

# **Green Audit Report**

## **BHARATI VIDYAPEETH (DEEMED TO BE UNIVERSITY) MEDICAL COLLEGE & HOSPITAL, SANGLI.**



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## FOREWORD...

World is facing serious environmental issues, different reports from World Health Organization, IPCC, various National and International organizations, highlights the Environmental issues are most sensitive and widely discussed issues in the world today. From local issues like unsafe drinking water , regional issues like urban smog to global warming to deforestation etc. are the environmental issues that are discussed at global level but in fact the regional or local activities are responsible to make such issues global. On the background of scenario components involved in higher education institutions like universities, colleges, research institutes are expected to take lead role in environmental conservation and protection. Institutions must play an active role in creating and modeling solution for environmental problems.

Bharati Vidyapeeth (Deemed To Be University) Medical College & Hospital, Sangli is following different sustainable practices as their vision. As a part of “Quality System”, college is committed to take lead role and create its own identity in the protection and conservation of environment. College has been following eco-friendly and sustainable practices to manage the available resources. As a part of such voluntary practices and component of “Quality System” internal environmental audit is conducted to evaluate the actual scenario on the campus.

Green auditing of college campus is planned systematic assessment of day to day activity with special referenceto conservation of natural resources, optimum use of available resourceand control over waste generation. Green audit assessment willshow way to find out the eco-friendly and non-eco-friendly practices on the campus.Objectives of green auditing vary with the operational activities of the organization. In case of our college green audit is an internal requirementof Quality System. Green audit shows alternative path for management for non-ecofriendly activities. It also promotes a good environmental management practice and raises the awareness about the environmental conservation and its long term benefits. College has already implemented conservation practices in vision, which provides chance to explore opportunities for better performance in the future.

As a part of Quality System over the past five years college has fixed goal for conservation of environment and sustainable practices. For the achievement of goal, college accepted various new and advanced technologies which are eco-friendly; such as self sufficiency in water by adapting watershed management and roof top rain water harvesting systems. Plantation of local and endemic plant species on campus is big challenge that is accepted by the college. Over the years various green practices helped for number of significant changes, which have helped to increase the green area on the campus.

I am very happy to forward this Green Audit report of BharatiVidyapeeth (Deemed To Be University) Medical College & Hospital, Sangli. I must congratulate NAAC cell for efforts taken for the completion of such type of report. I hope the report will be helpful to all concerned and will motivate all to change non sustainable practices.

**Dean**

BharatiVidyapeeth Deemed To Be University Medical College & Hospital, Sangli.

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## INTRODUCTION

Bharati Vidyapeeth Deemed To Be University Medical College, Sangli was established in 2005 with facility for 100 M.B.B.S. admissions per year. Presently 150 M.B.B.S. students are admitted per year. The college also runs Postgraduate Courses, admitting 78 candidates in 13 different departments every year.

The college is housed in multi-stored, well ventilated, spacious building with an area of 2.5 lakh sq. ft. The institute is well-equipped with laboratories and state of the art museums and has become a center for academic excellence.

With highly qualified & dedicated staff and advanced equipment the institution imparts quality training for the students for complete patient care.

Our faculty members are undertaking quality research projects through Institutional Ethical Committee and many of them have represented it at National and International Conference. The institute has provided comfortable accommodation facility for the students and also has residential quarters for the teaching staff.

### **Hospital Information:**

Bharati Hospital is an attached teaching hospital of Bharati Vidyapeeth Deemed To Be University Medical College, Sangli. It is a well-known center of clinical excellence located in the same premises. It is 780 bedded multi-specialty, tertiary care hospital providing modern diagnostic as well as therapeutic facilities housed in 4.5 lakh sq. ft. area

The hospital provides 24 hour emergency services.. The wards and OPDs are well equipped with all facilities for teaching, training and patient care. All the clinical departments are located in the hospital.

The administrative sections and record rooms are fully automated. The central clinical Laboratories of Hospital are well equipped with latest instruments like Fully Automated analyzers, ABG Machines, Hematology counters etc.

1. Blood Bank is well equipped and has an additional facility for component separation & storage.
2. Mortuary facility is available.
3. Liquid Oxygen Plant of 20k liters is available.
4. Sufficient accommodations for resident, & interns & nursing staff is available
5. Generator back-up facility of 700kv is available.
6. Institute runs RHTC at Yelavi, where the students are posted during their internship training.

**Institute also undertake following activities and programs**

National Blindness Control Program

National AIDS Control Program

ART Center

RNTCP Center

Family Welfare Program

Ex Serviceman contributory health scheme

Rajeev Gandhi Jeevodaya Arogya Yojna

Senior Citizens' Health Scheme

Mahatma Jyotiba Phule Arogya Yojna.

There is a state of art OT complex located in the Hospital with 11 Operating Rooms. This ultra-modern facility caters to General Surgery, Orthopedics, and super specialties like neurosurgery, laparoscopic surgeries etc. All OTs are centrally air conditioned with AHU, HEPA filters, multi-para monitors, and cardiac monitors. The Hospital has well equipped critical care areas like the ICU, CCU, NICU and PICU, Respiratory I.C.U with Surgical I.C.U. facilities. There is a separate Dialysis unit offering treatment to patients at a very low cost. The Department of Radio diagnosis offers modern diagnostic facilities like CT scan, MRI, Mammography, Color Doppler, and Ultra-sonography. The hospital has ultra-modern Cathlab with facilities like IVUS and Rotablator. All the Cardiac interventions are carried out by qualified and experienced Cardiologists.

**Other facilities available in the hospital are**

Central Laundry Unit

CSSD

Eye Bank

Ambulances

Canteen

Drug Store

## 1.1 Infrastructure

### a) Academic Facilities:

Sr. No.	Facility	Numbers
1	Lecture Theatre	6
2	Demo Rooms	29
3	Common Rooms	2
4	Laboratories	23
5	Central Library	1
6	Skills Lab	1
7	Computer Lab	1
8	Auditorium	1
9	Exam Hall	1

### b) Residential Facilities:

Sr. No.	Facility	Numbers
1	Hostel	7
2	Cafeteria	2
3	Mess	3

### c) Recreation Facilities:

Sr. No.	Indoor / Outdoor	Facilities
1	Outdoor	Well-equipped playground of 15756.78 sq.mts.
2	Indoor	Gymnasium, Carom & Table Tennis

### d) Medical Facilities for students and staff:

i) Free Health Check-up & Services

ii) Health Scheme for the staff

### ***1.2 Green Audit an overview:***

Educational Institutes are playing a key role in continues development of human resources worldwide through teaching and research. Educational institutes conduct various activities with aim to percolate the knowledge among the different levels of society. Likewise educational institutes also try to give issues related environmental conservation and pollution control. Various types of evolutionary methods are used to identify the environment concerning problem. It includes Environmental Impact Assessment (EIA), Social Impact Assessment (SIA), Carbon Footprint Mapping, Green audit etc.

“Green audit is a tool to highlight general practices accepted and implemented by organization in term of its impact on environment”. Green audit also focus on adverse practices which can cause and are responsible for harm to the environment. Green audit shows strength and weakness of organization towards protection and conservation of environment. It also mark and highlight the non-accepted practices of natural resources utilization. Green audit shows the path to continuously run healthy practices, new innovative system for optimum utilization of resource and minimization of waste generation. It helps for protection and conservation of environment, natural resources.

### ***1.3 Need of Green Auditing:***

Green auditing is the process of assessment of practices accepted by institution in view of whether they are ecofriendly and sustainable or not. Traditionally, Indian culture teaches good and efficient uses of natural resources. But over the period of time uncontrolled excess use of resources like energy, water, and chemicals has created threat to the environment and society also. It is necessary to check whether our accepted practices are consuming more than required resources? Whether we are handling waste carefully? Whether we have control over the use of natural resources. Green audit shows all such practices and gives an well direction to optimizes the use of natural resource. In the era of global warning, climate change, pollution and resource depletion it is necessary to verify the accepted practices and convert it in to green and clean one. Green audit provides an approach for it. It also increases overall awareness among the stake holders of institution towards an environmental conservation and green practices.

### ***1.4 Goals of Green Audit:***

College has conducted green audit with following goals.

1. Baseline data collection of environmental parameters and measures over the environmental issue before they lead to
2. Find out strength and weakness in green practices.
3. Conduct a survey to collect base line realities about green practices.
4. Find out the hurdles in green practice, and suggest solution over the hurdles.
5. Check out the facility of different types of waste management.
6. Increase environmental awareness throughout campus by training the people.

### ***1.5 Objectives of Green Audit:***

1. To collect the baseline information regarding current practices which has impact on environment?
2. To find out significant environmental issues.
3. Setup goal, vision and mission for environmental conservation and sustainable practices in the campus.



## METHODOLOGY

This is the first attempt to conduct Green Audit of Bharati Vidyapeeth Deemed To Be University Medical College & Hospital, Sangli. First target was to collect the base line data concern about the green practises. The present report is based on onsite visits, personal observations and questionnaires survey tools. Primarily, based on data requirement, different type of questionnaires were prepared. Questionnaires were provided to all concern asked them to fill the same. The generated data is subsequently gathered and used for further analysis. From the outcome of the overall study, a final report is prepared. Before the survey all the required secondary data were collected from concern departments.

### ***2.1 Survey by Questionnaire:***

Baseline data for green audit report preparation was collected by questionnaire survey method. Questionnaires were prepared based on the guidelines, rules, acts and formats prepared by Ministry of Environment and Forest, New Delhi, Central Pollution Control Board and other statutory organizations. Green audit report of Shivaji University, Kolhapur is used as format for the report preparation. Most of the guidelines and formats based on broad aspects and some of the issues or formats were not applicable for educational institutions. In fact questionnaires were prepared, using these guidelines and formats, combinations, modifications and restructuring them, sets of questionnaires were prepared as solid waste, energy, water, hazardous waste, and e-waste.

All the questionnaires comprises of group of modules. Questionnaires were prepared in such a view that it will be easy to extract the general information of the concerned department, which broadly includes name of the department, total number of students and employees, visitors of the department, average working days and office timings etc. Another part of the questionnaires extract the present consumption of resources like water, energy, or the handling of solid and hazardous waste. Maintaining records of the handling of solid and hazardous waste is much important in green audit. Last part of the questionnaires shows possibilities of loss of resources like water, energy due to improper maintenance.

## ***2.2 Onsite visit and observations:***

Bharati Vidyapeeth Deemed To Be University Medical College & Hospital campus has vast built up area comprising of various departments, administrative building, Library, Class rooms, staff quarters, student hostels, sports complex. All these amenities have different kind of infrastructure as per their requirement. All these buildings were visited by the surveyors. Presents conditions were checked by specific check list. Personal observations were made during the onsite visit.

## ***2.3 Data analysis and final report preparation:***

Required primary and secondary data were collected by different ways like questioners, check list etc. Collected data was crossed checked during the personal onsite visit. In case of green audit, the filled questionnaires of the survey from each group, were tabulated in excels spreadsheets. The tabulated data is then used for further analysis. SPSS software is used to find out the frequency distribution and results in percentile format. For better understanding of the results and to avoid complications, averages and percentages of the Tables were calculated. Interpretation of the overall outcomes is included in the Final report.

# OVERVIEW OF GREEN AUDIT

## Audit Criteria

- 3.1 Green Cover
- 3.2 Waste Management
- 3.3 Electricity and Energy Audit
- 3.4 Water Conservation
- 3.5 Health and Hygiene
- 3.6 Training and Awareness

### 3.1 Green Cover

The college continuously conducts tree plantation drives as a mission. The plantation movement is conducted three times during the year i.e. before the arrival of monsoon, during monsoon and post monsoon. Space has been allocated for developing a garden. The college premises indicates the awareness level on floral biodiversity among the staff and students of the college.

Counting of trees and shrubs in the college premises was done by Student volunteers. The college has maintained books on identification of flora and fauna. College students are also encouraged for bird watching within the campus. Records of such surveys on floral & faunal biodiversity are maintained and were available during the audit.

Different activities by student are continuously trying to highlight the issues concern about environmental conservation and protection. Various field visits are organised to get aware about the local biodiversity. Apart from this, students organizes time to time trips and nature treks to places of ecological importance for students who are interested. Following activities clears the intention towards development of Green Belt

### List of Flora and fauna

With the help of students a project on identification of plants in campus was undertaken and list of floral biodiversity is listed. Project on identification of fauna which includes, birds, reptiles etc. in campus was undertaken and list of faunal biodiversity is listed. (Attached with Annexures)

### Drip and Sprinkler irrigation system

As a part of water conservation Technique College installed drip and sprinkler system for watering the plant.

### Plantation of Rare Endangered Species

College has developed a garden by planting various local plants. Space has been allocated for developing a garden in premises. The college premises indicate the awareness level on floral biodiversity among the staff and students of the college.

### **Plantation with villagers at different villages**

College has started a unique movement of plantation, motivational approaches are developed in local people to plant more and more tree. As a part of this movement villagers from surrounding villages are motivated to plant a tree in front of their house and nourish the same.

### **Revenue from the sale of different items from garden**

College premises have some fruit plants like mango, coconut etc. These fruit plants are full grown and produce saleable fruits. College has its own horticulture department which take care of all these plant. By selling the different items college generate revenue. Horticulture department sales the products and keep the record of revenue generated. Practise is too much fruitful because fresh and healthy items are supplied to peoples with affordable rates as compared to market rate. Since the fresh and cheap item are available the demand is more.

### **Drinking water system for birds and animals**

As a part of conservation of biodiversity college has developed drinking water system for birds and animals. Specific water bowels are placed at typical location considering the less human interferences. This practise has shown very good results and bird and animal count is increased because of availability of water and secure place.

## **3.2 Waste Management**

Solid waste management is a burning issue in current days. The rate of generation of solid waste is very high while management technology is too inadequate. Unscientific handling of solid waste is also a burning issue which can create threats to public health and environment. It is necessary to manage the solid waste properly to reduce the load on waste management system. The purpose of this audit is to find out current management practice of solid waste generation in the campus. Paper waste is a major solid waste generated in the campus. Most of the departments including office, library are major locations contributing in the paper waste generation. Followed by paper, Plastic is secondary contributing solid waste generated in large quantity in the campus. Office staff is using one side papers for printing and writing. Biodegradable waste generated in campus is mostly from canteen, hostels and guest house kitchens. Glass waste is less contributing but it takes part in solid waste generation. Glass waste generated from laboratory mainly in the form of bottles, many times bottles are reuse for storing of other chemicals. Other glass waste is thrown with solid waste. The college have well established protocol to recycling and reuse of resources such as paper in the form of annual sale of stored newspapers and waste papers to

scrap dealer. Very few departments are categorizing the plastic and sending it for recycling. Metal scraps and waste is segregated separately and sent for recycling yearly. Canteen waste is collected and some biodegradable waste is treated with vermicomposting process. It was observed that e-wastes was collected but due for disposal with recycler. Wastes such as electronic peripherals and paper wastes are stored and later collected by the peon. As a medical college, biomedical waste is a burning issue, to come over the same.

### **3.3 Electricity and Energy Audit**

Major energy sources utilized include Solar Energy, electricity and LPG. Major use of the energy is at office, hostel, laboratories, library canteen and class rooms for lighting, transportation, cooking and laboratory work. Electricity is supplied to the campus by Maharashtra State Electricity Board. There is no provision of generating electricity on site.

The NAAC Cell conducted an Energy Audit as a part of Green Audit. Prime aim of audit was to find a way of energy conservation. College use solar energy as conventional energy source. Hostels are covered under use of solar energy. It is documented that Placards and posters are displayed near electricity supply and rooms however it was nowhere to be seen during the walk through. The peon switched off all power supply in non-lecture hours and was confirmed during the site walk through visit. Lab In charge of all laboratories conveyed that electricity during non-working hours are put to off. Different awareness programs were conducted for peons, staff and students. The college initiated to install CFL and LED bulbs in the college campus the initiative could be strengthened with help of a action plan. The college targets to reduce electricity out of total electricity consumed in college as per the documents. This may be supported by maintaining proper relevant records and benchmarking the present consumption.

### **3.4 Water Conservation**

For the purpose of water audit an on-site walk through survey and assessment was conducted to determine the efficiency of water use to develop recommendations for improving water use efficiency. Overall agenda of conducting water audit is to identify opportunities to make water use more efficient. Water audit includes tracking, assessing and validating all components of flow from distribution system in to the consumer's properties. On the other hand, water audit of a campus review direction and quantity of water used for domestic, laboratory, drinking, gardening, sanitary and landscaping processes. Drinking water is provided at accessible place in the campus. Drinking water is currently

being tested for the water parameters according to prescribed BIS standards for drinking water. Toilets were checked for leakages and spillage. These toilets were checked at random and found to be maintained in leakages and spillage free. Although it is highly appreciated that the college has initiated Rain Water Harvesting on site. Student's conducts water conservation drives inside the campus and also at public places. (Details are attached with annexure). College decided to reduce water consumption by raising awareness in students & staff members and having periodic checks on leaks. There were no displays of signage or message for Good Practices in the College premises for Water Conservation. It is needed for the continuous highlight of the issue. The college decided to recycle and reuse the wash water of wash basin for gardening purposes as a future plan. The college also planning for the rain water harvesting system as conservation practices.

As a concern of waste water management college has installed Effluent Treatment Plant and Sewage Treatment Plant Separately.

### **3.5 Health and Hygiene**

The college incited to promotes **Swatch Bharat Abhiyaan** by maintaining cleanliness on campus. It is well concentrated on housekeeping. Toilets were checked for hygiene, leakages and spillage. These toilets were checked at random and found to be maintained in hygienic condition also students were found to be satisfied with hygiene level. It is documented that Sweeper cleans the floor and toilets regularly Swachh Bharat Abhiyaan is promoted by the students and staff. For a good hygiene practices college run following activities.

#### **Campus as Oxygen Park**

By covering maximum area under green cover i.e. under plantation college has been oxygen park for the human as well as birds and plants also. College campus works as an oxygen park because campus it provides good, fresh and non-contaminated air. Considering the conditions local people enjoying the campus ride at morning and evening time.

#### **Illumination and ventilation**

College buildings are more spacious and class room and all other rooms are good ventilated. Natural illumination and ventilation is too good. There is no need of artificial ventilation and illumination. Hospital building is very well planned and has very good lights and ventilation.

#### **Sanitation drive**

College conducts sanitation drive, which motivates student and staff about the cleanliness practices.

### **Housekeeping/Pest control**

College has adopted a good practice of housekeeping and pest control. Contract is given to third party for housekeeping and pest control and monitored regularly.

### **Awareness campaign**

As a part of health and hygiene practices college arranges different awareness campaign on different diseases. As a routine activity Awareness campaign on Ebola, Zika, SwineFlue were arranged.

### **3.6 Training and Awareness.**

The college student's conducts street plays on various environmental, health and hygiene issues. Students with teaching and non-teaching staff actively participate to promote Swachh Bharat Abhiyaan. From time to time College organizes the lectures by experts on the issue of environment and social responsibilities.

### **3.7 Corporate Social Responsibility (CSR)**

Social transformation through chronic education is the massive statement of the organization. As a education organization concession for the time of 6-8 Cr. Is offered to the student.

## **Summary and Audit findings**

1. College takes efforts for solid waste management especially biomedical waste by proper outsourcing to the outside agency.
2. Recycling and reuse practice is followed strongly.
3. Solid waste and Biomedical waste is managed properly and appreciated
4. Electricity consumption is more and non-controllable at some departments.
5. Use of CFC and LFD lamps is alternative to the large energy.
6. Toilets and bathrooms are consuming more water particularly at hostels
7. Good watershed management program is implemented on campus.
8. Adequate water filtration and Water treatment plants systems is available.
9. E-waste segregation, handling and disposal should be done properly.
10. Good housekeeping is maintained throughout the premises.
11. Visual signage boards for generating awareness about conservation of water and electricity are not found to be displayed.
12. Drinking water is currently tested for the water parameters according to prescribed standards.

## **Recommendations**

Following are some of the key recommendation for improving campus environment.

1. Vision Mission and Goal to be prepared with all the recommendations and current practice carried by institution.
2. The college should develop internal procedures to ensure its compliances with environmental issues.
3. Leakages and corrosion of pipes, overhead tanks be maintained timely and promptly.
4. The college should improve its monitoring and reporting system for water usage, electricity consumption etc.
5. The college should develop a segregation protocol for the segregation of different type of solid waste.
6. To achieve the target of reduction in electricity and water consumption, there should be proper documented management programs to achieve the same.
7. College should arrange special drive to check of PUC and should be made mandatory for students who use and park personal vehicles in the college premises.





# Maintenance of the infrastructure

Maintenance of the infrastructure is undertaken by,

- General Maintenance
- Bio-Medical Department
- Bio-Medical Waste Management
- Electrical Maintenance

- **General Maintenance**

- It is sub-divided into – Plumbing, Carpentry, Welding, Mason, Maintenance of Sewer
- A total of 26 staff and 2 supervisors are working with general maintenance department.
- This department is supervised by one Incharge.
- The maintenance department also responsible for maintenance of Hospital, Medical College, Hostels, Central Library, Staff Quarters, Filter Plant & SIBF.

- **Bio-Medical Department**

- It looks after maintenance of all biomedical equipment like CT scan, MRI, Cath Lab, All X-Ray machines, Monitors, Ventilators and OT equipment.
- It looks after preventive maintenance and breakdown calls.
- The department is headed by biomedical engineer and supported by technical staff.
- The high end equipment are covered under AMC and CAMC, supported by our department.

- **Bio-Medical Waste Management**

- Our hospital is certified by Maharashtra Pollution Control Board.
- Bio-Medical Waste is collected and segregated according to guidelines of BMW management and handling rules 2016.
- Recyclable material is being handed over to an authorized agency for recycling.
- General waste generated out off patients and relative's activity is handed over to Municipal Corporation.
- Disposal of BMW is outsourced to Surya.

- **Electric Maintenance Department**

- It consists of well qualified technical staff headed by Electrical Engineer.
- There is AMC for lifts, generators, UPS, Vacuum Compressor in OT and air conditioning system which is supported by our team.
- The Electric Maintenance department looks after over all preventive maintenance as well as break down maintenance.
- The electric supply to the campus by High Tension line back up of 600 KVA and 250 KVA diesel generator sets.
- We maintain the power factor to save electricity for which we are been regularly awarded incentive by Maharashtra State Electric Board.

### **1. Drinking Water Treatment Plant (D.W.T.P.)**

- The plant having capacity of 20 lakh litres: 10 lakh litres for Raw Water and Filtered Water each.
- Source of Water – RiverWater lifted from Krishna River from NilajiBamani approximately 6 km from BharatiVidyapeeth Deemed University Medical Campus, Sangli.

#### **Process of WTP :**

- First the water is collected in Raw Water Tank (1.5 Lakh capacity) in that bubbling aeration is provided.
- From Raw water tank the water goes to isolated tank. Having capacity 50000 litres. In that bubbling aeration is proved and dosing of non-ferric alum chemical is given. In rainy season for every 2 hours 5kg of alum dosing is done and in other season per hour 4kg dosing of alum is done.
- In isolated tank Polyelectrolyte powder dosing is carried out. In 200 litters of water approximately 1kg to 1.2 kg of polyelectrolyte powder is sterilized for 45 minutes after that dosing is done continuously.
- From isolated tank water goes to settling tank in which flocculation process takes place and sludge is settled down at the bottom of settling tank and remaining upper water goes to main water tank. The settled sludge is drained out regularly.
- The main water tank is divided into two parts.The water coming from settling tank is stored in first part of the main tank. (Capacity 10 lakh litres.)
- The stored raw water is lifted and send to sand filter unit. (Capacity 70000 to 80000 litres / hr) In sand filter 5 types of sands are present in that hardness is removed.
- The back washing is regularly done for removing the sludge from sand filter.
- We are having two sand filters and are used it alternately.

- The water from sand filter goes to second part of main tank and stored. (Capacity 10 Lakh litres) & in this tank dosing of bleaching powder is done.

**Bleaching powder Dose:**

<b>Sr. No.</b>	<b>Filter water in feet</b>	<b>Water in Litres</b>	<b>Bleaching power in kg</b>
1.	10 feet	10 Lakh litres	5 kg powder
2.	9 feet	9 Lakh litres	4.5 kg powder
3.	8 feet	8 Lakh litres	4 kg powder
4.	7 feet	7 Lakh litres	3.5 kg powder
5.	6 feet	6 Lakh litres	3 kg powder
6.	5 feet	5 Lakh litres	2.5 kg powder
7.	4 feet	4 Lakh litres	2 kg powder
8.	3 feet	3 Lakh litres	1.5 kg powder
9.	2 feet	2 Lakh litres	1 kg powder
10.	1 feet	1 Lakh litres	0.5 kg powder

- As per the given chart the bleaching powder is utilised. E.g. 10 Lakh litres – 10 kg of bleaching powder mix in 50 litres water and dose is prepared. When the dose is settled the supernatant is dropped into the water tank.
- After that this filtered water is supplied to whole Medical Campus for drinking and domestic purpose. Regularly 5 to 6 Lakh litres of water is consumed in the campus.
- Every month water sample testing is done by Government laboratory and also to private laboratory.
- Chemical and Bacteriological test of inlet and outlet sample water is done.





## **2. Sewage Treatment Plant - Solid Immobilized Biofilter Plant (SIBF)**

- This system is based on integrated vermiculture technology.
- This system is having capacity 4 Lakh Ltrs / day.
- Daily 4 Lakh ltrs of sewage waste water is treated and this treated water is used for garden and plantation purpose in the campus.
- This system has less operational costs as it in-valves low skill and low electricity.
- Maintenance costs are also minimal as this system involves only pumps.
- It is an eco-friendly and nature's way of treating waste water.

### ➤ **Process of STP Plant (SIBF)**

- The domestic wastewater generated from hospital, colleges, hostel buildings and canteen is collected in underground collection tank of 4 lakh litre capacity.

### ➤ **Primary Treatment:**

- From collection tank the wastewater is lifted by pump to the Biofilter Phase – I in that about 80% pollution of wastewater is removed. The biofilterbeds containscow dung organic bacterial culture, grit and two types of stones having 4 to 4.5 feet depth. At the top level of Bio filter Bed the canna plants are planted. The roots of the canna plants suck all the organic load from the sewage water and also it increases aesthetics of plant.
- Then the water from Biofilter Phase – I goes to side sump tank. (capacity 40000 liters)From side sump tank the water is lifted again and send to Biofilter Phase – II. Same process is carried out in Biofilter Phase – II like Biofilter Phase – I.

### ➤ **Secondary Treatment:**

- From Biofilter Phase – II the water goes in a chamber, in which non ferric alum dosing is done.
- Then this water goes to alum tank, in which coagulation and flocculation process takes place and the sludge is settled down. At the time of tank washing the sludge is removed.

➤ Tertiary Treatment:

- The remaining upper level water from alum tank goes to pressure sand filter, where hardness is removed. After that the water goes to activated carbon filter where carbonates, bicarbonates and other impurities are removed.
- From carbon filter the finally treated water goes to treated water tank. (capacity 3 Lakh liters)
- From treated water tank, the water is supplied to garden and plantation.
- The treated water is used for about 2000 plants big and small and also for 10 to 15 lawns in the campus.





### **3. Solar water heating system :**

- Solar water heating system of flat plate collector type of total 45000 litre capacity is installed in the campus. This provides hot water facility to all the hostels and hospital.
- It is eco-friendly system which helps in reducing use of electricity and other conventional fuels.
- It is maintained through AMC by professional service provider.





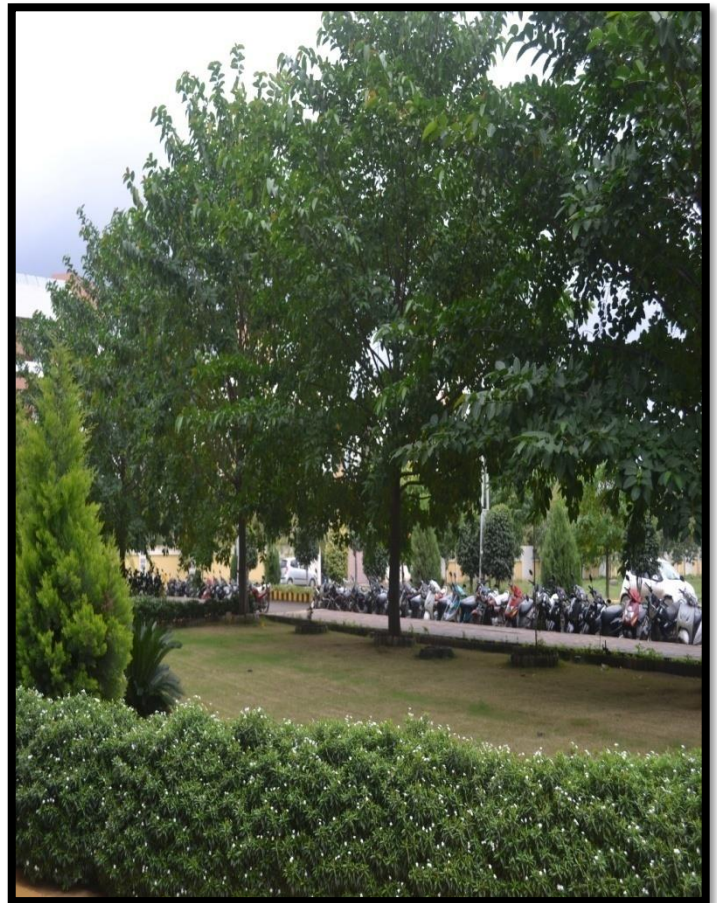
#### **4. Solar Power Generation System:**

- Recently we have installed Roof Top Solar PV system of capacity 475 KW under Net metering arrangement for power generation.
- Considering future demand for energy, renewable solar energy is one of the best options which provide sustainable & economical energy solution.



## **5. Green Campus:**

- We maintain a lush green campus.
- There are more than 2000 trees and lawn of 7600 sqmt.
- College has also maintained 2000 garden pots.
- We have maintained diverse flora with fruit bearing, flowering and ornamental plants.
- We have developed nursery for nurturing saplings. We are also outsourcing these garden pots to other institutes.
- Water is supplied through drip irrigation, sprinklers and gun method.
- All the water required for the gardening is recycled water from SIBF plant.
- We practice composting of garden waste.
- The garden facility is maintained by 18 gardeners, 1 supervisor headed by environmental engineer.







## 6. Bio-gas plant:

- We have installed two bio-gas plants for hostel canteens.
- The bio-gas plants are based on cooked waste food.
- The capacity is 100 - 125 kg per day.
- The gas produced is used for cooking in the canteens.





## **7. REVERSE OSMOSIS PLANT :**

- We have installed six reverse osmosis plants 2 for boys hostel , 3 for girls hostel and one for dialysis unit in nephrology unit in the hospital
- Total Capacity is 5300 liters of water
- The water from main water purification plant undergoes reverse osmosis and ultraviolet treatment to provide the quality packaged water.



## **8. Fire Safety:**

- We have installed a state of art fire hydrant system, certified by fire department of the municipal corporation.
- The system consists of 11 water pumps of cumulative capacity of 176 hp.
- The system is connected to dedicated water tanks of 4 lakhs capacity as well as to the drinking water supply if required.
- There are ample, easily accessible fire alarms and fire extinguishers.
- The fire exits are well displayed in each building.
- External agency is employed for regular maintenance of fire extinguishers and water pumps.
- Regular maintenance is looked after by well-trained personnel.



# **SURVEY DETAILS**

## **A SIMPLE PROFORMA FOR GREEN AUDIT**

### **of the Constituent Colleges of the Bharati Vidyapeeth Medical College, Sangli.**

The University as well as its constituent colleges may monitor the environmental conditions in the respective institutes and campuses from various angles that are relevant to Indian requirements, without stress on legal issues or compliance. They should answer a series of questions on a regular basis regarding environmental conditions in their respective units. This innovative scheme, developed by the P. R. Environmental Education Centre, Chennai, is simple and user-friendly. This environmental monitoring system helps the institution to set environmental examples for the community and to educate young learners. It can be adapted to urban and / or rural situations.

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

- Environmental education through systematic environmental management approach
- Improving environmental standards
- Benchmarking for environmental protection initiatives
- Reduction in resource use
- Financial savings through a reduction in resource use
- Curriculum enrichment through practical experience
- Development of ownership, personal and social responsibility for the college/ institute and its environment
- Enhancement of college/ institute profile
- Developing an environmental ethic and value systems in young people
- The areas of eco auditing to be followed / practiced by participating institutions:
  - A. Waste Minimisation and Recycling
  - B. Greening
  - C. Energy Conservation
  - D. Water Conservation
  - E. Animal Welfare

**The principals/ directors are requested to fill the following simple questionnaire for the period 2020-21.**



1) What is the total strength of students and teachers in your College/ Institute?

Total no. of Students: **750**.      No. of Teachers: **224** Non Teaching: **234**

2) Which of the following are available in your college/ institute?

- i) Garden area - Available
- ii) Playground - Available
- iii) Kitchen - Available
- iv) Toilets (number) - 500
- v) Garbage dump (number) - 01
- vi) Laboratory – Available
- vii) Canteen - Available
- viii) Others (specify)- Incinerator facility available.

3) Which of the following are found near your college/ institute? Mark the level of disturbance it creates for the college/ institute in a scale of 1 to 9.

- i) Municipal dump yard – NA
- ii) Garbage heap – NA
- iii) Public conveyance – 2
- iv) Sewer line – NA
- v) Stagnant water – NA
- vi) Open drainage – NA
- vii) Industry – (Mention the type) – 2
- viii) Bus / Railway station – 1
- ix) Market / Shopping complex / Public halls – NA

## I - WASTE

1. Does your college/ institute generate any waste? If so, what are they? – Hospital biomedical waste & General waste.

Yes, our college/ institute generate hospital biomedical waste & general waste.

2. What is the approximate amount of waste generated per day? (Please put ✓ mark in the table below at appropriate places.)

Approximately	Bio-degradable	Non-bio-degradable	Hazardous	Others
Less than one kg.				
Between 1 and 10 kg.				
More than 10kg	✓	✓	✓	

3. How is the waste generated in the college/ institute managed By?

Composting	Garden waste is decomposed by vermin culture and composting procedure.
Recycling	Waste sewage water is recycled daily 400 m <sup>3</sup> . It is used for garden & plantation.
Reusing	Reuse of waste water by operating ETP & STP plants.
Others (specify)	We have our own incinerator for disposal and treatment of biomedical waste.

4. How many separate boxes do you think you would need to put into a classroom to start a waste segregation and recycling campaign?

A. Waste segregation in hospital is done through biomedical waste management & handling rules 1998 in that 5 colour codes are used for segregation of biomedical waste. These codes are Yellow, Green, Red, Black & Blue.

B. In classroom two dustbins one for recyclable waste and other for non-recyclable waste are required to start waste segregation and recycling campaign.

5. What would each be used for? (Develop a colour code with reasons)

A. Hospital: As per biomedical waste management & handling rules 1998.

○ **Yellow:** Human anatomical waste, animal waste, Microbiology and biotechnology waste & solid waste (cotton, dressings, soiled plaster cast etc.)

○ **Green:** General waste

○ **Red:** Microbiology and biotechnology waste, solid waste (Cotton, dressings, soiled plaster cast etc.), solid waste (Tunings, catheters, intravenous sets etc.)

○ **Black:** Discarded medicines, cytotoxic drugs, Incineration Ash

○ **Blue:** Waste sharps (Needles, syringes, blades, glass etc.)

### **B. Classrooms, hostels and residential area:**

Two: Green for recyclable waste and Black for organic waste.

6. Do you use recycled paper in college/ institute?

Yes we use recycled paper in our college.

7. How would you spread the message of recycling to others in the community?

Our students during their community outreach activities communicate and educate the people regarding importance of recycling.

8. Have you taken any initiatives? If yes, please specify.

We have started to sensitize the staff & students with importance of recycling.

9. Can you achieve zero garbage in your college/ institute? If yes, how?

Currently it is very difficult given the limitations of availability of infrastructure and cost constraints. However it is definitely a goal of the institute to achieve zero garbage in future.

## **II - GREENING THE CAMPUS**

1. Is there a garden in your college/ institute? List the plants there, with approx. numbers of each species. –

Yes, approximately 1954 plants including all varieties.

<b>Sr. No.</b>	<b>Name of Plants and Trees</b>	<b>Quantity</b>
1	Bahuniablakeana	210
2	Cordiasebestena	53
3	Cassia nodusa	60
4	Anthocephaluschinesis	40
5	Wodyetia bifurcate	19
6	Milligtoniahortensis	36
7	Filiciumdecipiens	20
8	Allistemonforgate	14
9	Brassiaactinophylla	4
10	Plumeriarubra	20
11	Azadirachtaindica	50
12	Ficusreligiosa	2
13	Ficusbengalensis	1
14	Delonixregia	2
15	Albiziasaman	5
16	Prunusdulsis	2
17	Araucaria cookill	3
18	Dypsislutescus	20
19	Umbrella tree	2
20	Tabubiaargentina	50
21	Platoform tree	62
22	Ficusracemosa	3

23	Spathodeacampanulata	7
24	Brucidaangustifolia	26
25	Cocosnucifera	300
26	Annonasquamosa	10
27	Annona reticulate	8
28	Manikarazapota	14
29	Solanumnigrum	4
30	White jam tree	2
31	Ran awala tree	2
32	Rambotan tree	2
33	Citrus limetta	2
34	Papanus tree	2
35	Nirfanus tree	2
36	Pink jam tree	2
37	Mutiarasintelis	2
38	Rose apple	2
39	Tamarindusindica	17
40	Albizziarichadiana	2
41	Anacardiumoccidentale	2
42	Chrysophyllumcainito	2
43	Apple boar	2
44	Mulpighiaemarginata	2
45	Lihi tree	2
46	Sweet naringa	2
47	Paper lemon tree	4
48	Mangiferaindica	30
49	Guava tree	12
50	Musa acuminata	20
51	Thujaorientalis	32
52	Cycas revolute	10
53	Golden cyperus	18
54	Ficus black	207
55	Exora red	30
56	Exora mini	60
57	Podocarpus elongate	2
58	Cattia palm	11
59	Ficus star	1
60	Plumeria alba	16
61	Braunia tree	2
62	Callusia tree	2
63	Cristcali tree	2
64	Mimusopselengi	18
65	Bottlebrush pulandi	5
66	London pine tree	1

67	Gold crist trees	7
68	Sakeshwar trees	25
69	Alstoniascholaria	5
70	Pimparni trees	16
71	Milletiapinnata	2
72	Gulbhendi trees	17
73	MichelliaChampaca	3
74	Subabhul trees	2
75	Filliciumdecipiens	20
76	Kadipatta tree	8
77	Shevaga (Drum-Stick) tree	2
78	Grevillearobusta	30
79	Tad tree	1
80	Phoenix roebelenil	14
81	Bail tree	3
82	Lagerstroemia speciosa	13
83	Kanher trees	112
84	Khajur palm trees	15
85	Areca catechu	41
86	Star ficus	3
87	Bahava tree	2
88	Leaf of hybrida	4
89	Tabebuiaargentina	9
90	Tabebuiaavellanadae	6
91	Jatropha	20
<b>Total</b>		<b>1954</b>

2. Suggest plants for your campus. (Trees, vegetables, herbs, etc.) – Medicinal trees, Forest trees, fruit trees & shrubs.

We are planning to plant Ayurvedic Medicinal Plants like Brahmi, Ashwagandha, Bael, Nirgundi, etc.

3. List the species planted by the students, with numbers. :

100 Cocosnucifera plants were planted by the students at the time of “VrukshaDindiAbhiyan”.

### III - ENERGY

1. List the ways that you use energy in your college/ institute. (Electricity, LPG, others). Using this list, try to think of ways that you could use less energy every day.

Sr. No.	Ways you use energy	Ways that you could use less energy
1	Electricity: Illumination, Ventilation, all electric equipment.	Use of these electric appliances and instruments judiciously.
2	LPG: Cooking, experiments, Teaching labs & skill lab.	Using only when absolutely necessary and using along with appliances designed to reduce the energy expenditure.
3	Diesel / Petrol	Proper maintenance and judicious use of vehicles.
4	Solar water heaters	Increase the use to conserve non-renewable energy.
5	Biogas plant	Increase the use to conserve non-renewable energy.
6	Solar Electricity Generated	475 KW

2. Are there any energy saving methods employed in your college/ institute? If yes, please specify and suggest more. If no, suggest some.

Employee and students are instructed and educated to use electricity judiciously and avoid wastage. Newer, energy efficient appliances like LED bulbs, LED TVs, Energy efficient refrigerators etc. are gradually inducted in day to day use replace conventional appliances. Impetus is given to utilization of solar energy in the form of solar heaters. The institute plans to use solar cells for production of energy.

3. How much is the monthly expenditure of your college/ institute on energy such as electricity, gas, etc.

Month	Expenditure on Electricity Bill	Expenditure on Gas	Expenditure on Generator
April 2020	---	---	---
May 2020	423550.00	9495.00	0.00
June 2020	795440.00	5081.00	0.00
July 2020	427210.00	3683.00	0.00
Aug. 2020	492970.00	3379.00	35000.00
Sept. 2020	2685020.00	6979.00	0.00
October 2020	3374810.00	5522.00	35000.00
November 2020	7506151.00	2183.00	0.00
December 2020	3360780.00	1230.00	0.00
January 2021	2900522.00	5625.00	25000.00
February 2021	122050.00	0.00	0.00
March 2021			

4. What is the percentage of CFL bulbs has your college/ institute installed? If the percentage is less what are the reasons?

The percentage of CFL bulbs is 5%. The reason behind the low usage is necessity of proper uncompromised illumination for patient care. However we are planning to increase use of high capacity LED bulbs in future.

5. Are any alternative energy sources employed / installed in your college/ institute? (photovoltaic cells for solar energy, windmill, energy efficient stoves, etc.) Specify.

Yes. Solar water heaters are used for providing hot water. Similar we have photovoltaic cell employed for street lights. We plan to expand use the photovoltaic cells for energy production.

6. Do you run “switch off” drills at college/ institute? What is the effect of such drills?

Yes and also we have advisory regarding the same displayed at various places. It has helped creating awareness and thus decreasing wastage of electricity in the institute.

7. What percentage of computers and other equipment’s in your college/ institute are usually put on power-saving mode?

Almost all the computers and majority of equipment with the facility of power-saving mode are usually put on power-saving mode.

All the staff members are instructed for the same.

8. Does your machinery (TV, AC, Computer, weighing balance, printers, etc.) run on standby modes most of the time? If yes, how many hours?

Standby mode is used on the machinery only if is utmost necessary and related to patient care or else the machinery are switched off if not in use.

#### **IV - WATER CONSERVATION**

1. List four uses of water in your college/ institute.

- i. Drinking-
- ii. Laboratory-
- iii. Washing-
- iv. Gardening-
- v. Recare
- vi. CSSR- MRI – O<sub>2</sub> plants, cooking, heating etc.

2. How does your college/ institute store water? Are there any water saving techniques followed in your college/ institute? What are they ?

Yes, the college has a water storage facility. Our institute give conservation of

water an utmost importance.

- i. We had incorporated a culture of water preservation by educating the staff and students its importance and methods.
- ii. We have installed a state of the art water purification plant which ensures availability of pure & safe water with least amount of wastage during the process.
- iii. The integrity of plumbing is constantly ensured and vigilance is constantly maintained to mend any leaks.
- iv. We have an efficient sewage water treatment plant. We recycle the waste water, and this water is used for gardening and plantation in the campus. Thus we ensure that nearly 4 lakh litres water is reused per day.
- v. Gardening is done using drip and sprinkler irrigation.

3. If there is water wastage, specify why?

Although we had strived to ensure to eliminate water wastage but some waste is inevitable due to,

- i. Non-compliance to water saving techniques by the beneficiaries especially illiterate patients.
- ii. Some machinery requires excess water to control the temperature rise during functioning.

4. How can the wastage be prevented / stopped?

- i. Educating to all the stakeholders for judicious use of water.
- ii. Strong vigilance on leaking areas through the plumbing & maintenance.

5. Write down four ways that could reduce the amount of water used in your college/ institute.

- i. Use of the modern equipments requiring less amount of the water for functioning.
- ii. Expansion of capacity of water treatment plant as well as improving the quality of output from the treatment plant, rendering it potable.
- iii. Use of chemical cleaning instead of water cleaning.
- iv. Use of automatic taps.

6. What is the average consumption of water (in kilo-liters) per month?

Nearly 15000 kilo – liters per month.

7. Does your college/ institute harvest rain water? If yes, how many rain water harvesting units are there?

Yes, all the buildings in the campus are equipped with rain water harvesting units.



## VI - GENERAL

1. Are you aware of any environmental Laws pertaining to different aspects of environmental management?
  - i. Biomedical waste management and handling Rules – 1998.
  - ii. Air pollution & prevention Act – 1981
  - iii. Water pollution & prevention Act – 1974.
  
2. Does your college/ institute have any rules to protect the environment? List possible rules you could include.
  - i. Our college abides to the rules & regulations under the biomedical waste management and handling Act - 1998
  
3. How does the college/ institute bring environment awareness among stakeholders of the college/ institute?

The institute imparts Environmental Awareness Education to the teachers and the students by informal communication, posters and guest lectures by imminent authorities.

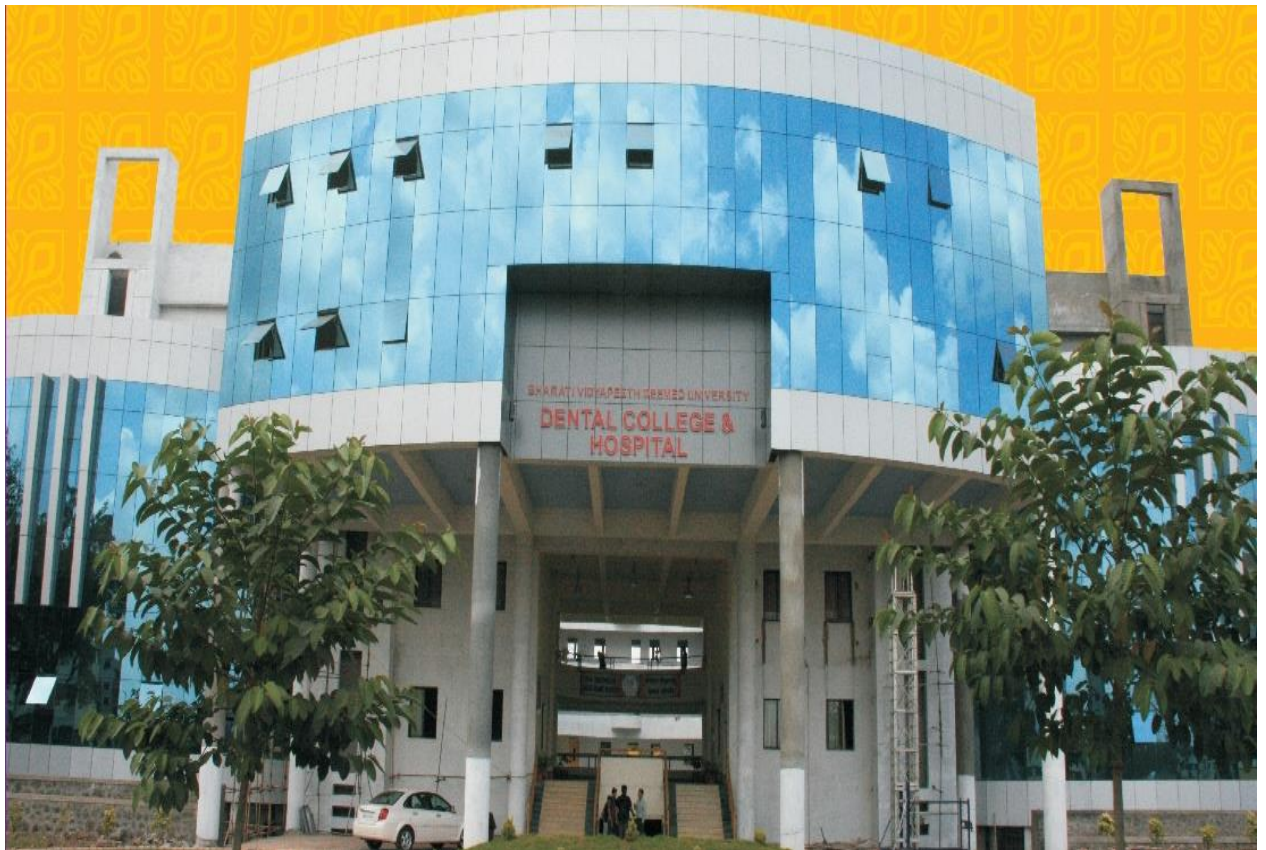
Curriculum on Environment Education.

## VII. PROVIDE ANY OTHER SIGNIFICANT INFORMATION.

NA



**BHARATI VIDYAPEETH DEEMED TO BE UNIVERSITY,  
DENTAL COLLEGE & HOSPITAL, SANGLI**



## **GREEN AUDIT**

**of the Constituent Colleges of the Bharati Vidyapeeth Deemed To Be University,  
Dental College & Hospital, Sangli.**

The University as well as its constituent colleges may monitor the environmental conditions in the respective institutes and campuses from various angles that are relevant to Indian requirements, without stress on legal issues or compliance. They should answer a series of questions on a regular basis regarding environmental conditions in their respective units. This innovative scheme, developed by the P. R. Environmental Education Centre, Chennai, is simple and user-friendly. This environmental monitoring system helps the institution to set environmental examples for the community and to educate young learners. It can be adapted to urban and / or rural situations.

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

- Environmental education through systematic environmental management approach
- Improving environmental standards
- Benchmarking for environmental protection initiatives
- Reduction in resource use
- Financial savings through a reduction in resource use
- Curriculum enrichment through practical experience
- Development of ownership, personal and social responsibility for the college/ institute and its environment
- Enhancement of college/ institute profile
- Developing an environmental ethic and value systems in young people
- The areas of eco auditing to be followed / practiced by participating institutions:
  1. Waste Minimisation and Recycling
  2. Greening
  3. Energy Conservation
  4. Water Conservation
  5. Animal Welfare

**The principals/ directors are requested to fill the following simple questionnaire for the period 2020-21.**

1. What is the total strength of students and teachers in your College/ Institute?
2. No. of Students:- 350                      No. of Teachers:-67Non Teaching : 105
3. Which of the following are available in your college/ institute?
  - i. Garden area -Available
  - ii. Play ground - Available
  - iii. Kitchen      - Available
  - iv. Toilets (number) -46**
  - v. Garbage dump (number)-01
  - vi. Laboratory -Available
  - vii.              Canteen -Available
  - viii.             Others (specify)- Incinerator Available
4. Which of the following are found near your college/ institute? Mark the level of disturbance it creates for the college/ institute in a scale of 1 to 9.
  - i. Municipal dump yard -NA
  - ii. Garbage heap -NA
  - iii. Public conveyance -01
  - iv. Sewer line-NA
  - v. Stagnant water -NA
  - vi. Open drainage -NA
  - vii.              Industry – (Mention the type) -NA
  - viii.             Bus / Railway station –Railway Line- 1
  - ix. Market / Shopping complex / Public halls -NA

## I - WASTE

1. Does your college/ institute generate any waste? If so, what are they?

- Yes, our college/ institute generate hospital biomedical waste & general waste.

2. What is the approximate amount of waste generated per day? (Please put ✓ mark in the table below at appropriate places.)

Approximately	Bio-degradable	Non-bio-degradable	Hazardous	Others
Less than one kg.	--	--	✓	--
Between 1 and 10 kg.	✓	--	--	--
More than 10kg	--	✓	--	--

3. How is the waste generated in the college/ institute managed? By

Composting	Garden waste is decomposed by vermiculture and composting procedure.
Recycling	Waste sewage water is recycled daily 400 m <sup>3</sup> . It is used for garden & plantation.
Reusing	Reuse of waste water by operating ETP & STP plants.
Others (specify)	We have our own incinerator for disposal and treatment of biomedical waste

4. How many separate boxes do you think you would need to put into a classroom to start a waste segregation and recycling campaign?

- Waste segregation in hospital is done through biomedical waste management & handling rules 1998 in that 5 colour codes are used for segregation of biomedical waste. These codes are Yellow, Red, Black & Blue.
- In classroom two dustbins one for recyclable waste and other for non-recyclable waste are required to start waste segregation and recycling campaign.+

5. What would each be used for? (Develop a colour code with reasons)

- **Yellow for** –Cotton, Linen, bandage, Gauze
- **Red for-** Syringe, Gloves, Plastic containers, Glass, Ampoules, Needles.
- **Blue for-** Metal parts
- **Black for** –Medicine Boxes, Plastic Rappers Papers, Food Material, paper tea Cups

6. Do you use recycled paper in college/ institute?

- Yes, we use recycled paper in our college.

7. How would you spread the message of recycling to others in the community?
  - Our students during their community outreach activities communicate and educate the people regarding importance of recycling.
8. Have you taken any initiatives? If yes, please specify.
  - We have started to sensitize the staff & students with importance of recycling.
9. Can you achieve zero garbage in your college/ institute? If yes, how?
  - Currently it is very difficult given the limitations of availability of infrastructure and cost constraints. However it is definitely a goal of the institute to achieve zero garbage in future.

## II - GREENING THE CAMPUS

1. Is there a garden in your college/ institute? List the plants there, with approx. numbers of each species.
  - Yes, approximately 1934 plants including all varieties.

Sr. No.	Name of Plants and Trees	Quantity
1	Bahuniablakeana	191
2	Cordiasebestena	47
3	Cassia nodusa	60
4	Anthocephaluschinesis	40
5	Wodyetia bifurcate	19
6	Milligtoniahortensis	36
7	Filiciumdeciapiens	20
8	Allistemonforgate	14
9	Brassiaactinophylla	4
10	Plumeriarubra	20
11	Azadirachtaindica	50
12	Ficusreligiosa	2
13	Ficusbengalensis	1
14	Delonixregia	2
15	Albiziasaman	5
16	Prunusdulsis	2
17	Araucaria cookill	3
18	Dypsislutescus	20
19	Umbrella tree	2
20	Tabubiaargentina	50
21	Platoform tree	62
22	Ficusracemosa	3
23	Spathodeacampanulata	7
24	Brucidaangustifolia	26
25	Cocosnucifera	300
26	Annonasquamosa	10
27	Annona reticulate	8
28	Manikarazapota	14
29	Solanumnigrum	4
30	White jam tree	2

31	Ran awala tree	2
32	Rambotan tree	2
33	Citrus limetta	2
34	Papanus tree	2
35	Nirfanus tree	2
36	Pink jam tree	2
37	Mutiarasintelis	2
38	Rose apple	2
39	Tamarindusindica	17
40	Albizziarichadiana	2
41	Anacardiumoccidentale	2
42	Chrysophyllumcainito	2
43	Apple boar	2
44	Mulpighiaemarginata	2
45	Lihi tree	2
46	Sweet naringa	2
47	Paper lemon tree	4
48	Mangiferaindica	30
49	Guava tree	12
50	Musa acuminata	20
51	Thujaorientalis	32
52	Cycas revolute	10
53	Golden cyperus	18
54	Ficus black	207
55	Exora red	30
56	Exora mini	60
57	Podocarpus elongate	2
58	Cattia palm	11
59	Ficus star	1
60	Plumeria alba	16
61	Braunia tree	2
62	Callusia tree	2
63	Cristcali tree	2
64	Mimusopselengi	18
65	Bottlebrush pulandi	5
66	London pine tree	1
67	Gold crist trees	7
68	Sakeshwar trees	25
69	Alstoniascholaria	5
70	Pimparni trees	16
71	Milletiapinnata	2
72	Gulbhendi trees	17
73	MichelliaChampaca	3
74	Subabhul trees	2
75	Filliciumdecipiens	20
76	Kadipatta tree	8
77	Shevaga (Drum-Stick) tree	2
78	Grevillearobusta	30
79	Tad tree	1
80	Phoenix roebelenil	14
81	Bail tree	3

82	Lagerstroemia speciosa	13
83	Kanher trees	112
84	Khajur palm trees	15
85	Areca catechu	41
86	Star ficus	3
87	Bahava tree	2
88	Leaf of hybrida	4
89	Tabebuiaargentina	9
90	Tabebuiaavellanedae	6
91	Jatropha	20
<b>Total</b>		<b>1934</b>

2. Suggest plants for your campus. (Trees, vegetables, herbs, etc.)
  - We are planning to plant Ayurvedic Medicinal Plants like Brahmi, Ashwagandha, Bael, Nirgundi, etc.
3. List the species planted by the students, with numbers.

### III - ENERGY

1. List the ways that you use energy in your college/ institute. (Electricity, LPG, others). Using this list, try to think of ways that you could use less energy every day.

Sr. No.	Ways you use energy	Ways that you could use less energy
1	Electricity: Illumination, Ventilation, all electric equipment.	Use of these electric appliances and instruments judiciously.
2	LPG: Cooking, experiments	Using only when absolutely necessary and using along with appliances designed to reduce the energy expenditure.
3	Diesel / Petrol	Proper maintenance and judicious use of vehicles.
4	Solar water heaters	Increase the use to conserve non-renewable energy.
5	Biogas plant	Increase the use to conserve non-renewable energy.

2. Are there any energy saving methods employed in your college/ institute? If yes, please specify and suggest more. If no, suggest some.
  - Employee and students are instructed and educated to use electricity judiciously and avoid wastage. Newer, energy efficient appliances like LED bulbs, LED TVs, Energy efficient refrigerators etc. are gradually inducted in day to day use replace conventional appliances. Impetus is given to utilization of solar energy in the form of solar heaters. The institute plans to use solar cells for production of energy.
3. What is the percentage of CFL bulbs has your college/ institute installed? If the percentage is less what are the reasons?



- The percentage of CFL bulbs is 5%. The reason behind the low usage is necessity of proper uncompromised illumination for patient care. However we are planning to increase use of high capacity LED bulbs in future.
4. Are any alternative energy sources employed / installed in your college/ institute? (photovoltaic cells for solar energy, windmill, energy efficient stoves, etc.) Specify.
    - Solar water heaters are used for providing hot water. Similar we have photovoltaic cell employed for street lights. We plan to expand use the photo-voltaic cells for energy production.
  5. Do you run “switch off” drills at college/ institute? What is the effect of such drills?
    - **NA**
  6. What percentage of computers and other equipments in your college/ institute are usually put on power-saving mode?
    - Computers and other equipments are on off mode when not required.
  7. Does your machinery (TV, AC, Computer, weighing balance, printers, etc.) run on standby modes most of the time? If yes, how many hours?
    - Electric instruments such as TV, AC, Computers, Printers, and Fans are used when it is required. These electric instruments are off when it is not required.

#### **IV - WATER CONSERVATION**

1. List four uses of water in your college/ institute.
  - i. Drinking
  - ii. Laboratory
  - iii. Washing
  - iv. Gardening
2. How does your college/ institute store water? Are there any water saving techniques followed in your college/ institute?
  - Yes, the college has a water storage facility. Our institute give conservation of water an utmost importance.
    - i. We had incorporated a culture of water preservation by educating the staff and students its importance and methods.
    - ii. We have installed a state of the art water purification plant which ensures availability of pure & safe water with least amount of wastage during the process.
    - iii. The integrity of plumbing is constantly ensured and vigilance is constantly maintained to mend any leaks.
    - iv. We have an efficient sewage water treatment plant. We recycle the waste water, and this water is used for gardening and plantation in the campus. Thus we ensure that nearly 4 lakh litres water is reused per day.

v. Gardening is done using drip and sprinkler irrigation.

3. What are they?

i. These are water saving scheme such as drip and sprinkler irrigation.

4. If there is water wastage, specify why?

Although we had strived to ensure to eliminate water wastage but some waste is inevitable due to,

i. Non-compliance to water saving techniques by the beneficiaries especially illiterate patients.

ii. Some machinery requires excess water to control the temperature rise during functioning.

5. How can the wastage be prevented / stopped?

i. Educating to all the stakeholders for judicious use of water.

ii. Strong vigilance on leaking areas through the plumbing & maintenance.

6. Write down four ways that could reduce the amount of water used in your college/ institute.

i. Use of the modern equipment's requiring less amount of the water for functioning.

ii. Expansion of capacity of water treatment plant as well as improving the quality of output from the treatment plant, rendering it potable.

iii. Use of chemical cleaning instead of water cleaning.

iv. Use of automatic taps.

7. What is the average consumption of water (in kilo-liters) per month?

➤ Nearly 10000 kilo – liters per month.

8. Does your college/ institute harvest rain water? If yes, how many rain water harvesting units are there?

➤ Yes, harvesting rain water system is present in campus.

## VI - GENERAL

1. Are you aware of any environmental Laws pertaining to different aspects of environmental management?
  - i. Biomedical waste management and handling Rules – 1998.
  - ii. Air pollution & prevention Act – 1931
  - iii. Water pollution & prevention Act – 1974.
2. Does your college/ institute have any rules to protect the environment? List possible rules you could include.
  - i. Our college abides to the rules & regulations under the biomedical waste management and handling Act - 1998
3. How does the college/ institute bring environment awareness among stakeholders of the college/ institute?
  - The institute imparts Environmental Awareness Education to the teachers and the students by informal communication, posters and guest lectures by imminent authorities.

## VII. PROVIDE ANY OTHER SIGNIFICANT INFORMATION.

NA



**BHARATI VIDYAPEETH DEEMED UNIVERSITY,  
COLLEGE OF NURSING, SANGLI**



## **GREEN AUDIT**

### **of the Constituent Colleges of the Bharati Vidyapeeth Deemed To Be University, College of Nursing, Sangli.**

The University as well as its constituent colleges may monitor the environmental conditions in the respective institutes and campuses from various angles that are relevant to Indian requirements, without stress on legal issues or compliance. They should answer a series of questions on a regular basis regarding environmental conditions in their respective units. This innovative scheme, developed by the P. R. Environmental Education Centre, Chennai, is simple and user-friendly. This environmental monitoring system helps the institution to set environmental examples for the community and to educate young learners. It can be adapted to urban and / or rural situations.

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

- Environmental education through systematic environmental management approach
- Improving environmental standards
- Benchmarking for environmental protection initiatives
- Reduction in resource use
- Financial savings through a reduction in resource use
- Curriculum enrichment through practical experience
- Development of ownership, personal and social responsibility for the college/ institute and its environment
- Enhancement of college/ institute profile
- Developing an environmental ethic and value systems in young people
- The areas of eco auditing to be followed / practiced by participating institutions:
  1. Waste Minimisation and Recycling
  2. Greening
  3. Energy Conservation
  4. Water Conservation
  5. Animal Welfare

## **Name of the Institution: BVDU, College of Nursing, Sangli.**

### **INFORMATION REGARDING GREEN AUDIT**

1) What is the total strength of students and teachers in your College/ Institute?

No.of Students: 409

No.of Teachers:32

Non Teaching Staff : 16

2. Which of the following are available in your college/ institute?

1. Garden area : Available
2. Play ground : Available
3. Kitchen: Available named as nutrition lab.
4. Toilets (number):18
5. Garbage dump (number) : Available
6. Laboratory: Computer lab, Community Health Nursing lab, MCH lab, nursing foundation lab.
7. Canteen: Available
8. Others (specify):-----

4. Which of the following are found near your college/ institute? Mark the level of disturbance it creates for the college/ institute in a scale of 1 to 9.

1. Municipal dump yard:1
2. Garbage heap:1
3. Public convenience:2
4. Sewer line:1
5. Stagnant water:1
6. Open drainage:1
7. Industry – (Mention the type) :1
8. Bus / Railway station: 1
9. Market / Shopping complex / Public halls:1

## I – WASTE

1. Does your college/ institute generate any waste? If so, what are they?
  - Office waste ( Papers)
2. What is the approximate amount of waste generated per day? (Please put 'tick mark' in the table below at appropriate places.)

Approximately	Bio-degradable	Non-bio-degradable	Hazardous	Others
Less than one kg.				
Between 1 and 10 kg.	√			
More than 10kg				

3. How is the waste generated in the college/ institute managed? By

Composting	√
Recycling	√
Reusing	
Others (specify)	

5. How many separate boxes are placed for waste segregation and recycling campaign?
  - Big Dustbins:04 small 10 dustbins in staff rooms and classroom.
6. What would each be used for?
  - Collection of waste paper and garden waste
7. Do you use recycled paper in college/ institute?
  - No
8. How would you spread the message of recycling to others in the community?
  - Organising the awareness campaigns through community extension activities and NSS unit.
9. Have you taken any initiatives? If yes, please specify.

Yes, participation of the teaching faculty and students in various activities related to environmental hygiene such as displaying of the instructions on notice board, swacha Bharat campaign, role play, and mime on save environment and waste management and tree plantation.

10. Can you achieve zero garbage in your college/ institute? If yes, how?

Yes, daily garbage is sent for composting in same campus.

## II - GREENING THE CAMPUS

4. Is there a garden in your college/ institute? List the plants there, with approx. numbers of each species.

Yes. Our campus is enriched with trees like Coconut (Cocosnucifera), Neem (Azadirachtaindica), Palm (Arecaceae), Pimpal (Picus Religiosa), Banyan



(Ficus benghalensis), Sandalwood (Santalum album), Badam (Terminalia catappa), Kabamba (Anthocephalus Chinesis), Indian Gooseberry (Albizia Richardiana) and many others. Approximately: 2-3

5. Suggest plants for your campus. (Trees, vegetables, herbs, etc.)

Trees: Mango, Guava etc.

Vegetables: Seasonable

Herbs; Tulsi, Aloe-vera etc.

6. List the species planted by the students, with numbers.

Rose plant: 100  
Coconut plant: 10

### III - ENERGY

3. List the ways that you use energy in your college/ institute. (Electricity, LPG, others). Using this list, what are the ways that you use reduce energy consumption every day.

Ser. Num.	Ways you use energy	Ways that you use to reduce energy consumption
1	To run the various electric devices such as computers, OHP etc.	Put off the devices as immediately. Infrastructure is eco-friendly.
2	LPG	Use of standard devices, safety wall.

4. Are there any energy saving methods employed in your college/ institute? If yes, please specify and suggest more. If no, suggest some.

- Yes, Infrastructure is eco-friendly.

5. What is the percentage of CFL bulbs has your college/ institute installed? If the percentage zero or is less what are the reasons?

- 100%

6. Are any alternative energy sources employed / installed in your college/ institute? (photovoltaic cells for solar energy, windmill, energy efficient stoves, etc.) Specify.

- No, photovoltaic cells for solar energy can be used.

7. Do you run "switch off" drills at college/ institute? What is the effect of such drills?

- Yes, energy saving.

8. What percentage of computers and other equipments in your college/ institute are usually put on power-saving mode?

- 100%

9. Does your machinery (TV, AC, Computer, weighing balance, printers, etc.) run on standby modes most of the time? If yes, how many hours?

No, except computer.

#### **IV - WATER CONSERVATION**

4. List four uses of water in your college/ institute.
  1. Drinking
  2. Sanitation
  3. Central supply for gardening
5. How does your college/ institute store water? Are there any water saving techniques followed in your college/ institute?
  1. Store tank around 1000 litres
  2. Yes. Water saving techniques are followed.
6. What are they ?
  1. No leakage of pipelines
  2. Strictly close the taps.
  3. Awareness programs
7. If there is water wastage, specify why?
  1. No.
8. How can the wastage be prevented / stopped?
  1. No leakage of pipelines
  2. Strictly close the taps.
  3. Awareness program
9. Write down four ways that could reduce the amount of water used in your college/ institute. Same as above
10. What is the average consumption of water (in kilo-liters) per month?  
30,000 litre
11. Does your college/ institute harvest rain water? If yes, how many rain water harvesting units are there?

Yes.

- Auto closure for overhead tanks to prevent overflow losses.
- Auto closure taps at public utility and staff quarters.

#### **VI - GENERAL**

5. Are you aware of any environmental Laws pertaining to different aspects of environmental management?  
Yes.
6. Does your college/ institute have any rules to protect the environment? List possible rules you could include.
  1. Do not cut the plant
  2. Throw waste in dust bins
  3. Composting the garbage.
  4. Waste water for gardening

7. How does the college/ institute bring environment awareness among stakeholders of the college/ institute?

Teaching and conducting projects related to environmental protection under environmental studies. Recycling of solid waste.

**VII. PROVIDE ANY OTHER SIGNIFICANT INFORMATION.**

Planning to do regular environmental audit and take necessary action.

Planning to start Eco-club.in College.

Planning to establish centralised water management systems which will monitor

1. Water needs
2. Over Flows
3. Leakages
4. Shortages
5. Quality of Water supply
6. Quality of sewage treatment