



Mahatma Phule Shikshan Sanstha's
KARMAVEER BHAURAO PATIL COLLEGE URUN-ISLAMPUR

Bahe Road, Urun-Islampur, Tal. Walwa, Dist. Sangli, Maharashtra, India,

•Established in 1961•

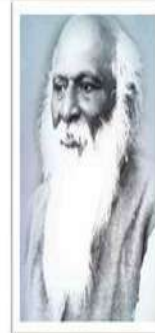
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Reaccredited A With CGPA 3.17 at the 3rd Cycle

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GREEN INITIATIVE REPORT

2024-25



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Environmental Consultancy & Eco-Businesses
ISO 14001:2015(EMS) & ISO 9001:2015(QMS) Certified Organization
Kolhapur, Maharashtra, India

Ms. Pooja S. Sarolkar
Proprieter & Lead Auditor

Ref. No.-Ecolife/10/2025

Environment Audit Certificate

This is to certify that the Environmental Consultancy & Eco-Businesses, Kolhapur has conducted detailed “Environment Audit” of esteemed institution **Mahatma Phule Shikshan Sanstha's, Karmaveer Bhaurao Patil College Uran-Islampur, Sangli, Maharashtra, India** for the academic year **2024-2025**. The environment audit was conducted in accordance with applicable standards prescribed by National Assessment and Accreditation Council (NAAC), Bangalore and Central Pollution Control Board, New Delhi. The audit involves Environmental Aspects such as **Energy, Water, Biodiversity, Carbon Sequestration, Waste Management, Air and Noise Monitoring** etc. The performance of the college was found to have good quality with respect to Sustainable Green Practices. In an opinion, information collected during the visit and data provided by the college, said environment audit gives a true and fair view in conformity with environmental auditing principles accepted in India.

As part of Institutions initiatives for a Healthy and Sustainable Institute the audit was conducted. We appreciate the immense efforts taken by staff and students towards the Green Initiatives and Efficient Management of Premise.

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Lead Auditor

EMS (ISO 14001:2015)

International Register of Certificated Auditor (CQI-IRCA)

Certificated No-22/IN/1023876/8088



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GREEN INITIATIVE REPORT

1.0: PREAMBLE:

The survival of humanity depends on the environment in which we live, as all living beings rely on various environmental factors. Yet, in today's age of industrialization, greater emphasis is placed on economic growth and financial progress than on environmental well-being. The continuous exploitation of natural resources to enhance human lifestyles has caused severe damage to ecosystems. Human activities are the primary drivers of pollution—whether it is soil, water, or air contamination. This polluted environment negatively affects the health of people, animals, and plants alike. Along with local and regional challenges, we also face pressing global issues such as global warming and ozone layer depletion, making environmental concerns increasingly significant worldwide.

India, as a developing nation, struggles with the problem of overpopulation, which puts immense pressure on its natural resources. To meet the rising demands, forest lands have been converted into agricultural or residential areas. While this has improved living conditions, it has also led to environmental degradation. Deforestation has destroyed natural habitats, driving several animal and plant species toward extinction.

Another major issue is the management of solid waste. Improper disposal leads to soil and groundwater pollution, with city outskirts often turning into dumping grounds. These sites not only cause health hazards for nearby residents but also pose risks of fire outbreaks. Additionally, noise pollution generated from residential, commercial, and industrial activities further deteriorates environmental quality.

The consequences of human actions are visible across oceans, forests, and both rural and urban landscapes. Such unchecked development violates the principles of sustainability. Since the 1970s, international conferences and treaties have attempted to address these concerns, but the problem of environmental degradation continues to escalate. Therefore, there is an urgent need to adopt eco-friendly technologies, reduce waste, and promote practices of recycling and reuse. Sustainable development is the key to ensuring both present and future generations' well-being. Efforts at individual, institutional, national, and international levels are essential to achieving this goal.

The concept of the green initiative was first introduced in the United States during the 1970s. By 1992, nearly half of the local authorities in the United Kingdom had fully or partially undertaken green audits. The United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro, further encouraged nations to adopt sustainable approaches to safeguard the Earth. Following this



summit, most countries formulated national strategies for sustainable development, incorporating policies and programs aimed at conserving geo-biodiversity and protecting the environment. The “Rio spirit” marked significant progress, as many countries worked to improve and upgrade their environmental conditions to the best possible extent.

Asian nations also drew inspiration from the summit and contributed within their capacities. Notably, India became the first country in the world to make environmental audits mandatory. As per a 1992 Gazette notification, all industries were instructed to submit environmental audit reports to their respective State Pollution Control Boards. These reports were required to detail the consumption of water, raw materials, and energy resources, as well as the products manufactured and waste generated during operations.

The green initiative essentially serves as a tool for environmental protection by promoting the conservation and sustainable use of natural resources. Through environmental audits, the utilization of environmental components can be systematically assessed to ensure long-term sustainability. Such audits represent a regular, methodical evaluation of the factors influencing the achievement of environmental goals.

In line with this, the college has undertaken a green audit with the following objectives:

- To identify and document green practices adopted by the university.
- To recognize strengths and weaknesses in current green practices.
- To analyze issues and suggest practical solutions.
- To evaluate the facilities for various types of waste management.
- To enhance environmental awareness across the campus.
- To identify and assess potential environmental risks.
- To encourage staff to optimize the sustainable use of available resources.
- To establish baseline data on environmental parameters and address issues proactively before they become significant problems.

Objectives

1. To examine existing practices that impact the environment, such as resource utilization and waste management.
2. To identify and analyze significant environmental issues within the campus.
3. To set up clear goals, vision, and mission for adopting sustainable and green practices.
4. To establish and implement environmental management systems across various departments.
5. To ensure continuous monitoring and assessment for improved performance in green initiatives.



Benefits of Green Initiatives to Educational Institutions

The implementation of a green audit in educational institutions provides multiple advantages:

1. Protection of the environment in and around the campus.
2. Identification of cost-saving opportunities through waste reduction and energy conservation.
3. Improvement in the institution's overall environmental performance.
4. Enhancement of the institution's reputation by promoting a clean and green campus image.

Objective and Scope

The broader aims and scope of eco-auditing in educational institutions include:

- Promoting **environmental education** through systematic management approaches.
- **Raising environmental standards** across the campus.
- Establishing **benchmarks** for environmental protection initiatives.
- Encouraging the **sustainable use of natural resources**.
- Achieving **financial savings** by reducing consumption of resources.
- Enriching the **curriculum** with practical, hands-on environmental learning experiences.
- Developing a sense of **ownership, personal responsibility, and social responsibility** for the campus and its surroundings.
- Enhancing the **institution's profile** by aligning with sustainable development practices.
- Instilling strong **environmental ethics and value systems** among students and young people.



2.0 ENVIRONMENTAL POLICY:

“CLEAN AND GREEN CAMPUS PRODUCING ACCOUNTABLE CITIZENS”

Karmaveer Bhaurao Patil College, Urun- Islampur aimed at undertaking environmental protection and the conservation of natural resources with other goals, such as affordable energy, air and drinking water quality monitoring etc. The college has established clean and green campus with awareness and protection and in fulfilling sustainable development goals set forth to implement environmental policies given by governmental and other regulatory bodies from time to time. It is to achieve sustainable future in terms of well aware citizens.

ENVIRONMENTAL MISSION:

For effective implementation of the Environmental Policy, the College has constituted Environmental forum. The structure of the forum is given in below:

1. IQAC Coordinator – Dr. Pramod Ganganwane
2. Chairman- Dr. Sandip Patil
3. Co-ordinator- Dr. Mahesh Gokhale

Being educational institute creating awareness amongst students, teachers and all other stakeholders is the first and foremost mission. Following are the aspects of this mission.

- i) Creating plastic free campus.
- ii) Energy conservation on campus.
- iii) Rain water harvesting on campus.
- iv) Environmental and Social Outreach programs
- v) Development and implementation of Courses, modules, activities, programs on campus for green environment.
- vi) Sustainable Waste management.

**COLLEGE PROFILE:**

Karmaveer Bhaurao Patil College, Urun-Islampur was established in 1961 to provide higher education to rural society. It is located in a seven acres area with well-equipped infrastructure. The college is imparting education to near about 3000 students every year from U.G. to P.G. level. It offers Twenty U.G. and Nine P.G. Programmes of Shivaji University, Kolhapur. The college also runs a unit of Y.C.M.O.U. Nashik to facilitate the students parted from regular educational mode. The college aims at developing the critical ability, work ethics and personality of our students. The co-curricular and extra-curricular activities run by the college through NSS, NCC (Boys and Girls), Sports and Cultural unit contribute a lot in students' progression.

Vision: Welfare of the masses through quality education

Mission: To impart the education to those who have been left out from stream of education and to develop their overall personality .This is essential for preparing an individual student to absorb into the modern socio economic and cultural environment and face future challenges.

Aims and Objectives:

- To provide higher education facility to the students in rural area.
- To develop overall personality of the students.
- To give the students an opportunity to have an interaction with poor and weaker section of society.
- To make the students cultured, civilized and responsible citizens.
- To inspire the students with the feeling of nationalism.
- To develop the sense of social awareness among the students and provoke them to help the needy people.
- To make the students able to face the challenges in the modern age.
- To implement new educational facilities and courses in the college.
- To make the students aware of hazards of various pollutions and to persuade them to try to defend against such pollutions.

**NAME AND ADDRESS OF COLLEGE:**

Sr. No.	Particular	Content
1	Name	Karmaveer Bhaurao Patil collegeIslampur.
2	Address	Bahe Road, Urun-Islampur, Tahsil-Walwa Dist. - Sangli Pin-415409
3	Telephone	02342-221778
4	Email ID	kbpislampur@gmail.com
5	Name	Natural Solution EnvironmentalServices
6	Address	Islampur Dist.:- Sangli
7	Registration No.	MH29D0037743
8	GSTIN	27ABYPI4809G1Z8
9	Mobile	09860437123
10	Email ID	naturalsolution3@gmail.com

Details of Programmes Offered by the College:

Programme Level	Name of Programm
UG	B.Sc., B. A., B.Com, BCS, BCA.
PG	M.Sc., M.A., M.Com.

Summary of admission during the year

Year	Male	Female	Total Admission
2024-25	1461	1027	2478

Table No. 1 Total strength of students and staff on campus during the last year

Year	Students		Teaching staff & Non – Teaching Staff		Total
	Male	Female	Male	Female	
2024-25	1461	1027	120	106	2714

Number of students enrolled during the year- 2024-25

Sr. No.	Class	Male	Female	Total admissions
1	B. A. I	140	68	208
2	B. A. II	118	82	200
3	B. A. III	90	87	177
4	B. Com. I	57	49	106
5	B. Com. II	51	31	82
6	B. Com. III	49	29	78
7	B. Sc. I	127	74	201
8	B. Sc. II	75	65	140
9	B. Sc. III	59	67	126
10	Bio Tech - I	06	10	16
11	Bio Tech - II	04	8	12
12	Bio Tech - III	00	1	1
13	B. C. A. - I	27	16	43
14	B. C. A. - II	81	55	136
15	B. C. A. - III	87	46	133
16	B. C. S. - I	92	73	165
17	B. C. S.- II	81	52	133
18	B. C. S. - III	105	56	161
19	B. Sc. I. T. - I	65	48	113
20	B. Sc. I. T. - II	62	40	102
21	B. Sc. I. T. - III	64	35	99
22	B. Com. I. T.- I	16	13	29
23	B. Com. I. T.- II	05	12	17
24	Total	1461	1027	2478

3.0 THE SCOPE OF THE GREEN INITIATIVE IS DEFINED IN TERMS OF:

3.1. Geographical Location of the College Campus

3.2. Its Environmental Aspects.

3.1. Geographical Location:

Table No. 2: Details of area:

Location	Urban
Campus area in square	28300 sq. m
Built-up area in square	11080.41 sq. m

LAND USE PATTERN OF COLLEGE:

Table No. 3: Land Use Pattern

Land use pattern	Area(m ²)
Total area	28300 sq. m
Area occupied by buildings	11080.41 sq. m
Ground	1102 sq.m
Botanical garden	2000 sq.ft
Open space	17242 sq.m.

Geographical details of the college area

Latitude (N)	Longitude (E)	Elevation (m) MSL
17° 3'25.48"N	74°16'8.06"E	587



Fig .1: Location of the college area is shown on Google Earth map

3.2 SCOPE OF GREEN INITIATIVE IN TERMS OF ENVIRONMENTAL ASPECTS:

- 3.2.1. Energy Conservation:** Energy conservation is the effort made to reduce the consumption of energy by using less of an energy service. This can be achieved either by using energy more efficiently (using less energy for a constant service) or by reducing the amount of service used
- 3.2.2. Use of Renewable Energy:** Renewable energy is useful energy that is collected from renewable resources, which are naturally replenished on a human timescale, including carbon neutral sources like sunlight, wind, rain, tides, waves, and geothermal heat.
- 3.2.3 Efforts for Carbon Neutrality:** carbon-neutral (or carbon neutrality) is the balance between emitting carbon and absorbing carbon emissions from carbon sinks.
- 3.2.4 Plantation:** It is usually large group of plants and especially trees under cultivation
- 3.2.5 Water Management:** Water management is the control and movement of water resources to minimize damage to life and property and to maximize efficient beneficial use.
- 3.2.6 Hazardous Waste management:** Hazardous waste management involves reducing the number of hazardous substances produced, treating hazardous wastes to reduce their toxicity, and applying sound engineering controls to reduce or eliminate exposures to these wastes.
- 3.2.7 E-Waste Management:** E-waste or Waste Electrical and Electronic Equipment are loosely discarded, surplus, obsolete, broken, electrical or electronic devices
- 3.2.8 Quality of water, air and noise:** Water quality describes the condition of the water, including chemical, physical, and biological characteristics, usually with respect to its suitability for a particular purpose such as drinking or swimming.

3.3: Energy Audit

Introduction

An **energy audit** is a systematic survey, assessment, and analysis of energy flows with the aim of reducing energy consumption in a building or system without compromising its output. It provides an effective method to understand how energy moves from its source to its end use.

According to the **Energy Conservation Act, 2001**, an energy audit involves the verification, monitoring, and analysis of energy usage, along with the preparation of a technical report. This report includes recommendations to improve energy efficiency, cost–benefit analysis, and an action plan to minimize energy consumption.

In the education sector, **green audits** are directly linked to *Criterion 7* of the **National Assessment and Accreditation Council (NAAC)**, an autonomous body that evaluates and accredits institutions. Energy auditing is an essential part of this criterion and plays a crucial role in the accreditation process. By fulfilling these requirements, institutions not only ensure compliance but also strengthen their reputation as centers of excellence with sound values, sustainable infrastructure, and a commitment to creating opportunities for students.

Need for Energy Audits

Energy audits are a valuable tool for analyzing and identifying sustainable and environmentally responsible institutional practices. While development is inevitable, it often leads to the overuse of natural resources. Water and energy—essential for daily functioning—are consumed extensively, often without regard for wastage.

Understanding **how much energy is consumed, where it is wasted, and how it can be optimized** is crucial in an era of depleting resources. Energy audits provide this clarity and guide institutions in adopting clean and green consumption practices. Moreover, they help organizations reflect on, expand, and improve operations while fostering awareness among staff and students about sustainability and responsible resource use.

Goals of Energy Auditing

1. Identify the strengths and weaknesses of existing green strategies.
2. Examine and propose solutions for identified issues.
3. Recognize and assess environmental risks.
4. Motivate employees to adopt sustainable resource-use practices.
5. Promote campus-wide awareness of environmental issues and solutions.

Objectives of Energy Audit

- Assess the environmental impact of current practices.
- Identify and analyze significant environmental challenges.
- Continuously evaluate and enhance environmental performance.
- Develop and implement a campus-wide green energy strategy while raising awareness among staff and students.

Benefits to Educational Institutions

- Improve energy utilization within and beyond campus facilities.
- Identify cost-effective strategies for energy conservation.
- Encourage conscious environmental thinking and sustainable practices among the campus community.
- Enhance the institution's reputation by promoting a clean, green, and resource-efficient image.

3.3.1 ENERGY POLICY

Energy conservation forms a vital component of the college's sustainability program. The institution recognizes its responsibility to reduce energy consumption and promote eco-friendly practices that safeguard natural resources. This policy serves as a framework to guide professors, staff, administrators, and students in adopting sustainable energy practices. By integrating efficiency and environmental consciousness into daily operations, the college aims to minimize its ecological footprint and contribute to global sustainability goals.

Policy Objectives:

- To regularly assess energy consumption and measure its environmental impacts.
- To adopt renewable energy solutions, such as installing solar photovoltaic (PV) panels, for alternative energy generation.
- To conserve energy by replacing conventional lighting with energy-efficient LED systems across the campus.
- To establish a systematic waste management program that aligns with sustainability principles.
- To implement rainwater harvesting systems for efficient water use.
- To promote afforestation and tree plantation drives to improve the green cover.
- To monitor emerging energy and environmental challenges and develop proactive responses.
- To enhance the environmental knowledge, skills, and awareness of staff and students, thereby strengthening the institution's overall environmental performance.

3.3.2 ENERGY CONSUMPTION:

Electricity is used for illuminating the rooms, fans, computers, Laboratory equipment, and pumps and for cooling rooms (AC) at all departments like administrative building, Science department, Arts Department, Common facility center, Gymkhana present several types of Electronic Appliances are used in laboratory and some of them are run every day.

Details of various sources of energy consumption units are given in table No.4.

Table No.4: Sources of Energy Consumption

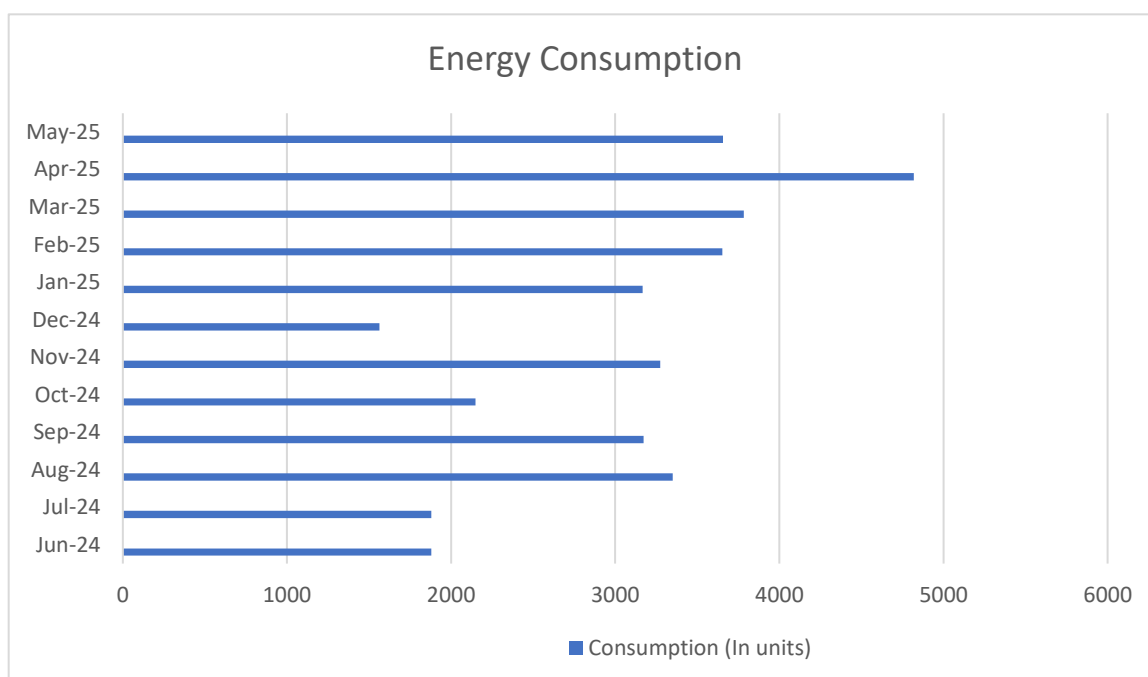
Sr. No	Energy sources	Electricity/generator/solar lamps
1	No. of laptops	08
2	No. of tube lights	870
3	No. of computers	305
4	No. of CFC bulbs	Nil
5	No. of UPS	Nil
6	No. of fans	445
7	No. of fridge	05
8	No. of generators	02
9	No. of A.C.	06
10	No. of LED bulbs	884
11	Electric pump 1 HP	15
12	No. of Projector	23 + Saga Board 08 + Intractor Panel- 13
13	No. of printers and Xerox machines	47 +09
14	No. of. CCTV	20

3.3.3 ENERGY REQUIREMENT: sanctioned load (35.00 kw)

Electricity supplied from the Maharashtra State Electricity Board is the main source energy for the activities on the campus. In addition to the regular supply, energy consumed (KW) during the last year is shown in tabular as well as graphical form.

Table No. 5: Energy consumption during the Year 2024-25**Consumer No - 284010239123**

Sr. No.	Months	Consumption (In units)
1	June 2024	1880
2	July 2024	3351
3	August 2024	3172
4	September 2024	2148
5	October 2024	3274
6	November 2024	1564
7	December 2024	3166
8	January 2025	3652
9	February 2025	3784
10	March 2025	4819
11	April 2025	3657
12	May 2025	2414

Figure 2: Graphical representation of energy consumption during 2024-25**Energy conservation measures taken up by the College:**

College is aware of environmental impacts of consumption of conventional energy supplied by MSEB. Initially College had installed Solar Panels as a renewable energy source. Hence, college has adopted following measures to minimize the energy consumption.

1. Switching over to the use of LED bulbs as a replacement to conventional high energy consumption bulbs.

2. College has encouraged use of e-mail instead of sending notices and faxing documents.
3. Most of the fans carry three stars rating of electrical appliances.
4. Awareness amongst students was carried out and accordingly sign boards are displayed at strategic locations for conservation of energy and students positively responding.

3.3.4: USE OF RENEWABLE ENERGY:

Use of solar system: (Solar Net Meter 35 KW)

Considering the growing energy demand from various sectors college has decided to go for use of nonconventional energy resources for all its internal consumptions by installing roof top solar panels. Solar energy i.e. renewable energy is harvested by implanting solar panels for electricity generation. It is used for water heaters and lightening purposes.

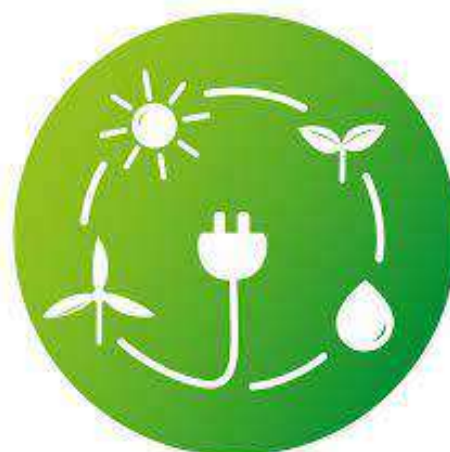
The college has undertaken significant steps towards promoting sustainable and renewable energy use on campus. Solar power is utilized both for electricity generation and water heating purposes.

Sr. No.	Type of Installation	Number of Units	Capacity
1	Solar Photovoltaic (PV) Panels	85 Panels	35 kW
2	Solar Photovoltaic (PV) Panels	42 Panels	24 kW
3	Solar Water Heaters	32 Units	—

The installation of a total of 127 solar PV panels with a combined capacity of 59 kW and 32 solar water heaters reflects the college's commitment to renewable energy and reduction of carbon footprint. This initiative helps in reducing dependency on conventional energy sources ,lowering electricity bills , and promoting environmental sustainability within the campus.

Innovative Methods are installed for Energy Conservation

- The College has installed **solar panels** on the rooftop in the optimal south-facing direction, which ensures maximum exposure to direct sunlight. To further enhance renewable energy use, the administration is planning to install additional solar-powered lights.
- Traditional tube lights have been replaced with **energy-efficient LED tubes**, reducing overall electricity consumption.
- The campus makes use of **5-star rated appliances** such as air conditioners, fans, and CFLs to ensure minimal energy wastage.
- Regular **maintenance** is carried out, including periodic cleaning of tube lights and bulbs, to remove dust and improve their efficiency.



- Computers and related equipment across departments are operated in **power-saving mode** to cut down unnecessary energy use.
- A strict practice is followed where **electricity is switched off after occupancy hours** in all departments, reinforcing the college's green commitment.
- Additionally, a **solar water heater** has been installed in the hostel, reducing dependency on conventional heating methods.

Plate No.1 Renewable energy source

The solar heater is installed on Hostel building



Solar Panels installation in college building

3.3.5 EFFORTS FOR CARBON NEUTRALITY:

One of the simplest ways to understand and reduce environmental pollution is by analysing our **carbon footprint**. By lowering individual and institutional carbon footprints, we can collectively contribute to making the Earth a cleaner, safer, and healthier place to live.



Studies estimate that nearly **50% of our total carbon footprint is linked to electricity consumption**, with lighting alone accounting for around **17%**. This highlights the importance of adopting energy-efficient lighting systems in reducing greenhouse gas (GHG) emissions.

A **carbon footprint** refers to the total amount of greenhouse gases—such as **carbon dioxide (CO₂)**, **methane (CH₄)**, and **nitrous oxide (N₂O)**—released into the atmosphere by a building, organization, or individual. These emissions primarily result from burning fossil fuels for electricity, heating, transportation, and other daily activities.

At the college, emphasis has been placed on evaluating the **carbon footprint generated by indoor lighting** within office buildings. The transition from conventional lighting systems to **energy-efficient alternatives** has resulted in a **notable reduction in overall carbon emissions**, reflecting the institution's commitment to sustainable practices.

The comparison of carbon footprints for different lighting systems is as follows:

1. **Incandescent Lights** – High energy consumption and maximum carbon emissions.
2. **Compact Fluorescent Lamps (CFLs)** – Moderate energy use, lower emissions than incandescent lights.
3. **Light Emitting Diodes (LEDs)** – Lowest energy consumption and minimal carbon footprint, making them the most sustainable option.

Through the adoption of **LED lighting**, the college has successfully reduced its carbon footprint, aligning with its broader sustainability and energy conservation goals.

Electricity:

By and large, half of our carbon footprint is due to electricity and 17 % is due to lighting alone. Electricity in turn can be produced by coal, natural gas, petroleum, and other. Electricity is produced from different sources and how much GHG released is shown in table no. 6

Table No. 6: Electricity produced from different sources

Source	Million metric tons of CO₂ emission for 1 year	Electricity generation (Billion kWh) for 1 year
Coal	1788	1882
Petroleum	106	119
Natural gas	337	562
Other	14	22
Non fossil fuels	None	1106
Total	2245	3621

Since close to 2245 million metric tons of CO₂ emitted by total electricity generation per year. A single kilowatt-hour of electricity will generate 619 grams of CO₂ emissions.

1. Incandescent Light

Incandescent lamp is a source of light which produce light when the filament is being heated. It can release 80% electrical energy converted into heat energy. We can calculate how much CO₂ will be emitted by 40-watt incandescent bulb.

Power Consumption- 40 watts

Operation per day- 10 hours

- **Power Consumption per annum-146000 watt**
- **Electricity per hour (kwh) - 0.04 (1 kWh=619g CO₂ can be released)**
- **Lighting Carbon Emission per year/lamp (146*619g) -90.3 kg.**



A single 40 watts incandescent bulb will generate 90.3 kilograms of CO₂ for every year. The reduction of carbon footprint is none for this lamp.

2. Compact Fluorescent Light

CFL produce less heat and more visible light compare than incandescent lamp. We can calculate how much CO₂ will be emitted by 14-watt incandescent bulb.

Power Consumption- 14 watts

- Operation per day- 10 hours
- Power Consumption per annum-51100 watt
- Electricity per hour (kwh) – 0.014 (1 kWh=619 g CO₂ can be released)



- **Lighting Carbon Emission per year/lamp- (51.1*619g) - 31.6 kg.**

A single 14 watts CFL lamp will generate 31.6 kilograms of CO₂ for every year. The reduction of carbon footprint is none for this lamp. CFL contains harmful mercury which creates mercury emission. Estimated suggestion led lights only will reduce our carbon foot print over than other lights.

3. LED Lights

LED lights consumes low power and energy efficient over than other lights. Not even a single point we can't compare led lights with other lighting. We can calculate how much CO₂ will be emitted by 8-watt LED lamp -

- **Power Consumption- 8 watts**

- Operation per day- 10 hours
- Power Consumption per annum-29200 watt
- Electricity per hour (kwh) – 0.008 (1 kWh=619 g CO₂ can be released)
- Lighting Carbon Emission per year/lamp (29.2 *619g) - 18 kg.



A building's carbon footprint from led lighting can be reduced by 68%.

- Reduction in Carbon Footprint (tons)-0.122(12.28 kg)

The 8-watt LED equivalent will only be responsible 18 kilograms of CO₂ over the same time span.

Table No. 7: Carbon foot prints

	Incandescent Bulb	LED light
Power Consumption(watt)	40	8
Electricity(kwh)	0.04	0.008
Hours of Operation Per Day	10	10

Carbon Emissions (tons) per year/lamp	0.903	0.18
Reduction in Carbon Footprint (tons) / lamp	--	0.12

- LED light can reduce our carbon footprint by 0.12 tons per year.
- Led light does not contain mercury; it is a big benefit for this lamp.
- Incandescent, it is 5.8 mg from power plant.

The 8-watt LED equivalent will only be responsible 18 kilograms of CO₂ over the same time span. Based on above comparisons, LED emerges as the BEST option to reduce carbon footprint.

Details of CO₂ emitted from these lights is given in table 8.

Year	Light	No. of bulbs	CO ₂ emitted per lamp / year	Total CO ₂ emitted per year
2024-25	LED (Bulbs+ Tubes)	860	18 kg	15, 480

At present, the college has undertaken an initiative to **replace incandescent and CFL bulbs with energy-efficient LED lighting**. Over the past year, this shift has resulted in a measurable decrease in energy consumption, thereby significantly reducing annual **CO₂ emissions**. To further strengthen these efforts, it is recommended that **all remaining bulbs be gradually replaced with LEDs in a phased manner**. Additionally, a phased replacement of existing fans with **energy-efficient five-star rated models** is advised to achieve further reductions in energy use and carbon footprint.

4. Green Audit

4.1 Green Campus & Plant Diversity:

The college has maintained the campus's greenery very well. In order to prevent future ecological harm, the Institute must take into account components that contribute to a healthy environment, even if they are all in good operating order.



The college campus area is 28300 sq.m. Total number of plants is about 550. College has planted trees that have a better capability for carbon sequestration. The Institute took the initiative to plant native plants, which is the best way to protect the area's biodiversity.

College has taken initiative for plant identification, by labeling them with scientific and common names also QR code of each plant is displayed. (Annexure 1).

Details of plantation with respect to Botanical name, local name and quantity is given table no. 9.

DETAILS OF PLANTATION IN COLLEGE:

Table no. 9: List of Plants in campus area

Tree species			
Sr. No.	Name	Family	No. of individuals
1	Terminalia catappa	Combretaceae	12
2	Delonix regia	Fabaceae	26
3	Ficus glomerata	Moraceae	1
4	Mimusops elengi	sapotaceae	7
5	Mangifera indica	Anacardiaceae	30
6	Polyalthia longifolia	Annonaceae	31
7	Lagerstroemia speciosa	Lythraceae	14
8	Thespesia populnea	Malvaceae	22
9	Tamarindus indica	Fabaceae	6
10	Aegle marmelos	Rutaceae	2
11	Peltophorum pterocarpum	Fabaceae	7
12	Phyllanthus emblica	Euphorbiaceae	1
13	Pongamia pinnata	Fabaceae	1
14	Ficus religiosa	Moraceae	4
15	Eugenia jambolana	myrtaceae	8
16	Terminalia bellirica	Combretaceae	3
17	Bauhinia racemosa	Fabaceae	7

18	Butea monosperma	Fabaceae	3
19	Azadirachta indica	Meliaceae	4
20	Leucaena leucocephala	Fabaceae	11
21	Melia azadirachta	Meliaceae	15
22	Grevillea robusta	Proteaceae	7
23	Samanea saman	Fabaceae	14
24	Ficus benghalensis	Moraceae	8
25	Artocarpus heterophyllus	Moraceae	2
26	Terminalia chebula	Combretaceae	1
27	Ficus carica	Moraceae	1
28	Cassia fistula	Fabaceae	1
29	Magnolia champaka	Magnoliaceae	6
30	Psidium guajava	myrtaceae	2
31	Moringa oleifera	Moringaceae	1
32	Santalum album	Santalaceae	1
33	Cocos nucifera	Arecaceae	2
34	Tectona grandis	Verbenaceae	6
35	Citrus medica	Rutaceae	1
36	Acacia auriculiformis	Fabaceae	2
37	Neolamarckia cadamba	Rubiaceae	1
Total			271

Garden plants			
Sr. No.	Name	Family	No. of individuals
1	Araucaria	Araucariaceae	1
2	Thuja	Cupressaceae	12
3	Livistona chinensis	Arecaceae	3
4	Tabernaemontanadivaricata	Apocynaceae	5
5	Punica granatum	Lythraceae	1
6	Hibiscus rosa-sinensis	Malvaceae	13
7	Jasminum sambac	Oleaceae	1
8	Duranta erecta	Verbenaceae	40
9	Phyllostachys aurea	Poaceae	15
10	Ficus species	Moraceae	14
11	Garden Palm	Arecaceae	90
12	Ixora species	Rubiaceae	2
13	Phoenix sylvestris	Arecaceae	3
14	Rosa indica	Rosaceae	25
15	Nyctanthes arbor-tristis	Oleaceae	3
Total			233

Table no. 10: List of Planted Medicinal Plants

Sr. No.	Name of Plant Species	Common Name	Medicinal Uses
1	Phyllanthus emblica	Amla	Improves immunity, aids digestion, rich in Vitamin C
2	Adhatoda vasica	Vasaka	Treatment of cough, asthma and bronchitis
3	Aloe vera	Korphad	Heals burns, skin care, relieves constipation
4	Ocimum spp	Tulasi	Treats cold, fever, cough, boosts immunity
5	Santalum album	Chandan	Cooling agent, skin diseases, headache relief
6	Garcinia spp	Ratamba	Improves digestion, antioxidant, anti-obesity
7	Achyranthes aspera	Aghada	Treats kidney stones, cough, wound healing
8	Acorus calamus	Vekhand	Improves memory, helps in digestive problems
9	Butea monosperma	Palas	Anthelmintic, treats skin diseases and diarrhea
10	Asparagus racemosus	Shatavari	Female reproductive health, gastric ulcers, immunity booster
11	Cassia fistula	Bahava	Natural laxative, treats constipation and skin problems
12	Curcuma longa	Halad	Anti-inflammatory, antiseptic, wound healing
13	Zingiber officinale	Ale (Ginger)	Digestive aid, anti-nausea, relieves cold
14	Gloriosa superba	Kalalavi	Used in treatment of arthritis and skin disorders (<i>toxic in high dose</i>)
15	Lawsonia inermis	Mehandi	Skin and hair care, cooling agent, wound healing
16	Tinospora cordifolia	Gulvel (Giloy)	Immunity booster, antipyretic, treats diabetes
17	Withania somnifera	Ashwagandha	Reduces stress, improves strength and immunity
18	Tridax procumbens	Dagadipala	Wound healing, stops bleeding, anti-inflammatory
19	Eugenia jambolana	Jambhal	Controls blood sugar, digestive tonic
20	Eclipta alba	Maka (Bhringraj)	Promotes hair growth, liver tonic
21	Barleria prionitis	Koranti	Treats toothache, cough and skin infections
22	Clitoria ternatea	Gokarna	Improves memory, anti-stress, anti-inflammatory
23	Catharanthus roseus	Sadafuli	Anticancer properties, controls diabetes (<i>medicinally potent</i>)
24	Citrus medica	Limbu	Improves digestion, treats scurvy and nausea
25	Nyctanthes arbortristis	Parijatak	Treats fever, arthritis and malaria
26	Ixora coccinea	Pendkul	Treats dysentery, ulcers and skin diseases
27	Ensete superbum	Chavai	Treats kidney stones and urinary disorders
28	Annona reticulata	Ramphal	Treats diarrhea, fever and improves digestion
29	Annona squamosa	Sitaphal	Antidiabetic, anti-lice, improves digestion
30	Punica granatum	Dalimb (Pomegranate)	Improves hemoglobin, antioxidant, heart health

31	Murraya koenigii	Kadhipatta	Controls diabetes, improves digestion and hair health
32	Michelia champaca	Sonchapha	Useful in fever, inflammation and skin diseases
33	Citrus maxima	Papnas (Pomelo)	Improves immunity, aids digestion
34	Tamarindus indica	Chinch	Relieves constipation, digestive aid, antioxidant
35	Cinnamomum tamala	Tamalpatra	Controls blood sugar, improves digestion
36	Piper nigrum	Miri (Black pepper)	Enhances digestion, relieves cold and cough
37	Cymbopogon citratus	Gavaticaha (Lemongrass)	Reduces fever, relieves anxiety, antimicrobial
38	Prosopis cineraria	Shami	Treats skin diseases, wounds and digestive problems
39	Cynodon dactylon	Durva	Stops bleeding, wound healing, cooling effect
40	Nerium indicum	Kanher	Used externally for skin diseases (<i>poisonous if ingested</i>)

❖ ☐ Bird's diversity:

The diversity among birds is striking. Birds live in a variety of different habitats. Birds that live in different habitats will encounter different foods and different predators. Birds can be carnivores (feeding on other animals), herbivores (feeding on plants), or generalists (feeding on a variety of foods).

Sparrow, crow, bulbuls, Pigeon, Cuckoo, Bat, Butterfly, etc. these species are seen regularly around the campus.

Annexure 1

Mahatma Phule Shikshan Sanstha's
Karmaveer Bhaurao Patil College, Urun-Islampur
Department of Botany

Plant species Name Plates

Academic Year – 2025-26

Report

Awareness is the key to improve quality of environment. Being an educational institute it is the first and foremost duty to educate and making aware the students about environment. Therefore, it is decided to create awareness about plant diversity. As a part of this activity name plates of prominent plants are created and tagged on the plants. For this purpose a QR code is prepared about basic information of plant. The data of world renowned website <https://powo.science.kew.org/> is used it is authentic, updated and accurate.

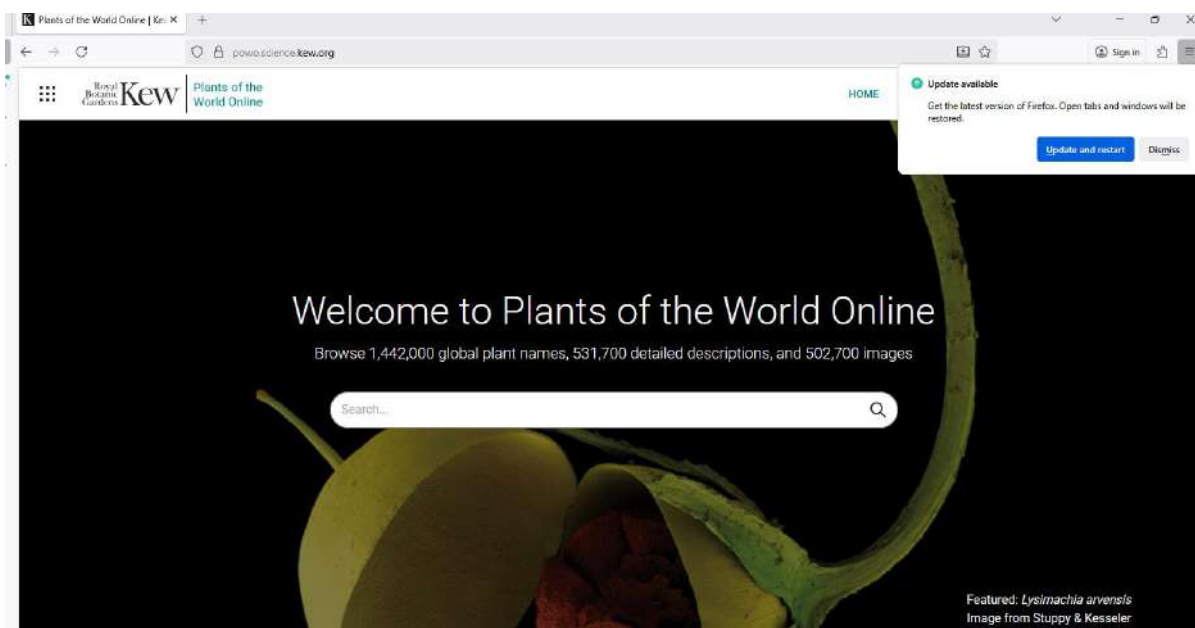


Plate No. 2 Plant Species in college campus



4.2 Carbon Stock and Carbon Sequestration:

Forests and trees act as natural carbon sinks, but the carbon is released when the trees are cut down and the area is deforested. Depending on the plant cover, the amount of carbon stored in a particular area of land varies. The carbon stock is the amount of carbon stored in a tree throughout the photosynthetic process.



Carbon sequestration is the long-term storing of carbon dioxide or other forms of carbon with the purpose of preventing or delaying dangerous climate change. It has been proposed as a method for limiting the build-up of greenhouse gases in the atmosphere and seas caused by the combustion of fossil fuels. The plant carbon pool can store 560 pentagrams (Pg.: pentagram=billion tons) of carbon globally. By enumerating every tree species in college, the current study aims to assess the existing carbon stock stored in the form of woody vegetation. A total of **35,897 kg** of CO₂ has been captured and stored by **280** woody plants on the college campus.

The role of CO₂ uptake in forests extends far beyond mere carbon sequestration. It is intimately connected to trees' growth and developmental dynamics, primarily through its influence on biomass accumulation. Biomass, in this context, refers to the sum of all organic material that constitutes a tree's physical structure – a tangible indicator of its growth. Trees distribute this biomass in two primary compartments: Above-Ground Biomass (AGB) and Below-Ground Biomass (BGB). Above-ground biomass encompasses the tree's parts visible above the soil line, including the trunk, branches, leaves, and any fruits or flowers. Below-ground biomass consists of the roots, which, though less visible, are equally crucial for the tree's stability and nutrient uptake.

This distribution of biomass is central to understanding how trees store carbon. The CO₂ absorbed from the atmosphere is assimilated into both AGB and BGB. As a tree matures, its capacity to sequester carbon increases, making older trees more efficient at absorbing CO₂. This relationship highlights the significance of forest conservation and the role mature trees play in mitigating climate change. By understanding and supporting these natural processes, we can enhance the capacity of forests to act as carbon sinks, thereby contributing to global efforts to balance our planet's carbon cycle and combat the escalating challenges of climate change.

To accurately determine the amount of CO₂ absorbed by trees, two critical measurements are taken directly from the tree: its diameter, measured in cm, and its height, measured in meters. These measurements are essential for calculating both the Above-Ground Biomass (AGB) and

Below-Ground Biomass (BGB). These biomass values are calculated based on a specific formula that incorporates these two parameters

$$\text{AGB} = 0.25 \times D^2 \times H$$

Where:

- AGB: Above-Ground Biomass (pounds).
- D: The tree diameter measured 1.37 meters from the ground (inches). This measurement is used globally as a standard to get better results. However, you can still use the formula if your tree is below 1.37 meters.
- H: The tree height (feet).

The overall green weight of the biomass is estimated to be 120% of the AGB value, based on the assumption that the BGB, which comprises the tree's root system, accounts for approximately 20% of the AGB. Therefore, BGB can be calculated as follows:

$$\text{BGB} = 0.2 \times \text{AGB}$$

From these formulas, we can calculate the total biomass from a tree:

$$\text{Total Biomass (TB)} = \text{AGB} + \text{BGB} = \text{AGB} + 0.2 \times \text{AGB} = 1.2 \times \text{AGB}$$

On average, a tree consists of 72.5% dry matter and 27.5% moisture content. To calculate the tree's dry weight, we could multiply the total weight of the tree by 72.5%.

$$\text{Total Dry Weight (TDW)} = \text{TB} \times 0.725$$

Carbon occupies 50% of the total dry weight. Therefore,

$$\text{Total Carbon (TC)} = \text{TDW} \times 0.5$$

With the value of total carbon, we can calculate the value of CO₂ equivalent sequestered on a tree.

Total 280 numbers of trees with more than 10 cm girth and height more than 4 ft have been enumerated. Girth and height of every tree has been measured for the carbon sequestration estimation.

Presently, CO₂ emitted from utilizing all types of bulbs per year is **15800 kg/yr**. To reduce these emitting rate institution has done good job of keeping the campus green. Hence, average **35,897 kg** of CO₂ has been captured and stored by **280** woody plants (out of **550** total plant) on the college campus, which indicates surplus carbon is stored that helps to maintain air quality of the campus.

3.6 WATER AUDIT:

Water is a vital component of all environmental systems and a unique substance with remarkable properties that sustain life on Earth. The total quantity of water on the planet has remained the same since its formation, continuously circulating through the hydrological cycle—from the oceans to the atmosphere, onto the land, and back again. This natural process ensures a consistent annual supply of fresh water by collecting, purifying, recycling, and redistributing it.



Despite its critical importance, freshwater is one of the most mismanaged resources. Human activities, coupled with natural factors such as topography and seasonal rainfall, prevent effective storage and utilization of available water. Even when rainfall is adequate, water often fails to percolate into the ground due to the dominance of built-up surfaces like roads and concrete structures, which disrupt natural recharge.

Therefore, it is essential to adopt systematic water conservation measures within institutions. Such measures can help reduce dependency on external sources, improve groundwater recharge, and promote the sustainable use of this irreplaceable resource.

5.1 WATER CONSUMPTION:

The institute has one water connection of local body. The water is used for domestic consumption and for drinking purpose after filtration.

Demand Analysis of water requirement: Residential based population on the campus and off the campus is given table No.11.

Table No. 11: Population strength on campus

Year	Students		Teaching staff & Non – Teaching Staff		Total
	Male	Female	Male	Female	
2024-25	1461	1027	120	106	2714

Water requirement for drinking and other purposes (Wash room, Plantation etc.) is calculated at the rate of 10 lit per person per day. Based on this assumption water demand analysis is given in table No. 12.

Table No. 12: Water demand Analysis

Total Number of People	Requirement of water	Total Requirement of water
2714	@ 10 lit / day	27,140 lit / day

On an average requirement of water per day is about 27,140 lit / day. This demand is met through supply of water from Municipal Corporation and college bore well throughout the year. However, RO water purifiers are placed in college campus, for the students and staff.

5.2 QUALITY OF WATER:

The college is committed to providing **safe and good-quality drinking water** to all students and staff through the installation of advanced water filtration systems. Water supplied by the municipal corporation is processed through filtration and RO systems and is routinely tested for various **physico-chemical and microbiological parameters** to ensure safety.

The analysis shows that the filtered water is **moderately hard**, with a measured hardness of **29 mg/L**, well within the **highest desirable limit of 100 mg/L**. The **Most Probable Number (MPN)** of coliform bacteria is recorded as **0/100 ml**, which fully complies with the **World Health Organization (WHO) standard of 0/100 ml** for drinking water.

Based on these results, the filtered water provided on campus is **safe and suitable for drinking**. A copy of the water analysis report is displayed at the filtration unit as an assurance and source of information for students.

Report No. 1 Drinking Water Quality Report

महाराष्ट्र शासन - कृषी विभाग

मान्यताप्राप्त व नोंदणीकृत

Reg. No. : STLRN - 2555030708/5

सुशीलानंद अँग्रो पॉलिक्लिनिक, इस्लामपूर

रजिस्ट्रेशन क्रमांक : Govt. of Maharashtra /Agri Dept./I.D.A.Kolhapur/ 02 / 2022 - 2025

प्रयोगशाला संदर्भ क्रमांक : पाणी/२०२४-२५/०९२

पावती क्रमांक : ११८४४

पावती दिनांक : ०२/०८/२०२४

परिक्षणाधीन नांव : मा. प्राचार्य, कर्मवीर भाऊराव पाटील कॉलेज

गांव : उरुण इस्लामपूर

तालुका : वाळवा

जिल्हा : सांगली

नमुन्याचा स्त्रोत : परिक्षणाधीनी स्वतः घेवून प्रयोगशालेमध्ये दिलेला नदी (नळ) च्या पाण्याचा नमुना

पिणेसाठी पाणी नमुना विश्लेषण अहवाल

गुणधर्म	अ. क्र.	विश्लेषित गुणधर्म	निरीक्षण	एकक	सर्वसाधारण प्रमाण IS : 10500 (1991) अन्वये
भौतिक	०१	तापमान (Temperature)	३८.२	°C	--
	०२	वास (Odour)	वासरहीत	--	वासरहीत
	०३	गुदुळता (Turbidity)	१.००	NTU	५ पेक्षा कमी
	०४	एकूण विरघळलेले कण (Total Dissolved Solids)	६०.००	mg/lit	५०० पेक्षा कमी
रासायनिक	०५	सामू (pH)	६.८३	-	६.५ ते ८.५
	०६	क्षारता (विद्युत वाहकता) (Electrical Conductivity at 25°C)	१२०.००	μmhos/cm	५०० पेक्षा कमी
	०७	कॅल्शियम (Calcium)	६.००	mg/lit	७५ पेक्षा कमी
	०८	मॅग्नेशियम (Magnesium)	३.६०		३० पेक्षा कमी
	०९	एकूण जडपणा (Total Hardness)	२९.७९		३०० पेक्षा कमी
	१०	एकूण विस्मृता (Total Alkalinity)	४२.७०		२०० पेक्षा कमी
	११	क्लोराईड्स (Chlorides)	८.८६		२५० पेक्षा कमी
जैविक	१२	एम.पी.एन. जीवाणू (M.P.N.)	०	No/100 ml	निरंक

शेरा : सदर पाण्याच्या नमुन्याचे भौतिक, रासायनिक व जैविक गुणधर्म प्रमाणात आहेत. सदर पाण्याचा नमुना सद्यस्थितीत पिणेसाठी योग्य आहे.

प्रयोगशाला अधिकारी
सुशीलानंद अँग्रो पॉलिक्लिनिक

सुशीलानंद विल्डींग, पहिला मजला, किसान नगर, कामेरी रोड, इस्लामपूर - ४१५ ४०९, ता. वाळवा, जि. सांगली. दुरध्वनी (०२३४३) २२४४९९, प्रमाणधनी : ९०२२३९४९९

टीप : सदर नमुना विश्लेषण अहवालाचा कोर्ट कचेरीचे कामी वापर करता येणार नाही याची नोंद घ्यावी.

5.3 WATER MANAGEMENT:

WATER CONSERVATION:

Clean, fresh water is a **limited and invaluable resource**. With recurring droughts and rising global demand, the availability of freshwater is rapidly becoming one of the most critical issues of our time. Although nearly **70% of the Earth's surface is covered with water**, only a small fraction is accessible as clean freshwater, and many regions across the world face severe shortages.

Water is essential for survival—not only for humans but also for plants, animals, and aquatic ecosystems. Without it, life cannot be sustained. Yet, despite its importance, water resources are often **overused, mismanaged, and polluted**. Conserving water ensures its **purity, availability, and sustainability for future generations**. Misconceptions that freshwater supply is infinite have worsened the problem, leading to careless wastage. Protecting and wisely using this finite resource is therefore crucial for environmental balance and survival.

Efficient Use of Water in the College Campus

Large volumes of water are unnecessarily wasted every day through **leaking taps, unattended open taps, and aging pipelines**. In many urban areas, studies indicate that more than half of the water supply is lost due to such leakages and pipeline deterioration. Recognizing this concern, the college has implemented several measures to promote water efficiency:

- **Awareness Initiatives:** Instruction boards are displayed in every washroom to remind students and staff to avoid wastage and ensure taps are closed after use.
- **Monitoring and Maintenance:** Taps and pipelines are regularly inspected for leakages, and necessary repairs are carried out promptly.
- **Immediate Action:** Faulty or leaking taps are immediately replaced with new, user-friendly alternatives.

These measures have helped the institution **reduce water wastage** and foster a culture of **responsible water use** among students and staff.

Suggested Future Measures

To strengthen water conservation practices, the following initiatives are recommended for future implementation:

1. **Sensor-Based Taps:** Use of automatic taps with sensors to minimize wastage caused by human negligence.

2. **Greywater Recycling:** Reusing treated wastewater from hostels and canteens for gardening and cleaning purposes.
3. **Drip Irrigation Systems:** Adoption of drip irrigation in garden areas to reduce water loss.
4. **Awareness Programs:** Regular workshops, campaigns, and competitions to encourage water-saving practices among students.
5. **Water Audit:** Conduct periodic water audits to monitor consumption patterns and track improvements.

Drinking water facility (RO)



Rain water harvesting:

Considering high rainfall in the area, college made efforts for rainwater harvesting. College has installed rain water harvesting system on main college building. Harvested water is refilled in college borewell through underground channel system. These recharging helps to maintain ground water table of bore well.

Type of System: -Roof top water harvesting

Type of roof : Flat roof

Considering the average annual rainfall of about 400mm, it is quite possible to harvest about 4,000 lit of water per day during the effective rainfall days of the rainy season.

Plate No. 3 Rain Water Harvesting



5.4 WASTE WATER MANAGEMENT:

WASTE WATER DISPOSAL METHOD:

Total water demand for domestic consumption on college campus is 27,140 lit / day. By and large, it is assumed that 30 % waste water is generated during college hours i.e., 27,140 lit / day $\div 0.3 = 90,466.66$ liter/day. Which is disposed off in septic tank.

Table No. 13. No of Toilets Campus

Sr. No	No of WCs + Urinals		Total
	Male	Female	
1	63	38	101

During the last year total strength of student and staff on campus is 2540. Ratio of number of people and WCs and urinals is 1:26.18

Male: 1581 Female students: 1133

Ratio of WCs+ Urinals for Male: 1:25.09

Ratio of WCs + urinals for Female – 1:29.81

It is observed that, college has constructed enough numbers of toilets. As per the WHO guidelines they should be 1: 30 for male and 1: 20 for female. However, for all practical purpose, minimum requirement should be at least 1: 30 for female and 1: 40 for male.

Waste water is disposed of through septic tanks.

6.1 HAZARDOUS WASTE MANAGEMENT:

Hazardous waste refers to any waste that is potentially dangerous or harmful to human health and the environment. It may exist in the form of liquids, solids, or contained gases. The college campus does not generate hazardous waste. However, several proactive measures have been undertaken to maintain a clean and eco-friendly campus environment:



- The campus has been declared a **Plastic-Free Zone**.
- The college avoids the use of non-biodegradable items such as plastic glasses, cups, plates, and straws in the canteen and instructs students to refrain from bringing plastic materials.
- Separate **waste bins** have been placed across the campus for **segregation of plastic, paper, and food waste**.
- Use of **eco-friendly bags, files, and paper bags** is promoted among staff and students.
- Regular **campus cleaning programs** are organized through student and staff extension activities.
- Awareness drives are conducted to train students in the use and promotion of **eco-friendly alternatives**.
- The campus has also been declared a **Tobacco-Free and Smoking-Free Zone**.

6.2 Solid Waste Management

The college follows a structured solid waste management system. As a policy, the use of plastic bags is strictly banned on campus. Waste is collected systematically using dustbins placed at strategic locations, including classrooms, offices, and common areas. Each classroom is equipped with a recycled dustbin to encourage responsible waste disposal.

Key measures include:

- Segregation of waste into **degradable and non-degradable** categories.
- **Degradable waste** is disposed of through a **compost pit**, which supports organic waste recycling. Photo plate 5b shows the built up of compost pit.

Details of pit as follows,

Length × Width × Height = 12 × 10 × 3

It means built up compost pit has volume: 360 cubic feet (≈ 10.19 cubic meters) and storage capacity: ≈ 5 to 6 metric tons of compost (depending on density)

Regular monitoring to ensure a clean and hygienic campus environment.

Awareness creation among students about the importance of waste segregation and cleanliness.

This approach not only ensures cleanliness but also encourages students to adopt sustainable practices in their daily lives.

6.3 Paper Waste Management

Paper constitutes the **major portion of solid waste** generated on campus. While paper is biodegradable, it has significant recycling potential, which helps conserve natural resources and reduce deforestation.

The institution has adopted several **green practices** to minimize paper waste:

- Reuse of **one-sided paper** for internal documentation and drafts.
- Promotion of **paperless activities** such as emailing notices, using WhatsApp groups, and digital circulation of information instead of printing.
- Following the **3R Principles – Reduce, Reuse, Recycle** in all academic and administrative activities.

Through these initiatives, the college not only reduces its environmental footprint but also fosters a **culture of sustainability** among students and staff.

Table No. 14 List of Dustbins

Sr. No.	Place	No. of Dustbins
1	Sansatha Office	02
2	Library	05
3	MCVC Department	02
4	Gymkhana	02
5	Sanskrutik Vibhag	03
6	Ladies	01
7	Cheri Bag	01
8	Exam Room	01

9	Ladies Hostel	19
10	Nearby Toilets & Urin Room	03
Total		39

6.4 e-Waste Management:

Electronic waste (E-waste) refers to discarded electrical and electronic devices such as computers, printers, mobile phones, projectors, and laboratory instruments. With the growing use of technology in education, proper management of E-waste has become essential to prevent environmental pollution and promote sustainable practices. Computers and their peripherals are the only source of electronic waste on the campus.

Objectives

- To minimize the generation of electronic waste on campus.
- To ensure safe handling, storage, and disposal of obsolete electronics.
- To create awareness among students and staff about responsible E-waste disposal.

College has sent all the generated e-waste to corporation through a proper system.

Plate No. 4 Measures for Waste Reduction



Waste segregation bins



Compost pit



Biogas Plant

7.0 GREEN INITIATIVES PROGRAMME:

College has initiated large number of Environmental awareness programme through college and NSS. Activities are given due publicity through local newspapers. Some of the high lights are given below:

GREEN INITIATIVES



Table No. 15: List of some activities during the year 2024-25

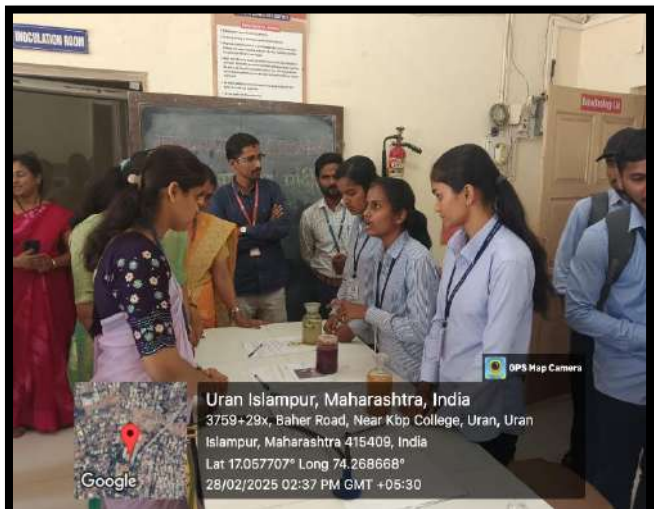
Sr. No	Activity	Date	Location	Description
1	'Vruksha Dindi'	13 th July 2024.	Urun-Islampur city & Collage Campus	On the occasion of birth anniversary of Prof. Dr. N. D. Patil, our college is organizing 'Vruksha Dindi' on 13 th July 2024. All the faculty members, non-teaching staff and students are instructed to participate in the same. It will be initiated on college campus and pass through Islampur city. Students and staff members are instructed to make aware the people to carry out and protect plantation. Created awareness about plantation and plant protection. It was a rally through Islampur. Therefore, students and staff members could discussed significance of plantation with nearby community.
2	Importance of Seed Ball Plantation	28 th February 2025	K.B.P Collage Urun-Islampur	On the occasion of Promoting Environmental Conservation in Institutions Importance of Seed Ball: A lecture by Dr. Sandeep Patil was organized under the Environmental Conservation Awareness Initiative on preparing and planting seed balls. In it, he gave complete guidance from the history of preparing seed balls to its planting. Due to which awareness was created among students and teachers and non-teaching staff regarding environmental conservation and protection. He explained the importance of seed balls as follows. 1. Nature-friendly method: Seed balls are a simple, low-cost and eco-friendly method. In this, seeds are wrapped in a ball of soil and fertilizer and sown in nature, due to which they easily germinate during the monsoon. 2. Rejuvenating forests: Seed balls are useful for increasing vegetation and maintaining biodiversity. It is especially

				used for revitalization in deforested areas or on open hills. 3. Increases soil fertility: The organic soil in the seed ball provides nutrients to the soil, which helps in the growth of the surrounding plants along with the soil. 4. Shelter for wildlife: The growth of trees creates a natural habitat for birds, insects and other animals. This helps in maintaining the balance of the environment. 5. Awareness and participation: These activities are educational and inspiring for school students, NGOs, and citizens. This is a good initiative to instill love for the environment. 6. Combat climate change: Planting trees absorbs carbon dioxide and produces oxygen, which helps in reducing global warming.
3	‘Faculty Development Program’ on ‘Institutional Environmental Initiatives by Individual Stake Holders’ 2024-2025	10 th March 2025	KBP Collage Urun-Islampur	One-day 'Faculty Development Program' conducted under the leading college. It was organized in our college on 10/03/2025 at 11.00 am on the topic 'Institutional Environmental Initiatives by Individual Stake Holders' through the 'Green Audit Committee'. All the faculty members, non- teaching staff and professor at affiliated leading college were participating in the same. President, Vice President and Board of Directors Staff members and Students were instructed to make aware the people to carry out and protect plantation. Created awareness about plantation and plant protection. Environment is of utmost importance in human life. Every individual in different institutions, colleges, industries should do environmental conservation work through small initiatives for environmental conservation and protection. For example, making seed balls, environmental conservation colour, environmental conservation rakhi, planting trees

				in coconut shells instead of using plastic bags for tree plantation. Etc. Valuable guidance was given in this regard.
4	Plantation activity by Botany Department	16/07/2024	Campus	Undertaken with participation of Botany students and staff.
5	Vruksha dindi of Botany Department	13/07/2024	Islamampur City	Undertaken with participation of Botany students and staff.
6	Awareness	19/09/2024	College Campus	It is a notice to maintain cleanliness on campus
7	Green corner Wall paper	Through out year	Botany Department	It is a platform for discussion about various subjects along with environment.
8	Projects in Environmental Studies	Through out year	Botany Department	Projects related to environmental studies based on college campus



Plate No. 5 Green Initiative Activities



1. Eco-friendly product making activity

2. Guest lecture on Importance of Seed Ball Plantation



3. Vruksha dindi of Botany Department



4. Tree plantation activity



प्रचंड खपाचे एकमेव निःपक्ष व निर्भीड दैनिक

स्थापना १९३९

पुढारी

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इस्लामपूर : येथे डॉ. एन. डी. पाटील जयंतीनिमित्त वृक्षारोपण करण्यात आले.

डॉ. एन. डी. पाटील जयंतीनिमित्त कर्मवीर महाविद्यालयात वृक्षारोपण

इस्लामपूर : पुढारी वृत्तसेवा कष्टकरी जनतेचे लढाऊ नेते डॉ. एन. डी. पाटील यांच्या जयंतीनिमित्त येथील महात्मा फुले शिक्षण संस्थेच्या कर्मवीर भाऊराव पाटील महाविद्यालयात विविध उपक्रम राबवण्यात आले.

ग्रीन कॅम्पस कमिटी, भूगोल विभाग, वनस्पतिशास्त्र विभाग आणि सामाजिक वनीकरण विभाग यांच्या संयुक्त विद्यमाने वृक्षारोपण आणि वृक्षवितरण करण्यात आले. प्र. प्राचार्य डॉ. नितीन शिंदे यांच्या हस्ते वृक्षांचे वितरण करण्यात आले. यावेळी मॅनेजिंग कौन्सिल सदस्य प्रा. स्मिता पाटील उपस्थित होत्या. डॉ. शिंदे आणि विद्यार्थ्यांच्या हस्ते कॉलेज परिसरात वृक्षारोपण करण्यात आले. डॉ. संदीप पाटील, डॉ. महेश गोखले यांनी संयोजन केले.

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5. Faculty Development Program' on 'Institutional Environmental Initiatives by Individual Stake Holders' 2024-2025

पुण्य नगरी





इस्लामपूर : कार्यशाळेचे उद्घाटन करताना पूजा सारोळकर, शेजारी प्राचार्य डॉ. नितीन शिंदे, उपप्राचार्य पी. व्ही. गायकवाड, डॉ. संदीप पाटील.

पर्यावरण संवर्धनाची जबाबदारी सर्वांची : पूजा सारोळकर

इस्लामपूर / प्रतिनिधी : पर्यावरण संरक्षण व संवर्धन ही संस्था तसेच समाजातील प्रत्येक घटकाची वैयक्तिक जबाबदारी आहे, असे मत पूजा सारोळकर यांनी व्यक्त केले. कर्मवीर भाऊराव पाटील कॉलेजमध्ये आयोजित एक दिवसीय कार्यशाळेत त्या बोलत होत्या. अध्यक्षस्थानी प्राचार्य डॉ. नितीन शिंदे होते. स्वागत डॉ. संदीप पाटील यांनी केले. पाहुण्यांचा परिचय प्रा. डॉ. महेश गोखले यांनी करून दिला. सूत्रसंचालन प्रा. अनिल माळी यांनी केले. यावेळी कॉलेजमधील सर्व प्राध्यापक, शिक्षकेत्तर कर्मचारी उपस्थित होते.

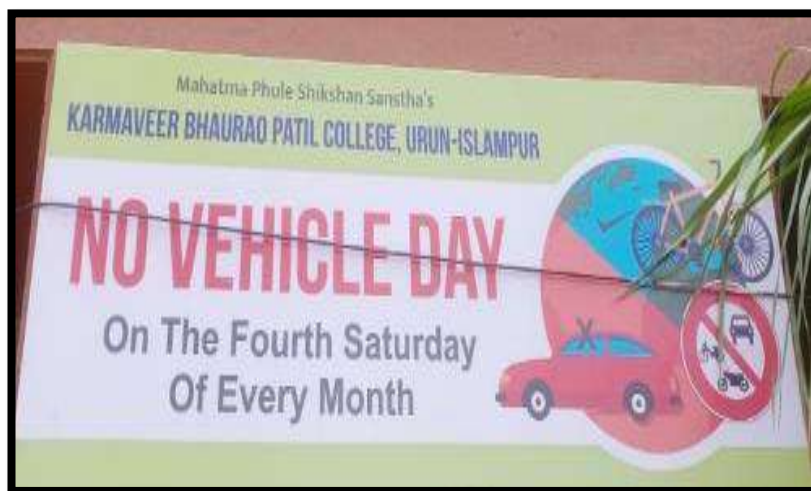
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7.1 ENVIRONMENT AWARENESS TAGS:

Environmental awareness is having an understanding of the environment, the impact of human behaviour on it and the importance of its protection. Hence, college has taken some Environmental awareness measures. College has prepared following tags related to environment:

1. Save the Environment
2. Save Fuel
3. Plastic Ban Zone
4. Save the Trees
5. Do Not Waste the Water
6. No Smoking

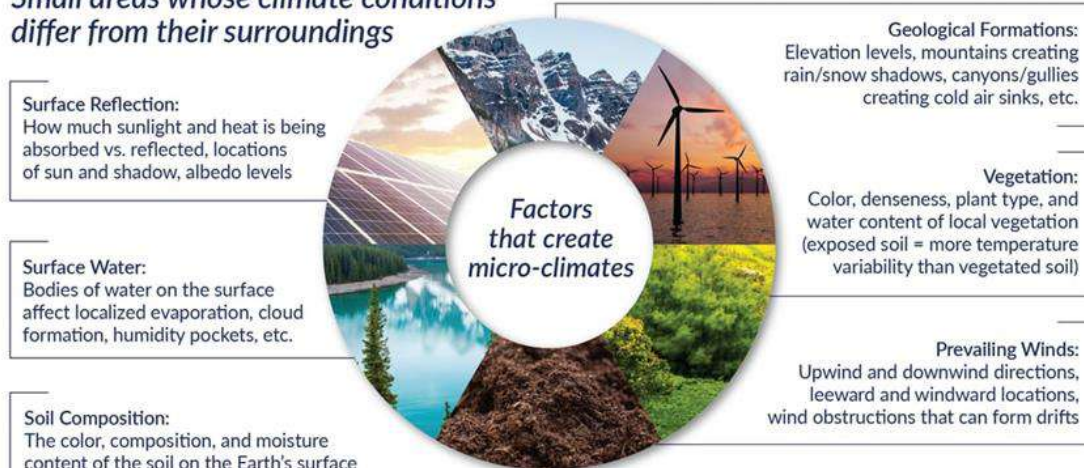
Plate No. 6 Environment Awareness Tags



7.2 Study on Campus Microclimate

WHAT ARE MICRO-CLIMATES?

Small areas whose climate conditions differ from their surroundings



Introduction

The microclimate of a college campus refers to the unique atmospheric conditions that exist within the campus boundaries, influenced by factors such as vegetation, built infrastructure, and human activity. Understanding the microclimate of a campus is essential for creating a comfortable and sustainable environment for students, faculty, and staff. This project aims to investigate the microclimatic conditions of our college campus, exploring how various factors interact to create a distinct local climate.

Background

Microclimates are small-scale atmospheric environments that differ from the surrounding regional climate. They are shaped by local factors such as topography, land use, and vegetation. On a college campus, microclimates can be influenced by the arrangement of buildings, the presence of green spaces, and the activities of the campus community. By studying the microclimate of our campus, we can gain insights into how to improve the outdoor environment, enhance biodiversity, and promote sustainability.

Objectives

The objectives of this project are:

1. To measure and analyze the temperature, humidity, and wind patterns on the college campus.
2. To investigate the impact of vegetation and green spaces on the microclimate.
3. To examine the effects of built infrastructure (e.g., buildings, pavements) on the microclimate.
4. To identify areas of the campus that may be prone to heat islands or other microclimatic phenomena.

5. To provide recommendations for improving the microclimate and creating a more sustainable campus environment.

Methodology

Our project will involve a combination of field measurements, observations, and data analysis. We will set up weather stations and sensors to collect data on temperature, humidity, and wind speed at various locations across the campus. We will also conduct surveys and observations to gather information on the types of vegetation, land use patterns, and human activities that may influence the microclimate.

Outcomes

This project aims to contribute to a better understanding of the microclimate of our college campus and to provide insights into how to create a more sustainable and comfortable environment for the campus community. Our findings will be presented in the form of maps, graphs, and recommendations for campus planners and administrators. This introduction sets the stage for a comprehensive investigation into the microclimate of the college campus, highlighting the importance of understanding local climate conditions and the potential benefits of creating a more sustainable environment.

Results

Our study on the microclimate of the college campus revealed distinct variations in temperature and humidity across different areas. The key findings are summarized below:

Temperature

1. **Vegetated Areas:** The areas covered with plants (e.g., gardens, lawns) showed significantly lower temperatures compared to non-vegetated areas. The average temperature in these areas ranged from 24°C to 28°C.
2. **Metal/Poly Sheet-Covered Corridors:** The corridors covered with metal or poly sheets recorded higher temperatures, with averages ranging from 32°C to 36°C.
3. **Open Spaces:** Open spaces, such as courtyards and playgrounds, had temperatures intermediate between vegetated and metal/poly sheet covered areas, ranging from 28°C to 32°C.

Humidity

1. **Vegetated Areas:** The areas with dense plant cover exhibited higher humidity levels, with relative humidity ranging from 60% to 80%.
2. **Metal/Poly Sheet-Covered Corridors:** The corridors with metal or poly sheet coverings had lower humidity levels, ranging from 40% to 60%.
3. **Open Spaces:** Open spaces showed moderate humidity levels, ranging from 50% to 70%.

Discussion

The findings of our study highlight the significant impact of vegetation and built infrastructure on the microclimate of the college campus. **Effect of Vegetation** The lower temperatures and higher humidity levels in vegetated areas can be attributed to the processes of evapotranspiration and shading. Plants absorb carbon dioxide and release water vapor, cooling the surrounding air through evapotranspiration. Additionally, the canopy provides shade, reducing the amount of direct sunlight that reaches the ground and lowering the temperature. These findings suggest that increasing green spaces on campus can help mitigate the urban heat island effect and create a more comfortable environment for students and staff.

Impact of Built Infrastructure

The higher temperatures and lower humidity levels in metal/poly sheet-covered corridors are likely due to the heat absorption and retention properties of these materials. Metal and poly sheets can absorb and re-radiate heat, contributing to the formation of microclimatic hotspots. These findings imply that the use of such materials in construction can exacerbate the urban heat island effect, making outdoor spaces less comfortable.

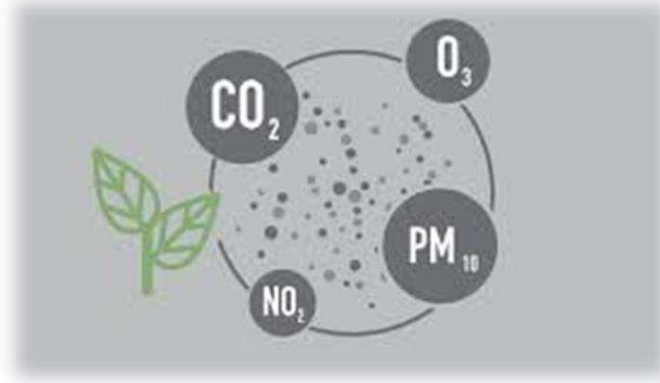
Implications for Campus Planning

Our study has implications for campus planning and design. By incorporating more green spaces and using materials with lower heat absorption properties, the college can create a more sustainable and comfortable environment for its community. Strategies such as green roofs, vertical gardens, and the use of permeable pavements can help mitigate the urban heat island effect and improve the overall microclimate of the campus.

Conclusion

This study demonstrates the importance of considering microclimatic factors in campus planning and design. By understanding the effects of vegetation and built infrastructure on temperature and humidity, the college can take steps to create a more sustainable and comfortable environment for its students, faculty, and staff. Future studies can build on these findings to explore additional factors influencing the microclimate and to develop more comprehensive strategies for improving campus sustainability.

7.3: Air Quality Index and Air Pollution Management



Air Quality Monitoring in Institutions

Maintaining good air quality in institutions is crucial for the health and well-being of students and staff.

Importance of Monitoring Air Pollution in Institutions

- Ensuring clean and healthy air within institutes has a direct impact on the overall well-being and academic performance of students.
- Poor indoor air quality can lead to various health issues, including respiratory problems, allergies, asthma, and even impaired cognitive function. By monitoring air pollution levels, Institutions can identify potential risks, take proactive measures, and provide a safe and conducive learning environment for students and staff.

Reasons for Poor Air Quality in Institutions

- **Outdoor Pollution:** Proximity to busy roads, industrial areas, or construction sites can expose institutions to high levels of outdoor pollutants such as Particulate Matter (PM), and Nitrogen Dioxide (NO₂).
- **Indoor Sources:** Indoor air pollutants can arise from sources such as furniture and cleaning products. Inadequate ventilation, including poor HVAC systems, can trap these pollutants indoors, leading to a buildup of contaminants.
- **Human Activities:** Increased occupancy, improper cleaning practices, and the use of certain products (e.g., art supplies, aerosol sprays) can release pollutants into the air. Activities like cooking in institutions kitchens without proper ventilation can also contribute to poor indoor air quality.

Utilizing Air Quality Data in institutions

Monitoring air quality in institutions is only the first step; utilizing the data obtained can help institutions take appropriate actions. Here are some ways schools can utilize air quality data effectively:

- **Implementing Mitigation Strategies:** Air quality data enables schools to identify the sources of pollutants and take necessary steps to mitigate them. For example, improving ventilation systems, using air purifiers, and implementing green cleaning practices can significantly enhance indoor air quality.
- **Educational Opportunities:** Air quality monitoring can serve as an educational tool, raising awareness among students, teachers, and staff about the importance of clean air and its impact on health. It can facilitate discussions on sustainable practices and encourage behavioral changes to reduce pollution sources.
- **Collaborative Efforts:** Sharing air quality data with relevant stakeholders, such as parents, local health departments, and environmental organizations, can foster collaboration and advocacy for healthier school environments. It can also help schools access additional resources and expertise to address air quality concerns effectively.

It was observed and revealed from data that the only possible sources of pollution in the college campus are as use of diesel/petrol vehicles, air conditioners, power generators, kitchen waste and other biodegradable waste from the canteen, use of electronic appliances and others. There is a very low chance of air pollution from outside as no commercial industrial activities are running near the campus, as the campus is rich in greenery. All the parameter of air pollution recorded below the average limit prescribed by the CPCB or MPCB.

College has taken an initiative to motivate the students and the faculty for the use of bicycles. The faculty and the students residing in the vicinity prefer bicycles for coming to the college. Majority of the students come from the nearby villages. They make use of the state transport buses for coming to the college.

No Vehicle Day: Last Saturday of every month is observed as No Vehicle Day to keep the college campus pollution free. The students, faculty and the citizens are requested not to use vehicles in the proximity of 200 meters of the college.

Report No. 2 Air Monitoring

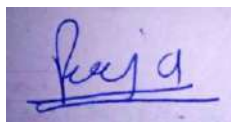
Name of the college : Karmveer Bhavurao Patil, Islampur, Maharashtra, India

Sample Description : Ambient Air

Sampling Location : College Campus

Sr. No.	Parameter	Result	Permissible limit as per CPCB guidelines (Annual average)
1	O ₃	81	100
2	PM 2.5	31	40
3	PM 10	39	60
4	CO	0.5	02
5	NO ₂	5	40
6	SO ₂	7	50
7	AQI	91	Good 0-50, Satisfactory 51-100 Moderate 101-150 Poor 151-200 Very Poor 201-300 and Severe >300

Note: All values unless otherwise stated are in $\mu\text{g}/\text{m}^3$ except CO (mg/m^3).



Monitored by

Ms. Pooja Sarolkar

Lead Auditor EMS

7.4 Noise Monitoring and Noise Pollution Management

Sound pollution is another important parameter that is taken into account for green auditing of the College Campus. Five different sites are chosen for the monitoring purpose namely College main gate, Near Workshop, Food court area, Hostel area and IIT and Medical academy. Sound is quantified by the Sound Level Meter



The human ear is constantly being assailed by man-made sounds from all sides, and there remain few places in populous areas where relative quiet prevails. There are two basic properties of sound, (1) loudness and (2) frequency. Loudness is the strength of sensation of sound perceived by the individual. It is measured in terms of Decibels. The loudest sound a person can stand without much discomfort is about 80 dB. Sounds beyond 80 dB can be safely regarded as Pollutant as it harms hearing system.

Frequency is defined as the number of vibration per second. It is denoted as Hertz (Hz).

The objectives of Noise Monitoring were as the following:

- To assess the impact on human work efficiency due to road traffic parameters, different Noise indices and attitudinal response.
- To study the temporal pattern of road traffic the study area.
- To study the existing status of noise levels in the study area by recording the noise Intensity at various locations.
- Identification and consideration of suitable mitigation and abatement measures.

It was observed that there are no industrial as well as sound generating activities near the college campus and it was revealed that due to a limited number of vehicles, the chances of noise pollution seem to be quite below of CPCB standard limit.

A) Silence Zones in the College

Various display boards have been placed in the library and other places for awareness to maintain silence in the college.

B) NOISE CONTROL IN THE COLLEGE

The college adopts a honking policy and prevents the use of any honking and noise on campus. Certain

areas like the library and classrooms are declared as Silence Zone, and noise pollution is kept to a minimum on college campuses.

Report No. 3 Noise Monitoring

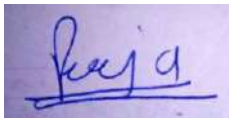
Noise Monitoring Report

Name of the college : Karmveer Bhavurao Patil, Islampur, Maharashtra, India

Sample Description : Ambient Noise

Sr. No.	Location	Result dB (A) Day	Specifications (CPCB Standards dB(A))
1	Near entrance gate	67.6	65 day/55 night
2	Near canteen	57.9	
3	Classroom	67.5	
4	Hostel	72.5	
5	Parking	60.3	

Observation: Overall, the results indicate that some areas of the campus experience higher noise pollution , particularly near the entrance, classrooms, and hostel, possibly due to vehicular movement, crowding, and daily activities.



Monitored by

Ms. Pooja Sarolkar

Lead Auditor EMS

8.0 FINDINGS AND SUGGESTIONS:

After a thorough analysis of green practices and environmental aspects of college the audit team has come with following findings and suggestions.

FINDINGS:

1. The college campus strictly follows green practices. All students, staff and faculty members participate actively in keeping campus clean and green.
2. College has tried to keep campus green by planting trees and landscaping in the premises.
3. Solid waste segregation and management is followed in the premises.
4. **Rain water harvesting** has been done in the campus with effective recharging of ground water table of borewell.
5. Large windows provided for natural ventilation reducing power consumption.
6. College has installed **Solar system** for energy conservation.
7. Bio-degradable waste like plant residue is collectively used for generation of **compost**.
8. Observing Celebration of **No Vehicle Day** on 4th Saturday of every month.
9. **Drinking water quality** has maintained as per the standards by frequent water quality analysis at Environment laboratory.
10. **Air Quality Index** is within permissible limit.
11. Overall, the results indicate that some areas of the campus experience higher **noise pollution**, particularly near the entrance, classrooms, and hostel, possibly due to vehicular movement, crowding, and daily activities.
12. **Representative plant species** are appropriately labeled with botanical name/English name/local name.
13. Average **35,897 kg** of CO₂ has been captured and stored by **280** woody plants on the college campus, which indicates **surplus carbon** is stored that helps to maintain air quality of the campus.

SUGGESTIONS FOR IMPROVEMENT:

College has taken good number of green initiatives for the protection of environment. However, for getting better results following suggestions may be considered by the college in phased manner.

1. Considering the present strength of the college, it is suggested to construct additional WCs + Urinals, 7 for male and 8 for female. Altogether, it expected to have 14 for male and 26 for female.
2. Kindly implement more activities related to Environmental awareness and conservation.
3. Kindly reconstruct the biogas plant for more use of renewable energy source and proper management of organic waste.
4. Kindly install street Solar panels for night energy use.
5. Considering the utilization of solar energy, it is suggested (If Possible) to computerize the solar system .i.e. Solar panel monitoring software's like SolarEdge, Intello, Solarman, and Tigo Energy for real-time, panel-level data and storage systems, showing energy flow, production, and consumption.

Overall, the performance of Institute is good in green initiative front and can take somemore green initiatives for sustainable future.