St. Paul Institute of Professional Studies, Indore

GREEN AUDIT REPORT

Year - 2021-22

Report prepared by

CENTRE FOR ENVIRONMENT PROTECTION, RESEARCH & DEVELOPMENT
पर्यावरण संरक्षण, अनुसंधान एवं विकास केन्द्र
Estd. 1996

GREEN AUDIT TEAM

- **Coordinator of the Team:**

  Dr. Ramesh Mangal
  Ph.D. Entrepreneurship & Hon. Secretary, Centre for Environment Protection, Research & Development

- **Expert Members of the Team:**

Expert Team:

1. **Dr. O. P. Joshi**
   [Ph.D. (Air Pollution), Botanist & Ex. Principal, Gujarati Science College]
2. **Dr. D. K. Wagela**
   [Ph.D. (Air Pollution) & Expert-Waste Management, Ex. Senior Scientist, MPPCB]
3. **Er. R. K. Tiwari**
   [BE, MBA (Energy Management) & Ex. Chief Engineer, MPEB]
4. **Er. Mahesh Rajvaidya**
   [Expert-Water Management & Ex. Supdt. Engineer, PWD]
5. **Dr. Sangita Bharuka**
   [Convenor for Colleges – CEPRD].

CONTENTS

CENTRE FOR ENVIRONMENT PROTECTION, RESEARCH & DEVELOPMENT
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Estd. 1996

No. CEPRD/338/2022 Date : 25/03/2022

Green Audit Certificate

This is to certify that

St. Paul Institute of Professional Studies, Indore (MP)

carried out a **Green Audit** of their campus for the year **2021-22** and has submitted the relevant data and credentials for scrutiny to our establishment **Centre for Environment Protection, Research and Development, Indore (MP)**. The activities and measures carried out by the Institution have been verified by the **Expert Team*** of this Centre and were found to be up to the mark. The efforts taken by the faculty, students and the administration therein, towards the protection of the environment and its sustainability are highly appreciated and commendable.

***Expert Team:**

1. **Dr. O. P. Joshi** [Ph.D. (Air Pollution), Botanist & Ex. Principal, Gujarati Science College]
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5. **Dr. Sangita Bharuka** (Convenor for Colleges - CEPRD).

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2. EXECUTIVE SUMMARY

Eco campus is a concept implemented in many educational institutions, all over the world to make them sustainable because of their mass resource utilization and waste discharge into the environment. Waste minimization plans for the educational institute are now mandatory to maintain the cleanliness of the campus. To find out the environmental performance of the educational institutions and to analyze the possible solutions for converting the educational campus as eco-campus the conduction of Green Audit of institutions is essential. The green audit of **St. Paul Institute of Professional Studies, Indore** enables to assess the lifestyle, action and its impact on the environment. This is the first attempt to conduct Green Audit of SPIPS campus. This audit was mainly focused on greening indicators like consumption of energy in terms of electricity and fossil fuel, waste management practices adopted, the carbon footprint of the campus, quality of water, air, noise and soil, etc.

Initially, a questionnaire survey was conducted to know about the existing resources of the campus and resource consumption patterns of the students and staff in the college. Collected data were grouped, tabulated and analyzed. Finally, a report pertaining environmental management plan with strengths, weaknesses and suggestions on the environmental issue of campus are documented.

3. INTRODUCTION

St. Paul Institute of Professional Studies, Indore (SPIPS) is established in the year 2010. SPIPS is a Self-financed Christian Minority Institute, approved as such by the Government of India. It is owned and managed by the Catholic Diocese of Indore. It is approved by the Department of Higher Education, M. P. and is affiliated to Devi Ahilya Vishwavidyalaya, Indore. Presently, it offers Graduate and Post-Graduate Courses for both boys and girls.

The fundamental aim of the college is to impart sound learning to young men and women under circumstances congenial to their all-around development. It encourages the students to aim at excellence not only in academic pursuits but also in every aspect of human endeavor to achieve perfection.

The vision of SPIPS is *to form global citizens, with professionalism and efficiency, Character and commitment, who will take our nation and the world to greater heights!*

Fig. 1: Location of St. Paul Institute of Professional Studies, Indore

Fig. 2: Outer view of SPIPS Building

The student and faculty strength of the college is listed below (**Table 1**):

Table 1: Total Strength of Students, Faculty, and Non-teaching Staff

No. of Students	**1636**
No. of Teachers	**44**
No. of Non-teaching staffs	**27**

ABOUT CEPRD

Centre for Environment Protection, Research & Development is a voluntary NGO, which came into existence on 6 June 1996 as a result of the voluntary efforts of enlightened and environment-loving citizens having vast experience in various fields. CEPRD is working in the Chairmanship of Learned Senior Advocate **Shri Anand Mohan Mathur**. CEPRD is a body of crusaders for the protection and development of the environment, using modern research, technology and know-how with committed public participation. The organization is working on the principle of "Think Globally & Act Locally". To ensure the achievement of its vast objectives, the CEPRD has 10 Working Groups working at the grass-root level with experts, specialists and social activists as core members of each faculty. All the senior, technical, scientific and professional experts specializing in subjects pertaining to different faculties are also associated in an advisory capacity.

4. OBJECTIVES OF GREEN AUDIT

The main objectives of this green audit are to assess the environmental quality and themanagement strategies being implemented in SPIPS. The specific objectives are:

1. To observe, identify and record green practices in the college campus.
2. To enhance environmental sensitive measures.
3. To identify the strength and weaknesses of green practices.
4. To monitor the energy consumption pattern of the college.
5. To address the problems related to green practices.
6. To find the solutions related the particular problems.
7. To identify the types of waste management.
8. To practice the measures of sustainable development.
9. To identify the gap areas and suggest recommendations to improve the green campus of the College.
10. To motivate the students and faculty members for the optimum use of resources.

5. SCOPE OF GREEN AUDIT

The wider scope of the green audit is:

1. Environmental education through practice.
2. Improving environmental standards.
3. To enhance environmental protection initiatives.
4. Sustainable use of natural resources in the campus.
5. Financial savings through optimum utilization of the resources.
6. Pragmatic learning of the curriculum.
7. Participation in social responsibility.
8. Developing environmental ethics and value systems in students.

6. METHODOLOGY ADOPTED

SPIPS has conducted Green Audit in the year 2021-22, on a yearly basis for the first time. The audit was carried out in three phases:

1. Questionnaire Survey:

The survey includes administrative issues associated with the planning of the audit, selecting the personnel for the audit team, preparing the audit protocol used by the organization, obtaining background information, etc. It was decided that the information related to Water and Wastewater Management, Energy Conservation, Green Belt, Carbon Footprints, Waste Management, Air, Noise and Soil quality status, other eco-friendly activities, etc. should be gathered for the audit purpose. For collecting data related to these different areas, specific questionnaires were prepared.

2. Onsite Visit and Observations:

The data relating to the above-mentioned areas were collected by visiting each and every facility of the college campus. The questionnaires were filled up according to the present situation. Photographic documentation was also done with the help of a digital camera.

3. Data Analysis:

After the collection of secondary data, the reviews related to each environmental factor were taken by the green audit team. The data were tabulated and analyzed. Depending upon the observations and data collected, interpretations were made. The lacunas and good practices were documented.

4. Focus Group Discussion:

Focus Group discussions by the team were held with the faculties, staff members and the management focusing on various aspects of Green Audit. The discussion was focused on identifying the attitudes and awareness towards environmental issues at the institutional and local levels.

7. TARGET AREAS OF GREEN AUDIT

Eco-campus concept mainly focuses on the efficient use of energy and water; minimizing waste generation or pollution and also economic efficiency. Target areas included in this green audit are water, energy, waste, green campus and carbon footprint.

1. Water Management
2. Energy Management
3. Waste Management
4. Green Campus Management
5. Carbon Footprint

8. AUDIT STAGE

In **St. Paul Institute of Professional Studies,** the green audit began with the assessment of the status of the green cover followed by waste management practices and energy conservation strategies etc. The team monitored different facilities at the college, determined different types of appliances and utilities as well as identified the relevant consumption patterns and their impacts. The faculty and staff were interviewed to get details of usage, frequency or general characteristics of certain appliances.

Water Management

The source of water used in the College are one bore well present in the campus and Narmada supply through IMC. The borewell is recharging with rainwater from the roof. A total of 3 to 4 M^3 of water is pumped out from the well every day (**Table 2**). Wastage of water from each and every place is reduced by adopting water-saving procedures. An average of 4 to 5 M^3 of water is used by the College normally.

Energy Management

Tables 3 and 4 show the details of the energy devices of the college. SPIPS is trying to adopt suggestions to reduce the consumption of electricity. Total Electricity Consumption Trends for the year 2019 – 2021 of SPIPS are shown in **Fig. 3**.

Waste Management

Waste management is important for an eco-friendly campus. In college different types of wastes are generated, their collection and management are very challenging. The following data provide the details of the waste generated and the disposal method adopted by the college (**Table 5, 6 and 7**).

9. GREEN AUDIT REPORT

The information reviewed for water management in SPIPS during Green Audit is as under:

Table 2: Water Management Details

S. No.	Parameters	Response	Remarks
1	Source of Water & Avg. Water Consumption per day	01 Borewell+ 01 Narmada Connection = 05 M^3/day	
2	No. of Well	01	
3	No. of the motors used	02	
4	Horsepower –Motor	--	
5	Depth of well–Total	500 Ft.	
6	Water level	Full	
7	Number of water tanks	03	
8	Capacity of tank	30 M^3/day	
9	Quantity of water pumped per day	05 M^3/day	
10	Any water wastage/why?	No	
11	Water usage for gardening	02 M^3/day	
12	Wastewater sources	Taps and Wash Rooms	
13	Use of wastewater	Gardening	
14	Faith of wastewater from labs	Nil	
15	Whether wastewater from labs mixed with groundwater	No	
16	Any treatment for lab water	No	If any, primary treatment is required.
17	Whether any green chemistry method practiced in labs	No	If any, disposal of waste/ discarded chemicals etc. to be done as per the Rules.
18	No. of water coolers	07	
19	Is rainwater harvest available?	Yes	
20	No. of units and amount of water harvested	Depends on Rain Fall	
21	Any leak taps	No	
22	Amount of water lost per day	Nil	
23	Any water management plan used?	Proper Repairing in Time	
24	Any water-saving techniques followed?	Rules and Regulations	
25	Are there any signs reminding people to turn off the water?	Yes, Alarm	

Table 3: Energy Audit - Details of the Energy Devices in use

Room Name/ No.	Electrical device/items	No.
Computer Lab1	Fan, Tube Light AC Computer Systems Speaker Camera Projector	6 3 2 60 1 1 1
Computer Lab2	Fan Tube Light AC Computer Systems Speaker Camera Projector	6 3 2 60 1 1 1
AV Room	Fan Tube Light AC Computer Systems Speaker Camera Projector Amplifier & Sound System	6 5 2 1 4 1 1 1
Seminar Hall	Tube Light AC Speaker Camera Projector Amplifier & Sound System	16 05 08 02 01 01
Auditorium	Fan Tube Light Coolers Speaker Camera Projector Amplifier & Sound System	24 31 07 30 04 01 03
Language Lab	Fan Tube Light Computer Systems Speaker Camera Projector Amplifier & Sound System	04 05 14 03 01 01 01

Room Name/ No.	Electrical device/items	No.
Staff Room Ist Floor	Fan Tube Light Computer Systems Speaker Camera	17 12 01 02 02
Staff Room IInd Floor	Fan Tube Light Computer Systems Speaker Camera	17 12 01 02 02
Staff Room IInd Floor	Fan Tube Light Computer Systems Speaker Camera	05 06 01 01 01
Mass Media Room	Fan Tube Light Computer Systems Speaker Camera	01 03 01 01 01
Physics Lab	Fan Tube Light Speaker Camera	06 10 01 01
Library	Fan Tube Light Computer Systems Speaker Camera Projector	14 20 02 01 06 00
Administration Block	Fan Tube Light Computer Systems Speaker Camera LED Screen	12 12 08 03 12 03

Items: Bulbs (CFL, incandescent, LED), AC, fan, computer, instruments.

Table 4: Energy Audit Report - Details of the Energy Devices in use

S. No.	Electrical Appliances/Instruments	Nos.
1	CFL	200
2	Tube	200
4	LED bulb	80
5	LED tube	80
6	Projector	15
7	Speakers	110
8	Fan	351
9	Computer	145
10	Laptops	2
11	Printers	20
12	Photostat machine	03
13	Scanner	02
14	UPS	145
15	Induction	01
16	A.C.	08
17	Refrigerator	01
18	Table fan	04
19	Mixer grinder	01
20	Oven	01
22	Centrifuge	00
23	Autoclave	00
24	Ultrasound	00
25	Laminar Flow	00
26	Exhaust Fan	25
27	Iron box	00
28	Sewing machine	00
29	Colour bulb	00
30	Incubator	00
31	Distillation unit	00
32	Sanitary napkin incinerator	01

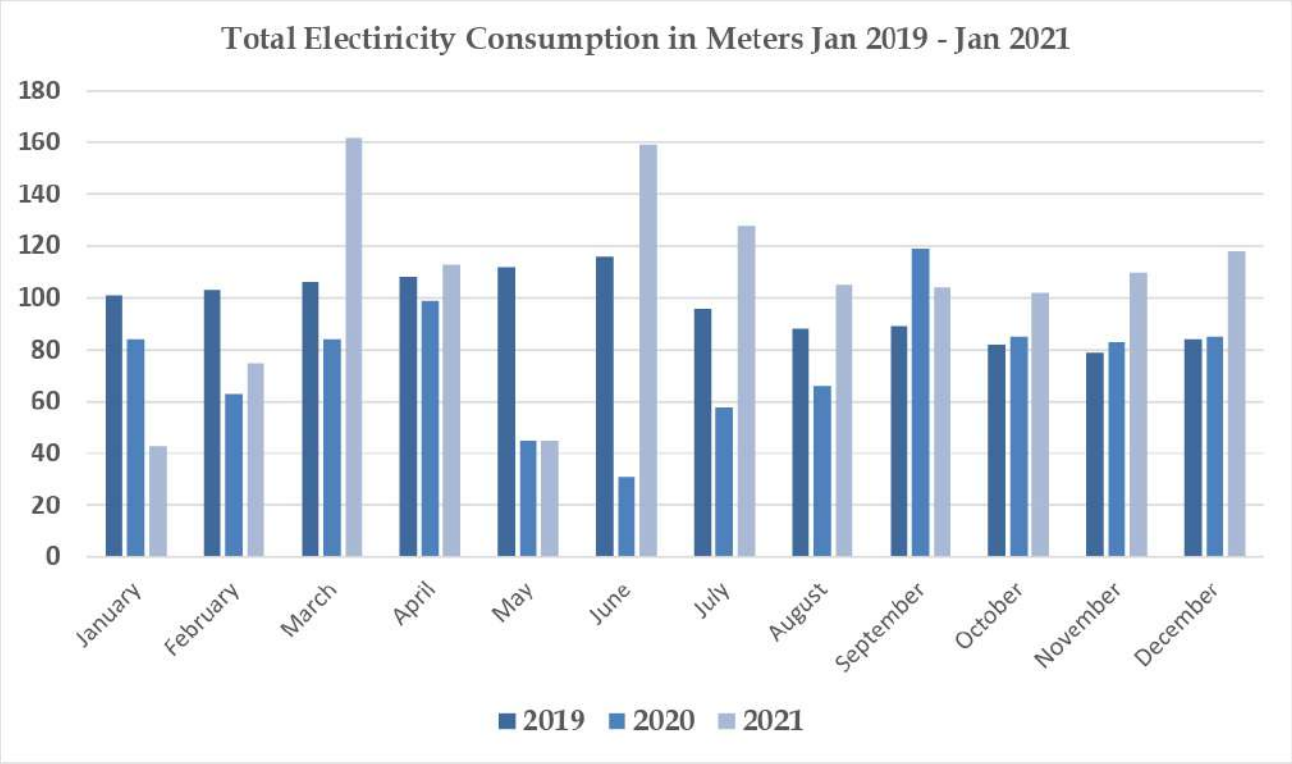


Fig. 3: Total Electricity Consumption Trends for the year 2019 – 2021 of SPIPS.

Table 5: Waste Management – Approx. Quantity of Waste Generated/ day (in kg)

Office				
Approx.	**Biodegradable**	**Non-biodegradable**	**Hazardous**	**Others**
<1Kg	√	-	-	-
2-10Kg	-	-	-	-
>10Kg	-	-	-	-

Laboratories				
Approx.	**Biodegradable**	**Non-biodegradable**	**Hazardous**	**Others**
<1Kg	**NIL**	-	-	-
2-10Kg	-	-	-	-
>10Kg	-	-	-	-

Canteen/kitchen				
Approx.	**Biodegradable**	**Non-biodegradable**	**Hazardous**	**Others**
<1Kg	-	-	-	-
2-10Kg	√	-	-	-
>10Kg	-	-	-	-

Table 6: How the waste generated in the college is managed?

A) Composting/ Vermicomposting	Yes	Facility provided
B) Recycling	√	Facility provided
C) Reusing	√	Facility provided
D) Other ways	Repairing Type	-

Table 7: E-Waste Generation and Disposal

E-waste	Very Minimum	To be disposed of through the Authorized
Hazardous waste	Nil	
Solid waste	Yes	
Dry leaves	Yes	
Canteen waste	Yes	
Liquid waste	No	
Glass	Less	
Unused equipment	No	
Napkins	No	
Others (specify)	Papers	

Do you use recycled paper in college?	No
Any waste management methods used?	Vermicompost

Waste management

Total number of stakeholders in the college: 1707

Table 8: Different types of waste generated and mode of disposal

Types of waste	Particulars	Disposal method
E-Waste	Computers, electrical and electronic parts	Reuse after maintenance will be disposed of through the authorized vendor
Plastic waste	Pen, Refill, Plastic water bottles and other plastic containers, wrappers etc.	Disposed of through Municipal Corporation
Solid wastes	Damaged furniture, paper waste, paper plates, food wastes	Reuse after maintenance energy conversion
Chemical wastes	Laboratory waste	Not applicable
Wastewater	Washing, urinals, bathrooms	Septic tank & its overflow used for gardening
Glass waste	Broken glass wares from the labs	Direct selling
Sanitary Napkin	-	Disposed of through Corporation

Carbon Footprint Analysis

1. Total number of vehicles used by the stakeholders of the college (per day)- 750
2. No. of cycles used- 145
3. No of two-wheelers used (average distance traveled and quantity fuel and amount used per day)- 730
4. No. of cars used (average distance traveled and quantity fuel and amount used per day)- 15
5. No. of persons using public transportation- 600
6. No. of persons using college conveyance- NIL
7. No. of generators used per day- 2
8. Number of LPG cylinders used in canteen/labs- 1
9. Use of any other fossil fuels in the college- Nil
10. Any suggestion to reduce the use of Solar Panel- Proposed

GREEN CAMPUS

Total number of plant species identified: 30

Total number of plants in the campus: 250

Table 9: List of plants in the SPIPS campus

S. No.	Botanical Name	Common Name	Nos.
1	*Ficus benjamina*	Benjamina	4
2	*Swietenia mahagoni*	Mahagoni	2
3	*Saraca asoca*	Ashoka	1
4	*Epipremnum aurreum*	Money Plant	32
5	*Aglaonema commutatum*	Aglaonema	12
6	*Iris domestica*	Leopard Lily	8
7	*Canna indica*	Indian Lilly	11
8	*Rosa indica*	Indian Rose	8
9	*Terminalia catappa*	Badam	6
10	*Codiaeum variegatum*	Crotons	14
11	*Dypsis lutescens*	Areca Palm	17
12	*Euphorbia tirucalli*	Pencil cactus	13
13	*Syngonium podophyllum*	Arrow head plant	10
14	*Asparagus officinalis*	Sparrow grass	1
15	*Hibiscus rosasinensis*	China Rose	5
16	*Rhapis excelsa*	Lady Palm	6
17	*Spathiphyllum*	Peace Lilly	14
18	*Polyalthia longifolia*	Ashok/ Asapalv	7
19	*Crassula ovata*	Jade Palm	5
20	*Pteris/ Pteridium*	Fern Plants	6
21	*Pongame pinnota*	Karanj	4
22	*Narcissus*	Daffodils	8
23	*Atkinsiana*	Petunia	6
24	*Murraya nenigi*	Curry Neem	2
25	*Hyophoorbe lagenicaulis*	Bottle Palm	9
26	*Philodendron*	Philodendron	4
27	*Calendula officinalis*	Marigold	12
28	*Livistona rotundifolia*	Table Palm	17
29	*Anthurium*	Laceleaf	4
30	*Araucaria columnaris*	Christmas Tree Plant	2
	TOTAL		**250**

10. RECOMMENDATIONS

Water Management:

1 Sewage generated from the College should be treated by Sewage Treatment Plant after the septic tank and then it shall be used for gardening purposes.
2 Testing of Drinking Water shall be done once or twice a year.
3 RO reject shall be reused for gardening and cleaning purposes.

Energy Audit:

1 The facility shall be developed for the use of Solar Energy.
2 More use of LED bulbs and tube lights shall be adopted in practice to reduce electricity consumption.
3 Use of energy-saving appliances shall be adopted in regular practice.

Waste Management:

1 Disposal of E-waste shall be done through the Authorized disposal facility.
2 Records of disposal of all types of solid wastes shall be maintained at the source.
3 The use of plastic items (especially single-use plastic) shall be reduced regularly.

Green concept:

1 Plantation of trees with broad leaves shall be done, as they are effective in reducing air pollution.
2 Cement concrete work at the base of the tree trunk shall be removed.
3 Labeling of trees with common & botanical names shall be done.

Carbon footprint:

1 The use of E-vehicles, bicycles and public transport shall be promoted among the students & faculty members.
2 Carpooling practices shall be adopted, wherever is possible.
3 Reducing the use of paper (like photocopy on both sides, etc.) and paperless activity shall be promoted in some cases.

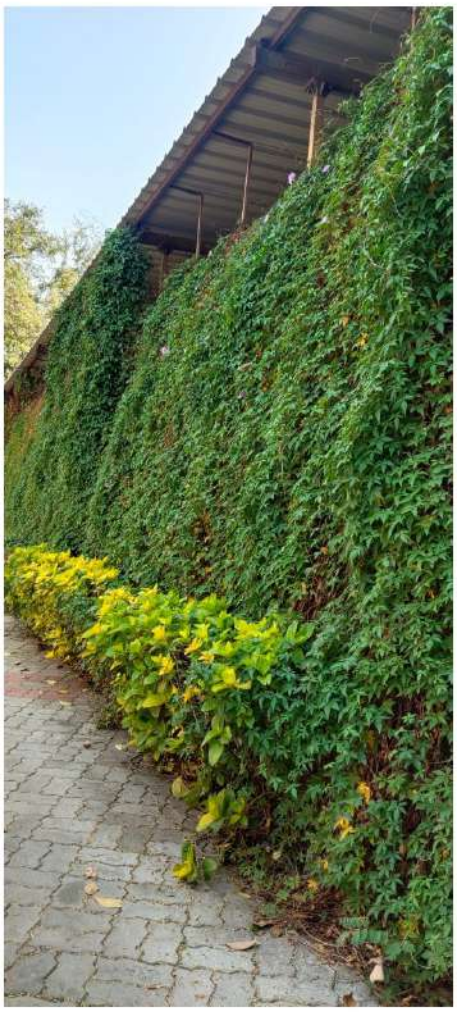
Others:

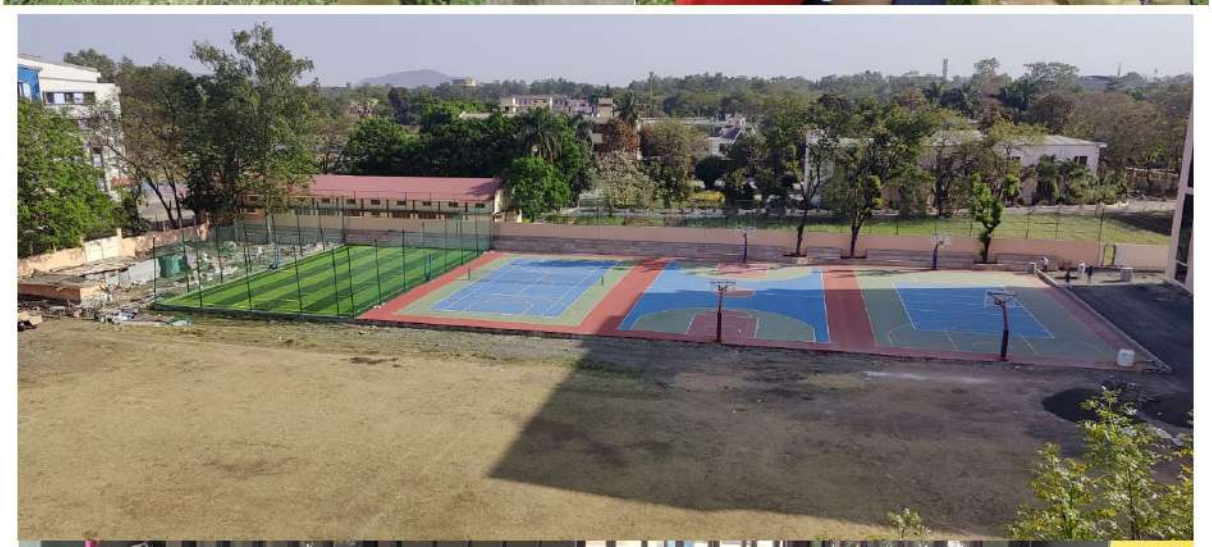
1 Monitoring of Air, Noise level & Soil shall be conducted once in a year to know the quality in the premises.
2 Celebration of days related to the environment for awareness.

GLIMPSES OF THE GREEN AUDIT VISIT

GREEN AWARENESS IN CAMPUS

GREEN AWARENESS IN CAMPUS





VERMI COMPOST

ORGANIC FARMING

ENERGY INFRASTRUCTURE

TEAM VISIT