

GREEN, ENERGY & ENVIRONMENT AUDIT REPORT



**RV Institute of
Management®**

**R V INSTITUTE OF MANAGEMENT,
BENGALURU**

PREPARED BY

NISARGA



ecoCONSULTANTS

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Green, Energy, and Environment Audit Report

**R V Institute of
Management,
Bengaluru**

By,

NISARGA
 **ecoCONSULTANTS**

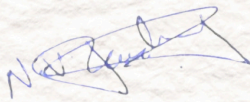
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CERTIFICATE GREEN AUDIT

This Certificate is Presented to :

**R V Institute of Management,
Bengaluru**

Our team of Environmental Engineers have
analyzed Green, Energy, and Environment
practices followed by the Institution.



Pradeep NV
Environmental Engineer
Audit Period: 2024-25
(Academic year)



ISO 9001:2015 CERTIFICATE NO. E20240510204

ISO 14001:2015 CERTIFICATE NO. E20240510205

ISO 17020:2012 CERTIFICATE NO. UQ-2024050701

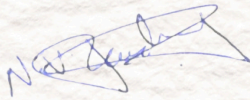
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CERTIFICATE ENERGY AUDIT

This Certificate is Presented to :

**R V Institute of Management,
Bengaluru**

Our team of Environmental Engineers have
analyzed Clean and Green Energy practices
followed by the Institution.



Pradeep NV
Environmental Engineer
Audit Period: 2024-25
(Academic year)



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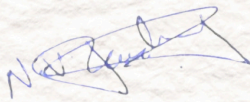
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CERTIFICATE ENVIRONMENT AUDIT

This Certificate is Presented to :

**R V Institute of Management,
Bengaluru**

Our team of Environmental Engineers have
analyzed Environment-friendly practices
followed by the Institution.



Pradeep NV
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Audit Period: 2024-25
(Academic year)



ISO 9001:2015 CERTIFICATE NO. E20240510204

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Acknowledgement

We sincerely appreciate the opportunity to conduct this audit and extend our heartfelt gratitude to the Management of R V Institute of Management and Director Dr. Purushottam Bung, whose leadership and support were instrumental in this process. We also thank the Audit Committee members and the entire team for their invaluable assistance and contributions. Additionally, we express our appreciation to the teaching and non-teaching staff, as well as the students, for their cooperation and support in making this audit successful.

Our Audit Team

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About the Institute

RSST (Rashtreeya Sikshana Samithi Trust) to which RVIM belongs was established in 1940. It is recognized as RV Group of Institution (Rashtreeya Vidyalaya) is one of the fastest growing group of Institutions in the state of Karnataka. It has presence in virtually every field of academics and research. As on date, RV Group has under its ambit over 27 institutions, in which 20,000 plus students from all over India and abroad are pursuing their dream education, RV Engineering College, DAPM RV Dental College, RV School of Architecture, RV Aster Super Specialty Hospital, RV Teachers College, Bengaluru are some of the flagship Institutions under RV Group. We welcome you all to the world of RV Institute of Management, located in Jayanagar, the beautiful and central suburb of Silicon Valley of India, i.e Bangalore also known as IT capital of India. The Institute is well connected to city even through metro rail network Our dedicated and experienced faculty with industry background; best in class infrastructure; student focus; intense placements support and robust industry and institutional linkages (domestic and international) help us in accomplishing our mission and vision. We believe in holistic development of students as reflected in our motto “We prepare our students for life”. In May 2019 RVIM was re-accredited by NAAC with ‘A+’ Grade & is certified by QS I-Gauge, a global accreditation agency for E-Readiness in 2020 and Diamond rating in the subject rating category in 2022.

Vision

- To become world class management Institute of eminence.

Mission

- To nurture universal thought leaders by offering holistic management education fostering business intelligence, health care, innovation, and entrepreneurship for inclusive growth and sustainable development.

Introduction to Green, Energy and Environment Audit

Certainly, conducting a Green, Energy, and Environment audit within educational campuses is a proactive step towards fostering sustainability and responsible environmental practices. The audit process typically involves several key components:

1. **Identification of Environmental Elements:** This stage involves identifying various aspects of the environment within the educational premises that could impact sustainability, such as energy consumption, waste management, water usage, transportation methods, and the use of environmentally friendly materials.
2. **Quantification and Measurement:** Once the environmental elements are identified, the audit assesses and quantifies them. For example, measuring energy consumption through utility bills, quantifying waste production, evaluating water usage through metering, and assessing transportation emissions.
3. **Recording and Documentation:** All data collected during the audit process needs to be recorded and documented systematically. This documentation provides a baseline for current environmental performance and helps in tracking progress over time.
4. **Reporting and Analysis:** After gathering and organizing the data, the audit report should provide a comprehensive analysis of the environmental conditions within the educational campuses. This analysis can include identifying areas of inefficiency, opportunities for improvement, and potential cost-saving measures.
5. **Recommendations for Improvement:** Based on the findings of the audit, recommendations for improving environmental practices and achieving sustainable goals should be outlined. These recommendations may include

implementing energy-efficient technologies, adopting recycling programs, promoting alternative transportation methods, and integrating sustainability into the curriculum.

6. Implementation and Monitoring: Once the recommendations are made, it's essential to implement them effectively. This may involve collaboration among various stakeholders, including administrators, faculty, staff, and students. Regular monitoring and evaluation help ensure that the proposed initiatives are achieving the desired outcomes and making progress towards sustainability goals.

By conducting a Green, Energy, and Environment audit, educational institutions can not only reduce their environmental footprint but also serve as models for sustainable practices within their communities. Moreover, integrating sustainability principles into campus operations and curriculum can help educate future generations about the importance of environmental stewardship.

Need for Green, Energy and Environment Auditing

Critical role of green, energy, and environment auditing in assessing and improving the sustainability of institutions, including educational campuses.

1. Assessing Resource Consumption: Green, energy, and environment auditing helps institutions evaluate whether their day-to-day activities are consuming resources efficiently. This assessment involves examining energy usage, water consumption, waste generation, and other resource-intensive processes.

2. Promoting Resource Conservation: By identifying areas where resources are being used excessively or inefficiently, audits encourage institutions to adopt more sustainable practices. This can include implementing energy-saving measures, water conservation initiatives, waste reduction strategies, and promoting the use of renewable resources.

3. Continuous Monitoring and Regulation: Through ongoing monitoring and regulation of processes, institutions can ensure that they are effectively managing their environmental impact. Regular audits help identify areas for improvement and track progress towards sustainability goals over time.

4. Addressing Environmental Concerns: With concerns such as climate change and resource depletion becoming increasingly urgent, green audits provide a framework for addressing these issues at the institutional level. By examining and modifying processes to be more environmentally friendly, institutions can contribute to broader efforts to mitigate environmental degradation.

5. Increasing Environmental Consciousness: Green auditing fosters a culture of environmental awareness and responsibility within institutions. By engaging stakeholders in the audit process and promoting sustainable practices, institutions can inspire individuals to adopt greener habits both at work and in their personal lives.

In summary, green, energy, and environment auditing serve as valuable tools for promoting sustainability and responsible resource management within educational institutions and beyond. By evaluating and improving environmental practices, institutions can help pave the way for a more sustainable future for generations to come.

Goals of Green, Energy and Environment Audit

The goals of a Green, Energy, and Environment Audit typically revolve around assessing, improving, and promoting sustainable practices within an organization or institution. Here are some specific goals associated with such audits:

1. **Identifying Environmental Impact:** The audit aims to identify the environmental impact of the organization's operations, including energy consumption, waste generation, water usage, and emissions.
2. **Assessing Compliance:** The audit evaluates the organization's compliance with environmental regulations, standards, and best practices, ensuring that it meets legal requirements and industry guidelines.
3. **Promoting Resource Efficiency:** One of the primary goals is to promote resource efficiency by identifying areas where resources are being used inefficiently or excessively and recommending strategies for improvement.
4. **Reducing Environmental Footprint:** The audit seeks to reduce the organization's environmental footprint by identifying opportunities to minimize waste, conserve energy and water, and mitigate pollution.
5. **Identifying Cost-Saving Opportunities:** By improving resource efficiency and reducing waste, the audit can help identify cost-saving opportunities for the organization, such as reducing utility bills and operational expenses.
6. **Fostering Environmental Awareness:** The audit aims to raise awareness among employees, stakeholders, and the broader community about the importance of environmental sustainability and the role they can play in promoting it.
7. **Setting Sustainability Goals:** Based on the findings of the audit, the organization can establish specific sustainability goals and targets to guide its environmental management efforts.

8. Improving Environmental Performance: Ultimately, the goal of the audit is to improve the organization's environmental performance by implementing recommended strategies and initiatives to enhance sustainability practices.

Overall, a Green, Energy, and Environment Audit serves as a comprehensive tool for organizations to assess their environmental impact, identify areas for improvement, and take proactive steps towards achieving sustainability goals.

Objectives of Green, Energy and Environment Audit

- To inspect the current practices, which can impact the environment.
- To recognize and analyze significant environmental issues.
- Establish and implement Environment Management in various departments.
- Continuous evaluation for betterment of performance in this regard.

Benefits of Green, Energy, Environment Audit to Educational Institutions

Green, Energy, and Environment Audits offer numerous benefits to educational institutions, helping them enhance sustainability, reduce environmental impact, and promote responsible resource management. Here are some key benefits:

1. Conducting a green audit can help educational institutions identify inefficiencies in resource use, such as energy and water consumption. By implementing recommendations from the audit, institutions can reduce utility costs and operating expenses, leading to significant cost savings over time.
2. Green audits enable institutions to assess their environmental footprint and identify opportunities for improvement. By implementing measures to reduce energy consumption, waste generation, and greenhouse gas emissions, educational institutions can contribute to environmental conservation and help mitigate climate change.
3. Green audits foster a culture of sustainability within educational institutions. By raising awareness about environmental issues and promoting

sustainable practices among students, faculty, staff, and administrators, institutions can inspire positive behavior change and empower individuals to adopt eco-friendly habits both on campus and in their personal lives.

4. Demonstrating a commitment to sustainability through green audits can enhance the reputation and brand image of educational institutions. By publicly showcasing their environmental initiatives and achievements, institutions can attract environmentally conscious students, faculty, staff, donors, and partners who value sustainability and social responsibility.

Executive Summary

A Green Campus or an Eco-friendly Campus is a place where environmentally friendly practices and education combine to promote sustainable and eco-friendly practices in the campus. It is a campus which is sustainable because of its resource utilization and minimum waste discharge into the environment. Green, Energy and Environmental Audit is an assessment of the extent to which an organization is observing practices which minimize harm to the environment. It assesses the campus performance in complying with applicable environmental laws and regulations. This audit report comprises of observations and recommendations for improvement of environmental conditions in the campus. It mainly focuses on the environmental management plan in the campus with environmental factors like quality of water, ventilation, vegetation, waste management practices, consumption of energy, harmful radiations of the campus, etc.,

For this purpose, to assess the quality of the different environmental factors, samples were analyzed at different places in the campus, viz., water quality, light intensity, air quality, noise pollution and electro-magnetic radiation. The data which was collected were assorted, scrutinized, analyzed and documented. Campus related preliminary interviews with the concerned staff were conducted. Student interaction also was carried out for this purpose. A report based on all these studies with regards to an environmental management plan at the campus with recommendations for further improvement is prepared.

Objectives and Scope

The purpose of this audit was to note that the campus follows environmentally friendly approaches in its regular routine. The implementation of these methods is done in the campus, across all departments, administrative bodies and students and were analyzed.

Following issues were noted during our visit:

- Present conditions at the campus.
- Environmental education through systematic environmental management approach.
- Improving environmental standards.
- Benchmarking for environmental protection initiatives.
- Sustainable use of natural resource in the campus.

Based on the available data, sampling and information provided by the college staff and officials, this report has been prepared and recommendations for betterment of campus environment are provided.

Audit Methodology

The Green, Energy, and Environment Audit was conducted in three systematic phases:

- Submission of Audit Questionnaire to the Institution
- Campus walkthrough and Data Analysis
- Report Preparation and Submission

Step 1: Submission of audit questionnaire

A comprehensive audit questionnaire was provided to the key stakeholders of the institution to facilitate data collection. The questionnaire covered the following domains:

- Institutional details
- Infrastructure specifications
- Waste management practices
- Energy management systems
- Eco-club structure and activities
- Water resource management
- Green cover and biodiversity details

Data collection was conducted in collaboration with the institution's teaching and non-teaching staff, ensuring comprehensive and accurate responses.

Step 2: Campus walkthrough and data analysis

A thorough Campus walkthrough (physical inspection) of the institution was undertaken to assess various campus facilities. This included identifying resource consumption patterns, evaluating waste management practices, and examining best practices such as rainwater harvesting and solar power systems.

Institutional representatives actively participated during the inspection process, demonstrating enthusiasm and a proactive approach in understanding and adopting the recommendations provided.

Supporting documents, including bills and relevant records, were verified through surveys and discussions to ensure accuracy and reliability of the data collected. Initial meeting was conducted before starting Campus walkthrough. Subsequently, with staff support our team conducted a detailed campus tour to collect essential data and perform a thorough assessment.

Step 3: Report Preparation and Submission

The audit process was completed within one month. The collected data was meticulously analyzed by the expert team at Nisarga Eco Consultants. A detailed audit report, including observations and actionable recommendations, will be submitted to the institution for implementation.

Summary of Findings

The main findings of the audit show that, all the students are aware about the need for environmental protection at a general level. It was also observed that a number of best practices such as water conservation, sewage treatment in sewage treatment plant, waste management, cleanliness, waste segregation, plantation, etc., are followed in the campus.

However, on detailed review, it was observed that, the college is following green practices at various levels. But certain processes could benefit from further review in order to improve their efficiency, and consistency.

Infrastructure and college details

- The college has sufficient infrastructure for curricular and co-curricular activities.
- Rooms - Classrooms, auditorium, library, department rooms, staffrooms, all labs, ladies' room etc.
- Sufficient reading materials for students.
- Administrative office, director chamber, office room and department rooms are well located and ventilated.
- Borewell, Underground and overhead water tanks.
- Computers: 200 desktops with internet facilities in office, director chamber, department rooms and library with high-speed internet connectivity.
- The institution is in area of 0.7 acres.
- Six number of classrooms and sufficient staff rooms in the institute.
- There are labs with all the facilities and are well ventilated.
- Institution has auditorium, conference halls, etc. with sufficient facilities.
- The campus has sports room, gym and yoga room.
- Total number of students are 360, teaching staff 21 and non-teaching staff 28.

1.

Green Cover Details

1. Green Cover

Plants and trees are essential for any educational institution. Green cover makes the campus aesthetically pleasing and also helps in providing good environment for the students. Planting saplings and maintaining the same has to be done periodically.

1.1 Annual plantation drives are organized to enhance greenery and promote environmental sustainability.

The institution organizes annual plantation drives on campus, offering significant environmental, social, and educational benefits.

Objectives:

- Enhancing Green Cover: Increasing tree plantations to improve air quality, provide shade, and enhance the campus environment.
- Promoting Biodiversity: Planting native species to support local wildlife and ecological balance.
- Raising Environmental Awareness: Educating students and staff on the importance of trees and sustainable practices.
- Mitigating Climate Change: Reducing carbon dioxide levels and contributing to a healthier environment.

Benefits:

- Environmental Impact – Improves air quality, conserves soil, and supports biodiversity.
- Educational Value – Provides hands-on learning experiences about sustainability.
- Community Building – Encourages collective participation in environmental initiatives.
- Aesthetic Enhancement – Creates a greener and more inviting campus.

1.2 Eco-Club: Fostering Sustainability and Environmental Awareness

The Eco-Club (Green Club) is a student-led initiative dedicated to promoting environmental consciousness, sustainability, and eco-friendly practices within the campus and the broader community. The institution has outlined specific objectives, activities, and projects to achieve these goals.

Objectives

1. **Environmental Awareness:** Educate students and staff about pressing environmental issues and the importance of sustainable living.
2. **Sustainability Initiatives:** Implement and encourage eco-friendly practices across the campus.
3. **Community Engagement:** Involve students and faculty in activities that promote environmental protection and sustainability.
4. **Advocacy and Policy:** Support environmentally responsible policies at the institutional and local levels.

Activities and Projects

1. **Recycling Programs:** Establish and manage recycling bins, conduct awareness drives on waste segregation, and coordinate E-waste collection, ensuring proper disposal through certified recyclers.
2. **Energy Conservation:** Promote energy-efficient practices such as switching off unused lights, using energy-saving appliances, and encouraging sustainable commuting options like walking and cycling.
3. **Green Campus Initiatives:** Advocate for green building practices, solar panel installations, and the development of green spaces such as gardens.
4. **Workshops and Seminars:** Organize educational events on topics like climate change, biodiversity conservation, and sustainable living.
5. **Clean-Up Drives:** Conduct regular campus and community clean-up events to foster a cleaner environment.
6. **Tree Plantation:** Organize tree-planting programs to increase greenery and support reforestation efforts.

7. Water Conservation: Implement water-saving initiatives such as fixing leaks, promoting efficient water fixtures, and raising awareness on responsible water usage.
8. Eco-Friendly Products: Promote the use of sustainable alternatives like reusable water bottles, cloth bags, and biodegradable materials.
9. Collaborations: Partner with local environmental groups, government bodies, and NGOs to undertake impactful environmental projects and campaigns.

Through these initiatives, the Eco-Club plays a vital role in fostering a culture of sustainability and environmental responsibility within the institution.

Table No. 1: Eco-club/Green club team

Sl. No.	Name	Designation
1	Dr. Purushottam Bung	Professor & Director
2	Dr. Vinay S	Staff
3	Dr. Uma Sharma	Staff
4	Prof. Sowmya D S	Staff
5	Ms. Arpitha Bhat	Student Coordinator
6	Mr. Nikhil Jadav	Student Representative

A. Ek Ped Maa Ke Naam

Tree Planation drive was organized by RVIM Rotaract students as part of the Ek Ped Maa Ke Naam, program announced by the Ministry of Environment and All India Technical Education Council (AICTE). This tree planting program was organized at Bangalore University Janabharathi Campus on the 10th of September 2024. Objective of the program was to create environment consciousness amount the youth, encourage them to be more considerate towards nurturing nature. Students, Faculty and Staff of RVIM participated in the tree plantation drive.

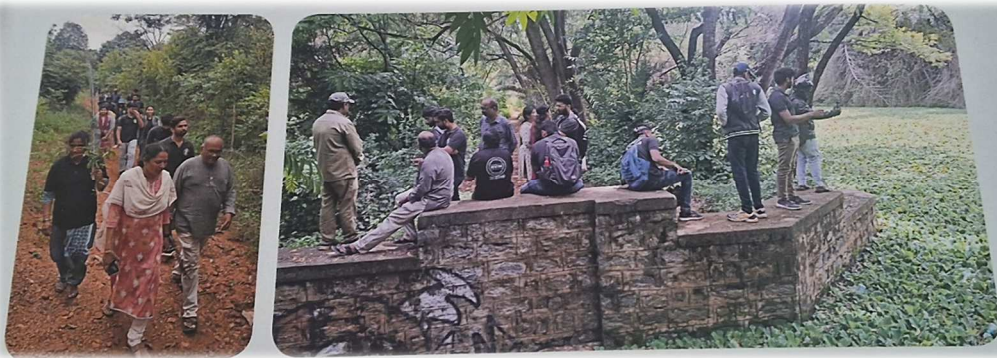


B. Eco Walk

As part of RVIM – Rotaract Club activities ECOWALK was organized where students and staff participated in the walk. The Eco Walk was conducted at the Biopark maintained in Bangalore University Janabharathi Campus by the Department of Biotechnology.

The walk was organized on the 10th of September 2024, guided by Mr. Mohan the walk was for a duration of 4 hours and included walk into the forest getting informed about the growth of trees and the various medicinal use of trees and plants, park's water source management systems were shown – the use of check dams and recharge wells.

All the students and staff who walked the forest path got a glimpse into the birds and animal habitat in the park which included sighting of peacock and peahen. Creating Environment consciousness by making the youth more concerned with nurturing the nature. Students, Faculty and Staff participated in sapling plantation.



Observations:

The campus boasts a vibrant green landscape with a diverse collection of plants and trees, reflecting its commitment to biodiversity and sustainability. The Green Club/Eco Club actively engages in various plantation programs and initiatives, continuously working towards a greener and more eco-friendly environment.

With a rich array of trees, shrubs, herbs, decorative potted plants, climbers, nursery plants, medicinal species, and greenhouse vegetation, the campus fosters a pollution-free atmosphere, contributing to the well-being of its students and staff. The well-maintained lawns and tree-lined avenues not only provide shade but also create a serene and aesthetically pleasing environment.

To ensure the sustainability of these green spaces, trained gardeners and supervisors meticulously maintain the landscaping. The Construction, Maintenance, and Beautification Committee oversees the ongoing development and upkeep of the campus greenery.

Despite challenges posed by the rocky terrain, the institution has successfully nurtured a thriving green cover through dedicated efforts from the management and staff. Indoor plants have been thoughtfully placed along corridors, and provisions for creepers have been incorporated to further enhance the natural beauty of the campus.

Table No. 2: Details of garden

Sl. No.	Name of the garden	Area (Sq. ft.)
1.	Garden in front of Administrative office	1000 sq. ft.
2.	Garden near canteen	500 sq. ft.
3.	Garden near main gate	200 sq. ft.

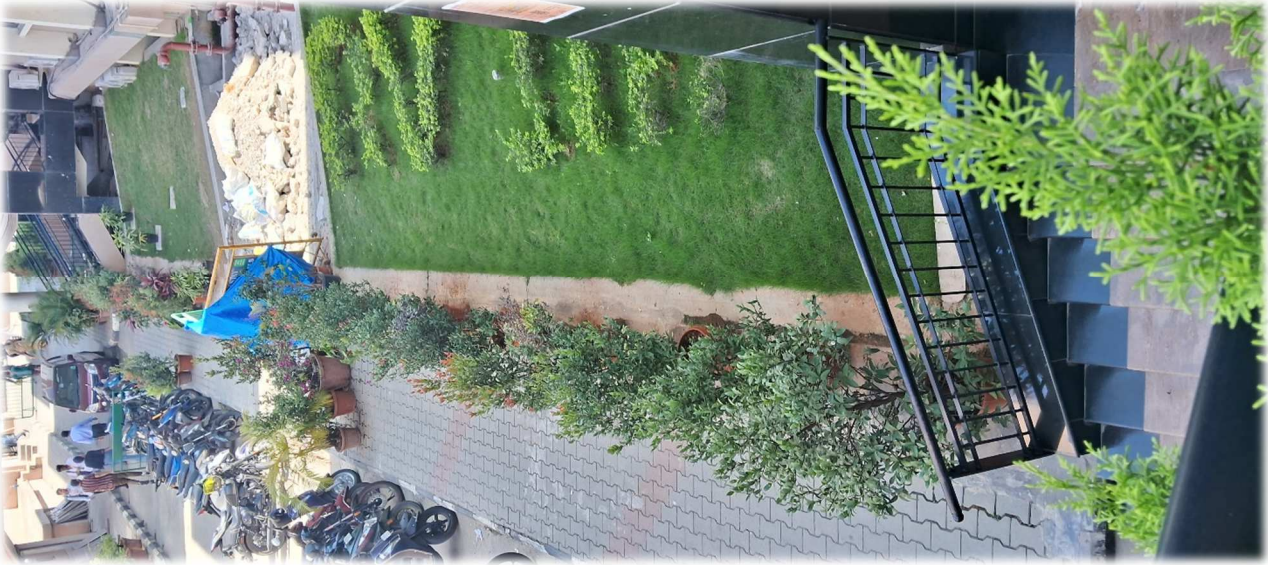
Table No. 3: Green Cover Details

Sl. No.	Scientific Name	Common Name
1.	<i>Mimusops elengi</i>	Bullet Wood
2.	<i>Sesamum indicum</i>	Gingely Tree
3.	<i>Delonix regia</i>	Gulmohur Tree
4.	<i>Areca catechu</i>	Palm Tree
5.	<i>Azadirachta indica</i>	Silver Wood
6.	<i>Tectona grandis</i>	Teak
7.	<i>Callistemon viminalis</i>	Bottle Brush
8.	<i>Mangifera indica</i>	Mango Trees

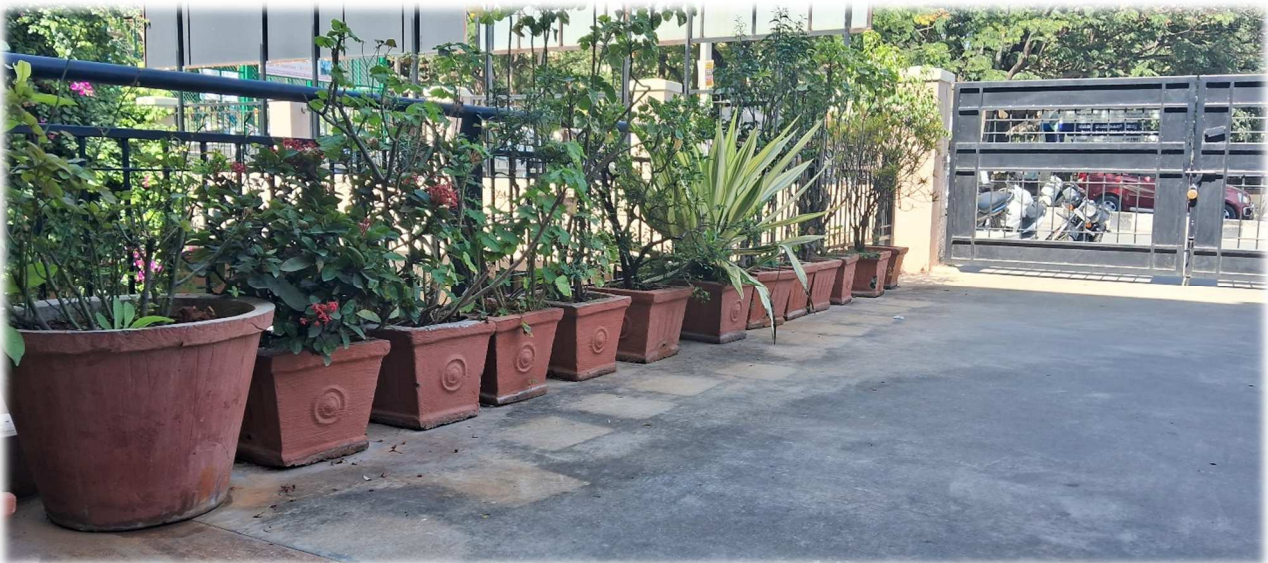
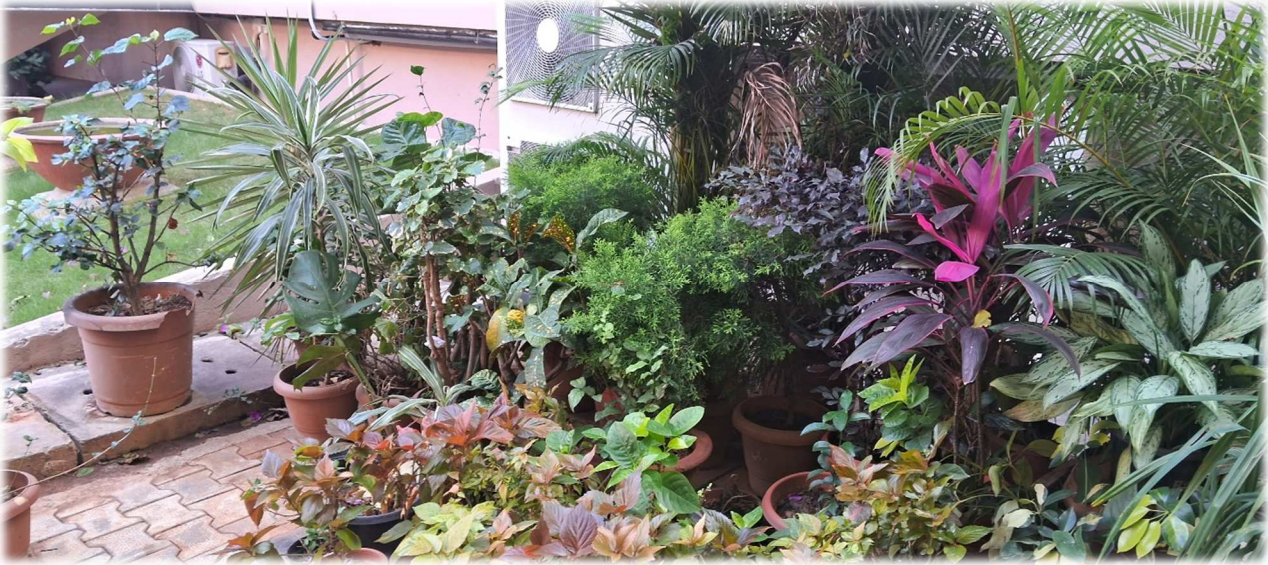
Other details

1. Total Lawn area: 1400 Sq. feet
2. Details on Ornamental plants: 70
3. Details of Hedge (Boundary plants) (in running feet): 200 feet
4. Total number of bushy plants: 50



















‘Save Nature’, ‘Save Planet’ awareness paintings

1.3 Biodiversity in the campus

Biodiversity refers to the vast array of life forms in the natural world, including plants, animals, insects, and microorganisms that coexist on our planet.

Observations

The institute has maintained a lush green cover across the campus, promoting ecological balance and supporting biodiversity. Various bird species inhabit the area, creating a thriving natural ecosystem. The presence of diverse flowering plants attracts bees, essential pollinators that further enrich campus biodiversity. Additionally, aquariums have been installed to enhance the environment, fostering a sense of tranquility among students, staff, and visitors. The presence of aquatic life contributes to a calming atmosphere, supporting overall well-being and a positive learning environment.





* Pictures in this page are for representation purpose only

1.4 Pedestrian-friendly pathways

Pedestrian-friendly pathways are essential for creating a safe, accessible, and inclusive campus environment. With a large number of students, faculty, and staff commuting daily, well-designed walkways enhance mobility, safety, and sustainability.

Importance of Pedestrian-Friendly Pathways

Enhanced Safety and Accident Prevention – Dedicated pathways separate pedestrian movement from vehicular traffic, reducing the risk of accidents, especially on campuses with heavy footfall and vehicle movement.

Improved Accessibility – Well-planned pathways with ramps, clear signage, and proper lighting ensure that students with disabilities and mobility challenges can navigate the campus comfortably.

Promotion of a Walking Culture – A well-maintained pedestrian network encourages walking, reducing reliance on vehicles for short distances and promoting a healthier lifestyle.

With a growing focus on sustainable infrastructure and student well-being, integrating pedestrian-friendly pathways into college campuses is a crucial step toward fostering a safer, healthier, and more accessible learning environment.



2.

Energy Management Details

2. Energy Management

Energy management plays a crucial role in institutions, helping to reduce environmental impact. Minimizing electricity consumption is key to lowering greenhouse gas emissions. This can be achieved by using energy-efficient 5-star rated electrical appliances. Additionally, harnessing renewable energy sources can further support sustainable practices on campus.

Observations:

- Solar rooftop harvesting is being implemented in the campus. This is greater step towards clean and green energy for the campus.
- 96 Solar panel has been installed on roof top of the institution. Energy generated from solar panels is used in college campus. Covering an area of 1491.33 sq. mt., installed in the year 2024.
- LED bulbs have been used extensively in the campus. Migration to LED tube lights and bulbs has been done in order to save electrical energy.
- Day light (Natural light) is the main source in the classrooms, staffrooms, and library and so on. Infrastructure is very well planned to harness maximum natural light in all the places.
- EV vehicle charging station has been made.
- Energy saving posters have been placed in all the classrooms.

Recommendations:

- Automated sensor lights can be installed in the campus for saving energy.
- Best practices have already been implemented in the institution for optimum use of energy.

Table No. 4: Information regarding power supply and its management

Sl. No.	Parameters	Response
1.	Source of electricity. BESCOM/Solar panels	BESCOM and Solar panels
2.	Type of Solar system	Off grid
3.	No. of Solar Panels	96
4.	Capacity of solar panels	130 kWp
5.	Capacity of back generators	82.5 kVA X 2 = 165 kVA

2.1 Solar Radiation over Bengaluru

Monthly Average Daily Solar Radiation refers to the amount of solar energy received per square meter of horizontal surface, averaged daily over a month. This parameter is crucial in understanding the solar potential of a location for applications like solar power generation, heating, and other solar-based technologies.

Solar Radiation:

It is the energy emitted by the sun in the form of electromagnetic waves. Solar radiation reaching the Earth's surface is measured in kilowatt-hours per square meter per day (kWh/m²/day).

Monthly Average Daily Solar Radiation:

It represents the daily solar energy averaged over the days of a particular month. This value accounts for the variations in solar radiation due to factors such as cloud cover, atmospheric conditions, and seasonal changes.

Importance of Bengaluru's Solar Profile:

Bengaluru, located at approximately 12.97°N latitude and 77.59°E longitude, experiences a tropical savanna climate, making it conducive for solar energy applications. The city's geographic position ensures substantial solar radiation throughout the year, which is beneficial for solar power generation and other solar-based technologies.

A. Factors Affecting Solar Radiation in Bengaluru

Latitude and Longitude:

Bengaluru's location near the equator ensures a relatively high amount of solar radiation throughout the year (12.97°N latitude and 77.59°E longitude).

Seasonal Variations:

Solar radiation peaks during summer (March-May) due to longer daylight hours and minimal cloud cover.

Monsoon months (June-September) witness reduced radiation due to dense cloud cover and frequent rainfall.

Atmospheric Conditions:

Air pollution, haze, and cloud density can reduce the amount of solar radiation reaching the surface.

Annual average GHI (Global Horizontal Irradiance)

The total amount of solar energy received on a horizontal surface per unit area. GHI is the sum of DNI, Diffuse Horizontal Irradiance (DHI), and ground-reflected radiation. Annual average GHI* for Bengaluru is 5.38 kWh/m²/day with about 320 sunny days per year.

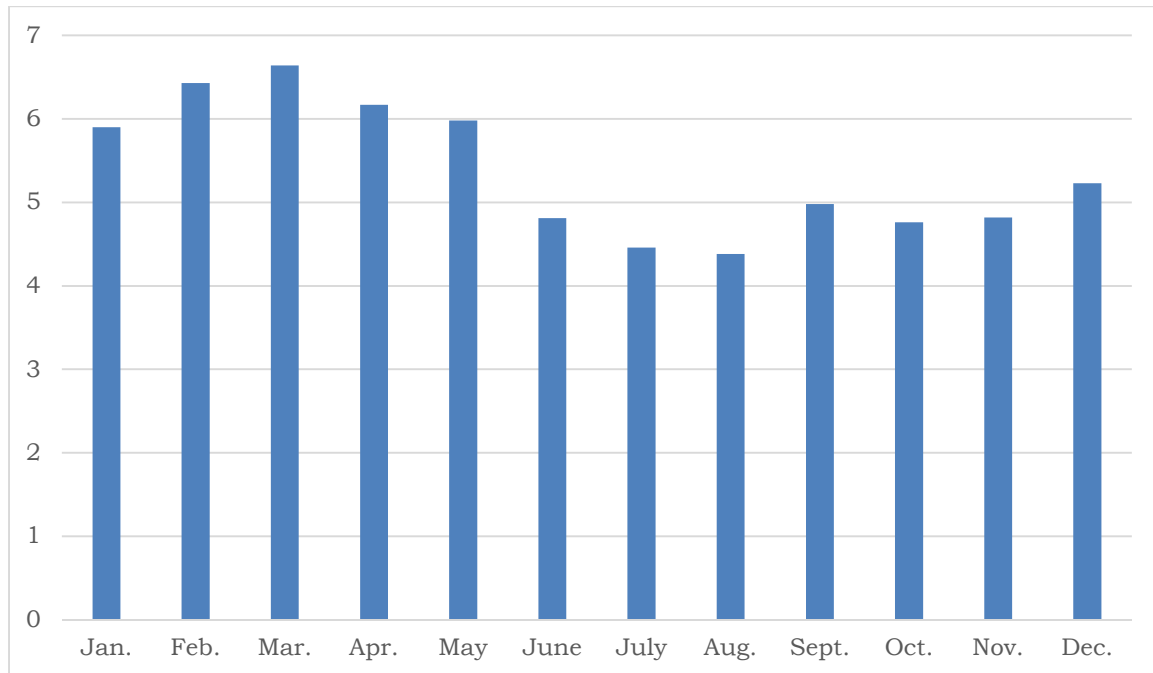
Annual average DNI (Direct Normal Irradiance)

The total amount of solar energy received on a surface directly facing the sun per unit area. DNI is measured as the incoming beam from the sun's disc and circumsolar irradiance within a 2.5° cone around the sun's center. DNI is particularly important for solar installations that use trackers. Weather patterns like clouds and rain directly affect DNI.

* Source: Karnataka Renewable Energy Development Limited.

B. Typical Solar Radiation Values for Bengaluru

The average daily solar radiation for Bengaluru varies across the year. Below are approximate monthly values (kWh/m²/day):

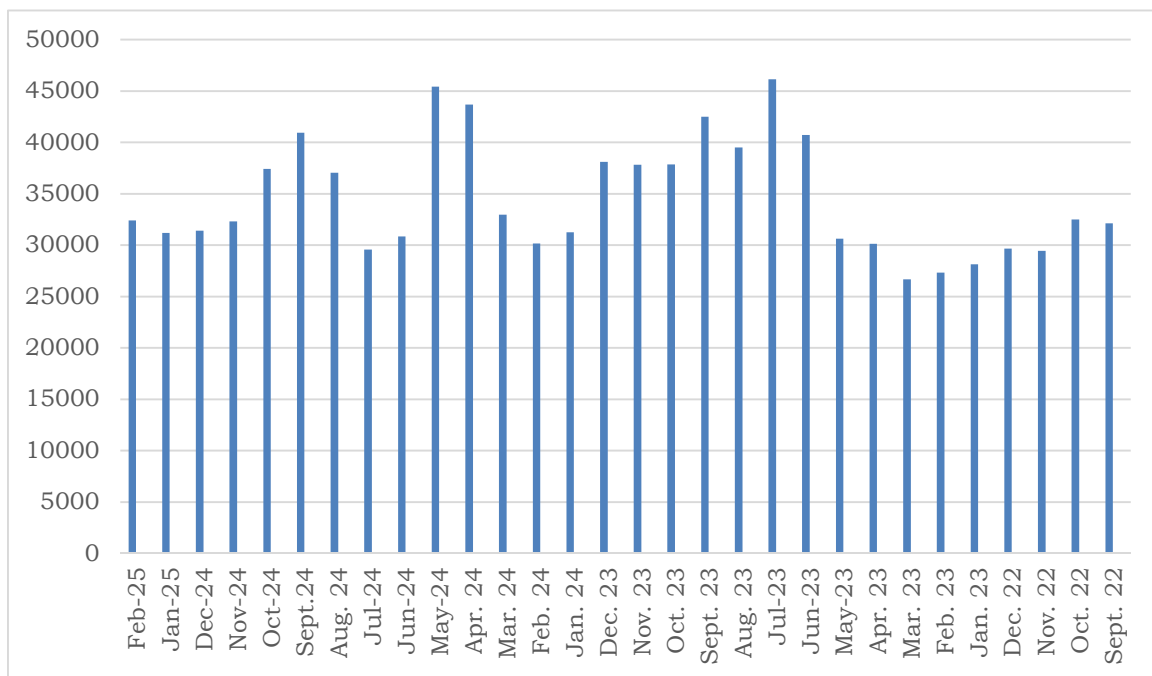


Graph No. 1: Monthly average daily solar radiation over
Bengaluru, Karnataka

2.2 Power Consumed by the institution

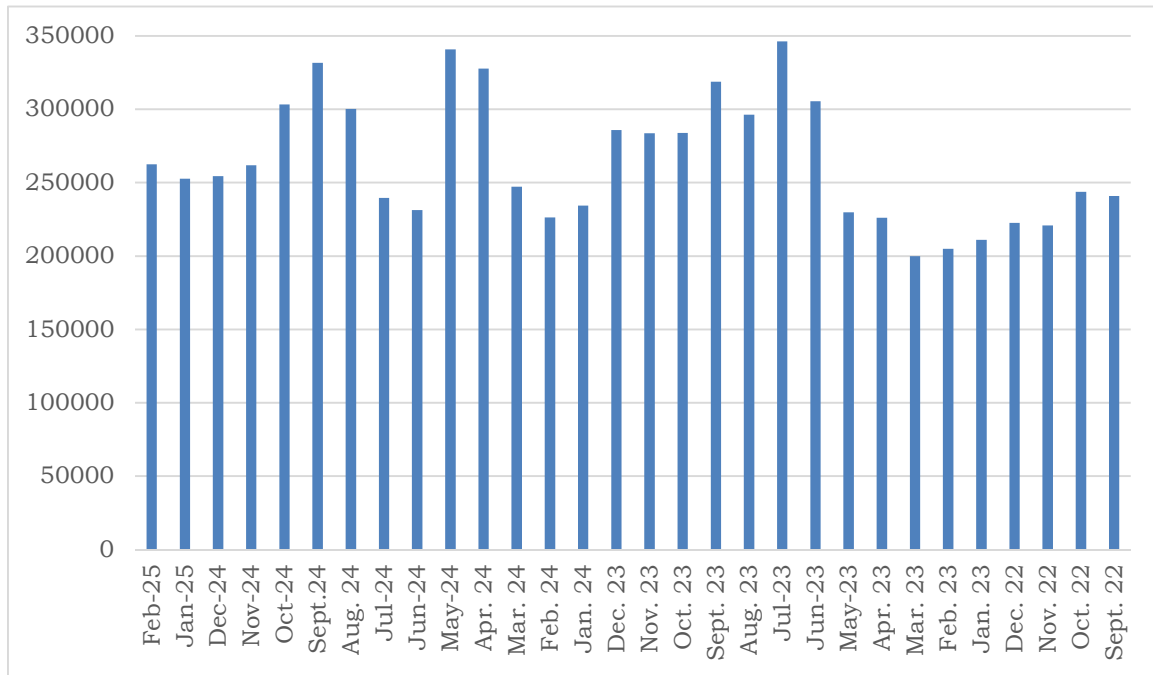
The college consumes energy in areas namely Air conditioners, Lighting, Fans, Blower and pumps in STP, lift, computers, printers and so on. The college also has a captive DG during power cuts. UPS has been installed which resumes power backup within few seconds during power cuts. Solar photovoltaic panels are installed on the roof top.

Units consumed by the institution from Sept. 2022 to Feb. 2025 has been depicted in graph below.



Graph No. 2: Units consumed by the Institution

Bill paid in rupees to BESCOM from Sept. 2022 to Feb. 2025 has been depicted in graph below.



Graph No. 3: Bill paid to BESCOM

2.3 Power factor and Harmonics

Capacitors installed for the power factor correction is in line with the current demand, capacitors are connected to circuit at the output of the transformer. For the present load and demand sufficient capacitive compensation has been provided.

Following harmonics generating loads are connected to the system

1. Uninterruptible power supply units
2. LED Lights
3. Variable frequency drives of Lifts
4. Computers and related loads

The analysis of power factor and harmonics indicate that the institution has implemented adequate capacitive compensation. The Total Harmonics Distortion is less than less and is acceptable.

2.4 Institutional Carbon Footprint Analysis

Institutional Carbon Footprint Analysis is essential for assessing the environmental impact of an organization's activities. By evaluating greenhouse gas emissions from energy use, transportation, waste management, and other operations, institutions can pinpoint major sources of emissions. This analysis enables them to implement targeted strategies such as adopting renewable energy, enhancing energy efficiency, and promoting sustainable practices to minimize their carbon footprint.

These efforts have a significant environmental impact. Lowering carbon emissions helps combat climate change, improves air quality, and preserves natural resources. It also cultivates a culture of environmental responsibility within the institution, encouraging students, staff, and stakeholders to embrace sustainable habits. Additionally, reducing the carbon footprint aligns institutions with global sustainability initiatives and strengthens their reputation as environmentally responsible organizations. By prioritizing Carbon Footprint Analysis, institutions contribute meaningfully to a more sustainable future.

2.4.1 Understanding and Assessing Institutional Carbon Footprint

A carbon footprint represents the total greenhouse gas (GHG) emissions generated by human activities, either directly or indirectly. These emissions, commonly measured in carbon dioxide equivalents (CO₂e), account for various gases such as carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), each with different global warming potentials.

Major Contributors to Carbon Emissions

Institutions contribute to carbon emissions through several key activities:

- **Energy Consumption:** Use of electricity, heating, and fossil fuel-based power sources.
- **Material Usage:** Production, procurement, and disposal of resources such as paper, electronic equipment, and food supplies.
- **Transportation:** Commuting, business travel, and campus vehicle operations.
- **Waste Management:** Organic waste decomposition, landfill emissions, and improper disposal of non-biodegradable materials.

Types of Carbon Footprints

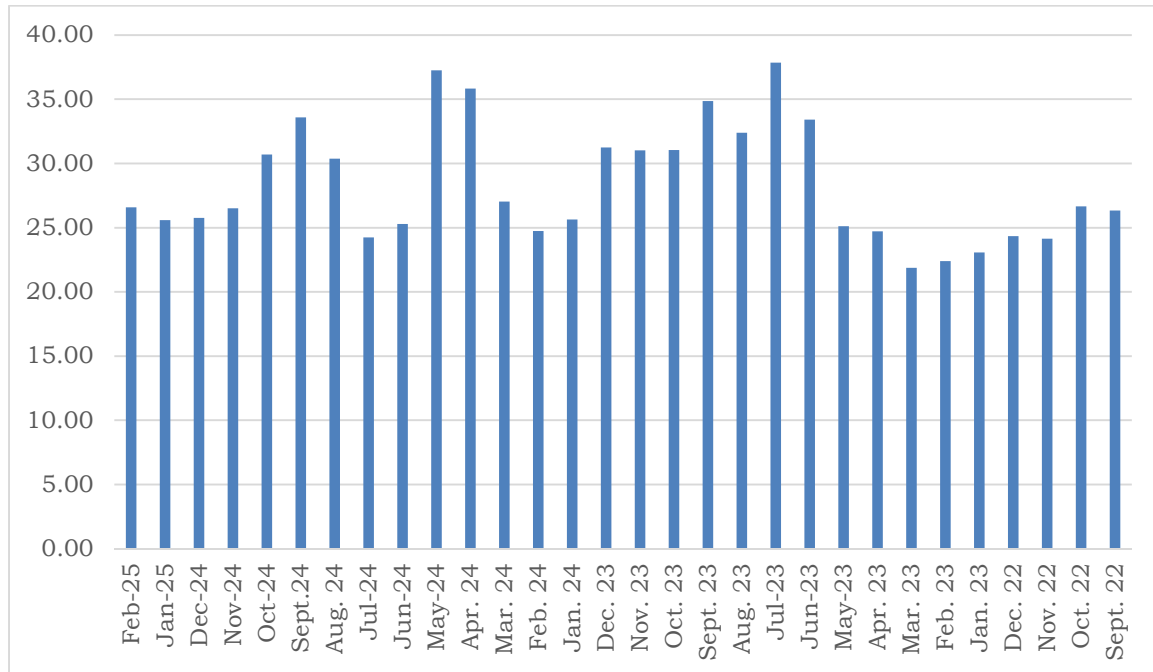
- **Institutional Carbon Footprint:** Emissions from an organization's operations, including infrastructure, utilities, and transportation.
- **Personal Carbon Footprint:** Individual emissions from daily activities like commuting, electricity use, and food consumption.
- **Product Carbon Footprint:** Emissions linked to a product's lifecycle, from raw material extraction to disposal.

Institutional Carbon Footprint Analysis: Electricity Consumption

Electricity consumption is a primary factor in an institution's carbon footprint. In India, electricity generation largely depends on coal-based power plants, leading to significant CO₂ emissions. On average, consuming 1 kWh of electricity results in approximately 0.82 kg of CO₂ emissions.

By tracking and reducing carbon emissions through energy efficiency, renewable energy adoption, and sustainable practices, institutions can play a

vital role in combating climate change and fostering environmental responsibility.



Graph No. 4: Month wise CO₂ emissions in tons



Solar panels have been placed on the rooftop to convert solar energy into electrical energy



Diesel Generator (alternate source) during power cut



LED tube lights have been extensively used in campus.



Electrical meters and panels have been enclosed in a safe and secured room.



Energy saving slogans have been pasted on switch boards.



‘Save Power’ awareness painting



EV vehicle charging station at parking

3.

Environment Management Details

3. Environment Management

Environmental Audit is a vital assessment tool that enables educational institutions to evaluate their environmental impact and adopt sustainable practices. In India, educational institutions play a crucial role in fostering environmental awareness. Conducting systematic environmental audits ensures resource conservation, pollution control, and the development of a sustainable campus.

Key Components of Environmental Audit

- **Sewage Treatment Plant (STP)**

A sewage treatment plant ensures that wastewater from hostels, canteens, and restrooms is treated before discharge. Proper sewage treatment prevents water pollution, protects nearby water bodies, and enables the reuse of treated water for gardening and flushing. Institutions should ensure their STPs comply with regulatory standards to maintain environmental hygiene.

- **Measurement of Light Intensity**

A light intensity audit assesses illumination levels in classrooms, laboratories, and outdoor spaces to ensure optimal lighting while minimizing energy consumption. Installing LED lights, motion sensors, and solar-powered lighting enhances energy efficiency and reduces electricity costs. Proper lighting also improves productivity and creates better learning environments.

- **Monitoring of Noise Levels**

Excessive noise can impact concentration and health. Monitoring noise levels in classrooms, auditoriums, and playgrounds helps maintain a conducive learning atmosphere. Measures such as soundproofing auditoriums, limiting high-decibel activities, and designating silent zones can significantly reduce noise pollution on campus.

- **Assessment of Electromagnetic Radiation (EMR)**

With the growing use of electronic devices, electromagnetic radiation (EMR) from Wi-Fi routers, mobile towers, and electrical appliances must be monitored. Periodic EMR assessments ensure exposure levels remain within safe limits. Strategies such as proper router placement, limiting excessive gadget use, and creating EMR-free zones help mitigate potential health risks.

- **Monitoring Air Quality**

Educational institutions contribute to and are affected by air pollution from vehicle emissions, construction activities, and laboratory chemicals. Regular air quality monitoring helps track pollutants like PM_{2.5}, PM₁₀, CO₂, and NO_x. Implementing measures such as tree planting, restricting vehicle use on campus, and promoting cycling or walking can significantly improve air quality.

- **Electronic Waste and its Management**

The increasing use of electronic devices in educational institutions results in significant electronic waste (E-waste), including discarded computers, printers, mobile phones, and digital equipment. Proper E-waste management prevents harmful substances like lead, mercury, and cadmium from polluting the environment. Institutions should establish E-waste collection points, collaborate with authorized recyclers, and conduct awareness programs on responsible disposal and recycling. Encouraging the reuse and refurbishment of electronic items further minimizes waste generation.

- **Survey of Water Usage (Water Audit)**

A water audit helps institutions analyze water consumption patterns, detect wastage, and implement conservation measures. This includes monitoring groundwater usage, evaluating water consumption in hostels, laboratories, and gardens, and identifying leakages. Institutions can adopt rainwater harvesting, water-efficient fixtures,

and wastewater recycling systems to reduce reliance on freshwater resources.

- Waste Generation and its Management

Effective waste management minimizes pollution and enhances sustainability. Institutions should implement waste segregation at the source, ensuring biodegradable and non-biodegradable waste are managed separately. Recycling initiatives, awareness programs, and waste reduction strategies—such as minimizing plastic use and promoting reusable materials—contribute to a cleaner campus.

By conducting comprehensive environmental audits, educational institutions can lead the way in sustainability, fostering environmental responsibility among students and staff while contributing to a greener future.

3.1 Water Audit

Water quality and quantity are crucial aspects of a sustainable Green Campus. These factors vary based on the condition of the water source from which they are drawn. The presence of contaminants in water can pose health risks to consumers, making regular water quality monitoring essential for the well-being of campus occupants. Additionally, an efficient water management plan is vital for the sustainable use of available resources.

A water audit systematically evaluates water usage within an institution to identify inefficiencies, reduce wastage, and optimize consumption. In educational institutions, this involves assessing water usage patterns across classrooms, hostels, canteens, restrooms, laboratories, gardens, and other facilities to ensure responsible and efficient water management.

3.1.1 Steps for Conducting a Water Audit

A. Source of water and water usage points

To conduct water audit the main factor to be considered is source of water and water usage point. Source of water for R V Institute of Management is water supplied from BWSSB and two borewells.

Water consumed in the campus is in: academic blocks, hostels, staff quarters, sports facilities, gardens, and laboratories and so on.

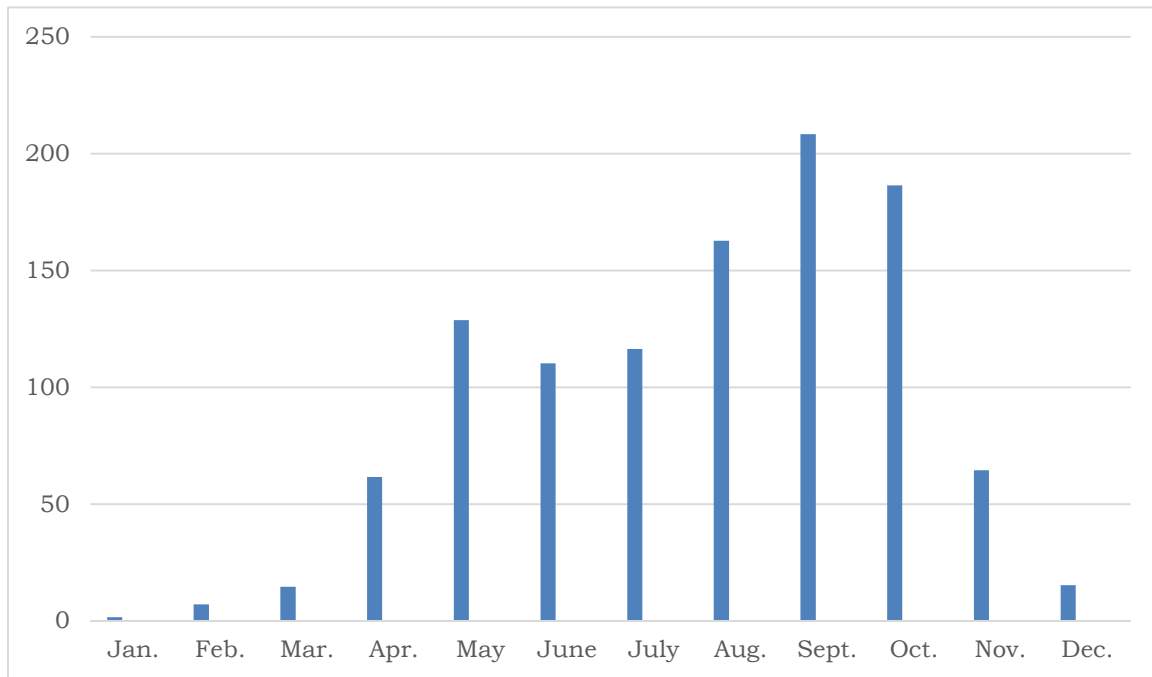
B. Data collection

This includes number of students and staff, per capita demand, rainfall data, number of rainy days, capacity of rainwater storage tanks, water consumed every day.

- The campus has 360 students, 21 teaching staff, and 28 non-teaching staff. This accounts for a total of 409 members.
- R V Institute of Management has a very well planned rainwater harvesting system with rainwater storage tanks. The potential of rainwater harvesting can be analyzed using rainfall data over 20 – 30 years period. We are considering rainfall data of 30 years to get insight on the amount of water being harvested.

C. Rainfall data

Bengaluru, located in southern India, experiences a tropical savanna climate with distinct wet and dry seasons. The city receives rainfall from both the southwest and northeast monsoons, leading to a variation in monthly precipitation levels. Breakdown of the average monthly rainfall in Bengaluru over a 30-year period is depicted in the graph below.

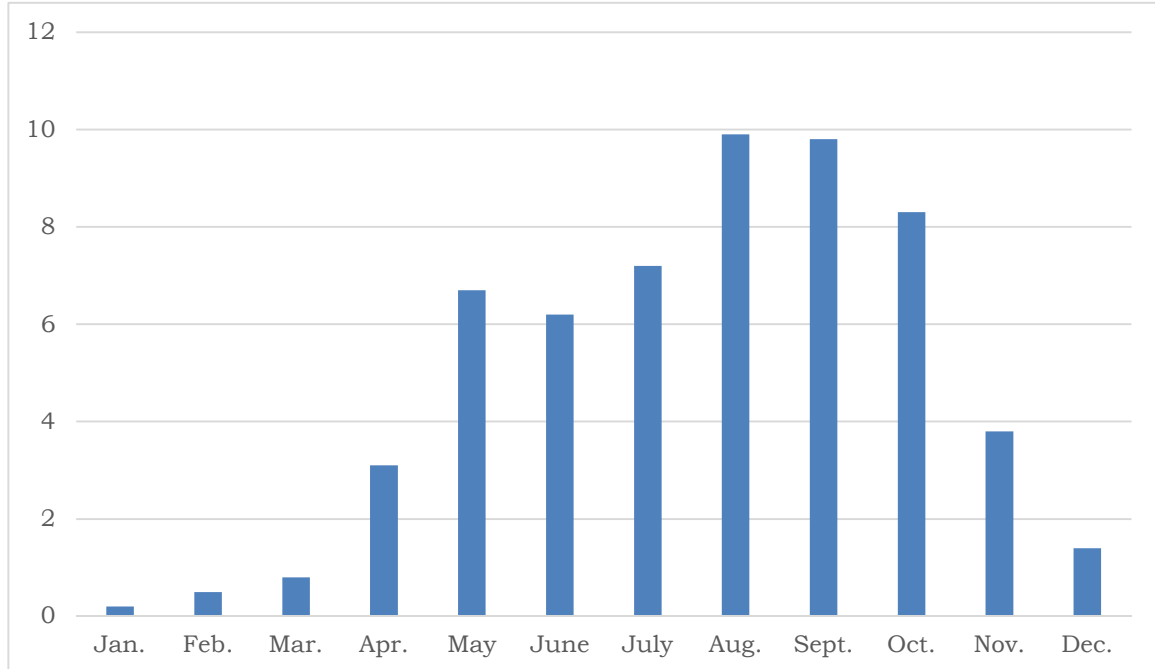


Graph No. 5: Month wise rainfall in mm over 30 years in Bengaluru

These figures indicate that the monsoon season, particularly from June to October, brings the highest rainfall, with September averaging the most at 208.3 mm. In contrast, the period from January to March is relatively dry, with minimal rainfall. Understanding this rainfall pattern is essential for planning activities and managing resources in Bengaluru.

It's important to note that these values are averages over a 30-year period, and actual rainfall can vary annually. For instance, in 2022, Bengaluru experienced record rainfall of 1,958.6 mm, surpassing the previous high of 1,608.5 mm in 2005.

The number of rainy days varies throughout the year, with the monsoon months receiving the most rainfall. Month-wise breakdown of the average number of rainy days in Bengaluru is presented in the following graph.



Graph No. 6: Number of rainy days in Bengaluru moth wise

These figures indicate that the monsoon season, particularly from June to September, brings the highest number of rainy days, with September averaging the most at 9.8 days. In contrast, the period from January to March is relatively dry, with less than one rainy day per month on average. Rainwater availability will be low during this period.

- Rainwater harvested and stored in the campus can be calculated using the following formula:

$$V = K \times I \times A$$

V: The volume of water that can be harvested annually in cubic meters

K: Runoff coefficient (0.9 for concrete, 0.4 for open land and lawn)

I: Annual rainfall in meters* (0.970 meters for Bengaluru)

A: Catchment area in square meters

Total volume of rainwater harvested from rooftop 340 KL per annum (approx.) is stored in underground water tanks and for groundwater recharge.

* - The annual average rainfall in Bengaluru is approximately 970 mm (0.97 meters). However, this can vary significantly each year due to changing weather patterns. For instance, in 2022, Bengaluru received 1,958.6 mm (1.96 meters) of rainfall, which was a record high. The long-term annual average remains close to 970 mm (0.97 meters).



Rainwater storage tank

D. Theoretical water usage (as per BIS)

The water requirements per person are determined based on the number of hostel residents, day scholars, teaching staff, non-teaching staff. The detailed breakdown of these categories, along with their respective water requirements, is presented in the table below.

Table No. 5: The total water requirement of the institution, calculated based on the number of individuals across various categories

Sl. No.	Various categories	Numbers (A)	Per capita water required per day (in liters) (B)*	Total water required by each category (in liters) (C = A *B)
1	Day scholars	360	55	19,800
2	Teaching staff	21	55	1,155
3	Non-teaching staff	28	55	1,540
Total water required as per standards				22,495

* - Per capita water required per day (in liters) is as per BIS Standard 1172:1993 (Code of Basic Requirements for Water Supply, Drainage, and Sanitation).

E. Actual water usage

Quantity of water pumped every day is 25 KL per day.

Liters per capita per day = total water used per day/number of users

Liters per capita per day = 25,000 / 409 = 61.12 liters

This accounts for 61.12 liters per capita per day, which is appreciable.

F. Water usage (Difference) =

Actual water usage - Theoretical water usage (as per BIS)

= 25,000 liters – 22,495 liters

= 2,505 liters per day

The difference between actual water usage and theoretical water usage (as per BIS standards) amounts to 2,505 liters, which is considered reasonable for an institution of this scale.

Table No. 6: Information regarding source of water and its usage points

Sl. No.	Parameter	Response
1.	Source of water for campus	BWSSB, Rainwater and borewell
2.	No. of open Wells/Bore wells	Two borewells
3.	Capacity of underground water tank	50,000 liters
4.	Number of water tanks (Overhead tank)	1
5.	Capacity of water tank (Overhead tank)	90,000 liters
6.	Quantity of water pumped every day	25,000 liters
7.	Waste water sources	Canteen, washrooms
8.	Use of waste water	Gardening and flushing
9.	No. of drinking water filters/water coolers	3
10.	Rain water harvest available?	Yes
11.	No. of units and amount of Rain water harvested	1,00,000 liters
12.	Any water saving techniques followed?	Dual flush systems, and leak detection maintenance are followed
13.	Are there any signs/posters reminding peoples to turn off the water?	Signs and posters are placed in washrooms and common areas, reminding people to turn off taps after use.
14.	Drinking water testing done?	Regularly Tested

Table No. 7: The table presents the test results for Total Dissolved Solids (TDS) and pH levels of the drinking water

Source	Inlet			Outlet		
	TDS (ppm)	pH	Temperature (°C)	TDS (ppm)	pH	Temperature (°C)
Water filter 1	160	7.4	28	40	7.3	24
Water filter 2	175	7.4	27	45	7.3	23
Water filter 3	150	7.4	28	55	7.3	24



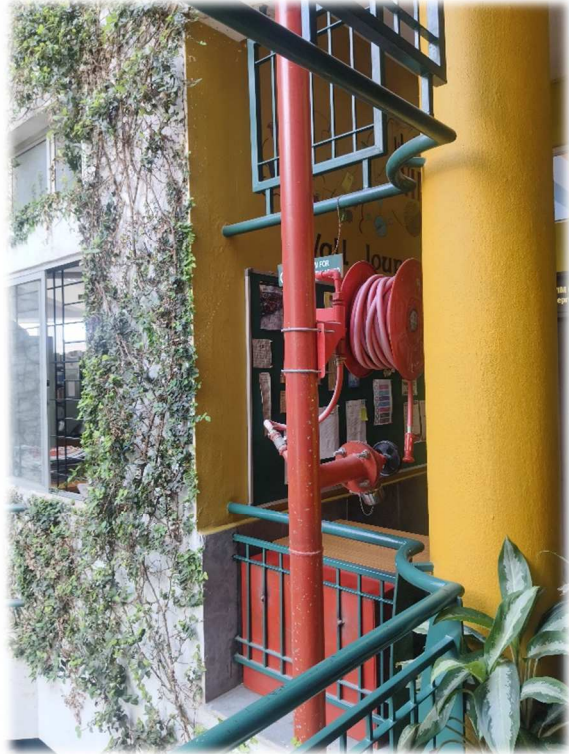
Drinking water filter and water cooler tanks placed in every floor



Overhead tanks



Water storage tank



Fire extinguisher have been placed
at every floor



Save water awareness posters have been put near taps, and in washrooms

3.2 Waste Management:

Waste management in educational institutions is essential for maintaining a clean, sustainable, and environmentally responsible campus. With a significant number of students, faculty, and staff generating various types of waste, systematic waste management ensures proper disposal, reduces environmental pollution, and promotes sustainability.

Need for Waste Management in Educational Institutions

1. **Rising Waste Generation** – Educational institutions produce large amounts of solid waste, paper waste, plastic waste, food waste, and electronic waste daily. Without proper management, this waste can lead to pollution, health hazards, and sanitation issues.
2. **Health and Hygiene** – Accumulation of unsegregated waste can attract pests, cause foul odors, and lead to diseases, affecting the well-being of students and staff.
3. **Environmental Responsibility** – As centers of learning, institutions play a key role in educating and setting examples for environmental stewardship. Managing waste efficiently reduces landfill burden, pollution, and ecological harm.
4. **Government and Regulatory Compliance** – Institutions must adhere to environmental laws and policies, such as Swachh Bharat Abhiyan, Solid Waste Management Rules 2016, and E-Waste Management Rules 2016, ensuring legal compliance and responsible waste disposal.
5. **Resource Conservation** – Recycling and reusing materials help conserve natural resources, reducing the need for raw materials like paper, plastic, and metals.

Importance of Waste Management in Educational Institutions

1. **Promotes a Clean and Healthy Campus**
 - Proper waste disposal prevents littering, ensuring a hygienic and pleasant learning environment.

- Segregation of biodegradable and non-biodegradable waste minimizes sanitation risks.
2. Encourages Sustainable Practices
- Integrating reduce, reuse, and recycle (3Rs) principles fosters sustainability.
 - Composting organic waste through vermicomposting units reduces landfill waste and enhances soil quality for gardening.
3. Reduces Environmental Impact
- Managing plastic waste by reducing single-use plastics and promoting eco-friendly alternatives minimizes pollution.
 - Proper e-waste management prevents harmful substances like lead and mercury from contaminating the environment.
4. Supports Water Conservation
- Treating wastewater through Sewage Treatment Plants (STPs) allows reuse for gardening and flushing, reducing fresh water consumption.
5. Educational and Awareness Opportunities
- Institutions can incorporate waste management into the curriculum through environmental science projects and practical learning.
 - Conducting awareness programs, workshops, and campaigns helps students and staff adopt responsible waste disposal habits.
6. Economic and Institutional Benefits
- Recycling and composting reduce waste disposal costs.
 - Sustainable waste management enhances an institution's reputation, contributing to NAAC and Green Audit certifications.

Observations:

In this campus, waste generated is managed as mentioned below:

Bio-degradable Waste:

- Bio-degradable waste (sewage) from toilets is connected to Sewage Treatment Plant.
- Paper is sent for recycling to ITC.

Non-Bio-degradable Waste:

- The campus is a 'single use plastic free zone'. Plastics (if any) generated by the campus is collected by BBMP waste collection vehicle.
- Educational posters related to water conservation, waste minimization, waste segregation have been put in the campus to create awareness.



'No Plastics', 'Keep campus clean', 'Go Green' posters



Dustbins are placed in every floor, playground, classroom and open areas

3.2.1 Sanitary Pad Vending and Incinerator

Providing sanitary pad dispensers and incinerators in degree colleges is essential for promoting menstrual hygiene, dignity, and environmental sustainability. Installing dispensers ensures easy and affordable access to sanitary pads, fostering a supportive environment for female students.

Proper disposal of sanitary waste is equally important. Without dedicated incinerators, used pads are often discarded improperly, leading to health hazards, environmental pollution, and sanitation issues.

Observations:

Pad vending and incinerators have been installed in ladies room in the institute.



3.2.2 Sewage Treatment Plant

Wastewater from bathrooms, urinals, toilets, and kitchens, commonly referred to as sewage, can be treated and reused for various purposes. Treated sewage is suitable for gardening, flushing, and other non-potable applications, helping to conserve fresh water resources.

Observations:

The institution has a Sewage Treatment Plant (STP) in place. The treated wastewater is effectively utilized for gardening, thereby reducing the reliance on fresh water and promoting sustainable water management.

Table No. 8: Information on source and fate of wastewater

Sl. No.	Details	Remarks
1	Wastewater Source	Canteen and washrooms
2	Use of waste water	Used after treating
3	Fate of waste water from labs	NA
4	Weather waste water from labs is mixed with other wastewater sources	NA
5	Any treatment for lab waste?	NA
6	Disposal of wastewater	Treated in STP
7	Use of treated wastewater from STP	Gardening and flushing



3.2.3 Electronic waste collection bins

With the increasing use of electronic devices, e-waste management is crucial in degree colleges. Improper disposal of discarded gadgets like mobile phones, chargers, and laptops leads to environmental pollution and health hazards. E-waste collection bins ensure safe disposal and recycling, preventing toxic substances from contaminating soil and water. Implementing these bins promotes eco-conscious behavior, waste segregation, and responsible recycling among students and staff.

Observations:

Sogo Synergy Pvt. Ltd., a prominent e-waste management company based in Bangalore, is actively collaborating with educational institutions in and around the city to promote responsible electronic waste disposal. By installing e-waste collection bins on campuses, Sogo Synergy facilitates the convenient and environmentally friendly disposal of obsolete electronic devices.

Additionally, Sogo Synergy conducted a successful e-waste drive at R V Institute of Management, encouraging students and staff to contribute to e-waste reduction efforts. An E-waste collection bin is placed in the institute for collecting E-waste.



3.2.4 SAP Implementation: A Step toward a Sustainable and Efficient Campus

The adoption of SAP (Systems, Applications, and Products in Data Processing) at R V Institute of Management marks a significant milestone in modernizing administrative and academic processes. This strategic shift to a digitally integrated ecosystem is not merely an operational upgrade—it is a commitment to efficiency, sustainability, and institutional excellence. By leveraging SAP, the institution has successfully minimized reliance on physical resources, streamlined workflow processes, and reinforced its commitment to environmentally responsible practices.

Key Benefits of SAP Implementation in Driving Sustainability and Operational Efficiency

1. Drastic Reduction in Paper Consumption and Waste Generation

Traditionally, academic and administrative functions have relied heavily on paper-based documentation, including student records, attendance registers, financial transactions, examination results, and faculty reports. This dependence on paper not only incurs significant costs but also contributes to deforestation, excessive water usage, and carbon emissions from the paper manufacturing industry.

By implementing SAP, the institution has transitioned to a paperless ecosystem, where data is stored, processed, and shared digitally. This shift has resulted in:

- A significant decline in paper consumption, reducing environmental impact.
- Minimized waste generation, thereby addressing long-term sustainability challenges.
- More efficient data retrieval and storage, eliminating the risks associated with misplaced or damaged physical records.
- Reduced administrative burden, allowing staff and faculty to focus on more value-driven tasks rather than manual paperwork.

By eliminating the need for printed registers, application forms, and administrative documents, SAP ensures that academic and administrative workflows are streamlined without compromising accessibility, security, or transparency.

2. Energy and Resource Conservation through Digital Transformation

Maintaining paper-based documentation demands substantial physical infrastructure, including filing cabinets, storage rooms, printing stations, and courier services for document transmission. These facilities consume energy, require continuous maintenance, and contribute to operational inefficiencies.

With SAP's cloud-based solutions and centralized digital storage, the institution has:

- Reduced the need for physical storage, leading to the optimization of available space.
- Lowered electricity consumption that was previously required for printing, photocopying, and document storage facilities.
- Minimized reliance on stationery, ink, and printing devices, leading to a reduction in overall resource consumption.

By replacing traditional paperwork with digital workflows, SAP not only enhances efficiency but also promotes a cost-effective and environmentally conscious campus environment.

3. Lowering the Institution's Carbon Footprint

A major contributor to the institution's carbon footprint is the lifecycle of paper-based resources—from production and procurement to distribution and disposal. The transportation of academic materials, printed notices, and official documents generates significant fuel-based emissions, further escalating environmental concerns.

SAP facilitates a seamless transition to digital governance, drastically reducing:

- Fuel consumption linked to transportation and logistics of physical materials.
- Emissions from paper production and waste disposal, contributing to a greener environment.
- Environmental hazards associated with ink and chemical-based printing processes.

By shifting toward a paperless ecosystem, SAP directly supports the institution's commitment to the United Nations Sustainable Development Goals (SDGs), particularly those related to responsible consumption (SDG 12), climate action (SDG 13), and innovation and infrastructure (SDG 9).

4. Strengthening Green Campus and Sustainability Initiatives

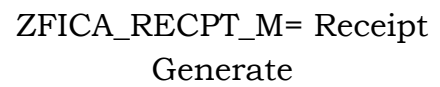
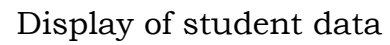
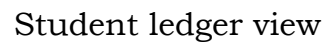
The integration of SAP is not just a technological upgrade but a strategic alignment with the institution's green campus vision. This initiative fosters a culture of environmental responsibility by:

- Encouraging digital documentation, communication, and resource management to minimize environmental impact.
- Promoting eco-friendly operational practices across academic and administrative departments.
- Establishing a model of sustainability that can be replicated in other educational institutions.

Moreover, SAP enhances institutional governance by ensuring transparency, reducing errors, and accelerating decision-making processes through real-time data access. This directly contributes to effective policy implementation and better resource allocation, reinforcing long-term sustainability commitments.

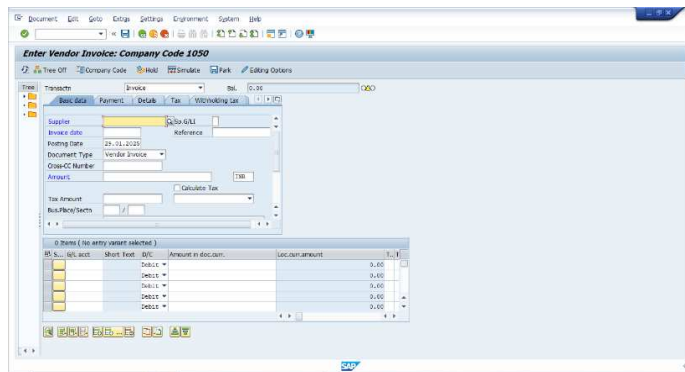
The implementation of SAP has positioned R V Institute of Management as a leader in technology-driven education and sustainable administration. By integrating cloud-based solutions, digital record-keeping, and paperless operations, SAP has not only improved efficiency but has also strengthened the institution's role in promoting environmental responsibility.

This transformative approach reflects a forward-thinking vision—one that embraces innovation, operational excellence, and ecological sustainability. As the institution continues to expand its digital footprint, the benefits of SAP will extend beyond the campus, inspiring a broader commitment to sustainable development within the educational sector and beyond.

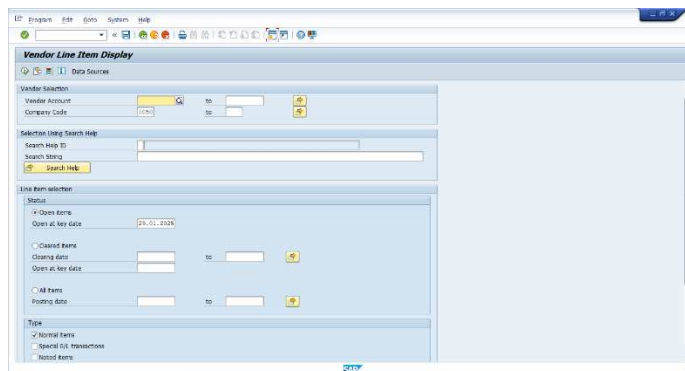




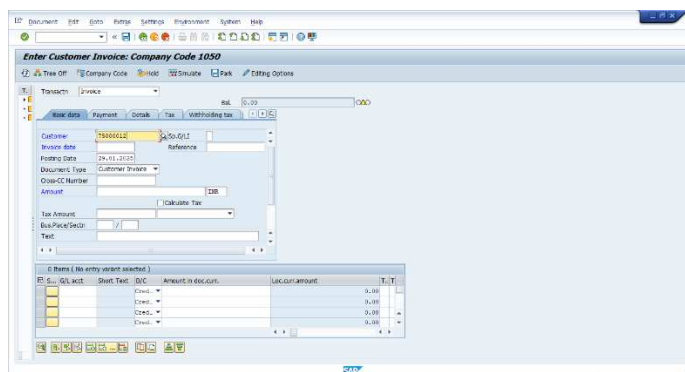
FICO
Login the SAP Portal



FB60: Invoice Entry



FBL1N: Vendor Ledger
Display



FB70: Customer Invoice
Entry

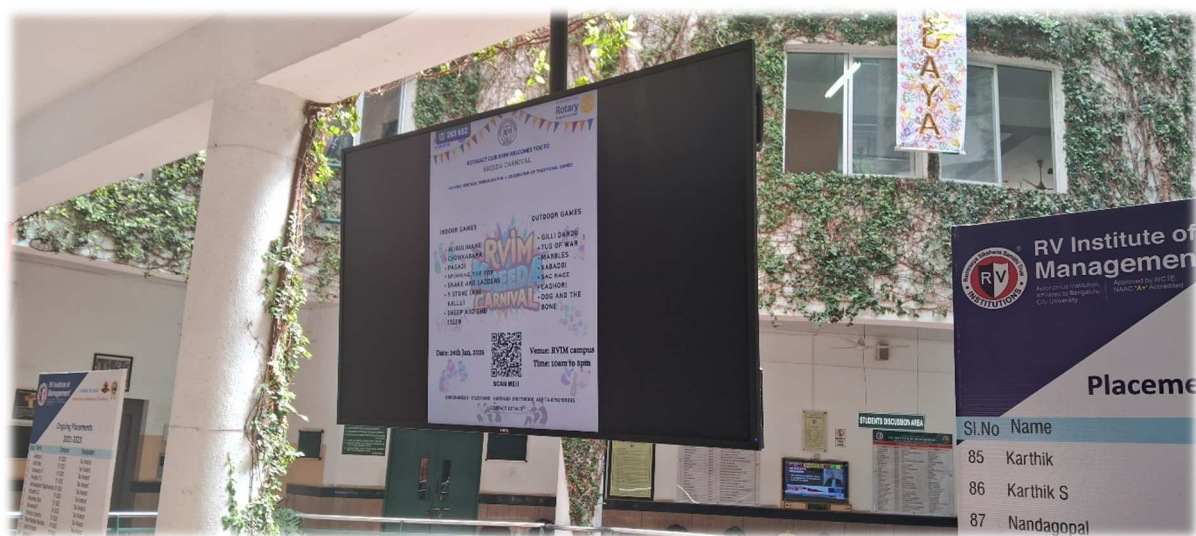
The above screenshots illustrate the implementation of SAP for maintaining vendor records.

3.2.5 Impact of Digital Display Notice Boards on Sustainability

The adoption of digital display notice boards significantly reduces paper consumption, thereby conserving natural resources and minimizing waste. Traditional notice boards require frequent printing of circulars, announcements, and event notifications, leading to excessive use of paper, ink, and electricity for printing. In contrast, digital displays eliminate the need for printed notices, reducing deforestation, water usage, and carbon emissions associated with paper production and disposal.

Additionally, digital boards enhance energy efficiency by utilizing LED technology, which consumes less power compared to continuous printing. They also promote real-time updates, ensuring better communication without material waste.

By reducing the logistical and environmental burden of paper-based notices, digital displays contribute to a cleaner, greener campus, aligning with sustainability initiatives and promoting eco-friendly practices among students and staff. This shift supports paperless governance, advancing the institution's commitment to environmental responsibility and sustainable development.



Digital Notice Board

3.2.6 ITC WOW (Wellbeing out of Waste) MoU with R V Institute of Management

ITC's Wellbeing out of Waste (WOW) initiative is a pioneering program aimed at promoting sustainable waste management through paper recycling. Under its Memorandum of Understanding (MoU) with R V Institute of Management, ITC has collaborated to collect and recycle paper waste, fostering environmental responsibility among students and staff.

Through this initiative, institutions segregate and donate used paper, reducing landfill waste and conserving natural resources. ITC then processes the collected paper into recycled products, ensuring a circular economy. Additionally, the program raises awareness about responsible waste disposal, encouraging a culture of sustainability.

By partnering with ITC WOW, educational institutions contribute to reducing deforestation, lowering carbon footprints, and promoting paper conservation. This initiative aligns with broader eco-friendly campus goals, reinforcing the importance of waste segregation, recycling, and sustainable resource management in shaping a greener future.



Waste segregation posters

3.2.7 Environmental Benefits of Making Course Material Available Online

R V Institute of Management has made the course content digital, moving towards sustainable development. Transitioning to online course materials significantly reduces paper consumption, leading to a decline in deforestation, water usage, and energy-intensive paper production. Traditional printed textbooks and study materials require vast amounts of natural resources, while digital resources eliminate this need, promoting sustainable education.

Additionally, online learning minimizes waste generation, as students no longer discard outdated books and notes. By reducing printing, transportation, and distribution, digital materials lower carbon emissions associated with logistics. Cloud-based storage further enhances energy efficiency, reducing the reliance on physical storage infrastructure.

Moreover, digital access enables real-time updates to study materials, eliminating the need for frequent reprinting. It also fosters interactive and engaging learning experiences, promoting eco-friendly education without compromising quality.



3.2.8 Environmental Benefits of Reusable Plates, Glasses and cutlery

R V Institute of Management has stopped using single use plastics and as an ecofriendly alternative, institute promotes the use of reusables. Single use plastic water bottles have also been replaced by glass bottles. Switching to reusable plates and glasses (such as stainless steel and glass) instead of single-use plastic significantly reduces plastic waste, minimizing pollution and environmental degradation. Unlike disposable plastic plates, which contribute to landfill overflow and ocean contamination, reusable alternatives help in waste reduction and resource conservation.

Plastic production and disposal generate high carbon emissions, while reusable materials, with proper maintenance, have a much lower environmental footprint. Stainless steel and glass are durable, non-toxic, and recyclable, ensuring long-term sustainability without harmful micro plastic pollution.

Additionally, reusable tableware enhances hygiene and food safety, as they do not contain harmful chemicals that can leach into food. Institutions adopting reusables promote eco-conscious behavior among students, fostering a culture of sustainability.

By reducing dependency on single-use plastics, educational institutions contribute to a cleaner environment, aligning with zero-waste initiatives and creating a more sustainable campus.



3.3 Air Quality

Air quality plays a major role in day-to-day life. People spend more time indoors. Indoor air quality is the air quality within and around buildings and structures. Indoor air quality is known to affect the health, comfort, and well-being of building occupants. Poor indoor air quality has been linked to sick building syndrome, reduced productivity, and impaired learning in schools and colleges.

Observations:

Particulate matter was measured in all the classrooms, staff rooms and library. It was observed that the concentrations of PM 1, PM 2.5 and PM 10 were found to be negligible at that instant.

The readings mentioned are measured at that instant.

Table No. 9: Readings of PM1, PM 2.5, PM 10, HCOH and TVOC

Sl. No.	Room				HCOH	TVOC
		PM 1	PM 2.5	PM 10		
1.	Centre for Media	9	15	21	<0.1 ppm	0.3 mg/m ³ to 0.5 mg/m ³
2.	Conference Hall	8	13	23		
3.	Dept. of Finance	8	12	20		
4.	Administrative office	9	14	22		
5.	Dept. of General Management	7	12	19		
6.	Dept. of Human Resources	6	13	20		
7.	Director's Room	8	14	21		
8.	Pantry	5	15	20		

9.	Secretary to Director	9	15	22	<0.1 ppm	0.3 mg/m ³ to 0.5 mg/m ³
10.	Board Room	6	14	21		
11.	Stationary stores	7	13	18		
12.	Dept. of IT and Management Centre for Social Responsibility	5	12	19		
13.	Digital Library	8	12	23		
14.	Seminar Hall	8	10	24		
15.	MDP/FDP hall/Tutorial room	9	9	25		
16.	Centre for Wellness	7	12	23		
17.	Computer Lab (1)	5	15	20		
18.	Computer Lab (2)	9	14	21		
19.	Communication Lab	10	13	18		
20.	System Service Centre	11	15	19		
21.	Centre for Knowledge Resources	9	16	20		
22.	RVIM Centre for Innovation, Entrepreneurship & Incubation	8	18	22		
23.	Lecture Hall/Classroom	5	14	25		
24.	Students discussion/Reading room	10	15	19		
25.	Activity room/Workshop Hall	9	16	22		
26.	IBM Innovation Centre for Education	8	14	26		

27.	Seminar Hall	7	13	22	<0.1 ppm	0.3 mg/m ³ to 0.5 mg/m ³
28.	Dept. of Marketing	6	12	24		
29.	IQAC/RV Centre for Research and Consultancy	5	15	23		
30.	Examination Control Room	8	14	22		
31.	Lecture hall/Classroom	9	13	21		

3.4 Light

The main part of the learning process is visual. The classroom is an arena for many activities, such as reading and writing, student or teacher presentations, tests, etc., hence, light plays a major role in classrooms. Well-lit classrooms are utmost essential in colleges. Working desks of the students require a minimum of light of 200 lux. Further, there may be certain zones that require specialized lighting. As per IS 3646, average lighting level of 200 to 300 lux should be maintained at teaching spaces, offices and meeting rooms. For example, the area in front of the board should have proper and separately switched presentation lighting.

Observations:

It was observed that all the classrooms are well lit. The light intensity was observed to be ranging from 300 lux to 450 lux.

Day light (Natural light) is the main source in the classrooms, staffrooms, and library and so on. Infrastructure is very well planned to harness maximum natural light in all the places.

LED bulbs have been used extensively in the campus. Migration to LED tube lights and bulbs has been done in order to save electrical energy.

The readings mentioned are measured at that instant.

Table No. 10: Readings of Light intensity in lux

Sl. No.	Room	Light intensity in lux
1.	Centre for Media	316
2.	Conference Hall	350
3.	Dept. of Finance	338
4.	Administrative office	338
5.	Dept. of General Management	314
6.	Dept. of Human Resources	302
7.	Director's Room	318

8.	Pantry	319
9.	Secretary to Director	316
10.	Board Room	317
11.	Stationary stores	328
12.	Dept. of IT and Management Centre for Social Responsibility	350
13.	Digital Library	301
14.	Seminar Hall	321
15.	MDP/FDP hall/Tutorial room	338
16.	Centre for Wellness	323
17.	Computer Lab (1)	321
18.	Computer Lab (2)	308
19.	Communication Lab	303
20.	System Service Centre	304
21.	Centre for Knowledge Resources	315
22.	RVIM Centre for Innovation, Entrepreneurship & Incubation	327
23.	Lecture Hall/Classroom	341
24.	Students discussion/Reading room	316
25.	Activity room/Workshop Hall	343
26.	IBM Innovation Centre for Education	348
27.	Seminar Hall	334
28.	Dept. of Marketing	315
29.	IQAC/RV Centre for Research and Consultancy	337
30.	Examination Control Room	313
31.	Lecture hall/Classroom	338

3.5 Noise

Noise is unwanted sound considered unpleasant, loud or disruptive to hearing. Unwanted sound is not preferred in any classroom. The Noise levels in the class room should be below 35 dB in an unoccupied classroom. Higher levels of noise in the classroom may distract the students.

Observations:

Noise levels were measured in the classrooms and were found to be in the range of 30 dB to 68 dB in an unoccupied classrooms and classrooms with students.

The readings mentioned are measured at that instant.

Table No. 11: Readings of Noise levels in decibel

Sl. No.	Room	Noise in decibel	
		Minimum	Maximum
1.	Centre for Media	37	55
2.	Conference Hall	43	65
3.	Dept. of Finance	35	68
4.	Administrative office	39	66
5.	Dept. of General Management	46	60
6.	Dept. of Human Resources	44	63
7.	Director's Room	31	66
8.	Pantry	46	59
9.	Secretary to Director	34	57
10.	Board Room	50	59
11.	Stationary stores	41	59
12.	Dept. of IT and Management Centre for Social Responsibility	43	63
13.	Digital Library	39	60

14.	Seminar Hall	33	60
15.	MDP/FDP hall/Tutorial room	34	63
16.	Centre for Wellness	33	66
17.	Computer Lab (1)	45	65
18.	Computer Lab (2)	50	63
19.	Communication Lab	48	64
20.	System Service Centre	39	57
21.	Centre for Knowledge Resources	49	59
22.	RVIM Centre for Innovation, Entrepreneurship & Incubation	36	60
23.	Lecture Hall/Classroom	50	57
24.	Students discussion/Reading room	40	67
25.	Activity room/Workshop Hall	31	59
26.	IBM Innovation Centre for Education	38	67
27.	Seminar Hall	45	62
28.	Dept. of Marketing	33	75
29.	IQAC/RV Centre for Research and Consultancy	43	78
30.	Examination Control Room	46	68
31.	Lecture hall/Classroom	48	58

3.6 Electro Magnetic Radiations

Electromagnetic radiation (EMR) consists of waves of the electromagnetic (EM) field, propagating through space, carrying electromagnetic radiant energy. EMR is generated by electronic devices and constant exposure to EM radiations is not advisable.

Observations:

Electromagnetic radiations were measured in all the classrooms, staff rooms, and library. It was observed that the Electromagnetic radiations were zero in all these places.

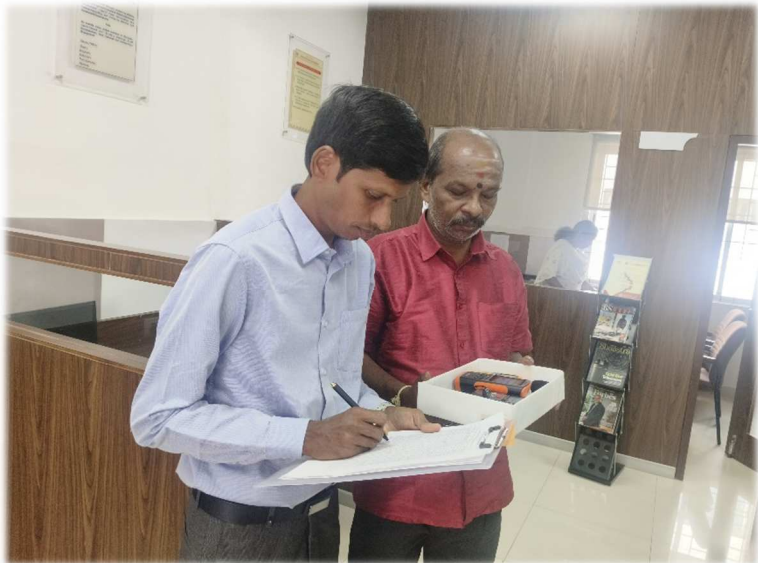
H-Field and E-Field were found in server room however the room is isolated and is always closed.



Measurement of PM 1, PM 2.5, PM 10, Light intensity, Noise, EMR, HCOH, TVOC



Measurement of PM 1, PM 2.5, PM 10, Light intensity, Noise, EMR, HCOH, TVOC



Measurement of PM 1, PM 2.5, PM 10, Light intensity, Noise, EMR, HCOH, TVOC



Measurement of PM 1, PM 2.5, PM 10, Light intensity, Noise, EMR, HCOH, TVOC




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Measurement of PM 1, PM 2.5, PM 10, Light intensity, Noise, EMR, HCOH, TVOC

DISCLAIMER

The audit team has prepared this report for R V institute of Management, Bengaluru based on the input data provided by the R V Institute of Management representatives, supplemented by the expert team's best judgment.

The carbon footprint calculations provided in this report are based on standard data and values obtained from various research papers and articles. These calculations are intended to provide an understanding of carbon emissions and should be considered as indicative estimates rather than precise measurements. They may not reflect absolute accuracy due to variability in emission factors and contextual differences.

While every effort has been made to ensure accuracy, the details in this report have been compiled in good faith based on the information gathered. The recommendations are made using our best judgment; however, no representation, warranty, or undertaking, express or implied, is made. The audit team accepts no responsibility for any direct or consequential loss arising from the use of the information, statements, or forecasts in this report.

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