				
Digital Failure Code:	**Brand and Grade of Lube Oil used:** VCL15W40CI4		**Type of Coolant Used:** EG **Battery Make:** Cummins **Model:** Pulse ultra lite **Battery Sr No. :**				
DG Set : 750KVA	**Controller Type :** PCC3.3	**Coolant Concentration Level :**					

Engine Performance Parameters				Service Request Details	
Low Idle RPM	RPM	**Low Idle pressure**	psi	**Response to Service Request**	**Date/Time**
High idle RPM	1500 RPM	**High Idle pressure**	650.00 psi	**Failure Date**	2024-03-16T9 15:00 AM
Full Load RPM	1500 RPM	**Full Load pressure**	575.00 psi	**Failure Reported on**	2024-03-16T9:27:27 AM
Coolant Temp (Degree/C)	75	**Lube Oil Temp (Degree/C)**		**Customer Requested on**	2024-03-16T5:23:38 PM
Cranking Voltage	Volts			**Attended on**	2024-03-16T9:51:53 AM
Parameters for Generator Set				**Parameters for Other applications**	**Diagnosis Completed on**	
Voltage(AC)	415 Volts	**Frequency (HZ)**	hz	**Drilling Speed (Rpm)**	RPM	**Required Material Received on**	
Current (Ac/Ampere)	amp	**Load (KW)**	kW	**Gear Speed (Rpm)**	RPM	**Actual Resolution Date**	2024-03-16T5:23:38 PM

Stray Voltage(DC volts)		**Ripple Voltage (AC volts)**						
Power Factor								

Inspection/Observation and Work Done in Brief :

Problem Resolution/Solution : Started dg and tested.During testing dg parameters and performance found with in limit

Recommendation/Suggestion :

Customer Observation Date : Mon Mar 16 00:00:00 GMT 2024

Problem Status: Closed	**Responsibility (If Status is Open):**
Customer's Remarks:	**Customer Experience :** Satisfied

Service Representative's Name :	SUNIL D'SOUZA	**Customer Representative's Name:**	**MR.SAYYAD**
Cummin's ID No:	15426617LHAC	**Service Rep Signature and Date :** 16-03-2024 17:24:27	**Customer Signature and Date :** 16-03-2024 17:24:52
Promotion ID No:	1375484		

ELEVATOR SERVICE REPORT

AIR CONDITIONING SERVICE REPORT

KNND ASSOCIATES PVT. LTD.

Carrier

Authorised Dealers for : Carrier Airconditioning & Refrigeration Ltd.
Door No. 2-3-194/4, Kottara Cross, Kapikad Kottara Road,
Mangalore - 575 004. Tel : 98455 95140, 2216474, 4282410
H.O: 153-166/1, East End Main Road,J.P. Nagar, Bangalore - 560 078

FSR No. 2960

PREVENTIVE MAINTENANCE /FSR

Customer Name: Yenepoya Hospital Telephone: _____ Contact Person: Mr. Sunil

Address: Derlakatte, mangalore

Preventive Maintenance

Due Date: _____

Warranty ☐ AMC ☑ Done Date: 13-11-2024

Carrier Ductable Unit 11 TR. and 8.5 TR.

No	Asset I.D	No	Model	Sr. No.	Location
1.	1st floor Cath Lab.	1.	38LH-066-501	SR. 5002038037300	Cath Lab.
2.	11 TR	2.			
3.	8.5 TR.	3.			
4.		4.			

Description:- We have Serviced the 2 no's carrier Ductable Unit. Check the Amps, Voltage, pressure and Temp. Unit working normaly Condition

Parameter	Equip 1	Equip 2	Equip 3	Equip 4	Parameter	Equip 1	Equip 2	Equip 3	Equip 4
PAC					Control Fuse (OK/Def)	OK	ok		
Load in Percentage					Running Voltage (V)	410	415		
Water or Gas Leak					Running Current (A)	10.8	12.1		
RA Temperature					Suction Pressure	65	110		
Fan Status					Discharge Pressure	250	390		
Alarm indication					Ambient Temperature	32°C	32°C		
					Room Temperature	22°C	23°C		
					Grill Temperature	12°C	12°C		

Technician Name : Rakesh

Technician Signature :

Service Completed on 13-11-2024 I acknowledge that the Service rendered as described is carried out to my satisfaction

Customer Observation / Remark If any

Customer's Company Seal & Signature :

GSTIN/UIN : 29AABCK3022G1ZV

Customer Care No.180 3011 1111,3121 1111
Website : www.carrierindia.com

GREEN AUDIT

1. BIODIVERSITY AUDIT

The biodiversity audit conducted by the expert team involving students of the university identified about 350 species of flora, 178 species of fauna and about 40 species of mushrooms on the Deralakatte campus. The audit was conducted to analyse the present biodiversity status of the university and to propose plans to enhance the existing biodiversity. The findings have been published in three books:

- A book on 'Medicinal plants of the university campus' documents about 50 medicinal plants with its photographs, chemical constituents and medicinal uses. All plants are maintained in the campus with name boards and their uses. First Edition 2013; Second Edition 2017 (ISBN:9788193485705)

- A book on 'Macrofungal resources of Yenepoya University' with a description of 40 macrofungi, their substrates associated with plants and their detritus was published in 2018. (ISBN: 978-81-934857-2-9)

- A comprehensive report on the species diversity found on the campus was published as a book titled 'Flora & Fauna of the Yenepoya (Deemed to be University) campus' in 2022. The book has photo and description of 131 plants and 173 animals of the campus. (ISBN: 978-81-957069-4-5)

Fig. 1: Books published on the flora and fauna of the campus

The list of plants, animals and mushrooms of the university campuses is given in the Annexure. Flora, fauna, and mushroom biodiversity survey and documentation of Naringana campus was held as follows:

- **Flora survey and checklist**
  Subject expert: Dr. Keshav Chandra
  Date: 26th October and 12th November 2024
  Report – 214 tree species belonging to 73 families were documented.
    - YAMCH herbal garden consists of 169 species belonging 54 families of flowering. plants. *i.e.*Angoisperms.
    - YHMCH herbal garden comprises of 104 species belonging to 51 families.
    - YPCRC surroundings have 12 species belongings to 12 families.

- **Fauna survey and checklist**
    - Subject expert: Dr. Vivek Hasyagar
    - Date: 26th and 27th October 2024
    - Report – 27 birds, 28 butterflies, 3 moth, 12 insects, 2 annelids and 4 others

- **Macrofungi documentation**
    - Subject expert: Dr. K. R. Sridhar
    - Date: 26th September, 4th and 5th October 2024
    - Report – 24 species of macrofungi

2. PLANT – A – TREE PROGRAM

About 718 saplings were planted this year (Table 1) (Fig. 2)

Fig. 2: Plantation of saplings during 2024

Table 1: List of saplings planted

Date	Name of the plant	Number
05.06.2024	*Syzygium cumini*	5
	Swietenia macrophylla	1
	Tabebuia rosea	4
	Mangifera indica	1
05.06.2024	*Swietenia macrophylla*	1
	Millttia pinnata	1
	Syzygium cumini	1
07.06.2024	*Swietenia macrophylla*	4
	Allamanda blanchetii	6
	Syzygium cumini	10
08.06.2024	*Syzygium cumini*	10
	Allamanda blanchetii	6
	Swietenia macrophylla	4
26.06.2024	*Syzygium cumini*	2
	Syzygium somarangense	1
	Mangifera indica	1
29.06.2024	*Allamanda blanchetii*	75
	Syzygium campanulatum	100
	Hamelia patens	75
04.07.2024	*Allamanda blanchetii*	100
	Syzygium campanulatum	75
	Crotons	85
10.07.2024	*Artocarpus heterophyllus*	1
	Pongamia pinnata	4
	Syzgium cumini	4
	Swietenia macrophylla	8
	Tabebuia rosea	5
	Allamanda cathartica	10
	Hamelia patens	5
	Artocarpus heterophyllus	9
	Artocarpus heterophyllus	10
	Artocarpus hirsutus	10
	Canariums trictum	10
	Mimusops elengi	10
	Phyllanthus emblica	10
	Garcinia indica	10
	Cassia fistula	10
	Psidium guajava	10
	Garcinia indica	10
	Murraya koenigii	10
20.08.2024	*Hibiscus*	2
	Rose	2
	Total	**718**

3. ENVIRONMENTAL EDUCATION

At the Yenepoya University, environmental education is integrated with curriculum to improve environmental literacy of students on various issues related to environment and adopting sustainable lifestyle. Environmental Science is a valuable and enriching "value-added" course for undergraduates, providing them with knowledge, skills, and perspectives to address environmental challenges and contribute to a sustainable future. A total of 1218 students have completed courses in environmental programs (Table 2).

Table 2: Student statistics completing Environmental Science course

Academic program	Batch	No. of students completed EVS course
IV BDS (Regular batch)	2020	97
III MBBS	2021	151
I BASLP (II Sem)	2023	21
I CP (II Sem)	2022	66
I BHA (II Sem)	2022	49
II BPT (IV Sem)	2022	89
II BOT (IV Sem)	2022	68
II B.Sc. Technology (IV Sem)	2022	614
II B.Sc. Dental Tech (IV Sem)	2022	21

Field Visits

Filed visit provide practical, hands-on experiences, allowing students to observe ecosystems biodiversity, and environmental processes in their natural settings. Filed visits also promote the development of crucial observational and analytical skills, preparing students for real-world challenges. Below is the report of the filed visits conducted for YDU students of the campus. Involvement of students towards exploring and documenting biodiversity along with cultivation of desired plant species educates them on the value of ecosystem, ecosystem services and conservation. The Yenepoya campus biodiversity register serves as a learning kit for the students of the university.

Table 3: Field visits for various courses

Sl. No.	Name	Date	No. of participants
1	III B.Sc. Nursing	17.01.2024	50
2	III B.Sc. Nursing	31.01.2024	50
3	III B.Pharma	17.04.2024	66
4	IV Sem BHA	25.04.2024	55
5	Department of Commerce YIASCM	26.09.2024	50
6	I Sem MHA	04.10.2024	56
7	III B.Sc. Nursing	20.12.2024	52
Total			**460**

4. ECO CLUB ACTIVITIES

Study visit to Kadammaje farms Uppinangady

On January 17 2024, the Eco Club of the Yenepoya Institute of Arts, Science, Commerce and Management from Kulur College Unit organized a study visit to Kadammaje Farm, Uppinangady, Belthangadi Taluk. This visit focused on the objective of Social Responsibility and Community engagement wherein students got to know about Cattle rearing, Poultry, Piggery, Sheep rearing, Fish rearing, Birds rearing, Apiculture as Bee Rearing, Agricultural related Areca nut, Coconut, Paddy, Banana Plantation Pepper, and how to develop Organic products, aquarium, and Gobar gas.

The event was organized by Ms. Sharmila P. Nayak Co-coordinator of Eco Club. Nearly 55 students had taken part in this event along with Mr. Abhisheikh, Faculty from Department of Management. Dr. Arun Bhagwath, Principal of the Yenepoya Institute of Arts, Science, Commerce and Management encouraged the team in conducting this successful event. The visit started at sharp 9:30 a.m. from Kulur campus. The Students were assigned to prepare study report and create blogs on this visit through attractive collection of photography and videos by different course streams. The event came up with treasure of knowledge of awareness, Self-employment and self-development, Social service and responsibility.

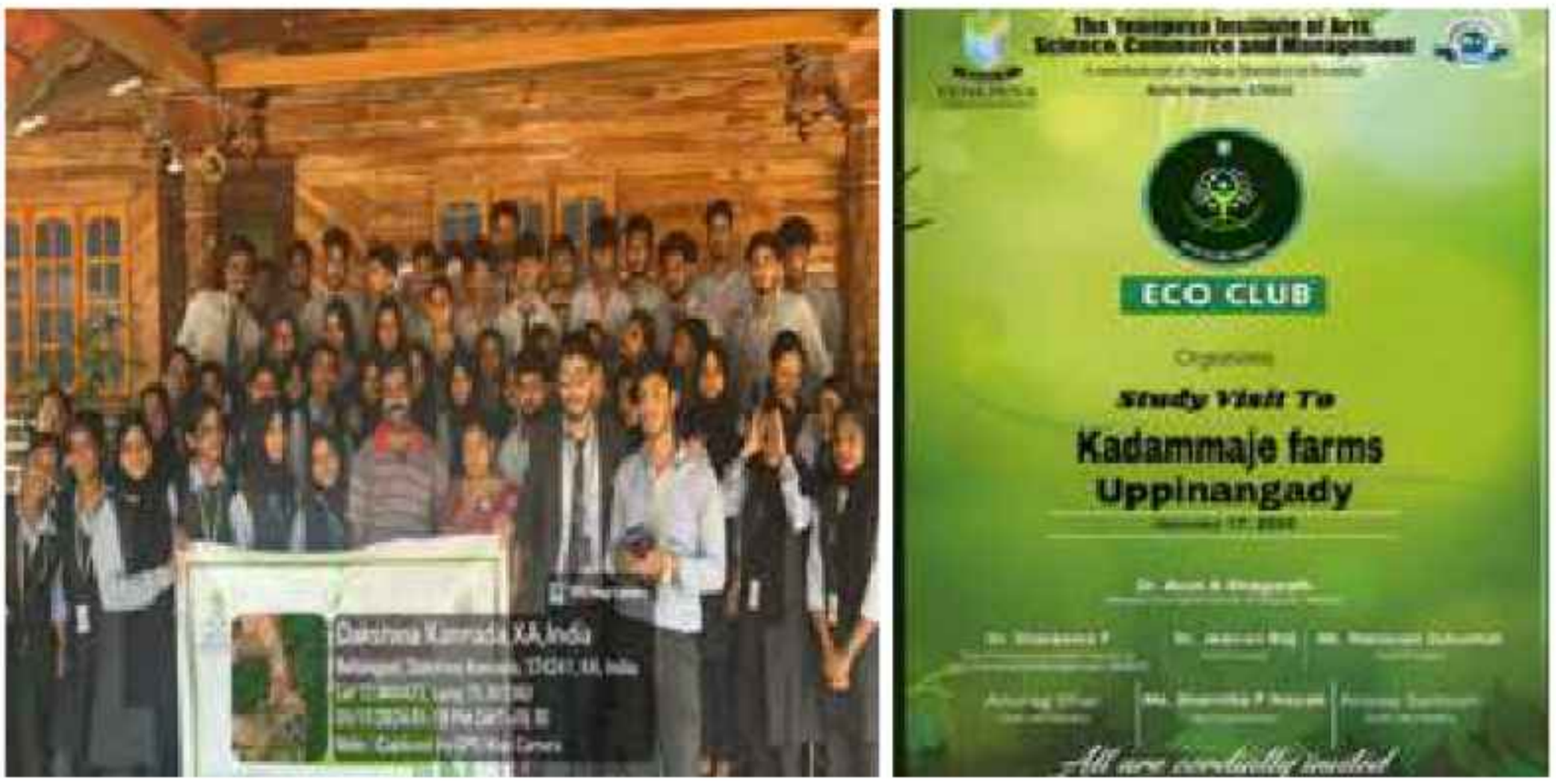


Fig. 3: Visit to Kadammaje Farm, Uppinangady, Belthangadi Taluk

Cloth bag making as alternative for plastic carry bag

On January 18 2024, The Eco Club of the Yenepoya Institute of Arts, Science, Commerce and Management from Kulur Campus conducted Workshop to students on cloth Bag making as alternative for plastic carry bag. The main objective of the workshop was on developing Self Employment which will lead them to startup entrepreneur as a professional career development benefit. Ms. Harina J Rao, Past Chairperson of district, Small Industries Association Women's Wing and a present Chairperson of DIASCM-STRIVE. The workshop commenced at sharp 10:30 a.m. The event aimed to promote self-employment, and start up Entrepreneurship to the non-teaching staff members, by imparting skills in making cloth bags and other related products. The workshop was organized by Eco Club co-ordinate

with Mr. Sumesh, Education Officer as a resource person in charge of the program. Resource Person Harina Rao, Past President of DSIA Women's Wing, served as the key resource person for the workshop. Her vast experience and expertise in the field added significant value to the event. Mr. Harish, the facilitator of the program, initiated the session by encouraging active participation through questions and discussions. The workshop on cloth bag making and self-employment proved to be a valuable and empowering experience for the participants. The practical skills acquired, coupled with the insights shared by the resource persons, created an atmosphere of motivation and enthusiasm for exploring alternative avenues of income generation. The event concluded with a sense of empowerment among the participants, who left with newfound knowledge and skills that could potentially open doors to self-employment opportunities. The initiative aligns with broader sustainability goals by promoting eco-friendly practices through the use of cloth bags as an alternative to plastic carry bags.

Fig. 4: Demonstration of Cloth Bag making

Guest talk on "Our Planet, Theirs Too"

Eco Club and Youth Red Cross, YIASCM, Balmatta jointly organized a guest talk on "Our Planet, Theirs Too" on 25.01.2024. Animal Activist Mr. Tauseef Ahmed was the resource person. Besides, the students and staff of YIASCM, Balmatta stepped forward and contributed an amount of Rs. 13,000/- which was handed over to Mr. Tauseef Ahmed for the welfare of animals.

Fig. 5: Talk by Mr. Tauseef Ahmed

Campus Bird Count

The campus bird count at Yenepoya University identified and documented 42 different bird species. Guiding the team were Mr. Vrijulal M V, Founder and Researcher at the Foundation for Research & Education in Nature Science & Sustainability, Bengaluru, and Dr. Uma Kulkarni, an ophthalmologist by profession and an avid bird enthusiast. Their expertise and passion contributed significantly to the success of the bird count initiative.

A webinar on the topic "An insight into the world of birds and birding" was organized on Feb 2nd 2024. The lecture gave the importance of birding and a hobby that captivates individuals of all ages and backgrounds. The lecture introduced the participants into the fascinating world of bird watching, exploring its significance, methodologies, and the profound connection it fosters between humans and nature. A total of 37 eco club members attended the webinar.

Fig. 6: Guest talk by Mr. Vrijulal M.V

On February 3rd a team of 21 members was led by Mr. Vrijulal in Deralakatte campus and about 28 birds were spotted. Cattle egret, Rock pigeon, House crow, Brahminy Kite, Black Drongo, Pale billed flowerpecker, Nilgiri flowerpecker, Purple rumped sunbird – female, Black Kite, Green Bee-eater, Parakeets, Rufous treepie, Jungle babbler, Golden oriole, White-cheeked Barbet, Asian Palm Swift, Racket tailed Drongo, Red-whiskered Bulbul, White-throated Kingfisher, Cormorant, Black-crowned night heron, Red wattled lapwing, Asian Koel male and female, Blue tailed Bee-eater, Magpie Robin, Pond heron, White breasted water hen and White browed wagtail.

On February 16th a total of 27 members participated in the birding at Kotraguttu led by Dr. Uma Kulkarni and spotted about 26 birds: Brahminy Kite, Wire tailed swallow, Martin, Pond herons, Paddy-field Pipit, Common sandpiper, Black Kite, Asian Palm Swift, Warbler, White-throated Kingfisher, Parakeets, Red-whiskered Bulbul, Golden oriole, Rock Pigeon, Grey heron, White ibis, Woodpecker, White breasted water hen, Purple heron, Peahen, Spotted Dove, Pied Kingfisher, Brown Shrike, Ashy prinia, Rose ringed parakeet, Cormorant.

On February 24th a total of 10 members participated in the birding in Deralakatte campus led by Dr. Bhagya Sharma and spotted the following birds: Cattle egret, Rock Pigeon, Black Kite, House Crow, House Sparrow, Parakeets, Rufous Treepie, Greater Coucal, Racket tailed Drongo, Black Drongo, Asian Koel male and female, Black rumped Flameback Woodpecker, White Cheeked Barbet, Jungle Babbler, Golden Oriole, Black-hooded Oriole, Pale Billed Flowerpecker, Brahminy Kite, Green Bee-eater, Blue tailed Bee-eater, Common Myna, White Throated Kingfisher, Little Cormorant, Pond Heron, Common Swift.

On February 27th a total of 4 members participated in the birding in Deralakatte campus led by Dr. Bhagya Sharma and spotted the following birds: Cattle egret, Rock Pigeon, Black Kite, House Crow, Black Drongo, Asian Koel male and female, Jungle Babbler, Golden Oriole, Pale Billed Flowerpecker, Brahminy Kite, Green Bee-eater, Blue tailed Bee-eater, Common Myna, Little Cormorant, Pond Heron, Cattle Egret.

Fig. 7: Field visits

Fig. 8: Photos of birds captured

Study Visit

The Eco Club in association with Youth Red Cross, Balmatta unit organized a study trip to Padubidri Blue Flag Beach, Soan's Farm and Thousand Pillar Temple, Moodabidri on 24.02.2024.The objective of the visit was to give hands on training session on Basics of Lifeguard Training by Mr. Ranganath, Lifeguard and former member of the Youth Red Cross, D.K. District to the Students as well as exploring the world of Horticultural and Biological Diversity of the well-known Soan's Farm. During these sessions the students were given insights on what measures are to be taken during accidental drowning cases. He showed various types of Rescue ropes and tubes that are used during these cases with demonstrations. Besides he also mentioned how CPR is provided accordingly to adults and children using the palm and finger techniques respectively.

Besides, the students were taken to Soans Farm situated at Moodabidri. The farm is famous for horticultural crops like pineapple, mango, banana and spices like vanilla, stevia, nutmeg, cinnamon and other spices etc, as well as medicinal plants. The farm also has a rich collection of exotic varieties of fruits from around the world and pineapple plantation. Efforts are also being made to maintain an Agri-museum. Moreover, the farm also nurtures a nursery consisting of various species of plants.

Further, as part of the visit, the students were shown the historic Thousand Pillar Temple at Moodabidri, which is a magnificent example of architecture and sculpture.

The visit was accompanied by Dr. Sareen Sheikh, Faculty Coordinator, Eco Club-Balmatta Unit, Ms. Tharangini K S, Faculty Coordinator, Youth Red Cross-Balmatta Unit and Dr. Sharath Kumar, Assistant Professor, Department of Chemistry.

Fig. 9: Study Visit to Padubidri Blue Flag Beach, Soan's Farm and Thousand Pillar Temple, Moodabidri.

Worm power: Revolutionizing sustainability

Fig. 10: Talk by Dr. Bhagya B Sharma

A guest lecture was organized by YPCRC on the topic 'Worm power: Revolutionizing sustainability' on 26.02.2024. Vermicomposting is a simple biotechnological composting process that uses certain earthworms to enhance the process of waste conversion to produce good-quality compost. In principle, Vermicomposting adheres to and promotes most of the agro ecological elements as defined by the FAO. Vermicompost enhances soil biodiversity and the population of microbial communities that further improve soil health upon which agricultural production depends, positively impacting human health, flora, and fauna. No. of participants: 65.

National Science Day

YIASCM Kulur eco club unit conducted poster competition on behalf of national science day on 28.02.2024. Nearly 50 students have participated in essay competition the theme given by international eco club student chapter by NSF on "Exploring the wonders of nature: From micro to macro".

Fig. 11: Students participating in essay completion

Workshop on Operation and Maintenance of STP

Centre for Environmental Studies in collaboration with Environmental Management and Policy Research Institute (EMPRI,) Bangalore organized a workshop on "Operation and maintenance of STP" on 15.03.2024 at 10 am. A total of 30 staff participated in the workshop. Dr. M. Lokeshwari, was the resource person who is an Associate Professor at R.V. Engineering College, Bangalore.

The speaker provided valuable insights into how Sewage Treatment Plants (STPs) work. She explained the process in simple terms, detailing how STP's recycle sewage water by removing contaminants and pollutants. This includes stages like screening, sedimentation, and biological treatment, where microorganisms break down organic matter. The session emphasized the importance of STPs in maintaining clean waterways and protecting the environment from pollution. The speaker explained the crucial role of each component within an STP, such as clarifiers, aeration tanks, and disinfection units, in ensuring effective wastewater treatment. She highlighted how proper maintenance and monitoring are essential for optimizing STP performance and meeting regulatory standards. Post lunch the afternoon session included field visit to two STP's of Yenepoya (Deemed to be University) was held with interaction and discussion among STP operators and the resource person. Participants gained a comprehensive understanding of STP operations and management practices.

Fig. 12: STP Training Programme and field visit

World Water Day

The world water day was observed from March 21 to March 23 with three different activities to create awareness and check wastage of water. The theme for this year is "Leveraging water for peace"

21.03.2024 - Leakage check

A team from maintenance department set up to monitor defective plumbing and water leakage in the campus. The team divided themselves into sub teams to monitor leakage check in various buildings. Any dripping faucets and leakages at valves and junctions identified were repaired immediately. The team interacted with students and staff and urged to report any leakage of water if observed. Regularly inspecting for water leaks is crucial to establish a good water management system and save precious water.

Fig. 13: Leakage checking in the campus

22.03.2024 - Guest lecture "Leveraging water for peace"

The resource person Mr. Vishnu Sharma A, Co-Founder and CTO, Aapaavani Environmental Solutions Ltd., from Mangaluru, delivered a lecture on the theme for world water day. He provided information on technology available for recycling water. He also stressed on the point that rivers are dry and we need to take immediate action to conserve every drop of water. He also urged students to participate in this movement and save precious water. Around 100 students of Yenepoya Ayurveda College and Hospital participated in the guest lecture.

Fig. 14: Talk by Mr. Vishnu Sharma

23.03.2024 - STP/WTP visit by students

A visit to the Sewage Treatment Plant (STP) and Water Treatment Plant (WTP) was arranged for the students of Dept. of Audiology, with an objective to provide exposure to students about practical working environment and to provide students an opportunity to gain full awareness about the treatment process. It also aimed to understand the technical difficulties faced and limitations of existing technology to open up scope of research in the student's minds. The students were briefed on the functioning of STP by Mr. Vinayaka Bhatta Environmental Engineer and supervisor Mr. Joy Nelson. The STP runs 24/7 by sequential batch reactor method and the recycled water is used for irrigation and toilet flushing. The raw water is treated in the WTP by passing through pressure sand filter, activated carbon filter, cartridge filter, RO membrane, UV filter and by addition of sodium hypo-chloride for disinfection, sodium bicarbonate for pH correction, and gramicid for membrane clearance. A total of 22 students participated in the field visit.

Fig. 15: Visit to the sewage treatment plant by Audiology students

Poster Competition

World Water Day is commemorated on 22 March every year since 1993 by United Nations, focusing on the importance of freshwater. Commemoration raises awareness to tackle the global water crisis and supports Sustainable Development Goal (SDG): water and sanitation for all by 2030. Hence to create awareness about saving water among the students of YAMCH, we proposed to host Poster competition for the members of ECO CLUB of YAMCH. These posters were displayed on 22-3-24 at YAMCH to create awareness among all students and employees of YAMCH.

Objective: Highlight the importance of valuing each and every drop of water and encourage responsible water usage by students and staff of YAMCH. 18 Students participated in the competition.

Fig. 16: Poster competition by the members of eco club of YAMCH

World Water Day

The eco club of The Yenepoya Institute of Arts, Science, Commerce and Management, Kulur organized one-day seminar including various competition like poster on theme drops of hope, short film making, pick and speak competition on behalf of world water day which is celebrated on 22 March. The objective of the programme was to give the awareness about the Sustainability of water conservation. Chief guest to the programme Mr. Nithin Vas, paper seed maker, Environmentalist from Pakshikere, delivered the key note address to the programme and Dr. Arun Bhagwath, Principal gave the Presidential address. Dr. Shareena P, Dean of Commerce and Management and Vice Principal encouraged the students. Dr. Bhagya B. Sharma, Deputy Director of Centre for Environmental Studies, Yenepoya (Deemed to be University) the guest of honor encouraged the students with her presence. The outcome of the programme came up with the proper utilization of precious and essential necessity of water through resources for the survival and sustainability.

Fig. 17: Prize distribution for the winners of the competitions

Webinar on "Sustainable Solution for Urban Water Management"

The Eco Club of YIASCM Balmatta in association with Environmental Management and Policy Research Institute (EMPRI), Bangalore organized a webinar on "Sustainable Solution for Urban Water Management" on the occasion of World Water Day on 22nd March 2024 from11.00 p.m. onwards for the students of Eco Club, Balmatta unit.

The resource person for the session was Ms. Rohini Pradeep, Project Manager, CDD, and India. The session gave insights on sustainable Water Management techniques and ways to adopt and promote urban waste water treatment and conservation. The talk also emphasized on the importance of DEWATS (Decentralized Waste Water Treatment System) and promotes nature based solutions to conserve water. Besides, this technique and its ability to reuse byproducts were mentioned. The session was coordinated by Dr. Sareen Sheikh, Staff Coordinator of Eco Club, Balmatta and Dr. Vinaya Chaitanya, Programme officer EMPRI, Bangalore.

Fig. 18: Talk by Ms. Rohini Pradeep

World Water Day

On the occasion of World Water Day, a poster competition was conducted for the students of YIASCM, Balmatta on 22.03.2024.

Fig. 19: World Water Day posters

Debate competition

On the occasion of World Water Day, the eco club of YIASCM Kulur had conducted a debate competition on 23rd March 2024. The debate topic was regarding the "Impact on the Environment" due to various aspects done by the people in the society. A few topics were urbanization v/s Rural Sustainability which model offers a more environmentally friendly way of life, and the topic on governments should prioritize investment in public transportation infrastructure over road expansion to reduce carbon emission and many more. The teams showed their enthusiasm and the counter points showed the knowledge of issue that is being faced by the people and how we can make small changes to make this world a better place 1to live

Fig. 20: Prize distribution for the winners of debate competition

Trekking to Konaje Kallu

Eco club and NSS unit 8 members went on trekking to Konaje Kallu and thousand pillar temple in commemorate on Earth Day on 24 April 2024.The students gained the knowledge and opportunity to know the different species of insects, reptiles, birds and different types of plants through the scavenger event by capturing the picture.

Fig. 21: Trekking to Konaje Kallu

Webinar on "Climate Change and Health Care"

A webinar on the topic "Climate Change and Health Care" was organized on April 29th 2024. The talk by Dr. Nabha Shetty underlined on the influences of healthcare towards the climate crisis. She explained about activities in hospitals which contribute to climate change and measures to avoid the generation of waste. One of the major reasons for climate change is an increase in greenhouse gases, the emission of carbon to the atmosphere in a larger amount leads to different types of diseases, certain changes where it leads to an unhealthy environment. Dr. Nabha shared her experience about the Green Medical Teaching Unit (Green MTU) at her university where the focus was on reducing generation of hazardous waste and reusing most of the yellow bag waste which is not hazardous. The one neglected sector where the carbon generation is high is in the supply chain where around 62% of carbon is produced. Also she mentioned a study on beef meat producing a huge amount of carbon compared with other food products. The lecture also focused on "low value care" where some selected treatments and procedures are unnecessary, which can be avoided to reduce the contribution of health care towards the climate crisis.
No. of Participants: 190

Fig. 22: Talk by Dr. Nabha Shetty

Educational Visit to Solara Active Pharma Sciences

Eco Club, Yenepoya Pharmacy College & Research Centre a unit of the "International Eco Club Student & Staff Chapter" and department of Pharmaceutics, organized an educational visit to Solara Active Pharma Sciences, Baikampady, Mangalore on 02.05.2024 from 9:30 am- 01:30 pm. The main aim of the event was to show students the pharma industry and make them co-relate the theoretical aspects practically. The journey to industry began at 9:30 am from Kinya Campus, together with Eco Club University Coordinator Dr. Bhagya Sharma. We reached Destiny at 11:00 am after the security check we were allowed to enter the industry. The first round of training was sharing the DO's and Don'ts about the industry, and gained firsthand knowledge about the operations, technologies, and management practices employed in the industry. After the session we were taken around the industry to observe various industrial processes, machinery, and equipment in operation and to understand their functions and significance in the production chain. The waste water management system plant, multiple effect evaporator, the acid and alkali neutralizer were well explained by resource person Ms. Jyoti and from this we understood the environmental impact of industrial activities which was most beneficiary for the students. We were also taken to Sequent Scientific Private Ltd, a quality control analysis unit. Finally, we were asked to come back to the auditorium to develop professional networks by interacting with industry professionals, which can provide future internship or job opportunities, and provide feedback on the industrial visit experience.

Fig. 23: Educational visit to Solara Active Pharma Sciences, Baikampady

Photography Contest

A photography competition was organized by YAMCH on 03.06.2024. Medicinal plants have always grabbed public attention. Some of them are incredibly beautiful and some are not commonly found. Their intrinsic value to the health and well-being of human beings and animals has also been well established over the years. At the same time, not many of us are fully aware of the usefulness and medicinal value of most of these plants. In an effort to create awareness about the usefulness of these plants, the Department of Dravyaguna in Collaboration with Eco Club YAMCH has hosted a photography competition on medicinal plants. Through this competition, Dept. of Dravyaguna and Eco club YAMCH, also wants to convey the message of conservation of these medicinal plants. 35 Students of BAMS has participated.

Fig. 24: Photos of medicinal plants

World Environment Day

On June 3rd, 2024, World Environment Day was celebrated at Vidyaratna English Medium School, Deralakatte. The event was organized by the Center for Environmental Studies (CES) of Yenepoya (Deemed to be University) (YDU). This year's theme was "Land Restoration, Desertification, and Drought Resilience."The program was inaugurated by Shri K. Ravindra Shetty, the founder and president of Vidyaratna English Medium School. Other esteemed guests included Mr. Ramesh Naik, Panchayat Development Officer (PDO) of Belma, Dr. Bhagya B. Sharma, the Deputy Director of CES, YDU. Smt. Soumya Shetty, the Secretary and Mrs. Neema Hamid, the principal of Vidyaratna School. Shri K. Ravindra Shetty emphasized the importance of environmental education and urged students to take full advantage of the opportunities provided by awareness programs. He highlighted the significance of understanding and addressing environmental issues from a young age. Dr. Bhagya B. Sharma conducted an insightful session focusing on the theme of World Environment Day 2024, which revolved around land restoration, combating desertification, and enhancing drought resilience. Dr. Sharma's session was well-received, with students actively participating and engaging in the discussion. A demonstration on vermicomposting was given by environmental engineer Mr. Vinayaka Bhatta. He demonstrated the process of vermicomposting as a sustainable alternative to manage biodegradable waste.

Fig. 25: Demonstration of Vermicomposting

The Centre for Environment Studies at Yenepoya (Deemed to be University) celebrated World Environment Day with a campus-wide plantation drive on June 5. Dr. M. S Moosabba, Principal of Yenepoya Medical College, inaugurated the programme by planting a black plum sapling to mark the occasion. Dr. Abhay Nirgude, the Vice-Principal, followed by planting a Mahogany sapling. Students from the I MBBS class and faculty from the Department of Medicine joined the initiative, aligning with the silver jubilee celebrations of Yenepoya Medical College. The plantation drive featured various saplings, including *Syzygium, cumini* (Jambul), *Swietenia macrophylla* (Mahogany),*Tabebuia rosea* (Rosy Trumpet), and *Mangifera indica* (Mango).Staff members from the Department of Maintenance and Horticulture also participated, enhancing the success of the event. Dr. Bhagya B Sharma, Deputy Director of the Centre for Environmental Studies, announced that 500 Saplings would be distributed and planted throughout June and July 2024, reinforcing Yenepoya's commitment to environmental sustainability. Participants: 40

Fig. 26: Plantation of saplings near rainwater harvesting pond

World Environmental Day celebration by plantation of saplings at old Age home Olavina Halli on 05.06.2024. On the occasion of Silver Jubilee Celebration of Yenepoya Medical College and as a part of World environment day a series of Program was organized by Dept of Community Medicine, Eco Club YMC in collaboration with NSS, Yenepoya (deemed to be University). On 5th. June 2024, World Environment Day, 3 saplings were planted by the representatives of Department of Community Medicine & Eco Club, Yenepoya Medical College along with MBBS students (2022 Batch) at Olavinahalli Rehabilitation Centre. The Staff & students took a pledge together to be environment-friendly. In the proceeding days, a sapling each was planted at 3 schools, namely Nishara Public School, Hajabba's Government School, New Padappu, Government School, Rajagudde and New Urban Health Training Centre at Harekala. Participants: 40

Fig. 27: Plantation of saplings at Olavinahalli Rehabilitation Centre

World Environment Day guest talk at Yenepoya Ayurvedic Medical College and Hospital on 05.06.2024. World Environment Day is a global event celebrated every year on June 5th. It is an initiative led by the United Nations (UN). This special day was observed at YAMCH on 05-06-2024 by hosting a guest lecture by Dr. Bhagya B Sharma with following objectives. The primary objective was to raise awareness about environmental issues and to encourage students to take action towards protecting the environment. To give awareness on policy changes required to promote environmental policies at local, national and international levels. To orient students towards environment friendly activities. This guest lecture was very informative, thought provoking and encouraged participant students and staff to focus on environmental issues, raise awareness and promote action for the protection of the environment. It served as a platform to come together and address environmental challenges and discuss global environmental issues. This event encouraged the participants to come together, get sensitized about environment, share knowledge towards protecting the environment. Participants: 200 students, Teaching Staff of YAMCH - 15

Fig. 28: Guest talk by Dr. Bhagya B. Sharma at YAMCH

World Environment Day guest talk in the Dept. of Public Health and MSW on 06.06.2024. Dr. Sharma delivered a lecture on how everyone can help end land degradation and restore blighted landscapes. Everyday people also have a vital role to play in restoration, which is crucial to our future as a species. Seven ways to get involved in ecosystem restoration are make agriculture sustainable, save the soil, Protect the pollinators, restore freshwater ecosystems, renew coastal and marine areas, bring nature back to cities and generate financing for restoration. No. of Participants: 45

Fig. 29: Guest talk by Dr. Bhagya B. Sharma for students of Dept. of Public Health and MSW

World Environmental Day celebration at Balmatta and Kulur Campus on 08.06.2024. CES made 20 saplings available for the plantation drive. On June 8, 2024, the Eco Club of the Yenepoya Institute celebrated World Environment Day at the Balmatta and Kulur campuses. Organized by club coordinators Ms. Sharmila P. Nayak, Dr. Sareen Sheikh, and NSS programme coordinator Colin Janet, the event involved all students, teaching, and non-teaching staff. Principal Dr. Arun A. Bhagwath highlighted the importance of environmental protection, urging efforts to combat desertification and drought. The event featured an environmental plantation initiative, supported by Vice Principal Dr. Shareena P., and Vice Principals Dr. Jeevan Raj and Mr. Narayan Sukumar. Participants: 63

Fig. 30: World Environment Day at YIASCM, Kulur

World Environmental Day celebration in collaboration with YRC on 11.06.2024. A guest talk by P. Shridhara was organized on the topic "Global Warming". The lecture by Mr. Shridhara presented the current state of forest reserves, National Forest Policy recommended 33% forest cover, while Karnataka's has fallen to around 9% due to urbanization. This underscores the urgent need for forest conservation to maintain ecological balance. No. of Participants: 159

Fig. 31: Guest talk by Mr. P. Shridhara

Plantation of saplings in the road divider area from YU towards Kuttar on 29.06.2024. A total of 250 saplings were planted. Faculty from YMC and 2nd Sem students of Dental Technology participated in the program. Participants: 60

Fig. 32: Plantation of saplings on the road divider

Painting Competition

On the occasion of Silver Jubilee Celebration of Yenepoya Medical College and as a part of World environment day Dr. Leena Pramod, Eco Club Coordinator of YMC organized a painting competition on 8 June 2024 for the students of constituent colleges under Yenepoya (deemed to be University). The Theme was "Generation Restoration". About 11 teams of 2 members each registered for the program. The competition started at 4 pm, Dr. Leena Pramod welcomed the participants and explained the rules and regulations of the program. The registered teams were called individually and given a team code. Out of 11 only 8 teams reported to the venue. The team were given time till 5.20 pm. The judges for the competition were Dr. Rohith K, Assistant Professor, Mr. Sachin B, Technician, of FMT, YMC & Mr.

Kiran B, Artist/Modeller, Anatomy, YMC. The first prize of Rs. 1000 was shared between Ms. Ruqayya Kobate& Ms. Reem Khan of 2021 batch YMC & Avani Anil Kumar &Nithya of BAMS / YAMS. The second prize of Rs. 500 was given to Anitha Mathew and Prerna Ganesh of BAMS/YAMS. A group photo of all the participants was taken by Mr. Sheikh, Photographer, Yen Media, YDU. The participants were given and Juice and candies. The Judges and Organizers congratulated the winners.

Fig. 33: Painting competition on theme "Generation Restoration".

Vanamahotsava

The Centre for Environment Studies at Yenepoya (Deemed to be University) celebrated Vanamahotsava on 10.07.2024 in Deralakatte and Naringana campus. Dr. Gangadhara Somayagi, Registrar inaugurated the event by planting a sapling of *Pongamia pinnata* (Honge) and by distributing the vegetable seeds of okra, cucumber, bottle gourd, cow pea and ridge gourd to the staff and students of the University. Mr. P Shridhar, Assistant Conservator of Forests, Forest department, Mangaluru planted a sapling of *Artocarpus hirsutus* (Wild jack) in Deralakatte campus. Dr. Maji Jose, Dean, Student Affairs, Dr. Sham Bhat, Dean, Faculty of Dentistry, Dr. Abhay Nirgude, Dean, Faculty of Medicine, Dr. Prakash Saldanha, Vice-Principal, YMC, were present during the occasion. Various plant cuttings from the campus such as different varieties of hibiscus, croton, ornamental plants and flowering plants were distributed. A total of about 250 participants collected their saplings and seed packets.

Fig. 34: Vanamahotsava at Deralakatte premises

In Naringana campus the event was inaugurated by Dr. Shripathi Rao, Pro Vice Chancellor by planting a sapling of *Artocarpus heterophyllus* (Jackfruit). Mr. P Shridhar, Assistant Conservator of Forests, Dr. Gururaja H, Dean, Faculty of Ayurveda, Dr. Shivaprasad K, Dean, Faculty of Homoeopathy, Dr. Bhagya B. Sharma, Deputy Director, Centre for Environmental Studies staff and students of YHMCH, YAMCH, BPT and YNC planted saplings (8 jackfruit) as a part of Vanamahotsava celebrations.

Fig. 35: Vanamahotsava at Naringana premises

About 500 saplings of *Artocarpus heterophyllus* (Jackfruit), *A. hirsutus* (wild jack), *Vateria indica* (Dhoopa), *Mimosops elengi* (renje), *Phyllanthuse mblica* (nelli), *Lagerstroemia indica* (holedasavala), *Cassia fistula* (kakke), *Syzygium cumuni* (nerale), *Garcinia indica* (punarpuli) and *Azadirachta indica* (kahibevu) were procured from the forest department. About 150 saplings was distributed among the staff and students.

Fig. 36: Saplings procured from Forest Department

Observation of Vanamahotsava "Ek Paudha Maa Ke Naam"

The National Service Scheme- Unit 8, 14 & 15 in association with Eco Club, of Yenepoya School of Allied Health Sciences, organized "Observation of Vanamahotsava" with a theme "Ek Pauda Maa Ke Naam" at DKZP Govt. Higher Primary School, Pilar, Someshwara on 10th of July 2024. Mr. Mohammed Hanif -SDMC President was the chief guest for the event and Ms. Gretta Mable Dsouza HM of DKZP School was the Guest of Honor. Ms. Afra student of YSAHS was the MC for the Inaugural Program. The event began with a welcome address by Ms. Gracy Dsouza Teacher at DKZP school spoke about the importance of trees and their socio-economic effects. Several problems or issues created by deforestation and depleting trees were highlighted through the speeches. The students were made to understand and appreciate the role played by the planting of saplings in preventing global warming reducing pollutions and promoting rainfall.

A Creative Drawing competition was conducted for the school students on the theme "Plant Trees Save Earth". Winners were awarded with the prizes.

This was followed by the planting of saplings. The students showed great eagerness while planting the saplings. They were told about the importance of each tree that was planted and were given simple instructions on how to take care of the plants. The objective of this activity is to encourage tree planting and the importance of a forestation.

Fig. 37: Vanamahotsava by YSAHS at DKZP Govt. Higher Primary School, Pilar, Someshwara

World Ozone Day - Poster making competition

On the occasion of world ozone day a poster making competition was held for the eco club students of YDC on 11.09.2024. The theme for the competition was "Montreal Protocol: advancing climate action". The winners of the competition were awarded with certificates and cash prizes.

Fig. 38: Distributing the prize for the winners

Ozone day - "Wealth out of Waste"

World Ozone Day, is celebrated every year on September 16th, aims to raise awareness about the depletion of the ozone layer and the need to protect this vital part of earth's atmosphere. In line with the spirit of environmental preservation, on 13th September 2024 Eco Club of Yenepoya Institute of Arts, Science, Commerce and Management organized the "Wealth out of Waste" by which this Initiative supports the reduction of pollutants the can exacerbate ozone depletion. This explores the significance of "Wealth out of Waste" in light of World Ozone Day, emphasizing its role in mitigating environmental damage, reducing waste and promoting a circular economy. Dr. Shareen P. the vice principal and dean of Commerce and Management inspired and motivated the students and raised awareness of the World Ozone Day initiatives goal of honoring the rationale for wealth out of waste, which demonstrated how sustainable practices may support both environmental preservation and financial gains. This event was coordinated by Ms. Sharmila P. Nayak. Nine teams produced an outcome that included energy conservation, social effect, gains and Environmental benefits.

Fig. 39: Wealth out of Waste competition

Eco Week - Earth Day Every Day

Event Overview: The Eco Club of YIASCM organized "Eco Week - Earth Day Every Day," featuring a series of competitions aimed at raising environmental awareness and fostering creativity among students. The event commenced on October 7th at 11:00 am in the YMK auditorium, with esteemed guests Dr. Jayakara Bhandary, Principal of Dr. P Dayananda Pai - P Satisha Pai Government First Grade College, and Dr. Bhagya Sharma, Deputy Director of Environmental Studies at Yenepoya University. The competition arranged to encourage students to showcase their talents and also critically think about the alarming environmental issues.

Fig. 40: Guest talk by Dr. Jayakara Bhandary

Quiz Competition (October 7, 2:00 pm):
Title: Eco brainiacs.
Participants: 40 students in 20 teams.
Focus: Environmental issues, sustainability, and eco-friendly practices.
The quiz consisted of multiple choice questions, the presentation Round and the rapid fire round.
Our esteemed judges evaluated the teams' based on accuracy, intellectual quotient and speed.

Fig. 41: Eco brainiacs quiz competition

Pick and Speak Competition (October 7, simultaneous):
Title: Pick, speak and shine.
Participants: 11 students.
Objective: Enhance public speaking skills on eco-related topics.
The primary goal of the Competition was to engage students in thoughtful discussions on various environmental issues, encouraging them to express their ideas creatively and confidently.

Photography Competition (October 8, 10:30 am):
Title: Frames of Nature.
Participants: 17 individuals.
Theme: Nature, encouraging creativity and exploration of the campus.
Students gained hands - on experience in conceptualizing ideas, executing visual storytelling and refining their craft through practice. Photography encourages students to think outside the box, experiment with different styles and capture unique perspectives.

Essay Competition (October 8, 2:00 pm):
Title: Verdi Voices.
Participants: 17 students.
Task: Write a 500-word essay on pressing environmental issues.
The competition achieved its objective by inspiring students to think critically about environmental issues and put it down in words through their writing skills.

Fig. 42: Verdi Voices essay competition

Debate Competition on October 9, 2024
Title: Chatter Competition.
Participants: 10 teams (two per team).
Topic: "Social media influencers are to blame for glorifying fast fashion that harms the environment."
It challenged participants to explore the complex relationships between the social media influencers, advertising platforms and the impact of fast fashion on the environment. It enabled the students to engage in active listening and counter questioning their opponents through reasonable responding.

Fig. 43: Chatter competition

Face Painting Competition (October 9, 10:00 am):
Title: Strokes of Nature.
Participants: 4 teams (two per team).
Focus: Artistic expression of current environmental issues.
The competition achieved its objectives by enabling the students to engage in creative thinking and also to demonstrate their ideas through art. The topic challenged the participants to show the effect of pollution on our planet through the face painting.

Fig. 44: Face painting competition

Cooking Without Fire (October 10, 10:30 am):
Title: Eco Green Bites.
Participants: 8 teams (three per team).
Objective: Use raw ingredients to prepare nutritious meals creatively.
In a world increasingly concerned with energy consumption and environmental impact, fireless cooking offers a practical solution allowing individuals to enjoy culinary experience without the need for traditional cooking methods.

Fig.45: Cooking without fire competition

Modeling Exhibition (October 10, 10:30 am):
Title: Eco Bricks.
Showcase of innovative models and projects by students.
Received positive feedback from faculty, highlighting creativity and innovation.
The students made creative models demonstrating the environmental issues and also came up with eco bricks that can be used as a substitute for construction and reduce plastic pollution.

Fig. 46: Model making competition

Conclusion: Eco Week was a resounding success, engaging students across various streams and promoting teamwork, critical thinking, and environmental consciousness. The positive feedback from attendees and participants underscores the importance of such initiatives in fostering awareness about ecological issues.

Observation of National Nutrition week

On October 9, 2024, the Department of Community Health Nursing, in collaboration with the ECO Club, YNC, organized "National Nutritional Week 2024" at Anganwadi Thokkottu, Mangalore. Twenty-five ladies from the general public participated in a cooking competition focused on healthy diet. Best dishes were awarded with prizes. GNM and student volunteers from Eco club had organized an exhibition on balanced Diet. The healthy diet dishes cooked by the participants of cooking competition and the exhibition by the students was viewed by general public, Asha Workers and anganwadi teachers. They gained insight and knowledge regarding balance diet. At the end of the program, saplings were distributed to all participants, and refreshments were served.

Fig. 47: National Nutrition week at Anganwadi, Thokkottu, Mangalore

Webinar on "Vermiwash Fertilizer: An organic tonic empowering small and marginal farmers to improve soil health and plant health in their farms"

Fig. 48: Talk by Dr. Bhagya B Sharma

A webinar on "Vermiwash Fertilizer: An organic tonic empowering small and marginal farmers to improve soil health and plant health in their farms" was organized by Shobhit Institute of Engineering and Technology, (Deemed to be University), Meerut on 19.09.2024. Dr. Sharma spoke on the significance of organic waste management, emphasizing vermitechnology as a comprehensive solution for sustainable agricultural practices. Vermiwash is least explored organic liquid fertilizer. *Vermiwash* is a rich source of vitamins, hormones, enzymes, macronutrients and micronutrients when applied to plants help in efficient growth. *Vermiwash is the coelomic fluid extraction*, which have enzymes, which stimulate the growth and yield of crops. To promote sustainable and cost-effective farming, farmers should be informed about vermiwash, a natural liquid fertilizer, its benefits, preparation, and usage, including its role in improving soil health and crop productivity. No. of participants: 35

Field Visit to Pilikula Zoological Park

World Animal Welfare Day celebration is an animal welfare movement that pushes global countries to make the world a better place for all animals. World Animal Welfare Day is a global event celebrated every year on Oct 4th. Connected to this special day a field visit was hosted by YAMCH on 22-10-2024 to Pilikula Zoological Park with following objectives. The primary objective was to raise awareness about the effects of people and their behaviors on these speechless living creatures. Educating on rescue shelters for the animals, animal welfare programs and conducting activities that would help in raising standards and provide better conditions for animal living. The observance of this special day also draws

attention and bestows awareness about cruelty to animals which ranges from pelting stones to beating and caning, using animals for wrong purposes. This field visit was very informative, thought provoking and encouraged participant students and staff to focus on the idea connected to various dimensions on welfare of animals.

Fig. 49: Visit to Zoological park at Pilikula Nisargadhama

International Day of Disaster Risk Reduction

Eco Club and Youth Red Cross, YIASCM, Balmatta jointly organized a guest talk on the Observation of "International Day of Disaster Risk Reduction" on 22/10/2024. Dr. Mona Mendonca, Assistant Professor and Head, Department of History, St. Aloysius Deemed to be University was the resource person. The talk gave insights on how disasters can have an impact on the society. Besides, carelessness and how not taking proper measures can lead to accidents and trauma underwent by survivors were the highlights of the topic. Moreover, the talk also shed light on Risk Prevention and mitigation measures. Principal Dr. Arun A. Bhagwath delivered the presidential remarks and highlighted the importance of disaster preparedness. Vice Principal Mr. Narayan Sukumar, heads of various departments were present. The programme was jointly coordinated by Ms. Tharangini K.S. and Dr. Sareen Sheikh.

Fig. 50: Guest talk by Dr. Mona Mendonca

Guest lecture on 'Transforming Our World: the 2030 Agenda for Sustainable Development'

Fig. 51: Guest Talk by C. Prathapmohan Nair

The CES organized a guest lecture on 'Transforming Our World: the 2030 Agenda for Sustainable Development' was by C. Prathapmohan Nair, International Consultant, UN Convention for Desertification & degradation in Sustainability and Green Financing space on 29.10.2024. The session began by introducing the 17 sustainable development goals and their target. The 5 Ps (People, Planet, Profit, Peace and Partnership) as pillars of sustainable goals was explained. The interaction helped the audience to get a good knowledge about the need for sustainable development and also the opportunities to volunteer related to this field. The speaker presented the challenges in achieving the SDGs. No. of participants: 30

Guest lecture on "Navigating the path to a sustainable Future"

Fig. 52: Talk by Dr. Bhagya B Sharma at YPCRC

A lecture on the topic "Navigating the path to a sustainable Future" was presented by Dr. Bhagya Sharma at the National Pharmacy Week for students of YPCRC on 20.11.2024. The speaker said, navigating the path to a sustainable future requires a holistic approach, integrating environmental, social, and economic considerations while embracing technology and innovation for resource efficiency and responsible practices. No. of participants: 100

Essay Competition

Centre for Environmental Studies organized the essay competition on the topic Environmental Sustainability in the month of November 2024. 23 essay sent by student and staff of the university. Dr. Uma Kulakarni, Professor, dept. of Ophthalmology, Yenepoya Medical College Hospital, Yenepoya (Deemed to be University) served as the chief judge for the essay competition.
The winners of the essay completion:
1st Prize – Dr. Abhirami N - YMC
2nd Prize – Nashida Fathima - YDC
3rd Prize – Nafeesath Zahiya - YPCRC

Fig. 53: Prize distribution by Vice Chancellor Dr. M. Vijayakumar

Guest lecture on 'Human Wildlife Conflicts'

Fig. 54: Guest Talk by Dr. Suprith Surya

The CES organized a guest lecture on the topic 'Human Wildlife Conflicts' by Dr. Suprith Surya, Consultant Veterinary Surgeon and In- charge, Advanced Surgical Skill Enhancement Division, YDU on 30.11.2024. The Session commenced with an introduction to the emerging issue of human- wildlife conflict. The discussion covered the strategies related to this issue. The presentation of recent conflict image effects, and mitigation strategies related to this issue. The presentation of recent conflict images effectively conveyed the severity of the problem, raising awareness among the audience. The interactive session enables the audience to gain in-depth knowledge and awareness about human-wildlife conflict, as well as the necessity for conservation strategies. No. of participants: 97

Energy Conservation Day - Awareness quiz

On December 14, 2024 the Centre for Environmental Studies organized an online multiple choice awareness quiz on the occasion of energy conservation day. The event aimed to raise awareness about the significance of energy conservation and promote sustainable practices.

A total of 163 participants took part in the quiz comprising 95% student and 5 % of faculty members and staff of Yenepoya (Deemed to be University). The quiz was aimed to educate participants about the importance of energy conservation and its relevance in our daily lives. The average point scored by the participants is 16.47.

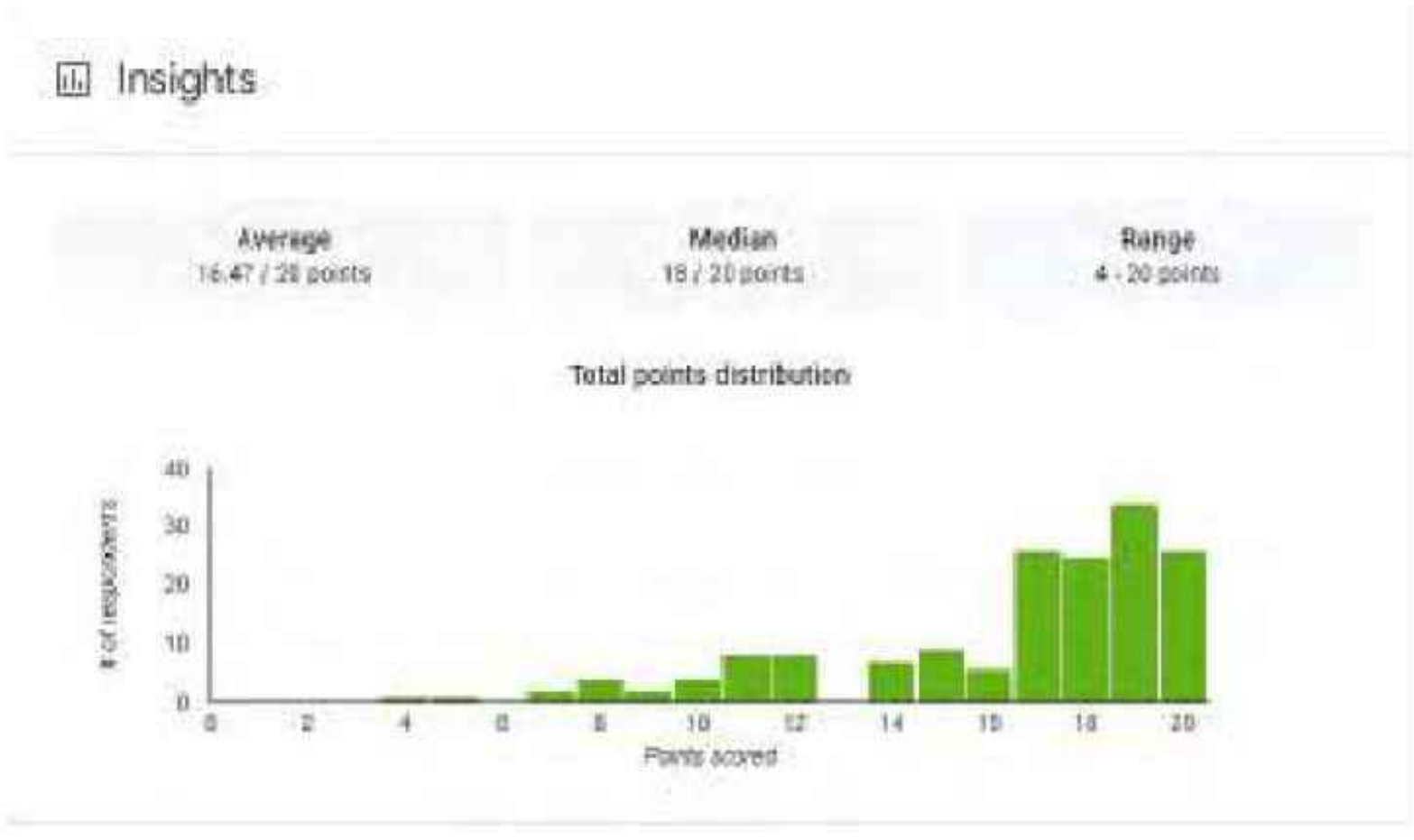


Fig. 55: Quiz competition – points scored

National Energy Conservation day

National Energy Conservation Day is celebrated annually on December 14 in India to emphasize the critical role of energy conservation in safeguarding the environment and ensuring sustainable development. The day is dedicated to spreading awareness about the need to reduce energy consumption and promote energy efficiency across all sectors. Energy conservation not only helps reduce greenhouse gas emissions but also lessens the reliance on non-renewable energy sources, ensuring a more sustainable future.

By encouraging the adoption of energy-efficient practices and technologies, the day serves as a reminder of our collective responsibility to protect the planet. Individuals, industries, and organizations are urged to take conscious steps to minimize energy waste through efficient use of resources. This initiative aligns with global efforts to address climate change and ensure long-term energy security. Observing this day fosters a culture of conservation that can have lasting impacts on environmental health and economic stability.

This year's theme for National Energy Conservation Day 2024 focuses on "Green Energy Transition: Empowering Sustainable Future." It highlights the importance of shifting towards renewable energy sources and adopting eco-friendly practices to combat climate change and secure a sustainable energy future.

In order to support the movement, promote energy saving methods Yenepoya (Deemed to be university) arranged National Energy Conservation Day celebration from Dec 12 to Dec 14, 2024. This 3-day program which had fair share by Center for Environmental Studies and Maintenance department in organizing had different activities planned and executed in order to save and conserve the energy.

Date	Venue	Activity	Concerning department
12/12/2024	Seminar Hall, Old Nursing Building, Deralakatte	Guest lecture	CES, Maintenance department
13/12/2024	Main campus, Deralakatte	Poster launch	Maintenance department
14/12/2024	Zulekha Oncology Hospital, Deralakatte	Awareness and poster display	Maintenance department

Day 1 - Guest lecture -12/12/2024

A guest lecture was delivered by Mr. Sudesh Martis, Additional Chief Electrical Inspector, Mangalore, who possesses extensive knowledge on the subject and hands-on experience in this important cause. The lecture was held on the 4th floor of the Incubation Technology building, with 40 staff members in attendance. The speaker provided valuable insights on the necessary changes and innovative ideas for saving electricity. The guest was felicitated by Dr. Bhagya B. Sharma, Deputy Director, CES, Mr. Walter Castelino, Facility Manager, Mr. Sayyad M. I., Electrical Engineer and Mr. Praveen, Hospital Superintendent.

Fig. 56: Guest talk by Mr. Sudesh Martis

Day 2 - Poster Launch -13/12/2024

A poster launch on energy saving was held as part of the National Energy Conservation Day celebrations at Yenepoya (Deemed to be University). The event was graced by Pro-Vice Chancellor Dr. Sripathi Rao Sir, who unveiled the poster, highlighting the university's commitment to sustainable energy practices. Registrar Dr. Gangadhar Somayaji, Dr. Bhagya B. Sharma, Deputy Director, CES, Mr. Walter Castelino, Facility Manager, Mr. Aboobakkar, Civil Engineer, Mr. Sayyad M.I., Electrical Engineer & Mr. Vinayaka Bhatta, Environmental Engineer also participated emphasizing the importance of energy conservation initiatives. The poster aims to raise awareness and encourage students and staff to contribute to energy-saving efforts on campus. This event marked a significant step towards promoting sustainable practices within the university community.

Fig. 57: Poster launch on Energy Conservation day

Day 3-Awareness and poster display -14/12/2024

The energy conservation team of the maintenance department, comprising Electrical Engineer Mr. Sayyed, Environmental Engineer Mr. Vinayaka Bhatta, along with Mr. Joy from the administration, maintenance, and the maintenance staff, actively participated in creating awareness on energy-saving practices at Zulekha Oncology Hospital. Together, they engaged with the hospital staff, educating them on the importance of energy conservation and providing practical tips to reduce energy consumption. Posters highlighting energy-saving measures were displayed throughout the hospital, serving as constant reminders to adopt environmentally responsible behaviors. This initiative aimed to not only raise awareness among the hospital staff but also to promote a culture of sustainability within the facility. The efforts of the team were well-received, reinforcing the importance of small but impactful actions in reducing the overall energy footprint.

Fig. 58: Poster Display at Zulekha Oncology Hospital

World Soil Day

Fig. 59: Guest Talk by Dr. Harish Kumar T

On 16th December, CES organized a guest talk on 'Know your soils' by Dr. Harish Kumar T, Assistant Professor of Zoology, Bapuji Educational Association, D.R.M Science College, Davanagere. The session began by introducing the theme of world soil day 2024 that is "Caring for Soil: Measure, Monitor, Manage" The presentation provided an in-depth knowledge of various soil types, including their macro and micro flora and fauna. The discussion continued to address the challenges facing soil health, highlighting the pressures exerted by human activities and their impacts on soil degradation, erosion, and nutrient depletion. The significance of soil conservation was discussed which is accompanied by an overview of effective methods for conserving soil. The lecture was organized in association with YNYSCH. No. of participants: 104

On 19th December 2024, NSS Units 10, 15, and 17 of Yenepoya School of Allied Health Sciences organized a program to celebrate World Soil Day with the theme "Caring for soils: measure, monitor, manage". The event featured an inspiring guest lecture by Dr. Bhagya Sharma. A reels and photography competition was also conducted, showcasing the creative awareness efforts of students, followed by a prize distribution ceremony to honor the winners. The program effectively raised awareness about soil health and engaged participants in promoting sustainable environmental practices.

Fig. 60: Talk by Dr. Bhagya B. Sharma and prize distribution

5. ONWARD ACTIONS TOWARDS SDG 13: Climate Action

GOAL

Take urgent action to combat climate change and its impacts

ONWARD ACTIONS

- The university integrates Environmental Education across all academic disciplines to foster climate consciousness and sustainability among students.
- A comprehensive Five-Year Sustainable Action Plan with defined targets and milestones is currently being implemented to address climate-related goals.
- Research initiatives focused on organic waste recycling, carbon footprint reduction, and climate-resilient practices are actively encouraged and supported.
- Awareness programs, including expert lectures, student competitions, and campaigns, are organized regularly to promote understanding and action on climate change mitigation and adaptation.
- The "My Mug Campaign" is promoted across campus to reduce single-use paper cups and encourage the use of reusable alternatives, contributing to waste reduction and sustainable behavior.
- Energy-efficient practices, tree plantation drives, and participation in global climate awareness days are also part of the university's climate action strategy.

6. ONWARD ACTIONS TOWARDS SDG 14: Life Below Water

GOAL

Conserve and sustainable use the oceans, seas and marine resources for sustainable development

ONWARD ACTIONS

- Beach and pond cleaning drives are regularly conducted by students and staff to reduce plastic and other waste from entering aquatic ecosystems.
- Awareness talks, exhibitions, and competitions are organized to educate the campus community about the harmful impacts of plastic pollution on marine and freshwater life.
- Posters and awareness campaigns advocating the avoidance of single-use plastics are prominently displayed throughout the campus.
- Campus cafés have adopted eco-friendly practices by replacing plastic cutlery with biodegradable wooden alternatives.
- Wastewater generated on campus is treated through Sewage Treatment Plants and recycled for safe use in irrigation, thereby preventing contamination of nearby water bodies.
- The university actively promotes sustainable consumption habits and responsible waste management to minimize its impact on aquatic ecosystems.

7. ONWARD ACTIONS TOWARDS SDG 15: Life on Land

GOAL

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainable manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

ONWARD ACTIONS

- The university actively maintains indigenous plant species across its green spaces to support local biodiversity and ecological balance.
- Regular surveys and documentation of the campus's flora, fauna, and mushrooms are conducted to monitor and preserve biodiversity.
- Approximately 40% of the campus is covered with green space, reflecting a strong commitment to the sustainable use of land resources.
- The Eco Club engages students through environmental awareness programs, competitions, tree plantation drives, and educational field visits.
- A comprehensive tree audit, including the estimation of carbon sequestration potential, is carried out as part of the university's environmental audit.
- Tree plantations are regularly organized both within the campus and in surrounding communities as part of outreach and greening efforts.
- As a sustainable practice, saplings are gifted to guests and resource persons, promoting a culture of green appreciation and ecological responsibility.
- Environmental events such as World Environment Day and Vanamahotsava are celebrated through mass tree planting and sapling distribution activities.

8. ANNEXURE

List of Plants

Deralakatte campus

HERBS

1. *Achetaria azurea* (Linden) V.C. Souza [*Otacanthus caeruleus* Lindl.] – Plantaginaceae
2. *Achyranthes aspera* L.- Amaranthaceae
3. *Acorus calamus* L. – Acoraceae
4. *Aervalanata* (L.) Juss. ex Schult – Amaranthaceae
5. *Agave amica* (Medik.) Thiede & Govaerts
6. *Aglaomorpha quercifolia* (L.) Hovenkamp & S. Linds.– Polypodiaceae
7. *Aloe vera* (L.) Burm. f. – Xanthorrhoeaceae
8. *Alpinia calcarata*(Haw.) Roscoe - Zingiberaceae
9. *Alpinia purpurata* (Vieill.) K. Schum. – Zingiberaceae
10. *Alternanthera bettzickiana* (Regel) G. Nicholson
11. *Andrographis paniculata* (Burm. f.) Wall. ex Nees – Acanthaceae
12. *Bacopa monnieri* (L.) Pennell – Plantaginaceae
13. *Boerhavia diffusa* (L.) – Nyctaginaceae
14. *Caladium bicolor* (Aiton) Vent. – Araceae
15. *Calathea zebrine* (Sims) Lindl. – Marantaceae
16. *Canna x generalis* L. H. Bailey. – Cannaceae
17. *Catharanthus roseus* (L.) G. Don. – Apocynaceae
18. *Centella asiatica* (L.) Urban – Apiaceae
19. *Chrysothemis pulchella* (Donn ex Sims) Decne. – Gesneriaceae
20. *Clinacanthus nutans* (Burm.f.) Lindau – Acanthaceae
21. *Coleus amboinicus* Lour. – Lamiaceae
22. *Colocasia esculenta* (L.) Schott. – Araceae
23. *Costus pictus* D. Don – Costaceae
24. *Curcuma longa* L. – Zingiberaceae
25. *Dieffenbachia amoena* Bull. – Araceae
26. *Eclipta prostrata* (L.) L. – Asteraceae
27. *Etlingera elatior* (Jack) R.M. Sm. [*Phaeomeria magnifica* (Roscoe) K. Schum] –Zingiberaceae
28. *Gerbera* sp. – Asteraceae
29. *Heliconia psittacorum* L. f. – Heliconiaceae
30. *Heliconia rostrata* Ruiz & Pav. – Heliconiaceae
31. *Hemigraphis alternata* (Burm. f.) T.Anderson. – Acanthaceae
32. *Hemigraphis colorata* W. Bull. – Acanthaceae
33. *Hymenocallis littoralis* (Jacq.) Salisb. – Amaryllidaceae
34. *Impatiens balsamina* L. – Balsaminaceae
35. *Ipomoea batatas* (L.) Poir. – Convolvulaceae
36. *Leucas lavandulifolia* Sm. – Lamiaceae
37. *Maranta arundinacea* L. – Marantaceae
38. *Musa x paradisiaca* L. – Musaceae
39. *Nephrolepis exaltata* (L.) Schott – Lomariopsidaceae [Fern]
40. *Ocimum tenuiflorum* L. – Lamiaceae
41. *Ophiopogon japonicus* (Thunb.) Ker Gawl. – Asparagaceae
42. *Philodendron* 'Green emerald' – Araceae
43. *Phyllanthus amarus* Schum & Thonn. – Phyllanthaceae
44. *Plumbago zeylanica* L. – Plumbaginaceae
45. *Portulaca grandiflora* Hook.– Portulacaceae
46. *Ruellia simplex* C. Wright – Acanthaceae
47. *Ruellia tuberosa* L.– Acanthaceae
48. *Spathiphyllum* sp. – Araceae
49. *Spathoglottis plicata* Blume – Orchidaceae
50. *Stachytarpheta urticaefolia* (Rattail). –Verbenaceae
51. *Syngonium podophyllum* Schott – Araceae

52. *Tagetes erecta* L.– Asteraceae
53. *Tradescantia spathacea* Sw. [*Rhoeo discolor* (L'Her.) Hance] – Commelinaceae
54. *Tradescantia zebrina* (Schinz) D.R. Hunt – Commelinaceae
55. *Vernonia cinerea* (L.) Less. – Asteraceae
56. *Vetiveria zizanoides*(L.) Nash – Poaceae
57. *Wedelia trilobata* (L.) Hitchc. – Asteraceae
58. *Xanthosoma sagittifolium* (L.) Schott – Araceae
59. *Zephyranthes candida* (Lindl.) Herb. – Amaryllidaceae
60. *Zephyranthes carinata* Herb. – Amaryllidaceae

SHRUBS

1. *Acalypha hispida* Burm.f. – Euphorbiaceae
2. *Acalypha wilkesiana* Muell. – Arg. – Euphorbiaceae
3. *Adhatoda zeylanica* Medikus– Acanthaceae
4. *Ardisia elliptica* Thunb.
5. *Asparagus densiflorus* (Kunth) Jessop – Asparagaceae
6. *Bambusa heterostachya* (Munro) Holttum –Poaceae
7. *Barleria cristata* L. – Acanthaceae
8. *Bauhinia acuminata* L. – Fabaceae
9. *Bauhinia tomentosa* L. – Fabaceae
10. *Bixa orellana* L. – Bixaceae
11. *Breynia vitis-idaea* (Burm.f.) C.E.C.Fisch.
12. *Caesalpinia pulcherima (L.) Sw. – Fabaceae*
13. *Calotropis gigantea* (L.) R. Br. – Apocynaceae
14. *Calotropis procera* (Aiton) W.T.Aiton
15. *Carissa spinarum* L. – Apocynaceae
16. *Clerodendrum inerme* (L.) Gaertn. – Lamiaceae
17. *Codiaeum variegatum* (L.) Rumph. ex A. Juss. – Euphorbiaceae
18. *Cordyline fruticosa* (L.) A. Chev. [*C. terminalis*Kunth] – Asparagaceae
19. *Cuphea hyssopifolia* Kunth – Lythraceae
20. *Dracaena braunii* Engl. [*D. sanderiana* Sander] – Asparagaceae
21. *Dracaena godseffiana* Mast. – Asparagaceae
22. *Dracaena marginata* Lam. – Dracaenaceae
23. *Dracaena reflexa* Lam. – Asparagaceae
24. *Duranta erecta* L. [*D. plumieri* Jacq.] – Verbenaceae
25. *Euodia ridleyi* Hochr. – Rutaceae
26. *Euphorbia milii* Des Moul. – Euporbiaceae
27. *Euphorbia trigona* Mill. – Euphorbiaceae
28. *Excoecaria cochinchinensis* Lour. – Euphorbiaceae
29. *Gardenia jasminoides* Ellis – Rubiaceae
30. *Graptophyllum pictum* (L.) Griff. – Acanthaceae
31. *Hamelia patens* Jacq. – Rubiaceae
32. *Hibiscus rosa-sinensis* L. – Malvaceae
33. *Hibiscus schizopetalus* (Dyer) Hook.f. – Malvaceae
34. *Hydrangea macrophylla* (Thunb.) Ser. – Hydrangeaceae
35. *Ixora casei* Hance – Rubiaceae
36. *Ixora chinensis* Lam. – Rubiaceae
37. *Ixora finlaysoniana* Wall. ex G. Don – Rubiaceae
38. *Ixora* sp. – Rubiaceae
39. *Jatropa curcas*L. – Euporbiaceae
40. *Jatropa gossipifolia* L. – Euporbiaceae
41. *Jatropa integerrima* Jacq. – Euphorbiaceae
42. *Jatropha pandurifolia* Andr. – Euphorbiaceae
43. *Justicia gendarussa* Burm.f. – Acanthaceae

44. *Lantana camara* L. – Verbenaceae
45. *Lantana montevidensis* (Spreng.) Briq. – Verbenaceae
46. *Lawsonia inermis* L. – Lythraceae
47. *Leea indica* (Burm.f.) Merr. – Vitaceae
48. *Malvaviscus penduliflorus* DC. – Malvaceae
49. *Melicope denhamii* (Seem.) T.G. Hartley – Rutaceae
50. *Morinda citrifolia*L. – Rubiaceae
51. *Mussaenda philippica* A. Rich. – Rubiaceae
52. *Nerium oleander* L. – Apocynaceae
53. *Nymphaea nouchali* Burm. F. – Nymphaeaceae
54. *Osmoxylon lineare* (Merr.) Philipson – Araliaceae
55. *Pandanus tectorius* Sol. ex Balf.f. – Pandanaceae
56. *Phyllanthus myrtifolius* (Wight) Muell. -Arg. – Phyllanthaceae
57. *Pisonia umbellifera* (J.R. Forst. & G. Forst.) Seem – Nyctaginaceae
58. *Polyscias filicifolia* (C. Moore ex E. Fourn.) L.H. Bailey – Araliaceae
59. *Polyscias guilfoylei* (W. Bull) L.H. Bailey – Araliaceae
60. *Polyscias paniculata* (DC.) Baker – Araliaceae
61. *Polyscias scutellaria* (Burm.f.) Fosberg – Araliaceae
62. *Premna serratifolia* L. [*Premnaobtusifolia* R. Br.] – Lamiaceae
63. *Pseuderanthemum carruthersii* (Seem.) Guillaumin – Acanthaceae
64. *Punica granatum* L. – Lythraceae
65. *Rauvolfia serpentina* (L.) Benth.ex Kurz – Apocynaceae
66. *Rhapis excels* (Thunb.) A. Henry ex Rehder – Arecaceae
67. *Ricinis communis* L. – Euporbiaceae
68. *Rosa* sp. – Rosaceae
69. *Rotheca serrata* (L.) Steane & Mabb. – Lamiaceae
70. *Russelia equisetiformis* Schltdl. – Plantaginaceae
71. *Sanchezia nobilis* Hook.f. – Acanthaceae
72. *Sansevieria trifasciata* (Prain) Mabb – Dracaenaceae
73. *Schefflera arboricola* (Hayata) Kanehira – Aralliaceae
74. *Senna occidentalis* (L.) Link – Caesalpiniaceae
75. *Solanum torvum* Sw. – Solanaceae
76. *Syzygium australe* (J.C.Wendl. ex Link) B.Hyland – Myrtaceae
77. *Tabernaemontana divaricata* (L.) R.Br. ex Roem. &Schult. –Apocynaceae
78. *Tecoma castanifolia* (D.Don) Melch. – Bignoniaceae
79. *Tecoma fulva* (Cav.) G.Don – Bignoniaceae
80. *Tephrosia purpurea* (L.) Pers. – Fabaceae
81. *Tibouchina urvilleana* Cogn. – Melastomataceae
82. *Turnera subulata* Sm. – Passifloraceae
83. *Turnera ulmifolia* L. – Passifloraceae
84. *Vitex negundo* L. – Lamiaceae
85. *Woodfordia fruticosa* (L.) Kurz – Lythraceae
86. *Wrightia antidysenterica* (L.) R. Br. – Apocynaceae

CLIMBERS

1. *Acacia caesia* (L.) Willd. – Fabaceae
2. *Allamanda blanchetii* A. DC. [*A. violacea* Gardner] – Apocynaceae
3. *Allamanda catharticaL.*– Apocynaceae
4. *Antigonon leptopus* Hook. & Arn. – Polygonaceae
5. *Asparagus racemosus* Willd. – Asparagaceae
6. *Bougainvillea buttiana* Holttum & Standey – Nyctaginaceae
7. *Cissus repanda* Vahl – Vitaceae
8. *Clematis gouriana* Roxb. ex DC. –Ranunculaceae
9. *Clerodendrum splendens* G. Don – Lamiaceae
10. *Clitoriaternatea* L. – Fabaceae

11. *Coscinium fenestratum* (Gartn.) Colebr. – Menispermaceae
12. *Epipremnum pinnatum* (L.) Engl. Cv. 'Aureum' – Araceae
13. *Hemidesmus indicus* (L.) R. Br. – Apocynaceae
14. *Lonicera japonica* Thunb. – Caprifoliaceae
15. *Mussaenda laxa* (Hook.f.) Hutch. ex Gamble – Rubiaceae
16. *Piper longum* L. – Piperaceae
17. *Quisqualis indica* L. – Combretaceae
18. *Thunbergia fragrans* Roxb. – Acanthaceae
    Thunbergia grandiflora (Roxb. ex Rottl.) Roxb.
19. – Acanthaceae
20. *Tinospora cordifolia* (Willd.) Miers – Menispermaceae
21. *Marsdenia sylvestris* (Retz.) P.I.Forst. – Asclepiadaceae
22. *Passiflora foetida* L. – Passifloraceae
23. *Philodendron cordatum* Kunth ex Schott. – Araceae
24. *Syngonium podophyllum* Schott. – Araceae

TREES

1. *Acacia auriculiformis* Benth. – Fabaceae
2. *Acacia mangium* Willd. – Fabaceae
3. *Aegle marmelos* (L.) Correa – Rutaceae
4. *Ailanthus triphysa* (Dennst.) Alston – Simaroubaceae
5. *Albizia saman*(Jacq.) Merr.[*Samanea saman* (Jacq.)Merr.] – Fabaceae
6. *Alstonia scholaris* (L.) R. Br. – Apocynaceae
7. *Annona muricata* L. – Annonaceae
8. *Aphanamixis polystachya* (Wall.) R. N. Parker – Meliaceae
9. *Areca catechu* L. – Arecaceae
10. *Artocarpus heterophyllus* Lam. – Moraceae
11. *Artocarpus hirstus* Lam. – Moraceae
12. *Averrhoa bilimbi* L. – Oxalidaceae
13. *Azadirachta indica* A. Juss. – Meliaceae
14. *Bambusa vulgaris* Schrad. – Poaceae
15. *Brownia coccinea* Jacq. – Fabaceae
16. *Butea monosperma* (Lam.) Taub. – Fabaceae
17. *Callistemon citrinus* (Curtis) Skeels [*C. lanceolatus* (Sm.) DC.] – Myrtaceae
18. *Careya arborea* Roxb. – Lecythidaceae
19. *Carica papaya* L. – Caricaceae
20. *Caryota urens* L. – Arecaceae
21. *Cascabela thevetia* (L.) Lippold – Apocynaceae
22. *Cassia fistula* L. – Fabaceae
23. *Cassia roxburghii* DC. [*C. marginata* Roxb.] – Fabaceae
24. *Citrus aurantifolia* (Christm. &Panz.) Swingle – Rutaceae
25. *Cochlospermum religiosum* (L.) Alston – Bixaceae
26. *Cocos nucifera* L. – Arecaceae
27. *Cyrtostachys renda* Blume – Arecaceae [Red palm]
28. *Dalbergia latifolia* Roxb. – Fabaceae
29. *Delonix regia* (Hook.) Raf. – *Fabaceae*
30. *Drypetes roxburghii* (Wall.) Hurusawa – Putranjivaceae
31. *Dypsis lutescens* (H. Wendl.) Beentije& J. Dransf. – Arecaceae
32. *Elaeocarpus ganitrus* Roxb. Ex G. Don – Elaeocarpaceae
33. *Erythrina variegata* L. [*E. indica* Lam.] – Fabaceae
34. *Ficus benjamina* L. – Moraceae
35. *Ficus exasperata* Vahl. – Moraceae
36. *Ficus hispida* Roxb. ex Wall. – Moraceae
37. *Ficus racemosa* L. – Moraceae
38. *Ficus religiosa* L. – Moraceae

39. *Flacourtia montana* J. Graham – Salicaceae
40. *Garcinia indica* (Thouars) Choisy – Clusiaceae
41. *Gmelina arborea* L. – Lamiaceae
42. *Grevillea robusta* Cunn. ex R. Br. – Proteaceae
43. *Hopeaponga* (Dennst.) Mabb. -Dipterocarpaceae
44. *Lagerstroemia speciosa* (L.) Pers. – Lythraceae
45. *Leucaena leucocephala* (Lam.) de Wit. – Mimosaceae
46. *Livistona rotundifolia* (Lam.) Mart. – Arecaceae
47. *Macaranga peltata* (Roxb.) Muell. – Arg. – Euphorbiaceae
48. *Magnolia champaca* (L.) Baill. ex Pierre [*Micheliachampaka* L.] – Magnoliaceae
49. *Mangifera indica L.* – Anacardiaceae
50. *Melaleuca leucadendron* L. – Myrtaceae
51. *Mesua ferrea* L. – Calophyllaceae
52. *Mimusops elengi* L. – Sapotaceae
53. *Morinda citrifolia* L. – Rubiaceae
54. *Moringa oleifera* Lam. – Moringaceae
55. *Muntingia calabura* L. – Muntingiaceae
56. *Myristica malabarica* Lam. – Myristicaceae
57. *Neolamarckia cadamba* (Roxb.) Bosser – Rubiaceae
58. *Nephelium lappaceum* L. – Sapindaceae
59. *Persea macrantha* (Nees) Kosterm. – Lauraceae
60. *Phyllanthus acidus* (L.) Skeels – Phyllanthaceae
61. *Phyllanthus emblica* L. – Phyllanthaceae
62. *Pimenta dioica* (L.) Merr. – Myrtaceae
63. *Plumeria obtusa* L. – Apocynaceae
64. *Plumeria rubra* L. – Apocynaceae
65. *Polyalthia longifolia* (Sonn.) Thwaites – Annonaceae
66. *Premna serratifolia* Blanco. – Lamiaceae
67. *Prosopis cineraria* (L.) Druce – Fabaceae
68. *Pterocarpus marsupium* Roxb. – Fabaceae
69. *Ptychosper mamacarthurii* (H. Wendl. ex H.J. Veitch) H. Wendl. &Hook.f. - Arecaceae
70. *Roystonea regia*(Kunth) O.F. Cook – Arecaceae
71. *Santalum album* L. – Santalaceae
72. *Saracaasoca* (Roxb.) Willd. – Fabaceae
73. *Schefflera actinophylla* (Endl.) Harms – Araliaceae
74. *Senna siamea* (Lam.) H.S. Irwin & Barneby [*Cassia siamea* Lam.] – Fabaceae
75. *Spathodea campanulata* P. Beauv. – Bignoniaceae
76. *Swietenia macrophylla* King – Meliaceae
77. *Syzygium cumini* (L.) Skeels – Myrtaceae
78. *Syzygium jambos* (L.) Alston – Myrtaceae
79. *Syzygium samarangense* (Blume) Merr. & L.M. Perry – Myrtaceae
80. *Tabebuia aurea* (Silva Manso) Benth. &Hook.f. ex S. Moore [*T. argentea* (Bureau & K. Schum.) Britton – Bignoniaceae
81. *Terminalia arjuna* (Roxb.) Wight &Arn. – Combretaceae
82. *Terminalia catappa* L. – Combretaceae
83. *Terminalia chebula* Retz. – Combretaceae
84. *Thevetia peruviana* (Pers.) K. Schum. – Apocynaceae
85. *Wrightia tinctoria* (Roxb.) R. Br. – Apocynaceae

WEEDS

1. *Adiantum lunulatum*Burm. – Pteridaceae
2. *Ageratum conyzoides* L. – Asteraceae
3. *Alternanthera ficoidea* (L.) Sm. – Amaranthaceae
4. *Alysicarpus bupleurifolius* (L.) DC. – Fabaceae

5. *Alysicarpus vaginalis* (L.) DC. – Fabaceae
6. *Amaranthus hybridus* L. – Amaranthaceae
7. *Asystasia variabilis* Trimen - Acanthaceae
8. *Axonopus compressus* (Sw.) P. Beauv. – Poaceae
9. *Blumea*sp. – Asteraceae
10. *Brachiaria subquadripara* (Trin.) Hitchc. – Poaceae
11. *Cheilanthes tenuifolia* (Burm.f.) Sw. – Pteridaceae
12. *Cheilocostus speciosus* (J. Koenig) C. Specht – Costaceae
13. *Chloris barbata* Sw. – Poaceae
14. *Christella dentata* (Forssk.) Brownsey & Jermy – Thelypteridaceae
15. *Cleome rutidosperma* DC. – Cleomaceae
16. *Colocasia esculenta* (L.) Schott – Araceae
17. *Commelina diffusa* Burm.f. – Commelinaceae
18. *Crotalaria pallida*Aiton – Fabaceae
19. *Cuscuta chinensis* Lam. – Convolvulaceae
20. *Cyanotis cristata* (L.) D. Don – Commelinaceae
21. *Cyanthillium cinereum* (L.) H. Rob. – Asteraceae
22. *Cynodon dactylon* (L.) Pers. – Poaceae
23. *Cyperus compressus* L. – Cyperaceae
24. *Cyperus distans*L.f. – Cyperaceae
25. *Cyperus iria* L. – Cyperaceae
26. *Cyperus javanicus* Houtt. – Cyperaceae
27. *Cyperus rotundus* L. – Cyperaceae
28. *Cyperus squarrosus* L. – Cyperaceae
29. *Dactyloctenium aegyptium* (L.) Willd. – Poaceae
30. *Desmodium scorpiurus* (Sw.) Desv. – Fabaceae
31. *Desmodium triflorum* (L.) DC. – Fabaceae
32. *Digitaria bicornis* (Lam.) Roem. &Schult. – Poaceae
33. *Digitaria longiflora* (Retz.) Pers. – Poaceae
34. *Digitaria setigera* Roth – Poaceae
35. *Diploclisia glaucescens* (Blume) Diels – Cucurbitaceae
36. *Drynaria quercifolia* (L.) J. Sm. – Polypodiaceae
37. *Echinochloa colona* (L.) Link – Poaceae
38. *Eclipta prostrata* (L.) L. – Asteraceae
39. *Elatostema cuneatum* Wight – Urticaceae
40. *Eleusine indica* (L.) Gaertn. – Poaceae
41. *Elytranthe parasitica* (L.) Danser – Loranthaceae
42. *Emilia sonchifolia* (L.) DC. – Asteraceae
43. *Eragrostis amabilis* (L.) Wight &Arn. – Poaceae
44. *Eragrostis nutans* (Retz.) Nees ex Steud. – Poaceae
45. *Eragrostis unioloides* (Retz.) Nees ex Steud. – Poaceae
46. *Euphorbia hirta* L. – Euphorbiaceae
47. *Evolvulus alsinoides* (L.) L. – Convolvulaceae
48. *Evolvulus nummularius* (L.) L. – Convolvulaceae
49. *Fimbristlis dichotoma* (L.) Vahl – Cyperaceae
50. *Hybanthus enneaspermus* (L.) F. Muell. – Violaceae
51. *Impatiens minor* (DC.) Bennet – Balsaminaceae
52. *Ipomoea triloba* L. – Convolvulaceae
53. *Kyllinga brevifolia* Rottb. – Cyperaceae
54. *Kyllinga nemoralis* (J.R. Forst. & G. Forst.) Dandy – Cyperaceae
55. *Laportea interrupta* (L.) Chew – Urticaceae
56. *Lindernia antipoda* (L.) Alston – Linderniaceae
57. *Lindernia ciliata* (Colsm.) Pennell – Linderniaceae
58. *Lindernia crustacea* (L.) F. Muell. – Linderniaceae

59. *Ludwigia hyssopifolia* (G. Don) Exell – Onagraceae
60. *Mecardonia procumbens* (Mill.) Small – Plantaginaceae
61. *Mimosa pudica* L. – Fabaceae
62. *Mitracarpus hirtus* (L.) DC. – Rubiaceae
63. *Mucuna pruriens* (L.) DC. – Fabaceae
64. *Murdannia nudiflora* (L.) Brenan – Commelinaceae
65. *Oldenlandia corymbosa* L. – Rubiaceae
66. *Osbeckia muralis* Naudin – Melastomataceae
67. *Oxalis corniculata* L. – Oxalidaceae
68. *Panicum repens* L. – Poaceae
69. *Pepromia pellucida* (L.) Kunth – Piperaceae
70. *Phyllanthus amarus* Schumach. & Thonn. – Phyllanthaceae
71. *Phyllanthus debilis* Klein ex Willd. – Phyllanthaceae
72. *Phyllanthus tenellus* Roxb. – Phyllanthaceae
73. *Phyllanthus urinaria* L. – Phyllanthaceae
74. *Phyllanthus virgatus* G. Forst. – Phyllanthaceae
75. *Physalis angulata* L. – Solanaceae
76. *Pilea microphylla* (L.) Liebm. – Urticaceae
77. *Pityrogramma calomelanos* (L.) Link – Pteridaceae
78. *Pogonatherum crinitum* (Thunb.) Kunth – Poaceae
79. *Pteris confusa* T.G. Walker – Pteridaceae
80. *Pteris vittata*L. – Pteridaceae
81. *Pycreus pumilus* (L.) Nees – Cyperaceae
82. *Rotala malampuzhensis* Nair ex C.D.K. Cook – Lythraceae
83. *Rungia pectinata* (L.) Nees – Acanthaceae
84. *Scoparia dulcis* L. – Plantaginaceae
85. *Selaginella ciliaris* (Retz.) Spring – Selaginellaceae
86. *Sidaalnifolia* L. – Malvaceae
87. *Spermacoce exilis* (L.O. Williams) C.D. Adams ex W.C. Burger & C.M. Taylor – Rubiaceae
88. *Sporobolus diandrus* (Retz.) P. Beauv. – Poaceae
89. *Sporobolus tenuissimus* (Schrank.) Kuntze – Poaceae
90. *Stemodia verticillata* (Mill.) Hassl. – Plantaginaceae
91. *Stylosanthes humilis* Kunth – Fabaceae
92. *Synedrella nodiflora* (L.) Gaertn. – Asteraceae
93. *Tridax procumbens* L. – Asteraceae
94. *Urena sinuata* L. – Malvaceae
95. *Zoysia matrella* (L.) Merr. – Poaceae

Fig. 61: Fruiting plants on the campus

Fig. 62: Flowering plants on the campus

Tree audit and their carbon sequestration potential at Deralakatte premises

A comprehensive tree audit was conducted from November to December 2023 to document tree biodiversity and quantify their contribution to carbon sequestration. The biomass content and carbon sequestration potential (CSP) of trees in a 27 acre Yenepoya (Deemed to be University) campus was studied. A total of 1,676 trees belonging to 31 families were surveyed, with each specimen recorded for its scientific name, geographical coordinates, girth, height, and estimated age (Fig 63).

Fig 63: Tree assessment Audit

The estimation of tree biomass and carbon sequestration potential was calculated using established allometric equations. The above ground biomass (AGB) and below ground biomass (BGB) and carbon storage were estimated using the non-destructive sampling method. Several trees existed on the campus when it was acquired for the university are now over 30 years old. These include *Borassus flabellifer, Alsotonia scholaris, Caryota urens, Anacardium occidentale, Mangifera indica*, and *Acacia auriculiformis*. Additionally, trees planted in the first year, such as *Swietenia macrophylla, Ficus benjamina, Terminalia arjuna, Butea monosperma, Cyrtostachys renda, Artocarpus heterophyllus, Terminalia catappa, Ficus religiosa, Phyllanthus emblica, Peltophorum pterocarpum, Pterocarpus marsupium*, and *Delonix regia*, have now matured to approximately 25 years of age.

The results of CSP reveal that oldest trees on the campus have a high capacity of carbon sequestration, namely, *Acacia auriculiformis* with a CSP equivalent to 13.86 tonnes, followed by *Terminalia arjuna* with 6.97 tonnes, *Alstonia scholaris* with 5.61 and *Ficus religiosa* with 4.71 tonne respectively. These species known for their robust growth and significant biomass accumulation, demonstrated their importance in urban carbon sinks. The university campus serves as a model for sustainable urban forestry, demonstrating how well-managed green spaces can contribute to carbon neutrality goals.

Table 4: Details of the trees of Deralakatte premises

Sl. No.	Scientific name	Number of trees	Mean Age	Mean Girth	Mean Height	Carbon sequestration potential (tonne)
1	*Bambusa vulgaris*	650	20	0.7	50	53.958
2	*Areca catechu*	450	20	0.8	35	34.153
3	*Swietenia macrophylla*	116	15	3.5	28.06	135.100
4	*Terminalia catappa*	57	15	2.7	25.8	36.324
5	*Caryota urens*	35	15	3.75	29.4	49.029
6	*Neolamarckia cadamba*	28	15	3.5	26	30.216
7	*Lagerstroemia speciosa*	23	15	2.96	25.6	17.479
8	*Mangifera indica*	22	15	3.14	21.045	15.467
9	*Artocarpus heterophyllus*	20	15	3.1	23	14.978
10	*Wodyetia bifurcata*	18	12	2.4	17	5.972
11	*Acacia auriculiformis*	17	12	17.73	13	235.388
12	*Saraca asoca*	16	12	2.1	17.7	4.232
13	*Cocos nucifera*	15	12	2.66	24.8	8.918
14	*Garcinia indica*	14	10	1.89	18.92	3.206
15	*Magnolia alba*	14	15	3.25	23.28	11.664
16	*Roystonea regia*	11	15	3.2	24.1	9.198
17	*Tabebuia rosea*	11	10	2.6	34.5	8.692
18	*Callistemon citrinus*	10	15	3.95	24	12.688
19	*Cyrtostachys renda*	10	25	2	35	4.744
20	*Wrightia tinctoria*	10	10	1.9	17.9	2.189

21	*Syzygium cumini*	9	15	4.7	24.3	16.369
22	*Cassia fistula*	8	10	2.58	19.2	3.464
23	*Artocarpus hirsutus*	7	10	2.6	23	3.688
24	*Muntingia calabura*	7	12	3.2	16	3.886
25	*Dalbergia latifolia*	6	12	1.65	12.67	0.701
26	*Mimosops elengi*	6	12	1.2	17	0.498
27	*Peltophorum pterocarpum*	5	20	4.3	27.2	8.520
28	*Macaranga peltata*	4	12	2.3	15	1.075
29	*Persea macrantha*	4	15	3.7	35.7	6.624
30	*Plumeria acutifolia*	4	15	1.8	10	0.439
31	*Spathodea campanulata*	4	10	4.3	22	5.513
32	*Syzygium samarangense*	4	15	2.6	22	2.016
33	*Tectona grandis*	4	5	1.3	13	0.298
34	*Aphanamixis polystachya*	3	9	2.8	40	3.188
35	*Cassia roxburghii*	3	12	3.36	28.3	3.248
36	*Drypetes roxburghii*	3	10	4	30	4.879
37	*Ficus benjamina*	3	15	3.3	8.3	0.919
38	*Phyllanthus emblica*	3	20	2.4	14.3	0.837
39	*Psidium gujava*	3	10	2.5	9	0.572
40	*Alstonia scholaris*	2	30	5.7	51	11.229
41	*Delonix regia*	2	17	6.9	23.5	7.582
42	*Ficus religiosa*	2	20	6.75	30.5	9.417
43	*Flacourita montana*	2	15	2.35	32.5	1.216
44	*Magnolia champaca*	2	15	5.5	30.5	6.252
45	*Morinda citrifolia*	2	15	1.8	12.5	0.274
46	*Moringa oleifera*	2	20	2	11	0.298
47	*Myristica malabarica*	2	10	2	18	0.488
48	*Polyalthia longifolia*	2	10	2.1	35	1.046
49	*Pterocarpus marsupium*	2	20	5.6	34.5	7.332
50	*Terminalia arjuna*	2	25	7.5	36.5	13.913
51	*Anacardium occidentale*	1	30	4.3	22	1.378
52	*Annona reticulata*	1	5	2.4	40	0.781
53	*Borassus flabellifer*	1	40	3	30	0.915
54	*Butea monosperma*	1	25	5.3	25	2.379
55	*Cananga odorata*	1	2	1	12	0.041
56	*Careya arborea*	1	20	3.1	18	0.586
57	*Elaeocarpus ganitrus*	1	10	2.8	20	0.531
58	*Ficus racemosa*	1	10	3.2	24	0.833
59	*Madhuca longifolia*	1	5	1	10	0.034
60	*Nephelium lappaceum*	1	15	1	10	0.034
61	*Plumeria obtusa*	1	15	2	12	0.163
62	*Plumeria rubra*	1	15	2	12	0.163
63	*Pongamia pinnata*	1	5	2	22	0.298
64	*Scleropyrum pentandrum*	1	20	2.5	13	0.275
65	*Simarouba amara*	1	10	1	8	0.027
66	*Spondias dulcis*	1	10	4.9	31	2.522
67	*Tecoma castanifolia*	1	15	1.7	10	0.098
Total		1676	-	-	-	830.433

Naringana campus

Table 5: Flora of YAMCH medicinal plant garden

Sl. No.	Botanical Name	Botanical Family	Habit	Number
1	*Abrus precatorius* L.	Papilionoideae	Climber	1
2	*Acorus calamus* L.	Acoraceae	Herb	1
3	*Adenanthera pavonia* L.	Mimosoideae	Deciduous tree	1
4	*Aegle marmelos* (L.) Corrêa	Rutaceae	Tree	1
5	*Ailanthus triphysa* (Dennst.) Alston	Simaroubaceae	Tree	1
6	*Alangium salvifolium* (L.f.) Wangerin sub sp. *hexapetalum* (Lamk.) Wangerin	Cornaceae	Straggling shrub	5
7	*Aloe vera* (L.) Burm.f.	Asphodelaceae	Herb	1
8	*Alpinia galanga* (L.) Willd.	Zingiberaceae	Herb	1
9	*Alstonia scholaris* (L.) R.Br.	Apocynaceae	Tree	1
10	*Anacardium occidentale* L.	Anacardiaceae	Tree	2
11	*Ananas comosus* (L.) Merr.	Bromeliaceae	Herb	1
12	*Annona reticulata* L.	Annonaceae	Tree	2
13	*Anona bicolor* Urb. (Syn: *Anona glabra*)	Annonaceae	Tree	3
14	*Anona muricata* L.	Annonaceae	Tree	4
15	*Anona reticulata* L.	Annonaceae	Tree	2
16	*Aphanamixis polystachya* (Wall.) R.Parker	Meliaceae	Tree	1
17	*Aporosa cardiosperma* (Gaertn.) Merr.	Phyllanthaceae	Tree	1
18	*Ardissia elliptica* Thunb.	Primulaceae	Tree	1
19	*Aristolochia indica* L.	Aristolochiaceae	Twining shrub	1
20	*Artemisia vulgaris* L.	Asteraceae	Herb	1
21	*Artocarpus heterophyllus* Lam.	Moraceae	Tree	1
22	*Artocarpus hirsutus* Lam.	Moraceae	Tree	1
23	*Asparagus racemosus* Willd.	Asparagaceae	Scandent shrub	1
24	*Averrhoa bilimbi* L.	Oxalidaceae	Tree	1
25	*Ayapana triplinervis* (Vahl) R.M.King & H.Rob.	Asteraceae	Shrub	1
26	*Azadirachta indica* A.Juss.	Meliaceae	Tree	1
27	*Baliospermum solanifolium* (Burm.) Suresh	Euphorbiaceae	Herb	3
28	*Barleria cristata* L.	Acanthaceae	Shrub	1
29	*Barleria prionitis* L.	Acanthaceae	Shrub	1
30	*Barringtonia acutangula* Gaertn.	Lecythidaceae	Tree	1
31	*Barringtonia racemosa* (L.) Spreng.	Lecythidaceae	Tree	1
32	*Bixa orellana* L.	Bixaceae	Tree	1
33	*Bombax ceiba* L.	Malvaceae	Tree	1
34	*Breynia vitis-idaea* (Burm.f.) C.E.C. Fisch	Phyllanthaceae	Shrub	2
35	*Bridelia stipularis* (L.) Blume	Phyllanthaceae	Shrub	2
36	*Butea monosperma* (Lam.) Kuntze	Papilionoideae	Deciduous tree	3
37	*Caesalpinia bonduc* (L.) Roxb.	Caesalpinoideae	Liana	1
38	*Callicarpa tomentosa* (L.) L.	Lamiaceae	Tree	1
39	*Calophyllum apetalum* Willd.	Calophyllaceae	Tree	1
40	*Calotropis procera* (Aiton) Dryand.	Apocynaceae	Shrub	2
41	*Canthium coromandelicum* (Burm.f.) Alston	Rubiaceae	Shrub	1
42	*Carissa spinarum* L.	Apocynaceae	Shrub	1
43	*Caryota urens* L.	Aeracaceae	Tree	1
44	*Cascabela thevetia* (L.) Lippold	Apocynaceae	Tree	1
45	*Catharanthus roseus* (L.) G.Don	Apocynaceae	Herb	1

46	*Catunaregam spinosa* (Thunb.) Tirveng.	Rubiaceae	Tree	1
47	*Cayratia mollissima* (Planch.) Gagnep.	Vitaceae	Tendril climber	1
48	*Celastrus paniculatus* Willd.	Celastraceae	Liana	1
49	*Centratherum punctatum* Cass.	Asteraceae	Herb	1
50	*Cinnamomum tamala* (Buch.-Ham.) T.Nees & C.H.Eberm.	Lauraceae	Tree	1
51	*Cinnamomum verum* J.Presl	Lauraceae	Tree	1
52	*Citrus aurantiifolia* (Christm.) Swingle	Rutaceae	Tree	1
53	*Clerodendrum infortunatum* L.	Lamiaceae	Shrub	1
54	*Clinacanthus nutans* (Burm.f.) Lindau	Acanthaceae	Herb	1
55	*Cochlospermum religiosum* (L.) Alston	Bixaceae	Deciduous tree	1
56	*Cocos nucifera* L.	Aeracaceae	Tree	1
57	*Coscinium fenestratum* (Gaertn.) Colebr.	Menispermaceae	Liana	1
58	*Cosmostigma racemosum* Wight	Apocynaceae	Climber	1
59	*Couroupita guianensis* Aubl.	Lecythidaceae	Tree	1
60	*Crateva magna* (Lour.) DC.	Capparaceae	Deciduous tree	1
61	*Curcuma amada* Roxb.	Zingiberaceae	Herb	1
62	*Cyanthillium cinereum* (L.) H.Rob.	Asteraceae	Herb	1
63	*Cymbopogon citratus* (DC.) Stapf	Poaceae	Herb	1
64	*Dalbergia latifolia* Roxb.	Papilionoideae	Tree	1
65	*Dalbergia sissoo* Roxb. ex DC.	Papilionoideae	Tree	1
66	*Decalepis hamiltonii* Wight & Arn.	Apocynaceae	Climbing shrub	1
67	*Dillenia pentagyna* Roxb.	Dilleniaceae	Tree	1
68	*Embelia ribes* Burm.f.	Primulaceae	Climbing shrub	1
69	*Ficus amplissima* Sm.	Moraceae	Tree	1
70	*Ficus benghalensis* L.	Moraceae	Tree	1
71	*Ficus exasperata* Vahl	Moraceae	Deciduous tree	1
72	*Ficus racemosa* L.	Moraceae	Tree	1
73	*Ficus religiosa* L.	Moraceae	Tree	1
74	*Flacourtia montana* J.Graham	Salicaceae	Tree	1
75	*Garcinia indica* (Thouars) Choisy	Clusiaceae	Tree	1
76	*Garcinia xanthochymus* Hook.f. ex T.Anderson	Clusiaceae	Tree	1
77	*Gloriosa superba* L.	Colchicaceae	Herb	1
78	*Gmelina arborea* Roxb. ex Sm.	Lamiaceae	Tree	1
79	*Hedychium coronarium* J.Koenig	Zingiberaceae	Herb	1
80	*Helicteres isora* L.	Malvaceae	Shrub	1
81	*Hemidesmus indicus* (L.) R.Br. ex Schult.	Apocynaceae	Climber	1
82	*Hibiscus rosa-sinensis* L.	Malvaceae	Shrub	1
83	*Holigarna arnottiana* Hook.f.	Anacardiaceae	Tree	2
84	*Hopea indica* (Raf.) R.Kr.Singh (Syn: *Hopea parviflora* Bedd.)	Dipterocarpaceae	Tree	1
85	*Hultholia mimosoides* (Lam.) Gagnon & G.P.Lewis (Syn: *Caesalipinia mimosoides* Lam.)	Caesalpinoideae	Liana	1
86	*Hydnocarpus pentandra* (Buch.-Ham.) Oken	Achariaceae	Tree	2
87	*Ixora coccinea* L.	Rubiaceae	Shrub	1
88	*Jasminum grandiflorum* L.	Oleaceae	Climber	1
89	*Jasminum malabaricum* Wight	Oleaceae	Climber	2
90	*Justicia adhatoda* L.	Acanthaceae	Shrub	1
91	*Justicia gendarussa* Burm.f.	Acanthaceae	Shrub	2
92	*Kalanchoe pinnata* (Lam.) Pers.	Crassulaceae	Herb	1

93	*Lagerstroemia speciosa* (L.) Pers.	Lythraceae	Tree	1
94	*Lantana camara* L.	Verbenaceae	Shrub	1
95	*Lawsonia inermis* L.	Lythraceae	Shrub	1
96	*Leea indica*	Vitaceae	Shrub	1
97	*Leucas lavandulifolia* Sm.	Lamiaceae	Herb	1
98	*Macaranga peltata* Müll.Arg.	Euphorbiaceae	Tree	1
99	*Machilus glaucescens* (Nees) Wight	Lauraceae	Herb	1
100	*Magnolia champaca* (L.) Baill. ex Pierre	Magnoliaceae	Tree	1
101	*Mallotus philippensis* (Lam.) Müll. Arg.	Euphorbiaceae	Tree	2
102	*Mammea suriga* (Buch. - Ham. ex Roxb.) Kosterm.	Calophyllaceae	Tree	1
103	*Mangifera indica* L.	Anacardaceae	Tree	4
104	*Manilkara zapota* (L.) P. Royen	Sapotaceae	Tree	1
105	*Maranta arundinacea* L.	Marantaceae	Herb	1
106	*Mesua ferrea* L.	Calophyllaceae	Tree	1
107	*Mimosa pudica* L.	Mimusoidae	Herb	1
108	*Mimusops elengi* L.	Sapotaceae	Tree	1
109	*Morinda citrifolia* L.	Rubiaceae	Tree	1
110	*Moringa oleifera* Lam.	Moringaceae	Tree	1
111	*Mucuna pruriens* (L.) DC.	Papilionoideae	Herb	1
112	*Musa* × *paradisiaca* L.	Musaceae	Tree	1
113	*Mussaenda laxa* (Hook.f.) Hutch. ex Gamble	Rubiaceae	Shrub	1
114	*Naregamia alata* Wight & Arn.	Meliaceae	Herb	1
115	*Neolamarckia cadamba* (Roxb.) Bosser	Rubiaceae	Tree	1
116	*Nerium oleander* L.	Apocynaceae	Shrub	1
117	*Nyctanthes arbor-tristis* L.	Oleaceae	Tree	1
118	*Ocimum tenuiflorum* L.	Lamiaceae	Shrub	1
119	*Opuntia* sp.	Cactaceae	Shrub	1
120	*Oroxylum indicum* (L.) Kurz	Bignoniaceae	Tree	1
121	*Oxalis corniculata* L.	Oxalidaceae	Herb	1
122	*Paederia foetida* L.	Rubiaceae	Climber	1
123	*Phyllanthus amarus* Schumach. & Thonn.	Phyllanthaceae	Herb	1
124	*Phyllanthus emblica* L.	Phyllanthaceae	Tree	3
125	*Pimenta dioica* (L.) Merr.	Myrtaceae	Tree	1
126	*Plumbago zeylanica* L.	Plumbaginaceae	Shrub	1
127	*Pogostemon heyneanus* Benth.	Lamiaceae	Herb	1
128	*Pongamia pinnata* (L.) Pierre	Papilionoideae	Tree	10
129	*Premna serratifolia* L.	Lamiaceae	Shrub	1
130	*Psidium guajava* L.	Myrtaceae	Tree	1
131	*Pterocarpus marsupium* Roxb.	Papilionoideae	Tree	2
132	*Pterocarpus santalinus* L.f.	Papilionoideae	Tree	1
133	*Pterospermum diversifolium* Blume	Malvaceae	Tree	1
134	*Putranjiva roxburghii* Wall.	Putranjivaceae	Tree	2
135	*Rauvolfia serpentina* Benth. ex Kurz	Apocynaceae	Shrub	1
136	*Rauvolfia tetraphylla* L.	Apocynaceae	Shrub	1
137	*Ricinus communis* L.	Euphorbiaceae	Shrub	1
138	*Rotheca serrata* (L.) Steane & Mabb.	Lamiaceae	Shrub	1
139	*Saccharum officinarum* L.	Poaceae	Grass	1
140	*Salacia chinensis* L.	Celastraceae	Shrub	1
141	*Santlum album* L.	Santalaceae	Tree	4
142	*Saraca asoca* (Roxb.) Willd.	Caesalpiioideae	Tree	5

143	*Scleropyrum pentandrum* (Dennst.) Mabb.	Santalaceae	Tree	1
144	*Senegalia chundra* (Roxb. ex Rottler) Maslin (Syn:*Acacia catechu)*	Mimusoideae	Deciduous Tree	1
145	*Senegalia rugata* (Lam.) Britton & Rose (Syn: *Acacia concinna* (Willd.) DC.	Mimusoideae	Liana	1
146	*Sida rhombifolia* L.	Malvaceae	Herb	1
147	*Simarouba glauca* DC.	Simaroubaceae	Tree	3
148	*Smilax zeylanica* L.	Smilacaceae	Climber	1
149	*Solanum torvum* Sw.	Solanaceae	Shrub	1
150	*Stereospermum colais* (Buch.-Ham. ex Dillwyn) Mabb.	Bignoniaceae	Tree	1
151	*Strobilanthes ciliata* Nees	Acanthaceae	Shrub	1
152	*Strobilanthes pavala* (Roxb.) J.R.I.Wood (Syn: *Hemigraphis auriculata*)	Acanthaceae	Herb	1
153	Syzygium sp.	Myrtaceae	Tree	2
154	*Syzygium caryophyllatum* (L.) Alston	Myrtaceae	Tree	1
155	*Syzygium cumini* (L.) Skeels	Myrtaceae	Tree	2
156	*Syzygium jambos* (L.) Alston	Myrtaceae	Tree	2
157	*Syzygium travancoricum* Gamble	Myrtaceae	Tree	1
158	*Tabernaemontana divaricata* (L.) R.Br. ex Roem. & Schult.	Apocynaceae	Tree	1
159	*Tamarindus indica* L.	Caesalpinoideae	Tree	1
160	*Terminalia arjuna* (Roxb. ex DC.) Wight & Arn.	Combretaceae	Tree	3
161	*Terminalia catappa* L.	Combretaceae	Tree	1
162	*Terminalia chebula* Retz.	Combretaceae	Tree	1
163	*Trema orientalis* (L.) Blume	Cannabaceae	Tree	1
164	*Tylophora indica* (Burm.f.) Merr.	Apocynaceae	Climber	1
165	*Vateria indica* L.	Dipterocarpaceae	Tree	4
166	*Vitex nugundo* L.	Lamiaceae	Tree	1
167	*Wrightia tinctoria* R.Br.	Apocynaceae	Tree	1
168	*Zanthoxylum ovalifolium* Wight	Rutaceae	Tree	1
169	*Ziziphus oenopolia* (L.) Mill.	Rhanmaceae	Shrub	1
			Total	226

Table 6: Flora of YHMCH medicinal plant garden

Sl. No.	Botanical Name	Botanical Family	Habit	Number
1	*Abrus precatorius* L.	Papilionoideae	Climber	1
2	*Adenanthera pavonia* L.	Mimosoideae	Deciduous tree	1
3	*Aegle marmelos* (L.) Corrêa	Rutaceae	Tree	1
4	*Alangium salvifolium* (L.f.) Wangerin sub sp. *hexapetalum* (Lamk.) Wangerin	Cornaceae	Straggling shrub	2
5	*Alpinia galanga* (L.) Willd.	Zingiberaceae	Tall herb	1
6	*Alstonia scholaris* (L.) R.Br.	Apocynaceae	Tree	1
7	*Anona bicolor* Urb. (Syn: *Anona glabra*)	Annonaceae	Tree	1
8	*Anona muricata* L.	Annonaceae	Tree	1
9	*Aphanamixis polystachya* (Wall.) R.Parker	Meliaceae	Tree	1
10	*Archidendron bigeminum* (L.) I.C.Nielsen	Mimusoideae	Tree	1
11	*Ardisia elliptica* Thunb.	Primulaceae	Tree	1
12	*Artocarpus gomezianus* Wall. ex Tréc.subsp. *zeylanicus* Jarret	Moraceae	Deciduous Tree	1
13	*Averrhoa bilimbi* L.	Oxalidaceae	Tree	1
14	*Averrhoa carambola* L.	Oxalidaceae	Tree	2

15	*Azadirachta indica* A.Juss.	Meliaceae	Tree	1
16	*Barleria prionitis* L.	Acanthaceae	Shrub	1
17	*Barringtonia racemosa* (L.) Spreng.	Lecythidaceae	Tree	1
18	*Bauhinia accuminata* L.	Caesalpiioideae	Errect shrub	1
19	*Bauhinia tomentosa* L.	Caesalpiioideae	Errect shrub	1
20	*Bauhinia variegata* L.	Caesalpiioideae	Deciduous tree	1
21	*Biancaea sappan* (L.) Tod. (Syn: *Casalpinia sappan* L.)	Caesalpiioideae	Tree	1
22	*Bixa orellana* L.	Bixaceae	Tree	1
23	*Bombax ceiba* L.	Malvaceae	Tree	2
24	*Breynia vitis-idaea* (Burm.f.) C.E.C.Fisch.	Phyllanthaceae	Shrub	1
25	*Bridelia stipularis* (L.) Blume	Phyllanthaceae	Scandent shrub	1
26	*Calophyllum inophyllum* L.	Calophyllaceae	tree	1
27	*Careya arborea* Roxb.	Lecythidaceae	Deciduous tree	1
28	*Casuarina equisetifolia* L.	Casurinaceae	Tree	1
29	*Catunaregam spinosa* (Thunb.) Tirveng.	Rubiaceae	Small deciduous tree	1
30	*Chrysopogon zizanioides* (L.) Roberty	Poaceae	Herb	1
31	*Cinnamomum verum* J.Presl	Lauraceae	Tree	1
32	*Citrus aurantiifolia* (Christm.) Swingle	Rutaceae	Tree	2
33	*Citrus limon* (L.) Osbeck	Rutaceae	Shrub	1
34	*Coix lacryma-jobi* L.	Poaceae	Herb	1
35	*Costus pictus* D.Don	Costaceae	Herb	1
36	*Cymbopogon citratus* (DC.) Stapf	Poaceae	Grass	1
37	*Dalbergia latifolia* Roxb.	Faboideae	Deciduous tree	1
38	*Dillenia pentagyna* Roxb.	Dilleniaceae	Tree	1
39	*Diospyros malabarica* (Desr.) Kostel.	Ebenaceae	Tree	1
40	*Elaeocarpus serratus* L.	Elaeocarpaceae	Tree	1
41	*Emilia sonchifolia* (L.) DC.	Asteraceae	Herb	1
42	*Erythrina variegata* L.	Papilionoideae	Deciduous tree	1
43	*Ficus carica* L.	Moraceae	Tree	1
44	*Ficus exasperata* Vahl	Moraceae	Deciduous tree	1
45	*Ficus hispida* L.f.	Moraceae	Shrub	1
46	*Garcinia cambogioides* (Murray) Headland (Syn: *Garcinia morella* (Gaertn.) Desr.)	Clusiaceae	Tree	1
47	*Garcinia indica* (Thouars) Choisy	Clusiaceae	Tree	1
48	*Garcinia xanthochymus* Hook.f. ex T.Anderson	Clusiaceae	Tree	1
49	*Holarrhena pubescens* Wall. & G.Don	Apocynaceae	Tree	1
50	*Holoptelea integrifolia* (Roxb.) Planch.	Ulmaceae	Deciduous tree	1
51	*Hopea ponga* (Dennst.) Mabb.	Dipterocarpaceae	Tree	1
52	*Hydnocarpus pentandra* (Buch.-Ham.) Oken	Achariaceae	Evergreen tree	1
53	*Ixora coccinea* L.	Rubiaceae	Shrub	1
54	*Jasminum malabaricum* Wight	Oleaceae	Climbing shrub	1
55	*Jatropha curcas* L.	Euphorbiaceae	Shrub	1
56	*Justicia adhatoda* L.	Acanthaceae	Shrub	1
57	*Justicia gendarussa* Burm.f.	Acanthaceae	Herb	1
58	*Lagerstroemia speciosa* (L.) Pers.	Lythraceae	Deciduous tree	1
59	*Leea indica* (Burm.f.) Merr.	Vitaceae	Shrub	1
60	*Litchi chinensis* Sonn.	Sapindaceae	Evergreen tree	1
61	*Machilus glaucescens* (Nees) Wight	Lauraceae	Evergreen tree	1
62	*Madhuca longifolia* var. *latifolia* (Roxb.)	Sapotaceae	Tree	1

63	*Magnolia champaca* (L.) Baill. ex Pierre	Magnoliaceae	Evergreen tree	1
64	*Mammea suriga* (Buch.-Ham. ex Roxb.) Kosterm.	Calophyllaceae	Evergreen tree	1
65	*Mangifera indica* L.	Anacardaceae	Tree	1
66	*Memecylon randerianum* S.M.Almeida & M.R.Almeida	Melastomataceae	Shrub	2
67	*Mesua ferrea* L.	Calophyllaceae	Tree	1
68	*Mimusops elengi* L.	Sapotaceae	Evergreen tree	1
69	*Moringa oleifera* Lam.	Moringaceae	Tree	2
70	*Murraya koenigii* (L.) Spreng.	Rutaceae	Tree	1
71	*Neolamarckia cadamba* (Roxb.) Bosser	Rubiaceae	Deciduous tree	1
72	*Nerium oleander* L.	Apocynaceae	Shrub	1
73	*Ocimum tenuiflorum* L.	Lamiaceae	Herb	1
74	*Oldenlandia corymbosa* L.	Rubiaceae	Herb	1
75	*Oroxylum indicum* (L.) Kurz	Bignoniaceae	Deciduous tree	1
76	*Phyllanthus emblica* L.	Phyllanthaceae	Deciduous tree	4
77	*Pimenta dioica* (L.) Merr.	Myrtaceae	Tree	1
78	*Piper betle* L.	Piperaceae	Climber	1
79	*Piper longum* L.	Piperaceae	Herb	1
80	*Piper nigrum* L.	Piperaceae	Climber	1
81	*Pogostemon heyneanus* Benth.	Lamiaceae	Herb	1
82	*Polyalthia longifolia* (Sonn.) Thwaites	Annonaceae	Tree	3
83	*Pongamia pinnata* (L.) Pierre	Papilionoideae	Tree	1
84	*Premna serratifolia* L.	Lamiaceae	Shrub	1
85	*Pterocarpus marsupium* Roxb.	Papilionoideae	Deciduous tree	2
86	*Pterospermum diversifolium* Blume	Malvaceae	Tree	1
87	*Putranjiva roxburghii* Wall.	Putranjivaceae	Evergreen tree	1
88	*Rauvolfia serpentina* Benth. ex Kurz	Apocynaceae	Herb	1
89	*Santlum album* L.	Santalaceae	Evergreen tree	1
90	*Sapindus laurifolius* Vahl	Sapindaceae	Tree	2
91	*Saraca asoca* (Roxb.) Willd.	Caesalpiioideae	Tree	5
92	*Sida rhombifolia* L.	Malvaceae	Herb	1
93	*Simarouba glauca* DC.	Simaroubaceae	Tree	1
94	*Smilax zeylanica* L.	Smilacaceae	Climbing shrub	1
95	*Strobilanthes ciliata* Nees	Acanthaceae	Shrub	1
96	*Strychnos nux-vomica* L.	Loganiaceae	Evergreen tree	1
97	*Syzygium cumini* (L.) Skeels	Myrtaceae	Evergreentree	1
98	*Syzygium jambos* (L.) Alston	Myrtaceae	Tree	7
99	*Tabernaemontana alternifolia* L.	Apocynaceae	Deciduous tree	2
100	*Terminalia arjuna* (Roxb. ex DC.) Wight & Arn.	Combretaceae	Deciduous tree	1
101	*Terminalia bellirica* (Gaertn.) Roxb.	Combretaceae	Deciduous tree	1
102	*Vitex negundo* L.	Lamiaceae	Tree	1
103	*Wrightia tinctoria* R.Br.	Apocynaceae	Deciduous tree	1
104	*Zanthoxylum rhetsa* (Roxb.) DC.	Rutaceae	Tree	1
			Total	128

Table 7: Flora around YPCRC

Sl. No.	Botanical Name	Botanical Family	Habit	Number
1	*Flacourtia montana* J.Graham	Salicaceae	Tree	2
2	*Allamanda cathartica* L.	Apocynaceae	Climber	1
3	*Artocarpus hirsutus* Lam.	Moraceae	Tree	12
4	*Calophyllum inophyllum* L.	Calophyllaceae	Tree	1
5	*Cassia fistula* L.	Caesalpinoideae	Tree	5
6	*Datura metel* L.	Solanaceae	Shrub	1
7	*Neolamarckia cadamba* (Roxb.) Bosser	Rubiaceae	Tree	1
8	*Pterocarpus marsupium* Roxb.	Papilionoideae	Tree	1
9	*Samanea saman* (Jacq.) Merr.	Mimusoideae	Tree	1
10	*Tabebuia rosea* (Bertol.) DC.	Bignoniaceae	Tree	12
11	*Artocarpus heterophyllus* Lam.	Moraceae	Tree	25
12	*Minusops elengi* L.	Sapotaceae	Tree	13
			Total	75

Table 8: Flora of Kulur premises

Sl. No.	COMMON NAME	SCIENTIFIC NAME
1	Winter Bourn	*Thaumatophyllum xanadu*
2	Weeping Fig	*Ficus benjamina*
3	Summer Snapdragon	*Angelonia grandiflora*
4	Bengal Clockvine	*Thunbergia grandiflora*
5	Copperleaf/Jacob's Coat	*Acalypha wilkesiana*
6	Purple Orchid Tree	*Bauhinia purpurea*
7	Renje	*Mimusops elengi*
8	Geiger Tree	*Cordia sebestina*
9	Bush Clock Vine / King's Mantle	*Thunbergia erecta*
10	Ribbon Grass	*Chlorophytum comosum*
11	Princess Flower/Glory Bush	*Pleroma semidecandrum*
12	Red Ivy/Red-Flame Ivy	*Strobilanthes alternata*
13	Ylang Ylang	*Cananga odorata*
14	Indian Head Ginger,	*Costus spicatus*
15	Parrot's Beak,	*Heliconia psittacorum*
16	Pink Poui /Rosy Trumpet Tree	*Tabebuia rosea*
17	Pastel Flower,	*Pseuderanthemum*
18	African Tulip Tree	*Spathodea campanulata*
19	Neem Tree	*Azadirachta indica,*
20	Beach Spider Lily,	*Hymenocallis littoralis*
21	Oleander / Nerium	*Nerium oleander*
22	Palm Tree	*Areca catechu*
23	Wild Cherry	*Prunus avium,*
24	Mango Tree	*Mangifera indica,*
25	Coconut Tree	*Cocos nucifera*
26	Golden Shower	*Cassia fistula*
27	Teak Tree	*Tectona grandis*
28	Ashoka Tree	*Saraca asoca*
29	Chinese Ixora	*Ixora chinensis*

List of Animals

Deralakatte campus

ANNELIDA

1. *Eudrilus eugenia* (African nightcrawler)
2. *Pontoscolex corethrurus* (Earth worm)

ARTHROPODA

1. *Heterometrus bengalensis* (Scorpion)
2. *Nephila pilipes* (Gaint golden orb weaver)
3. *Argiope anasuja* (Signature spider)
4. *Bavias*p. (Jumping spiders)
5. *Tetragnatha* sp. (Stretch spiders)
6. *Anepsion maritatum* (Spider)
7. *Menemerus bivittatus* (Gray wall jumper)
8. *Myrmarachne plataleoides* (Jumping spider)
9. *Phidippus* sp. (Spider)
10. *Aethriamanta brevipennis* (Scarlet marsh hawk)
11. *Neurothemis fulvia* (Fulvous Forest skimmer)
12. *Neurothemis tullia* (Pied paddy skimmer)
13. *Rhyothemis variegata* (Common picture wing)
14. *Trithemis pallidinervis* (Long-legged marsh glider)
15. *Ictinogomphus rapax* (Common clubtail)
16. *Copera marginipes* (Yellow Bush Dart)
17. *Diabolocatantops* sp. (Acridid grasshopper)
18. *Atractomorpha* sp. (Grashopper)
19. *Euconocephalus* sp. (Katydid)
20. *Velarifictorus micado* (Japanese burrowing cricket)
21. *Periplaneta americana* (Cockroach)
22. *Creobroter pictipennis* (Indian flower mantis)
23. *Purana tigrina* (Cicada)
24. *Oryctes rhinoceros* (Coconut rhinoceros beetle)
25. *Holotrichia* sp.(Chafer beetles)
26. *Coprissp.* (Dung beetle)
27. *Musca domestica* (Housefly)
28. *Aedes* sp. (Mosquito)
29. *Anopheles* sp. (Mosquito)
30. *Vespa* sp. (Wasp)
31. *Apissp.* (Bee)
32. *Ocecophylla smaragdina* (Asian weaver ant)
33. *Camponotus* sp.(Carpenter ant)
34. *Odontomachus haematodus* (Trap-jaw ants)
35. *Telicota bambusa* (Dark Palm Dart)
36. *Suastusgremius* (Indian Palm Bob)
37. *Tagiades litigiosa* (Water Snow Flat)
38. *Tagiades gana* (Suffused Snow Flat)
39. *Borbo cinnara* (Rice Swift)
40. *Iambrix salsala* (Chestnut Bob)
41. *Aeromachus pygmaeus* (Pygmy Scrub Hopper)
42. *Psolos fuligo* (Dusky Partwing)
43. *Papilio polytes* (Common Mormon)
44. *Graphium agamemnon* (Tailed Jay)
45. *Graphium teredon* (Narrow-banded Bluebottle)
46. *Papilio demoleus* (Lime Butterfly)
47. *Papilio clytia* (Common Mime)
48. *Papilio polymnestor* (Blue Mormon)
49. *Pachliopta aristolochiae* (Common Rose)
50. *Troides minos* (Southern Birdwing)

51. *Catopsilia pomona* (Common Emigrant)
52. *Eurema hecabe* (Common Grass Yellow)
53. *Eurema blanda* (Three-spot Grass Yellow)
54. *Delias eucharis* (Common Jezebel)
55. *Pareronia hippia* (Common Wanderer)
56. *Arhopala centaurus* (Centaur Oakblue)
57. *Surendra quercetorum* (Common Acacia Blue)
58. *Jamides celeno* (Common Cerulean)
59. *Caleta decidia* (Angled Pierrot)
60. *Castalius rosimon* (Common Pierrot)
61. *Acytolepis puspa* (Common Hedge Blue)
62. *Neopithecops zalamora* (Quaker)
63. *Spindasis vulcanus* (Common Silverline)
64. *Bindahara moorei* (Blue-bordered Plane)
65. *Zizina otiss* (Lesser Grass Blue)
66. *Euploea core* (Common Crow)
67. *Tirumala septentrionis* (Dark Blue Tiger)
68. *Danaus chrysippus* (Plain Tiger)
69. *Danaus genutia* (Striped Tiger)
70. *Mycalesis perseus* (Common bushbrown)
71. *Ypthima huebneri* (Common Fourring)
72. *Orsotriaena medus* (Medus Brown)
73. *Melanitis leda* (Common Evening Brown)
74. *Cupha erymanthis* (Rustic)
75. *Elymnias caudata* (Tailed Palmfly)
76. *Cirrochora thais* (Tamil Yeoman)
77. *Acrea terpsicore* (Tawny Coster)
78. *Moduza procris* (Commander)
79. *Euthalia aconthea* (Common Baron)
80. *Parthenos sylvia* (Clipper)
81. *Junonia iphita* (Chocolate Pansy)
82. *Junonia atlites* (Grey Pansy)
83. *Junonia lemonias* (Lemon Pansy)
84. *Hypolimnas bolina* (Great Eggfly)
85. *Neptis hylas* (Common Sailer)
86. *Ariadne ariadne* (Angled Castor)
87. *Harpaphe haydeniana* (Yellow spotted millipede)
88. *Trigoniulus corallines* (Rusty millipede)

MOLLUSCA

1. *Mariaella dussumieri* (Slug)
2. *Macrochlamys indica* (Snail)

AMPHIBIA

1. *Duttaphrynus melanostictus* (Common Indian toad)
2. *Euphlyctis cyanophlyctis* (Skittering frog)
3. *Hoplobatrachu stigerinus* (Indian bull-frog)
4. *Pseudophilautus wynaadensis* (Wyanad bush-frog)

REPTILES

1. *Eutropis carinata*(Common skink)
2. *Calotes versicolor* (Oriental Garden lizard)
3. *Hemidactylus frenatus* (Common house gecko)
4. *Varanus bengalensis* (Common Indian monitor lizard)
5. *Ptyas mucosa* (Oriental rat-snake)
6. *Dendrelaphis tristis* (Bronze-back tree snake)
7. *Fowlea piscator* (Checkered keelback)
8. *Ahaetulla nasuta* (Green vine snake)
9. *Amphiesma stolatum* (Striped keelback)
10. *Coelognathus helena* (Common trinket snake)
11. *Naja naja* (Spectacled cobra)

AVES

1. *Pavo cristatus* (Indian peafowl)
2. *Gallus sonneratii* (Grey jungle fowl)
3. *Columba livia* (Rock pigeon)
4. *Streptopelia chinensis* (Spotted dove)
5. *Treron phoenicopterus* (Yellow-footed green pigeon)
6. *Hierococcyx varius* (Common Hawk Cuckoo)
7. *Edynamys scolopaceus* (Asian koel)
8. *Amaurornis phoenicurus* (White breasted waterhen)
9. *Ciconia episcopus* (Wooly necked stork)
10. *Nycticorax nycticorax* (Black-crowned night-heron)
11. *Ardeolagrayii* (Indian pond heron)
12. *Bubulcus ibis* (Cattle egret)
13. *Ardea cinerea* (Grey heron)
14. *Threskiornis melanocephalus* (Black headed ibis)
15. *Phalacrocorax fuscicollis* (Indian cormorant)
16. *Anhinga melanogaster* (Oriental darter)
17. *Vanellus indicus* (Red wattled lapwing)
18. *Pernis ptilorhynchus* (Oriental honey buzzard)
19. *Spilornis cheela* (Crested serpent eagle)
20. *Haliastur indus* (Brahminy kite)
21. *Milvusmigrans* (Black kite)
22. *Accipiter badius* (Shikra)
23. *Tyto alba* (Barn owl)
24. *Dinopium Benghalense* (Black-rumpedflameback woodpecker)
25. *Psilopogon viridis* (White cheeked barbet)
26. *Meropsorientalis* (Green bee-eater)
27. *Coracias benghalensis* (Indian roller)
28. *Alcedo atthis* (Common kingfisher)
29. *Ceryle rudis* (Pied kingfisher)
30. *Halcyonsmyrnensis* (White throated kingfisher)
31. *Loriculus vernalis* (Vernal hanging parrot)
32. *Psittacula cyanocephala* (Plum headed parakeet)
33. *Psittacula krameri* (Rose ringed parakeet)
34. *Pitta brachyura* (Indian pitta)
35. *Oriolus kundoo* (Indian golden oriole)
36. *Aegithina tiphia* (Common iora)
37. *Dicrurusmacrocercus* (Black drongo)
38. *Laniuscristatus* (Brown shrike)
39. *Corvus splendens* (House crow)
40. *Corvus macrorhynchos* (Jungle crow)
41. *Dendrocitta vagabunda* (Rufous Treepie)
42. *Terpsiphone paradisi* (Indian paradise flycatcher)
43. *Leptocoma zeylonica* (Purple rumped sunbird)
44. *Cinnyrislotenius* (Loten's sunbird)
45. *Arachnothera longirostrata* (Little spider hunter)
46. *Lonchura striata* (White breasted munia)
47. *Lonchura punctulata* (Scaly breasted munia)
48. *Passer domesticus* (House sparrow)
49. *Anthus rufulus* (Paddy field pipit)

50. *Motacilla maderaspatensis* (White browed wagtail)
51. *Mirafra erythroptera* (Indian bush lark)
52. *Prinia hodgsonii* (Grey breasted prinia)
53. *Prinia socialis* (Ashy prinia)
54. *Orthotomus sutorius* (Common tailorbird)
55. *Hirundo smithii* (Wire-tailed swallow)
56. *Rubigula gularis* (Flame throated bulbul)
57. *Pycnonotus jocosus* (Red whiskered bulbul)
58. *Pycnonotus cafer* (Red vented bulbul)
59. *Pycnonotus sinensis* (Greater coucal)
60. *Argya caudata* (Common babbler)
61. *Acridothere stristis* (Common myna)
62. *Copsychussaularis* (Oriental magpie robin)
63. *Saxicola caprata* (Pied bush chat)
64. *Geokichla citrina* (Orange headed thrush)

MAMMALS

1. *Pteropus giganteus* (Indian flying fox)
2. *Paradoxurus hermaphrodites* (Toddy palm civet)
3. *Herpestes edwardsii* (Indian grey mongoose)
4. *Funambulus palmarum* (Three striped palm squirrel)
5. *Hystrix indica* (Indian porcupine)
6. *Canis lupus familiaris*(Dog)
7. *Felis catus* (Cat)

Fig. 64: Fauna on the campus

Naringana campus

BIRDS

1. White throated Kingfisher
2. Purple heron
3. Little spider hunter
4. Oriental honey buzzard
5. Green bee eater
6. Purple sunbird
7. House crow
8. Asian green bee eater
9. White-browed wagtail
10. Greater coucal
11. Black kite
12. Brahminy kite
13. Gray headed bulbul
14. Large billed crow
15. Purple rumped sunbird
16. Ashy wood swallow
17. Common tailor bird
18. Little swift
19. Indian peafowl
20. Red wattled lapwing
21. Eastern cattle egret
22. Rufous treepie
23. Red whiskered bulbul
24. Red vented bulbul
25. Indian scimitar babbler
26. Greater racket tailed drongo
27. Black drongo

BUTTERFLY

1. Chocolate pansy
2. Crimson rose
3. Common crow
4. Red spotted duke
5. Common fourring
6. Phsycy butterfly
7. Tailed jay
8. Water snowflat
9. Gray count
10. Blue bottle
11. Common mormon
12. Great egg fly
13. Common piarrot
14. Common Sailor
15. Medus brown
16. Cerulean
17. Common Emigrent
18. Plain tiger
19. Cruiser
20. Grass yellow
21. Dark blue tiger
22. Common jezibel
23. Southern birdwing
24. Tiny grass blue
25. Evening brown
26. Towny caster
27. Blue mormon
28. Common nawab

MOTH

1. Blue day moth
2. Handmaiden moth
3. Bagworm moth

INSECTS

1. Praying mantis
2. Black ant
3. Paper wasp
4. Potter wasp
5. Cricket
6. Grasshopper
7. Apis indicus
8. Spitting insect
9. Weaver ant
10. Bumble bee
11. Marsh glider
12. Green lynx spider

ANNILEDS

1. Megascolex konkanensis
2. Pontoscolex corerthrurus

PLATYHELMINTHES

1. Hammerhead slug

MOLLUSCA

1. Garden snail

REPTILES

1. Oriental garden lizard

AMPHIBIANS

Aloysius skittering frog

List of Macrofungi

Deralakatte campus

1. *Agaricus sp.*
2. *Amylocarpus campbellii*
3. *Auricularia auricula-judae*
4. *Chlorophyllum molybdites*
5. *Conocybe crispa*
6. *Coprinus disseminatus*
7. *Cystoagaricus trisulphuratus*
8. *Dacryopinax spathularia*
9. *Daldinia concentrica*
10. *Ganoderma applanatum*
11. *Ganoderma lucidum*
12. *Gymnopilus lateritius*
13. *Gymnopilus terricola*
14. *Hexagonia tenuis*
15. *Ileodictyon gracile*
16. *Lentinus dicholamellatus*
17. *Lentinus squarrosulus*
18. *Lenzites betulina*
19. *Lycoperdon mammiforme*
20. *Lycoperdon utriforme*
21. *Marasmiellus ignobilis*
22. *Marasmiellus stenophyllus*
23. *Marasmiellus subaurantiacus*
24. *Marasmius androsaceus*
25. *Marasmius haematocephalus*
26. *Marsmius sp.*
27. *Microporus vernicipes*
28. *Mycena rosea*
29. *Omphalotus olearius*
30. *Phallus atrovolvatus*
31. *Phallus duplicatus*
32. *Phlebopus marginatus*
33. *Polyporus sp.*
34. *Pycnoporus cinnabarinus*
35. *Schizophyllum commune*
36. *Scutellinia setosa*
37. *Termitomyces fuliginosus*
38. *Tetrapyrgos nigripes*
39. *Volvariella bombycina*
40. *Xylaria multiplex*

Fig. 65: Macrofungi of the campus

Naringana campus

1. *Agaricus crocopeplus* Berk. & Broome
2. *Auricularia auricula-judae* (Bull.) Quél
3. *Chlorophyllum molybdites* (G. Mey.) Massee
4. *Clathrus delicatus* Berk. & Broome
5. *Coprinus plicatilis* (Curtis) Fr.
6. *Dacryopinax spathularia* (Schwein.) G.W. Martin
7. *Daldinia concentrica* (Bolton) Cesati, & de Notaris.
8. *Ganoderma applanatum* (Pers.) Pat.
9. *Geastrum triplex* Jungh.
10. *Hexagonia tenuis* (Fr.) Fr.
11. *Iliodictyon gracile* Berk.
12. *Lentinus squarrosulus* Mont.
13. *Lenzites betulina* (L.) Fr.
14. *Leucoagaricus rubrotinctus* (Perk) Singer
15. *Lycoperdon utriforme* Bull.
16. *Marasmius haemotocephalus* (Mont.) Fr.
17. *Microporus xanthopus* (Fr.) Kuntze
18. *Mycena rosea* Gamberg
19. *Phallus indusiatus* Vent.
20. *Phallus merulinus* (Berk.) Cooke
21. *Pycnoporus sanguineus* (L.) Murrill
22. *Schizophyllum commune* Fr.
23. *Scleroderma citrinum* Pers.
24. *Xylaria multiplex* (Kunze) Fr.

35. CONCLUSION

Through the dedicated efforts of the Centre for Environmental Studies and the maintenance team, the university has undertaken a series of campaigns and programs aimed at educating both students and staff on the critical importance of natural resource preservation, responsible resource utilization, recycling, and reuse. These initiatives have positioned environmental education, comprehensive training, and projects such as vermicomposting as the hallmarks of the institution's commitment to environmental stewardship.

The university has developed a comprehensive sustainable action plan slated for implementation over five years. A dedicated team has been established to oversee the execution of this plan, ensuring its success. The university is taking multiple measures to promote sustainability, including the utilization of renewable energy resources, active biodiversity conservation efforts, and educational campaigns focused on water conservation.

Furthermore, the university is committed to a range of initiatives designed to reduce its environmental footprint. These initiatives include decreasing paper consumption, minimizing the use of plastics, and offering environmental education programs for students. This commitment underscores the university's dedication to environmental sustainability.

The University boasts an extensive and well-organized solid waste management system within the campus, a testament to the proactive response from the management. The pristine cleanliness of the campus reflects the dedication and vigilance with which we approach environmental responsibility.

This environmental audit has diligently assessed the wide range of activities undertaken within the campus, demonstrating the active collaboration of management, staff, and students in these vital initiatives. By preserving nature and fostering awareness in the community, we not only contribute to a healthier society today but also lay the groundwork for a more sustainable future tomorrow.

Yenepoya (Deemed to be University) is undeniably heading in the right direction, and its intent to continue in this trajectory is evident. Numerous Environmental Management Plans have been proposed, underscoring its commitment to conservation, resource optimization, and the support of biodiversity within the campus. These initiatives collectively underscore its unwavering dedication to establishing the institution as a sustainable and environmentally responsible campus.

36. RECOMMENDATIONS

a. Water Conservation

- Upgrade water fixtures – consider replacing outdated tap fittings with modern taps to reduce water wastage.
- Educational initiatives – conduct awareness programs on water conservation to educate students and staff about the importance of saving water.
- Reuse treated water – implement a system for reusing water treated by Sewage Treatment Plants (STP) for non-potable purposes such as cleaning floors, running coolers, and any other suitable applications.

b. Energy Conservation

- Energy education – organize awareness programs to promote energy conservation practices and raise awareness among the campus community.
- LED lighting – Transition to energy-efficient LED bulbs and lighting solutions to reduce electricity consumption and lower energy costs.

c. Solid Waste management

- Vermicomposting expansion – extend the existing vermicomposting process by adding more units to efficiently manage organic waste.
- Waste segregation training – conduct training programs to educate students and staff on the proper segregation and management of solid waste.
- Vermicompost training – provide training on vermicomposting techniques to encourage the recycling or organic waste.

d. Establish an Environmental and Weather Monitoring facility at the University

- Air quality monitoring including particulate matter, greenhouse gases, and other pollutants.
- Soil assessment to monitor nutrient levels, contamination, and overall soil health.
- Sound or noise level monitoring to measure the loudness of any kind.
- Water quality analysis for monitoring water sources to evaluate chemical, biological and physical parameters.
- Weather station to record real-time atmospheric conditions such as temperature, humidity, precipitation, wind speed, and direction.

e. Eco Club

- Environmental awareness – encourage environmental awareness among students through various activities, workshops, and events that highlight the importance of environmental conservation.
- Carbon foot print training – organize training programs on carbon footprint assessment and reduction to instill a sense of responsibility among students and staff.
- Flora and fauna projects – engage students in projects that involve the identification and preservation of local flora and fauna, fostering a sense of connection to the environment.
- Field visits and trekking – organize field visits and trekking expeditions to expose students to real-world environmental challenges and instill a deeper appreciation for nature.

These recommendations provide a clearer and more organized approach to addressing water and energy conservation, solid waste management, and the activities of the Eco Club within the institution. They emphasize a combination of practical measures and educational initiatives to create a holistic and sustainable approach to environmental management.

The university has a crucial role in contributing to the well-being of the community it serves. Documenting and actively addressing its social responsibilities is not only a commendable initiative but also a fundamental aspect of its commitment to societal progress. To enhance its impact, the university should consider expanding its green community engagement programs. These initiatives could range from educational outreach and skill development programs to collaborative research projects with local organizations.

Incorporating sustainable and community-focused practices into the university's mission not only aligns with ethical standards but also positions the institution as a responsible and responsive member of society. This approach can attract positive attention, build stronger relationships with local communities, and contribute to a positive institutional reputation. Ultimately, by integrating social responsibility into its core identity, the university can play a pivotal role in addressing societal challenges and fostering a sense of shared responsibility for the community.

YENEPOYA

(Deemed to be University)

University Road, Deralakatte, Mangalore – 575018, India
Ph: 0824 2204668
Website: www.yenepoya.edu.in