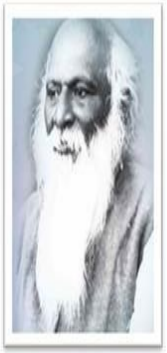
Mahatma Phule Shikshan Sanstha's
KARMAVEER BHAURAO PATIL COLLEGE URUN-ISLAMPUR
Bahe Road, Urun-Islampur, Tal. Walwa, Dist. Sangli, Maharashtra, India,
•Established in 1961• 415409. Ph. 02342-221778, 226778, Fax-221776 I/C Principal
•Website: www.kbpislampur.com• Reaccredited A With CGPA 3.17 at the 3rd Cycle Dr. Nitin Shinde



GREEN INITIATIVE REPORT

2023-24

Prepared By

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Environmental Consultancy & Eco-Businesses

ISO 14001:2015(EMS) & ISO 9001:2015(QMS) Certified Organization
Kolhapur, Maharashtra, India

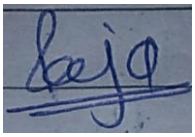
Ms. Pooja S. Sarolkar
Propriter & Lead Auditor

Ref. No.-Ecolife/08/2024 Date:

Green Audit Certificate

This is to certify that the Environmental Consultancy & Eco-Businessess, Kolhapur has conducted detailed "Green Audit" of esteemed institution **Mahatma Phule Shikshan Sansth's**, **Karmaveer Bhaurao Patil College Uran-Islampur, Sangli, Maharashtra** for the academic year **2023-2024**. The green 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 Green Aspects such as **Biodiversity, Green Initiative Activities** 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 green 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.

Prepared & certified by



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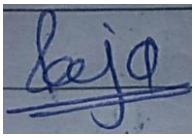

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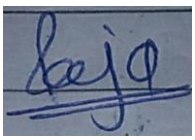

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GREEN INITIATIVE REPORT

1.0: PREAMBLE:

The environment we live in determines whether the human race survives. Every living thing on Earth depends critically on a variety of environmental elements. However, in our industrialized period, we pay very little attention to the environment and instead concentrate primarily on development and economic prosperity. In order to improve our standard of living, we are constantly overusing the natural resources, which degrades the ecosystem. Numerous types of pollution, including soil, water, and air pollution, are the result of human activity. Animal, plant, and human health are negatively impacted by this contaminated environment. In addition to various local or regional pollution problems, we also have to deal with worldwide problems like global warming and ozone layer depletion. These days, environmental concerns are becoming more and more of a global concern.

India is a developing nation that is dealing with an overpopulation issue. Thus, the natural resources that are available are burdened. Forest lands have been converted for residential or agricultural use as a result of this population boom. Although it has contributed to the improvement of lifestyle, it also exploits the environment. Deforestation has resulted in the devastation of animals' natural habitats. Both animals and several plants have gone extinct as a result of it.

We also have to deal with the problem of managing solid waste in addition to this. Both groundwater and soil pollution have resulted from it. Cities' environs are frequently used as disposal sites for solid garbage. In addition to a number of health issues that affect the locals, these garbage disposal sites occasionally catch fire. Residential, commercial, and industrial locations all contribute to noise pollution.

These human-caused activities have had a significant impact on the oceans, forests, rural and urban areas. The principles of sustainable development are violated by this indiscriminate development. Following 1970, the effects of these actions were taken into account, leading to numerous international conferences and treaties being signed. However, the issue of environmental deterioration is still becoming worse. As a result, attention needs to be paid to environmentally friendly technology. We must simultaneously decrease the amount of waste produced and transition to recycling and reuse. In order to ensure the socioeconomic well-being and the survival of future generations, we should strive for sustainable development. At the individual, institutional, national, and international levels, efforts should be made in this regard.

GENRAL INTRODUCTION:

The green initiative was first conducted in the United State of America in 1970s.

By 1992, approximately half of the local authorities of UK undertook the green audit completely or partially. The United Nations Conference on Environment and Development (UNCED), which was held at Rio de Janeiro, motivated all the countries to act cautiously to save the earth with sustainable approach. Most of the countries have accepted their national strategy for sustainable development which includes the policy and programmes aimed to promote geo-biodiversity and protect environment. This Rio spirit shows significant progress in most of the countries and they have changed and upgraded the environmental situation to the possible extent. Some of the Asian countries were also motivated from the summit and played same role within their limits. India is the first country in the world to make environmental audit compulsory. According to gazette notification, all Industries were communicated to submit the reports of the environmental audit to their concerned State Pollution Board, giving details of water, raw materials and energy resources used and products and waste generated by them in their operations from 1992.

Green initiative is a tool to protect the environment by adopting concept of conservation of natural resources.

Environmental component utilization can be audited to ensure sustainable use. The initiative is referred to as a frequent, methodical evaluation and appraisal of the forces and elements that support the achievement of objectives.

College has conducted a green audit with specific goals as:

1. Identification and documentation of green practices followed by university.
2. Identify strength and weakness in green practices.
3. Analyze and suggest solution for problems identified.
4. Assess facility of different types of waste management.
5. Increase environmental awareness throughout campus
6. Identify and assess environmental risk.
7. Motivates staff for optimized sustainable use of available resources.
8. The long-term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental issue before they become problem.

Objectives:

1. To examine the current practices, which can impact on environment such as of resource utilization, waste management etc.
2. To identify and analyze significant environmental issues.
3. Setup goal, vision, and mission for green practices in campus.
4. Establish and implement Environment Management in various departments.
5. Continuous assessment for betterment in performance in green

BENEFITS OF GREEN INITIATIVETO EDUCATIONAL INSTITUTIONS

There are many advantages of green audit to an Educational Institute:

1. It would help to protect the environment in and around the campus.
2. Recognize the cost saving methods through waste minimization and energy conservation.
3. Empower the organization to frame a better environmental performance.
4. It portrays good image of institution through its clean and green campus.

OBJECTIVE AND SCOPE

The broad aims/benefits of the eco-auditing system would be:

- Environmental education through systematic environmental management approach
- Improving environmental standards
- Benchmarking for environmental protection initiatives
- Sustainable use of natural resource in the campus.
- Financial savings through a reduction in resource use
- Curriculum enrichment through practical experience
- Development of ownership, personal and social responsibility for the College campus and its environment
- Enhancement of College profile
- Developing an environmental ethic and value systems in 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 programmes

v) Development and implementation of Courses, modules, activities, programmes 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.

1. To develop overall personality of the students.
2. To give the students an opportunity to have an interaction with poor and weaker section of society.
3. To make the students cultured, civilized and responsible citizens.
4. To inspire the students with the feeling of nationalism.
5. To develop the sense of social awareness among the students and provoke them to help the needy people.
6. To make the students able to face the challenges in the modern age.
7. To implement new educational facilities and courses in the college.
8. 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-WalwaDist. - 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
2023-24	**1495**	**905**	**2400**

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		
2023-24	1495	905	49	34	57	2540

Number of students enrolled during the year- 2023-24

Sr. No.	Class	Male	Female	Total Admissions
1	**B. A. I**	231	92	**323**
2	**B. A. II**	84	81	**165**
3	**B. A. III**	74	73	**147**
4	**B. Com. I**	59	37	**96**
5	**B. Com. II**	36	29	**65**
6	**B. Com. III**	47	24	**71**
7	**B. Sc. I**	92	67	**143**
8	**B. Sc. II**	76	67	**143**
9	**B. Sc. III**	95	79	**174**
10	**Bio Tech - I**	06	09	**15**
11	**Bio Tech - II**	01	01	**01**
12	**Bio Tech - III**	04	06	**10**
13	**B. C. A. - I**	117	59	**176**
14	**B. C. A. - II**	105	46	**151**
15	**B. C. A. - III**	24	11	**35**
16	**B. C. S. - I**	106	56	**162**
17	**B. C. S.- II**	108	56	**164**
18	**B. C. S. - III**	39	09	**48**
19	**B. Sc. I. T. - I**	71	47	**118**
20	**B. Sc. I. T. - II**	70	35	**105**
21	**B. Sc. I. T. - III**	38	10	**48**
22	**B. Com. I. T.- I**	13	11	**24**
Total		**1495**	**905**	**2400**

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	7 Acre
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 .3: 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 survey, assessment, and analysis of energy flows for the purpose of reducing energy consumption in a building or system without adversely affecting its output. An effective way to comprehend the movement of energy from its source to its ultimate application is through energy audits.

As per the Energy Conservation Act, 2001, Energy auditing is the verification, monitoring and analysis of use of energy including submission oftechnical report containing recommendations for improving energy efficiencywith cost benefit analysis and an action plan to reduce energy consumption.

Green audits are assigned to criteria 7 of the National Assessment and Accreditation Council, which is a self-governing organization that provides various institutions with grades based on their criteria for accreditation.

Essentially requirement for an Energy Audit is a part of the criteria 7 and is vital to the accreditation process. This accreditation provides a college with anopportunity to present itself as an esteemed institution without impeccable values, infrastructural advantage and endless opportunities it could provide itsstudents.

Need for Energy Audits:

Energy audits are a useful tool for analyzing and identifying sustainable or environmentally friendly institutional activities. The world is changing all the time, and regrettably, development leads to extensive use of natural resources. Natural resources are now utilized for more than just product supply. Water and energy are basic resources that everyone uses liberally. Knowing how much we consume and where we squander resources is crucial to ensuring optimal utilization in light of the impending issue of resource depletion. Energy audits offer chances to ascertain the same and assist the firm in reflecting on, expanding, and improving its operations in order to make the transition to clean, green resource consumption. In addition, it fosters a sense of awareness among members of the institution regarding environmental issues and sustainable resource utilization.

Goals of Energy Auditing:

- Determining the advantages and disadvantages of green strategies.
- Examine and recommend fixes for issues that have been found.
- Recognize and evaluate environmental danger.
- Encourage employees to use resources in the most sustainable way possible.
- Raising campus-wide understanding of environmental issues.

ENERGY AUDIT

A Better Way to Increase Energy Efficiency and Reduce Energy Bills

Objectives of Energy Audit:

• Examine the effects of present actions on the environment.

• Recognize and evaluate important environmental problems.

• Ongoing evaluation to improve environmental performance.

• Create and carry out a campus-wide green energy strategy, raising awareness among staff and students.

Benefits to Educational Institutions:

• Improve the energy utilization within and outside the campus premises.

• Help recognize cost-effective green strategies that enable conservation ofenergy.

• Empower people linked to the organization to move towards conscious environmental thinking and practice.

• It helps improve the image and builds a positive impression of theinstitution for its green and clean resource use.

3.3.1 ENERGY POLICY:

Energy conservation is a major aspect of the college sustainability program. The following standards aim to control and minimize energy usage on college campuses worldwide. Every member of the professors, staff, administration, and students should abide by these rules. The college's energy usage policy aims to manage energy in a way that minimizes its environmental impact. It will assist us in realizing our obligations and committing to the protection and responsible use of natural resources by assisting us in integrating efficiency and environmental consciousness into our daily operations.

Policies:

• To evaluate source energy consumption and quantify environmental effects.

• Installing solar panels with photovoltaic capabilities to produce alternative energy.

• To save energy, install LED lighting throughout the school.

• To create a methodical waste management system.

• To create a rainwater collection system.

• To start a tree-planting campaign.

• Keeping an eye on new energy and environmental challenges and responding to them.

• To enhance the environmental knowledge and abilities of our staff and students in order to enhance our own 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	**05**
2	No. of tube lights	**860**
3	No. of computers	**346**
4	No. of CFC bulbs	**NIL**
5	No. of UPS	**15**
6	No. of fans	**441**
7	No. of fridge	**05**
8	No. of generators	**02**
9	No. of A.C.	**06**
10	No. of LED bulbs	**860**
11	Electric pump 1 HP	**15**
12	No. of Smart T. V	**--**
13	No. of printers and Xerox machines	**49+8**

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.

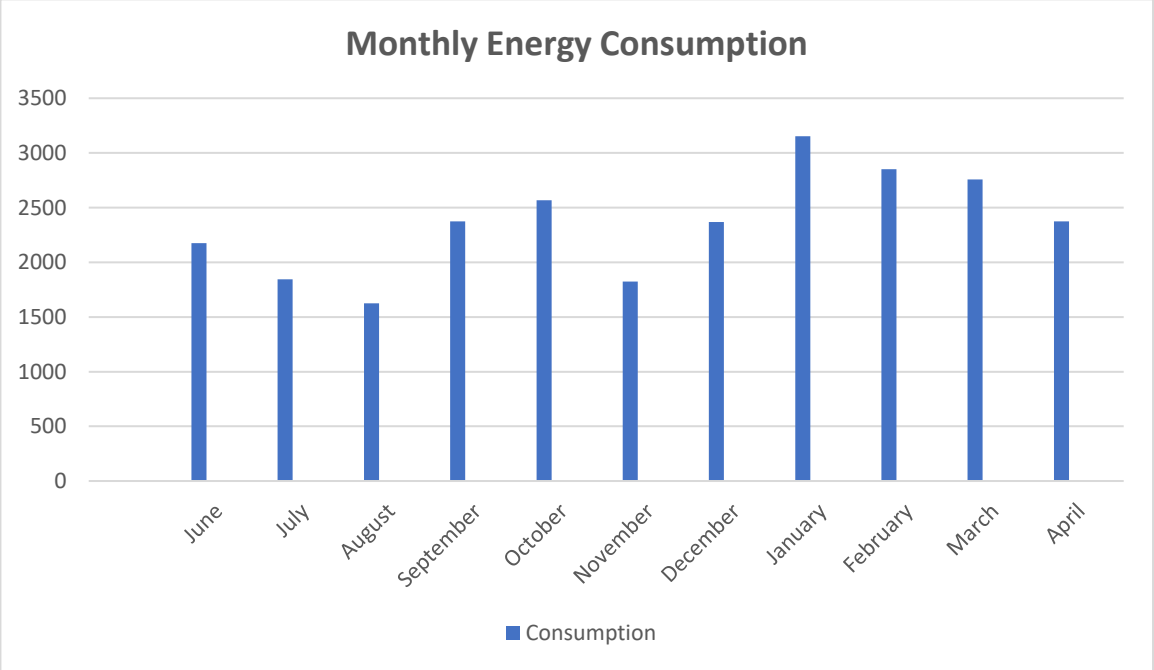
Electricity supplied from the Maharashtra State Electricity Board is the main source energy for the activities on the campus. In addition to the regular supply, energy consumed (KW) during the last year is shown in tabular as well as graphical form.

Table No. 5: Energy consumption during the Year 2023-24

Consumer No - 284010239123

Sr. No.	Months	Consumption (In units)
1	June	2175
2	July	1843
3	August	1626
4	September	2374
5	October	2568
6	November	1824
7	December	2368
8	January	3153
9	February	2851
10	March	2758
11	April	2375
12	May	959

Figure 2: Graphical representation of energy consumption during 2023-24



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:

Considering the grooving 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.

College has installed total 168 Solar panels (78 on main College Building, 45 on MPSC Building and 45 on Ladies Hostel Building) in Roof top with the best direction position i.e. solar panels towards south face which receives most direct sunlight. The college authority is planning to install more solar lights to increase this contribution. There is replacement of the old tube lights with the new LED tubes. 5–star rated Air Conditioners, Fans and CFLs is being used. Regular cleaning of tube-lights/bulbs to be done periodically, to remove dust over it. Equipment's like Computers are used with power saving mode. In all departments in college campus, electricity is shut downed after occupancy time and it is one of green practices for energy conservation.

College has also installed 32 solar water heaters in the girl's hostel.

The benefits of solar heating:

- Endless amounts of energy, free of charge
- No CO2 emissions during operation
- Cost savings: up to 60% less energy to heat water, up to 35% less energy for space heating
- Reduced consumption of fossil fuels

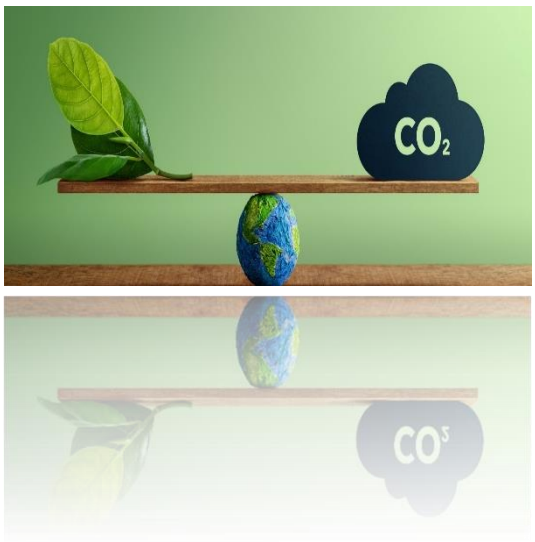
Plate No.1 Renewable energy source

The solar heater is installed on Hostel building

Solar Panels installation in college building

Green Audit

3.3.5 EFFORTS FOR CARBON NEUTRALITY:



Thinking about carbon footprints is a simple way of thinking about ways to reduce environmental pollution. By reducing our carbon footprints, each one of us can contribute to making the earth a safer, better place to live. Estimates suggest that almost half of our carbon footprint is due to electricity and 17% is due to lighting alone.

Carbon footprint is the amount of Green House Gases like carbon dioxide, methane, nitrous oxide emissions emitted by a building, organization etc. It relates to the amount of greenhouse gases we are producing in our day-to-day lives through burning fossil fuels for electricity, heating, transportation etc.

At Shripatrao Chougule College, carbon footprint for indoor lighting in office building is considered. The performance of the building by using LED lights reduces the building carbon foot print. The carbon foot print is for –

1. Incandescent Light
2. CFL
3. LED Lights

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 is shown in table no. 6

Table No. 6: Electricity produced from different sources

Source	**Million metric tons of CO_2 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. At Shripatrao Chougule College, all together there are 37 rooms (including, class rooms, offices, labs etc.) 195 LED lamps.

Details of CO_2 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**	**Grand total**
2023-24	LED (Bulbs+ Tubes)	860	18 kg	**15, 480**	**15, 480**

Presently, College has taken initiative to replace Incandescent bulbs and CFL bulbs by LED. During the last year energy consumption of LED bulbs against the total energy requirement has been decreased. This has shown substantial reduction in the C02 emission per year. It is suggested to replace all bulbs by LED bulbs in a phase manner. Further, all the fans should be replaced in phased manner energy efficient five-star rating fans.

3.4 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 **525**. 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.

Total Green cover area	
Total Area	15043
Total Green cover area	4500
% Area Covered	29.91424583

Details of plantation with respect to Botanical name, local name and quantity is given table no. 8.

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	Tabernaemontana divaricata	Apocynaceae	5
5	Punica granatum	Lythraceae	1
6	Hibiscus rosa-sinensis	Malvaceae	13
7	Jasminum sambac	Oleaceae	1
8	Duranta errecta	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

Medicinal plants		
Serial No.	**Name**	**Number**
1	Phyllanthus emblica	1
2	Adhatoda vasica	1
3	Aloe vera	1
4	Oscimum spp	1
5	Santalum album	1
6	Garcinia spp	1
7	Achyranthes aspera	1
8	Achorus calamus	1
9	Butea monosperma	1
10	Asparagus racemosus	1
11	Cassia fistula	1
12	Curcuma longa	1
13	Zingiber officinarum	1
14	Gloriosa superba	1
15	Lawsonia inermis	1
16	Tinospora cordifolia	1
17	Withania somnifera	1
18	Tridax procumbans	1
19	Eugenia jambolana	2
20	Eclipta alba	1
	Total	**21**

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 offoods).

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

Plate No. 2 Plant Species in college campus


WATER AUDIT

3.5 WATER AUDIT:

Water is an essential component of all environmental systems. Water is a remarkable substance with special qualities that have an impact on earthly life. The amount of water on earth is the same as it was when it was formed. Water on Earth is constantly moving from the ocean to the atmosphere, back to the land, and so on. We are able to obtain a consistent supply of fresh water annually thanks to the atmospheric water cycle. Thankfully, the earth's hydrological cycle continuously gathers, cleans, recycles, and distributes the freshwater supply on Earth. Because water is essential to life, we often take it for granted. We are mishandling this vital resource, freshwater. Water is one of our most mismanaged resources, despite its importance. Due to factors including topographical features and seasonal rains, water cannot be maintained in the ground even in the event that the Institute receives an adequate amount of rainfall. Therefore, natural water cycle control is appropriate. Rainwater does not seep into the ground in an area that is covered in built structures and roadways. Water conservation measures should therefore be implemented.

3.5.1 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		
2023-24	1495	905	49	34	57	2540

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

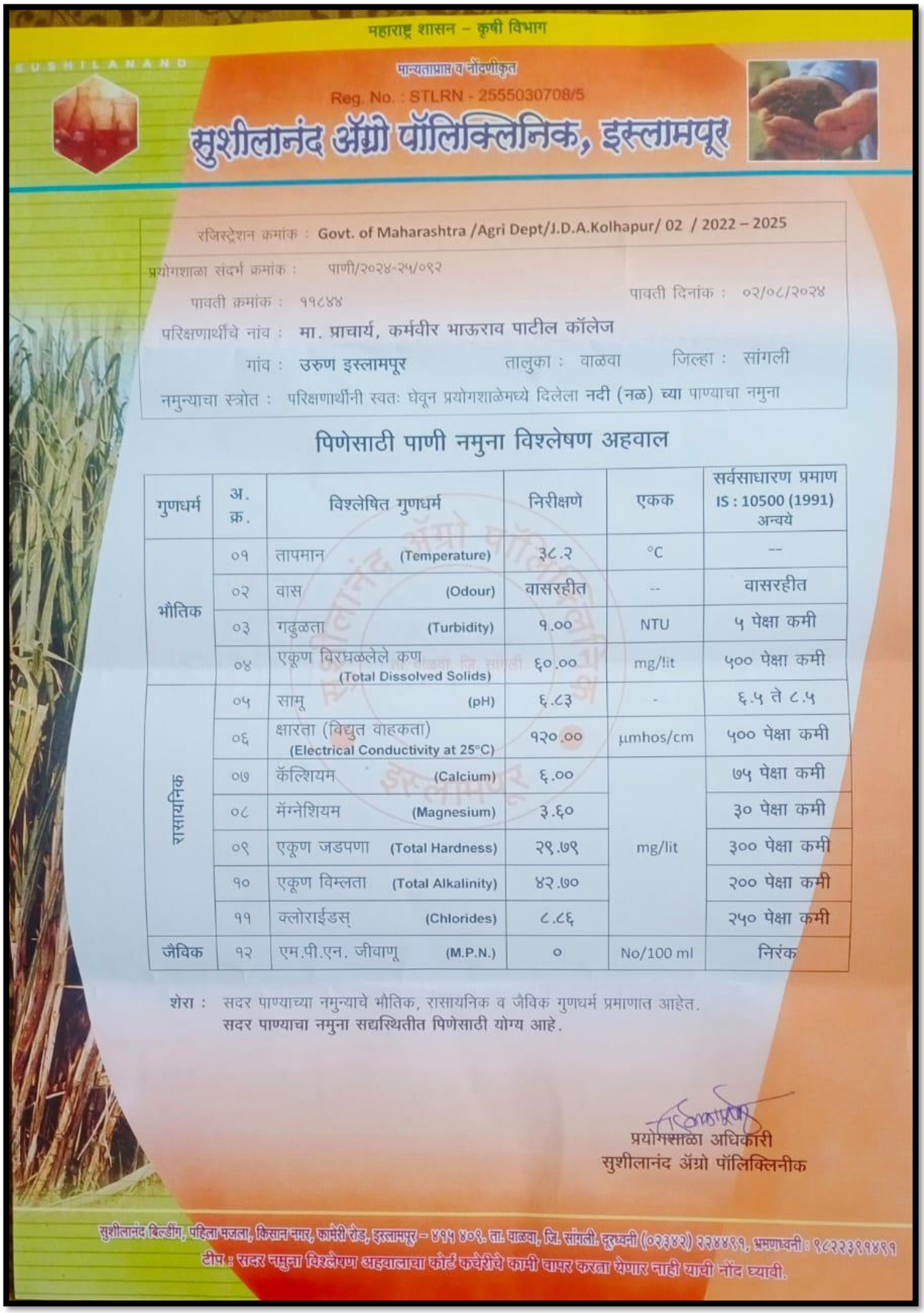
Total Number of People	Requirement of water	Total Requirement of water
2540	@ 10 lit / day	25,400 lit / day

On an average requirement of water per day is about 25,400 lit / day. This demand is met through supply of water from municipal corporation and college borewell throughout the year. However, RO water purifiers are placed in college campus, for the students and staff.

3.5.2 QUALITY OF WATER:

College is committed to provide good quality of water by installing water filter system. Water supplied by the corporation is tested for various physic-chemical and microbiological parameters from the filter system. Water supplied by the to the students after filter/ RO system is moderately hard (Hardness is 29 mg/l) whereas, the highest desirable limit is 100 mg/l. Most Probable Number (MPN) is 0 / 100 ml. as against the recommended W.H.O standard of 0 / 100ml. Hence, filtered water is suitable for drinking. Copy of the analysis report is displayed on the filter as information to the students.

Plate No. 3 Drinking Water Quality Report



महाराष्ट्र शासन – कृषी विभाग

मान्यताप्राप्त व नोंदणीकृत

Reg. No. : STLRN - 2555030708/5

सुशीलानंद ॲग्रो पॉलिक्लिनिक, इस्लामपूर

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

प्रयोगशाळा संदर्भ क्रमांक : पाणी/२०२४-२५/०९२

पावती क्रमांक : ११८४४ पावती दिनांक : ०२/०८/२०२४

परिक्षणार्थीचे नांव : मा. प्राचार्य, कर्मवीर भाऊराव पाटील कॉलेज

गांव : उरुण इस्लामपूर तालुका : वाळवा जिल्हा : सांगली

नमुन्याचा स्त्रोत : परिक्षणार्थीनी स्वतः घेवून प्रयोगशाळेमध्ये दिलेला नदी (नळ) च्या पाण्याचा नमुना

पिणेसाठी पाणी नमुना विश्लेषण अहवाल

गुणधर्म	अ. क्र.	विश्लेषित गुणधर्म	निरीक्षणे	एकक	सर्वसाधारण प्रमाण IS : 10500 (1991) अन्वये
भौतिक	०१	तापमान (Temperature)	३८.२	°C	--
	०२	वास (Odour)	वासरहीत	--	वासरहीत
	०३	गढुळता (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 विम्लता (Total Alkalinity)	४२.७०		२०० पेक्षा कमी
	११	क्लोराईडस् (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.

प्रयोगशाळा अधिकारी
सुशीलानंद ॲग्रो पॉलिक्लिनीक

सुशीलानंद बिल्डींग, पहिला मजला, किसान नगर, कामेरी रोड, इस्लामपूर – ४१५ ४०९. ता. वाळवा, जि. सांगली. दूरध्वनी (०२३४२) २२४४९१, भ्रमणध्वनी : ९८२२३९१४९१

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

3.5.3 WATER MANAGEMENT:

WATER CONSERVATION:

Clean, fresh water is a limited resource. With all the severe droughts happening in the world, the limited supply of fresh water is becoming one of our most precious resources. Every person on earth needs water to survive. Without it, many of us would get sick and even result in death. While almost 70% of the Earth is made up of water, many parts of the world suffer from clean water shortage. Conserving water is important because it keeps water pure and clean while protecting the environment. Conserving water means using our water supply wisely and be responsible. As every individual depends on water for livelihood, we must learn how to keep our limited supply of water pure and away from pollution. Keeping our water supply safe and pure will protect the water for the generations to come.

Many believe that our water supply infinite. However, our supply is quite the opposite. It is important that we must not pollute your water as many do not realize just how important and scarce water is. Humans are not the only species on Earth that requires water for survival. In fact, every species on this planet needs water to live and survive. Without water, the aquatic life will stand no chance of survival. It is highly important that we save water that is essential to our sustainability.

EFFICIENT USE OF WATER:

Enormous amounts of water is wasted, without reason, through leaking taps and open taps waste. In many cities, more than half the available supply is lost through these leakages and rotting of pipelines. In Institute campus instruction boards are displayed at every washroom to avoid wastage of water. Students are instructed to close the taps when they are not in use. Taps and pipelines are regularly checked for leakages and repaired if needed. Leaking taps are immediately replaced by new handy taps.

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. 4 Rain Water Harvesting


WASTE AUDITS

3.6 WASTE MANAGEMENT:

WASTE WATER DISPOSAL METHOD:

Total water demand for domestic consumption on college campus is 25,400 lit / day. By and large, it is assumed that 30 % waste water is generated during college hours i.e., 25,400 lit / day ÷ 0.3= 84,666.66 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	61	36	97

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: 1500 Female students: 950

Ratio of WCs+ Urinals for Male: 1:24.59

Ratio of WCs + urinals for Female – 1:26.38

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.

3.6.1 HAZARDOUS WASTE MANAGEMENT:

Hazardous waste is a waste that make it potentially dangerous or harmful human health or environment. The universe of hazardous waste is large and diverse. Hazardous waste can be liquid, solids or contained gases. There is no such hazardous waste on the

campus. Some of the action taken for cleaning campus is given below:

- The campus has been declared as plastic free zone
- The College aims to make the campus plastic-free by avoiding non-biodegradable products such as plastic glasses, cups, plates and straws in the Institute canteen and instructing students to avoid bringing plastic materials.
- Bins are placed in different parts of the campus for the segregation of plastic, paper and food waste.
- The college aims for an ecofriendly campus and to make this a reality, the use of ecofriendly bags and files are encouraged.
- The staff and students have taken the initiative to take up campus cleaning programme through extension activities.
- Students are trained to use paper bags and a promotion of the same is held.
- The campus is also declared tobacco free and smoking free zone.

3.6.2 SOLID WASTE MANAGEMENT:

As a policy matter College has banned usage plastic bags on the campus. College has taken precautions to collect solid waste through dust bins. The dustbins are helpful to maintain clean atmosphere sanitate ion of college campus. Dustbins are placed on various places. Each classroom carries one recycled dustbin. The main aim of using dustbins is to clean the campus, to collect waste material and to create awareness of cleanliness among the students. Solid waste collected is segregated into degradable and non-degradable. Generated degradable solid waste is disposed through compost pit.

3.6.3 PAPER WASTE MANAGEMENT:

Major part of the solid waste generated at the college campus is a paper. Though paper is biodegradable material, it is having good potential of recycling thus will help in conserving the resources and trees indirectly. Institute follows the green practice like use of one-sided paper, paperless activities like e-mailing all notices instead of printingit of paper, putting the information on what's app groups are also practiced in the college to reduce the use of paper. Thus, Reduce, Reuse and Recycle, 3 R principles of solid waste management are followed in the Institute for waste management.

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**

3.6.4 e-Waste Management:

Computers and their peripherals are the only source of electronic waste on the campus. College has sent all the generated e-waste to corporation through a proper system.

Plate No. 5 Measures for Waste Reduction

Waste segregation bins

Compost peat

3.7 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**:**

Table No. 15: List of some activities during the year 2019-24

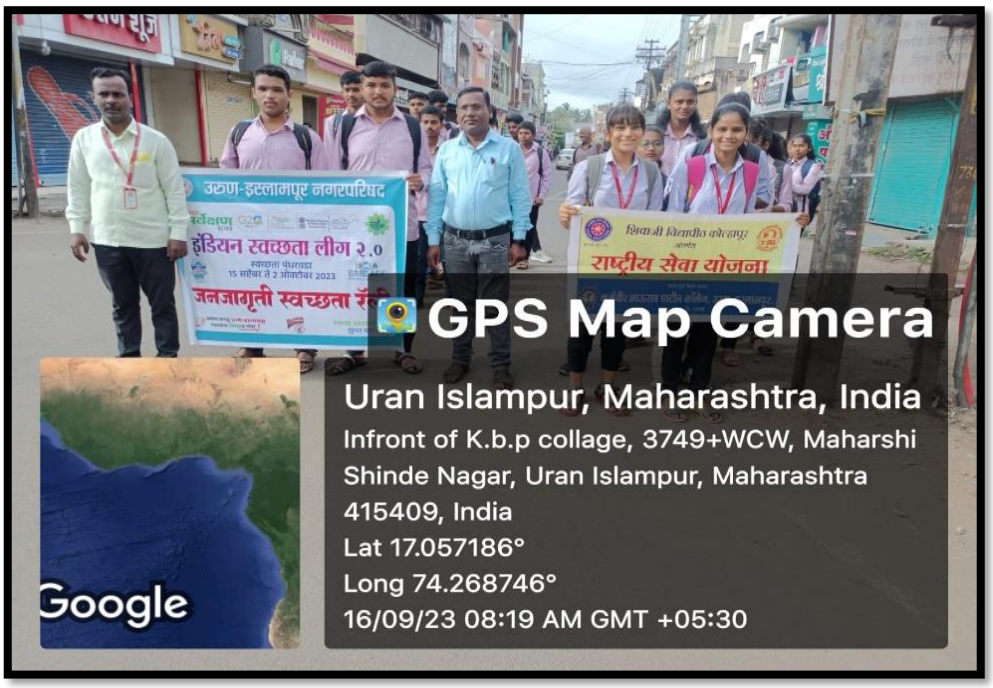
Sr.No.	Activity	Date	Location	Description
1	Plantation	10/07/2023 10/08/2024	College campus and students' fields	Plantation is carried out at different places by college students
2	Workshop on 'revival of indigenous technologies for vikasit bharat'	28/02/2024	Botany Department	Facilitated the students for green practices
3	World wetland day	05/02/2024	Botany Department	Organized to create awareness about wetlands.
4	Wall paper presentation	05/02/24 to 15/02/24	Botany Department	Presentation of wall papers on environmental issues by students.
5	Syllabus – Cross cutting issues on environment	Throughout year	All departments	Taught the topics related to environment.
6	Celebration of Science Day	28/02/2024	Campus	Science Day program related to Environment awareness
7	Workshop 8arrangement	05/03/2024	Campus	Workshop on gardening techniques
8	Cleanliness	16/09/2023	Campus	

	awareness drive			
9	Cleanliness oath	30/09/2023	Campus	Cleanliness oath by students and staff
10	Celebration of Mahatma Gandhi Jayanti	01/10/2023	In and around college area	Cleanliness drive
11	Plantation activity	10/07/2023 to 10/08/2023	Participants Home area	A Plant for Nation
12	NSS Camp	03/01/2024 to 09/01/2024	Navkhed village, Sangali	Activities related to environmental awareness and conservation

Plate No. 6 Green Initiative Activities

Celebration of Science Day

Workshop on gardening techniques

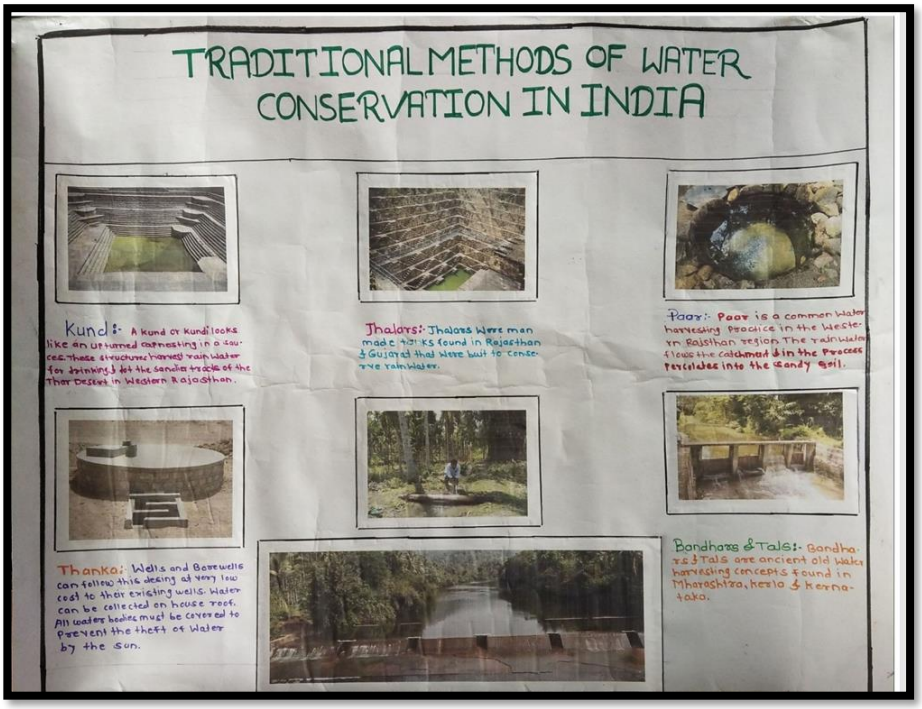


Cleanliness awareness drive

Cleanliness oath

Cleanliness drive

Tree planataion



Wall paper display

NSS Actities

Kishna River area cleanliness drive

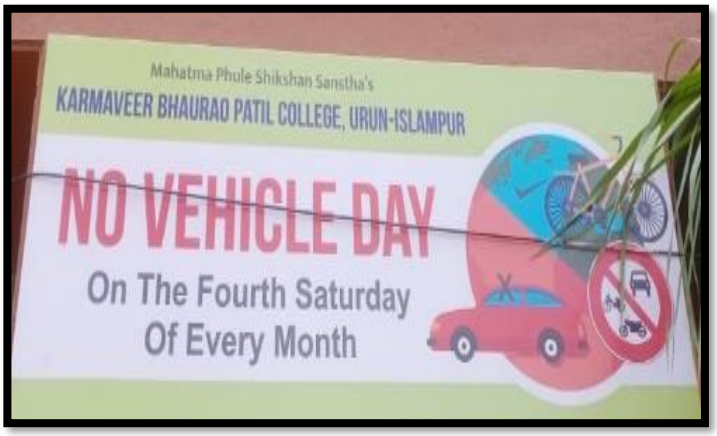
Environmental conservation rally

3.8 ENVIRONMENT AWARENESS TAGS:

Environmetal 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. 7 Environment Awareness Tags



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:

- The college campus strictly follows green practices. All students, staff and faculty members participate actively in keeping campus clean and green.
- Though the campus is small the college has tried to keep it green by planting trees and landscaping in the premises.
- Solid waste segregation and management is followed in the premises.
- Rain water harvesting has been done in the campus with effective recharging of ground water table of borewell.
- Large windows provided for natural ventilation reducing power consumption.
- College has installed Solar system for energy conservation.
- Bio-degradable waste like plant residue is collectively used for generation of compost.
- Observing Celebration of No Vehicle Day on 4th Saturday of every month.
- Considering the present strength, college has constructed enough numbers of WCs + Urinals (as per WHO), for male and for female.
- Drinking water quality has maintained as per the standards by frequent water quality analysis at Environment laboratory.

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. Representative plant species be appropriately labeled with botanical name/English name/local name.
2. It is also suggested to use solar energy as an alternate of energy for street light.
3. Collect garden waste regularly and use it for compost making.
4. Fix all leakages in ladies hotel.
5. Follow regular cleaning of RO in girls hostel
6. Kindly implement more activities related to Environmental awareness and conservation

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