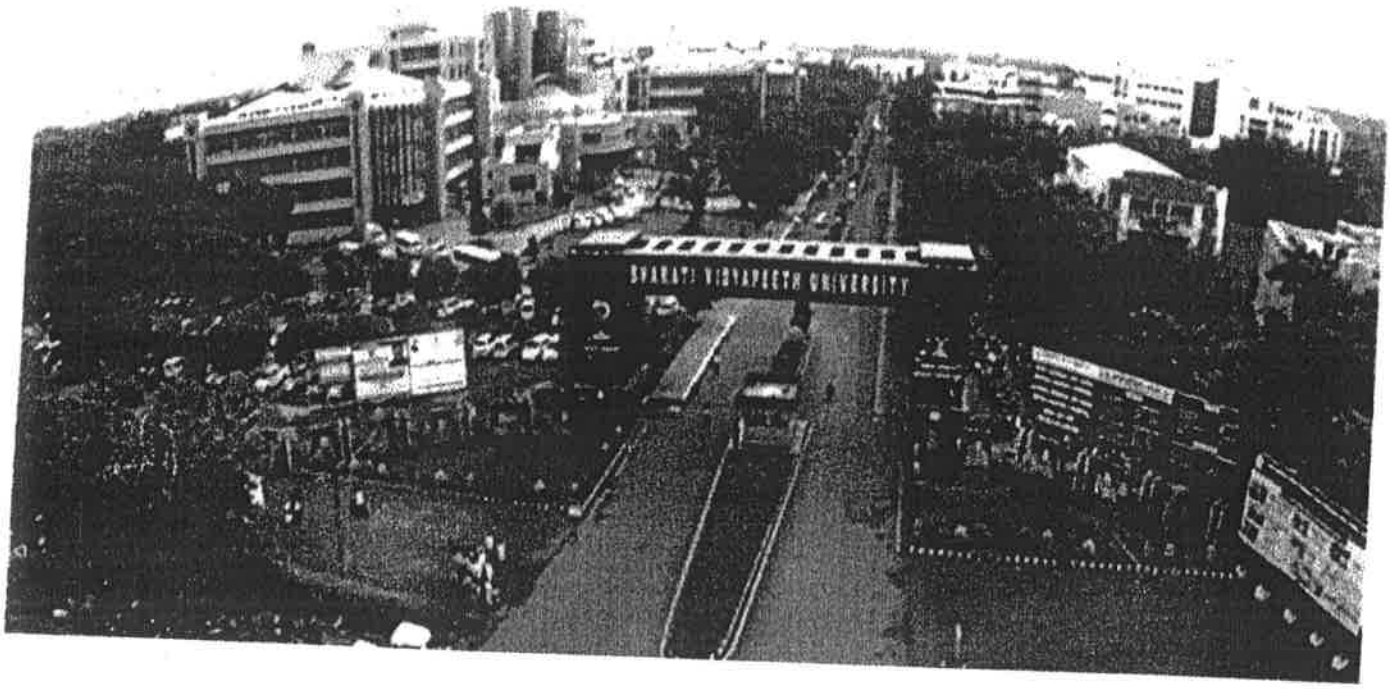
Green Audit Report

Bharati Vidyapeeth

(Deemed to be University)

Medical College & Hospital, Sangli.



Prepared by

M/S NISARG ENVIRO SERVICES,

KOLHAPUR.

Web: www.nisargenviro.com

E-mail: info@nisargenviro.com

NISARG ENVIRO SERVICES

A Mission for Clean, Green & Sustainable Environment...

Ref. No. : NES/BVDU/11/21

Date: 10/01/22

We have a great pleasure in presenting the Green Audit Report of Bharati Vidyapeeth (Deemed To Be University) Medical College & Hospital, Sangli. The Green Audit report gives detailed information about their greenery area under college campus, wastewater reuse, energy generation through natural resources, energy conservation, water conservation, disposal of biomedical/general waste & steps to reduce the minimum use of natural resources.

They have been maintaining well their ecological diversity in college campus.

We wish them all success in the future.

For Nisarg Enviro Services,

Mane Narendra

NISARG ENVIRO SERVICES Pin No. 416101 JAYSINGPUR

Pune Office :
Flat No. J/104, First Floor, Mayur Nagari,
Phase 2, Pimple Gurav, Pune.

Sales & Service Office :
Jaysingpur Office : Jayraj Building, Lane No. 11,
Opp. J.J. Magdum Hospital, Tel. (02322) 236493.

Web. www.nisargenviro.com **Email** : info@nisargenviro.com / sales@nisargenviro.com **Cell No.** - 9922241599

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 reference to conservation of natural resources, optimum use of available resource and control over waste generation. Green audit assessment will show 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 requirement of 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 year's 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 Bharati Vidyapeeth (Deemed to be University) Medical College and 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

Bharati Vidyapeeth (Deemed to be University) Medical College and Hospital, Sangli

Contents

INTRODUCTION

Bharati Vidyapeeth (Deemed to be University) Medical College and Hospital, 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 and Hospital, Sangli. It is a well-known center of clinical excellence located in the same premises. It is 950 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 Jeevandayee Arogya Yojna
Senior Citizens' Health Scheme
Mahatma Jyotiba Phule Aarogya 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 focusses 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 marks 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 a well direction to optimize 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 was 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 comprise 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 extracts 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 and Hospital, Sangli 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
3.7 Corporate Social Responsibility (CSR)

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 indicate 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 organize 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 sailing 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 interferes. 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 adequate. 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, and 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 an 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 specious 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, and Swine Flu 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 dynamic education is the mission statement of the organization. As an educational organization concession to tune of 6-8 Cr. is offered to the students.

Summary and Audit findings

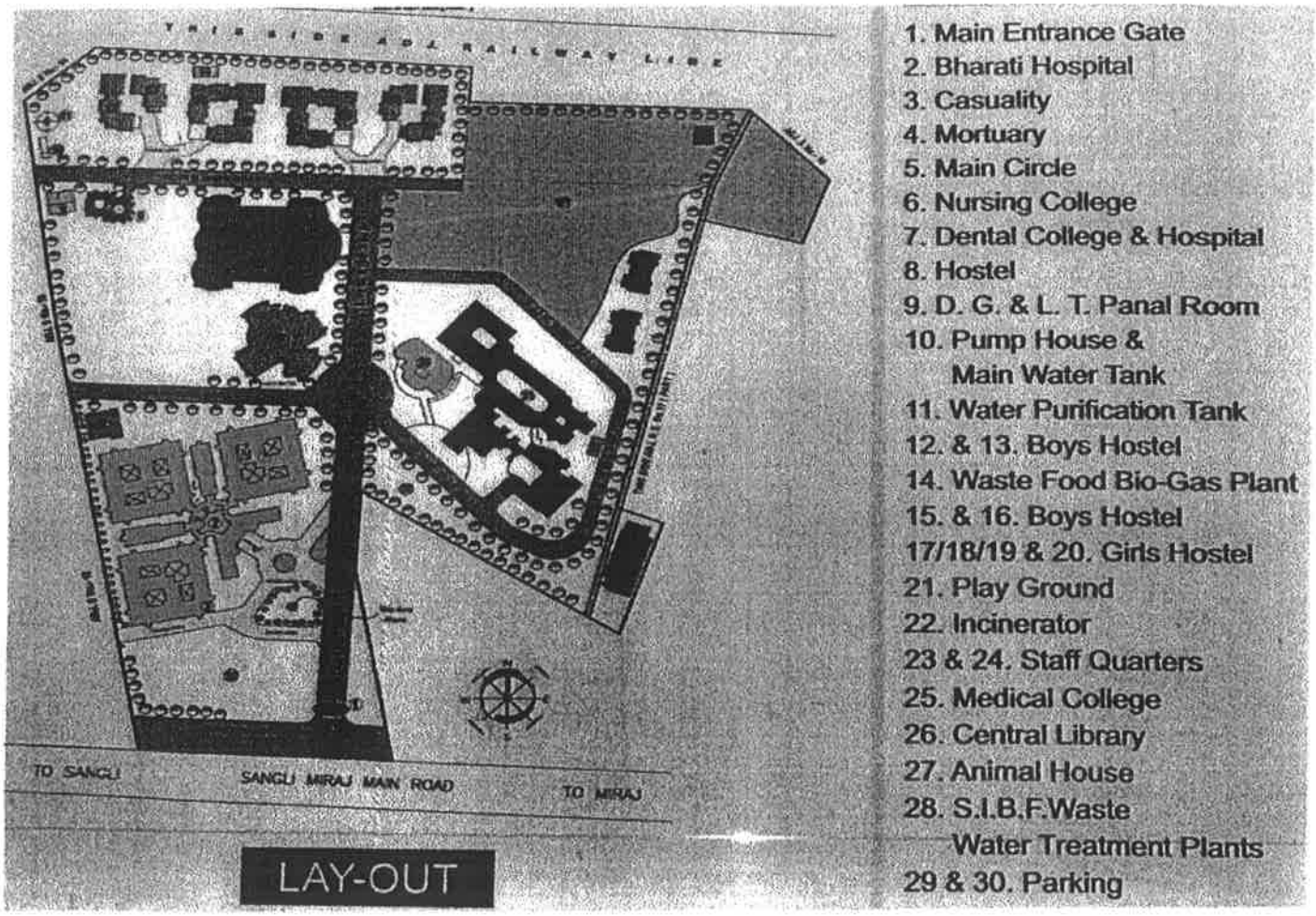
1. College takes efforts for solid waste management especially biomedical waste by proper outsourcing to the outsize agency.
2. Recycling and reuse practice is followed strongly.
3. Solid waste and Biomedical waste is managed properly and appreciated
4. Electricity consumption is more and non-controllable at some departments.
5. Use of CFC and LFD lamps is alternative to the large effect.
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 system 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 takes 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.

ANNEXURES



Layout of campus

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 is 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 the guidelines of BMW management and handling rules 2016.
  - Recyclable material is being handed over to an authorized agency for recycling.
  - General waste generated out of patients and relative's activity is handed over to Municipal Corporation, Sangli.
  - Disposal of BMW is outsourced to Surya Central Treatment Facility MIDC, Miraj

- **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 – River Water lifted from Krishna River from Nilaji Bamani approximately 6 km from Bharati Vidyapeeth (Deemed to be University) Medical Campus, Sangli.

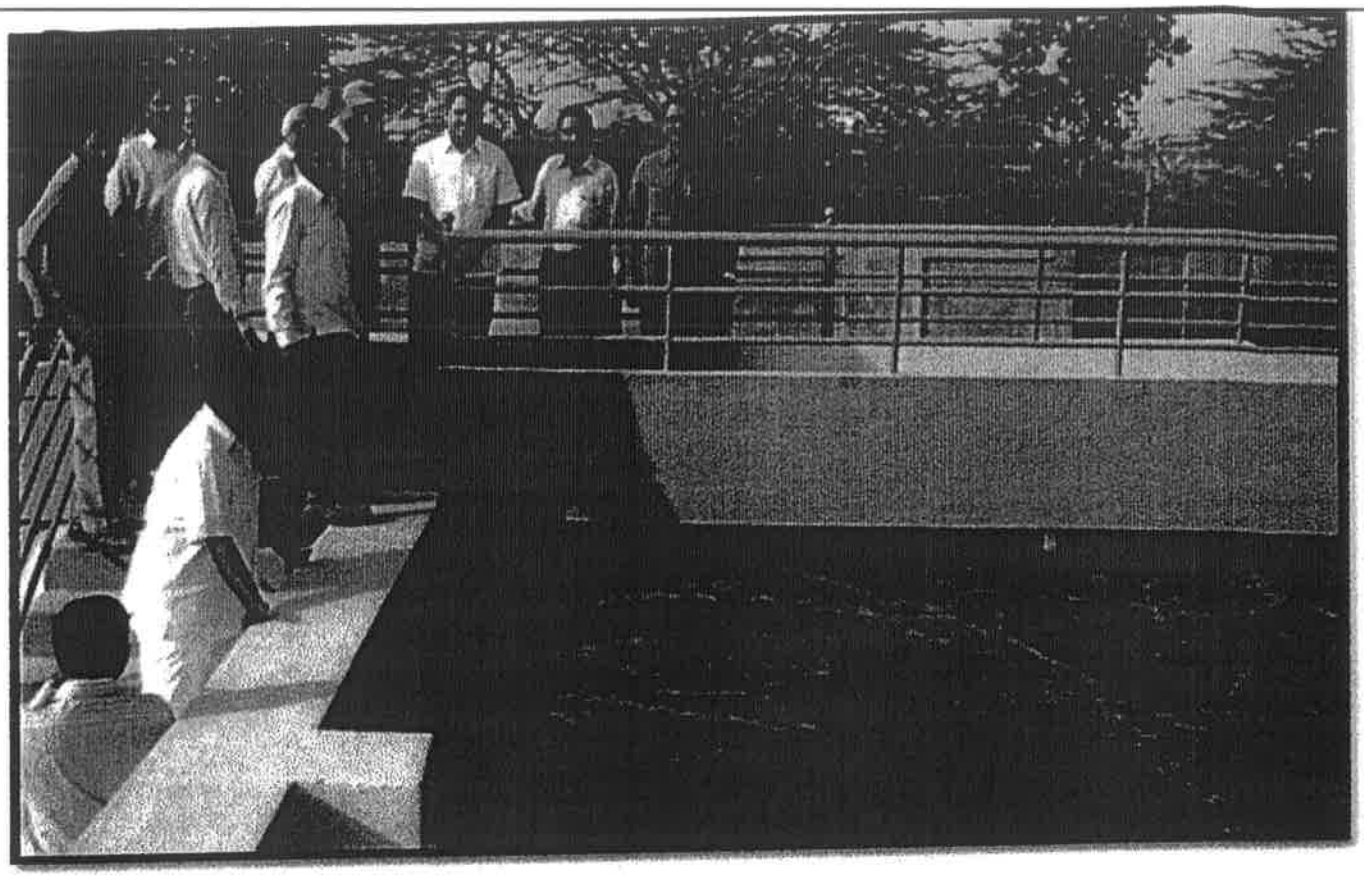
Process of WTP:

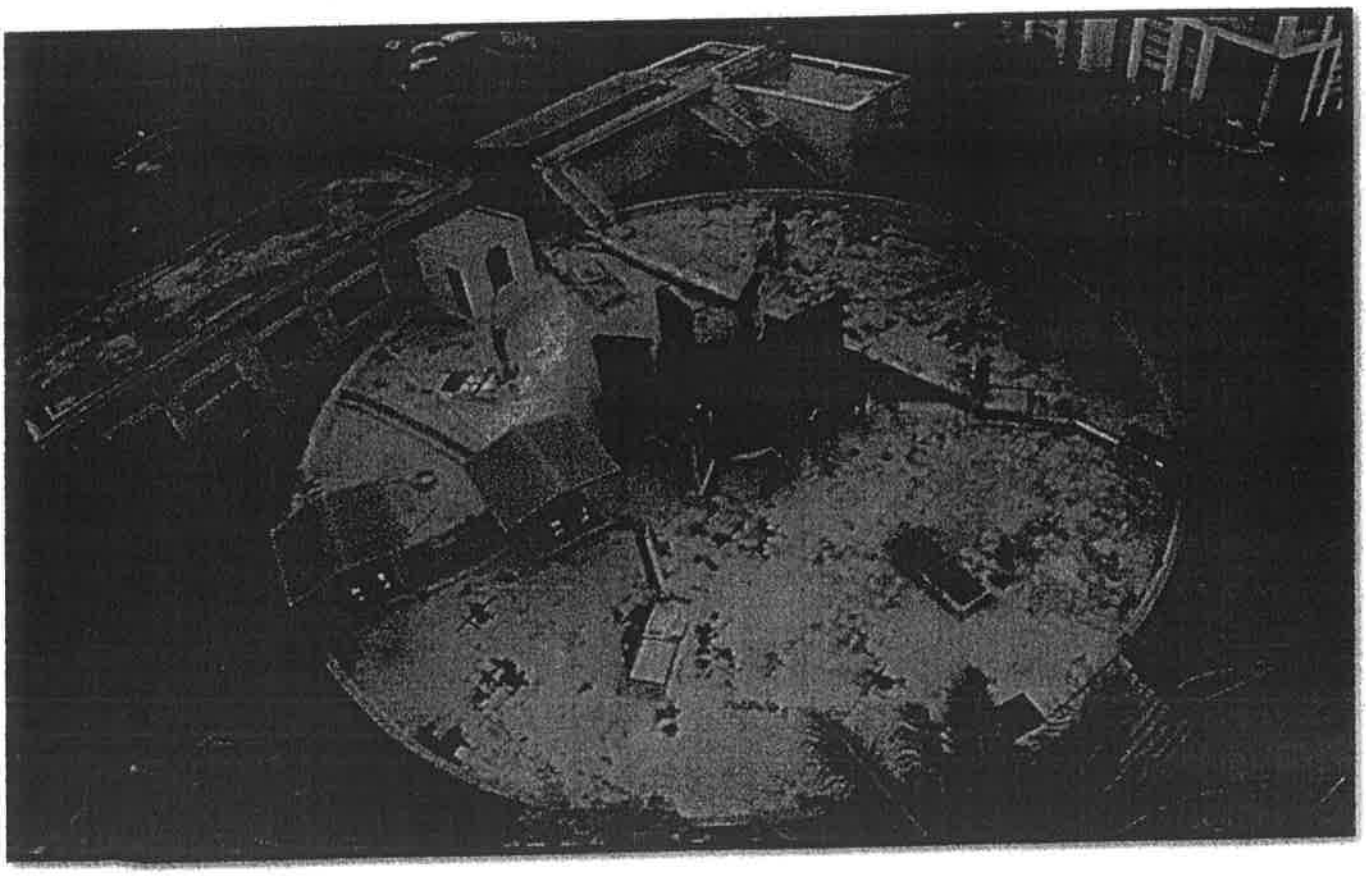
- First the water is collected in Raw Water Tank (1.5 Lakh capacity) in that bubbling aeration is provided.
- From Raw water tank the water goes to isolated tank. Having capacity 50000 litres. In that bubbling aeration is proved and dosing of non-ferric alum chemical is given. In rainy season for every 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:

Sr. No.	Filter water in feet	Water in Litres	Bleaching power in kg
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 Litres / day.
- Daily 4 Lakh litres 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 Bio Filter Phase – I in that about 80% pollution of wastewater is removed. The bio filter beds contain cow 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 Bio Filter Phase – I go to side sump tank. (capacity 40000 litres) From side sump tank the water is lifted again and send to Bio Filter Phase – II. Same process is carried out in Bio Filter Phase – II like Bio Filter Phase – I.

➢ Secondary Treatment:

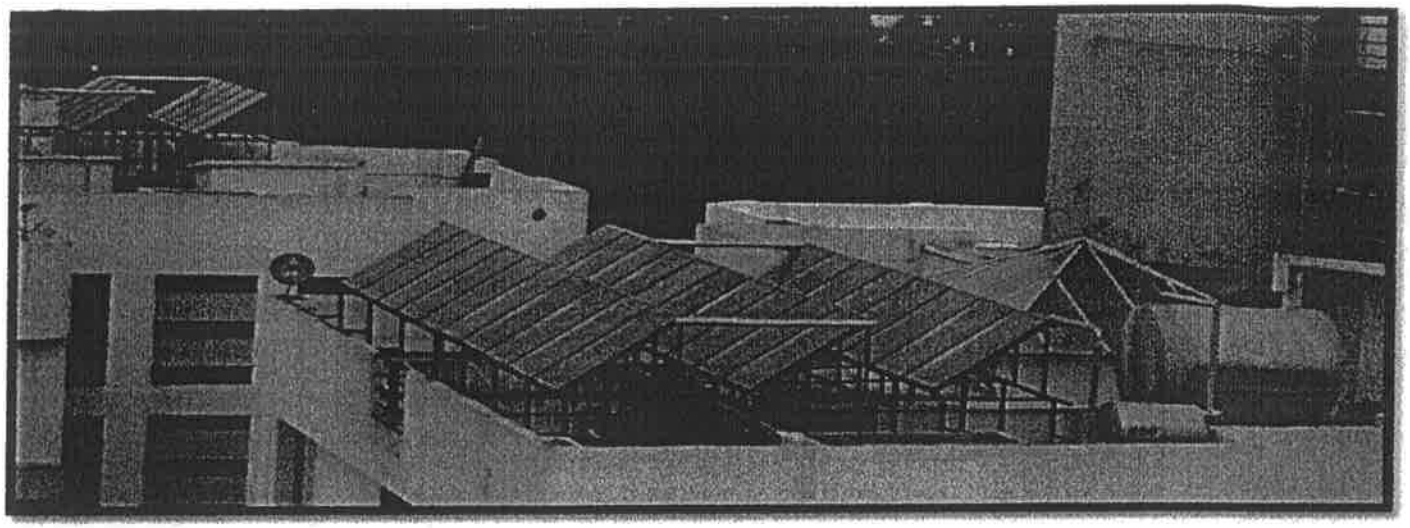
- From Bio Filter Phase – II the water goes in a chamber, in which non ferric alum dosing is done.
- Then this water goes to alum tank, in which coagulation and flocculation process takes place and the sludge is settled down. At the time of tank washing the sludge is removed.

➢ 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 litres)
- 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.

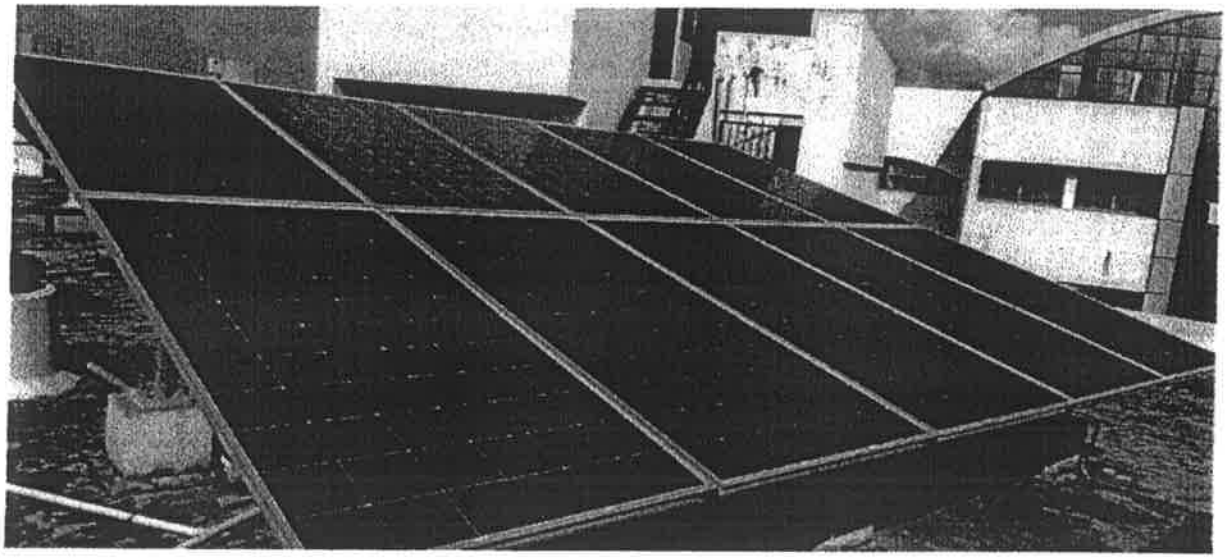
3. Solar water heating system:

- 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.



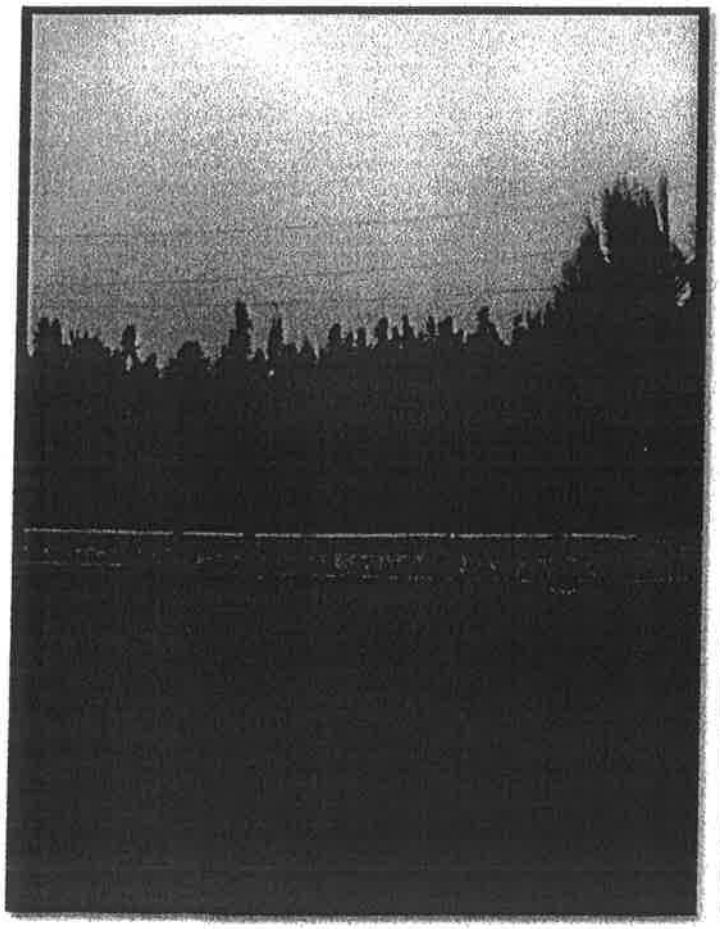
4. Solar Power Generation System:

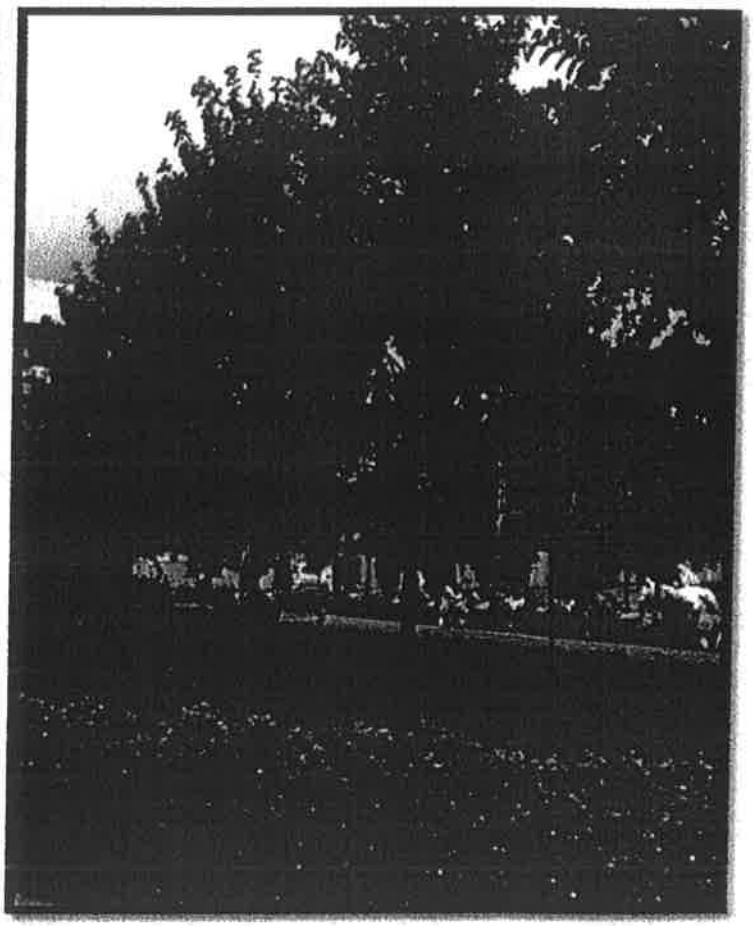
- Recently we have installed Roof Top Solar PV system of capacity 475 KW under Net metering arrangement for power generation.
- Considering future demand for energy, renewable solar energy is one of the best options which provide sustainable &economical energy solution.

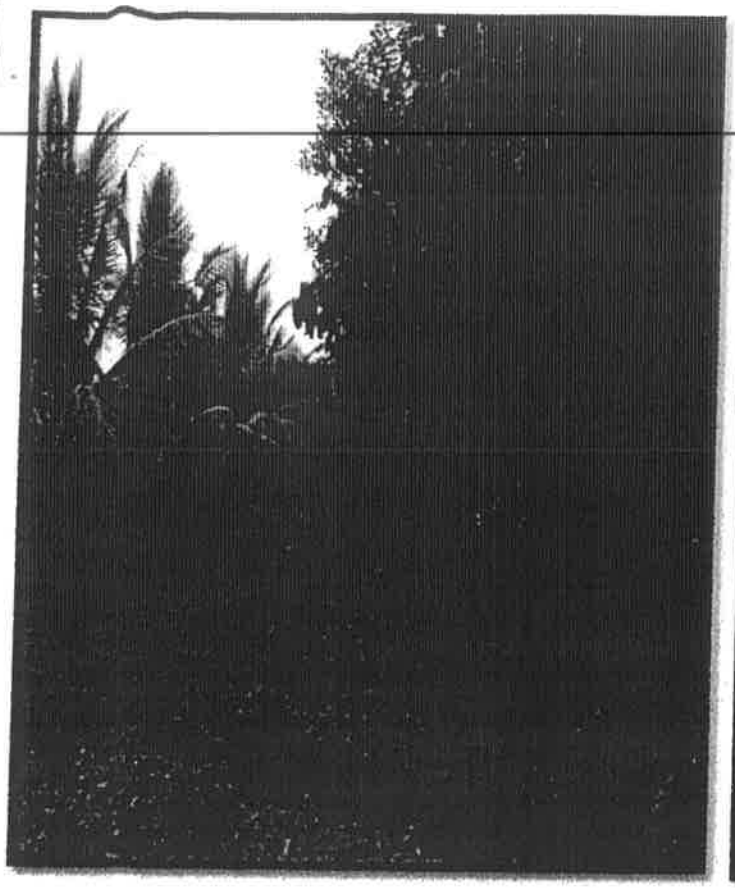


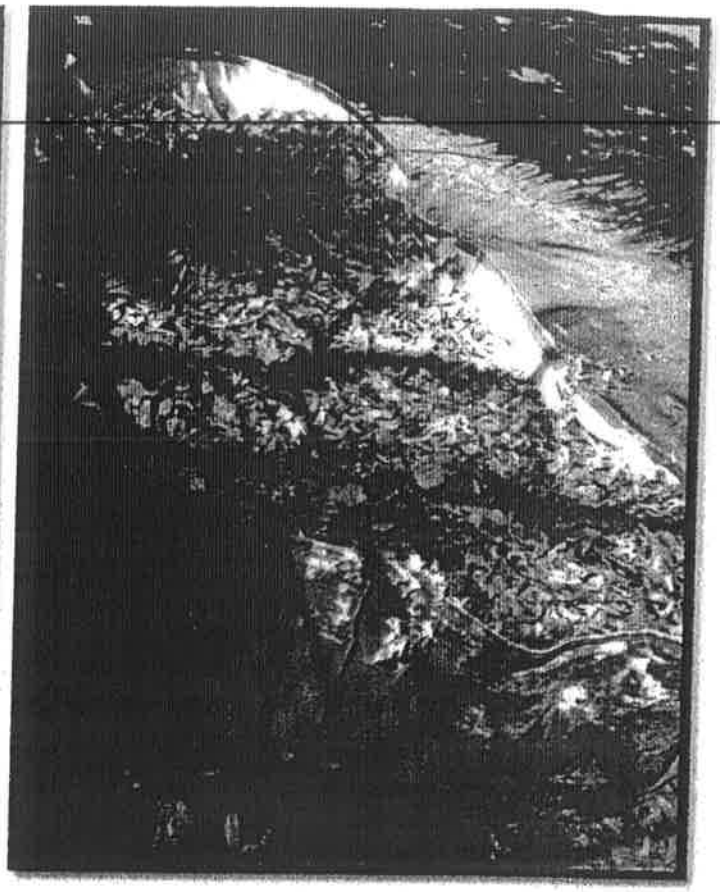
5. Green Campus:

- We maintain a lush green campus.
- There are more than 2000 trees and lawn of 7600 sq mt.
- 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.







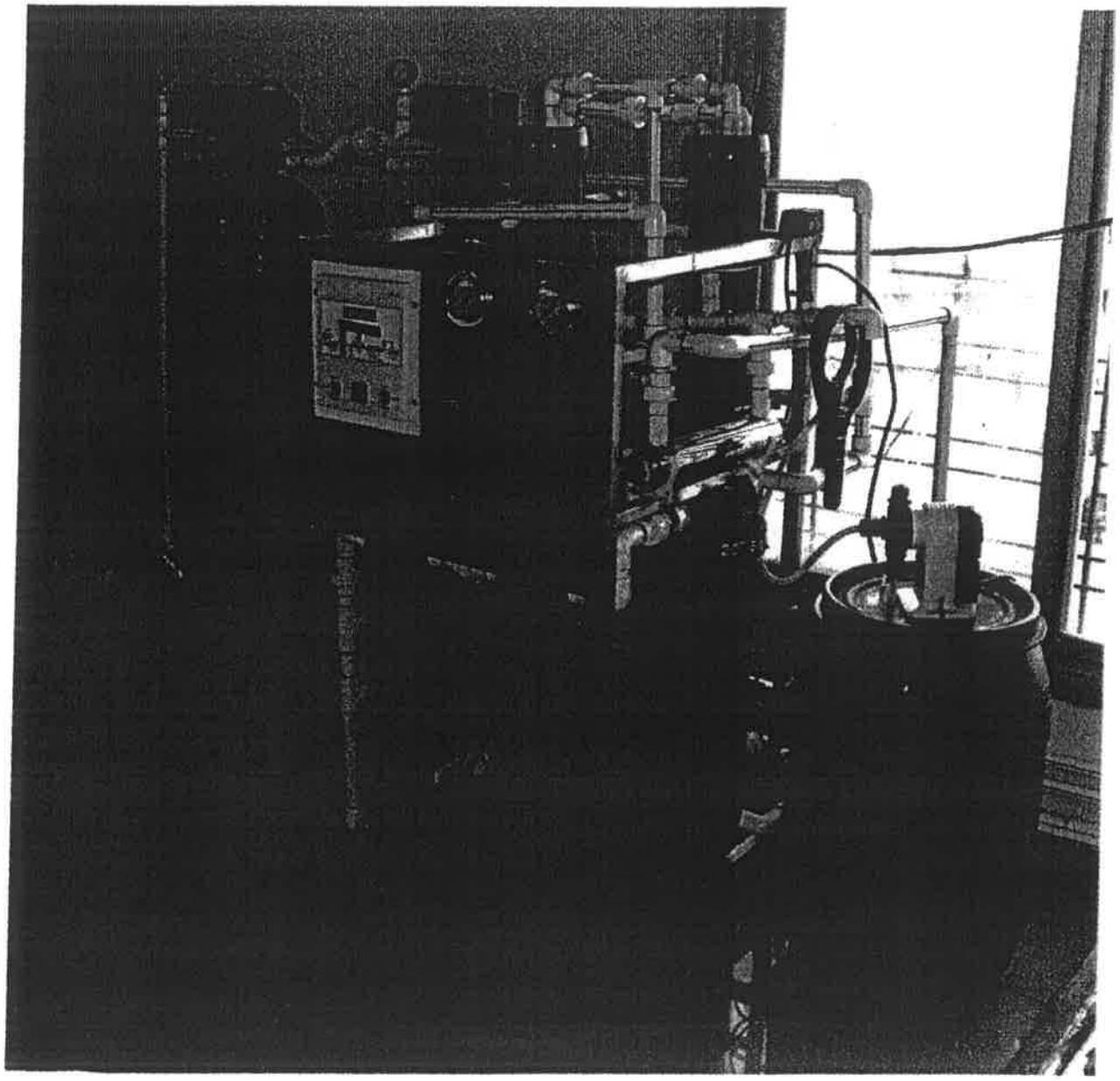


6. Bio-gas plant:

- 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.

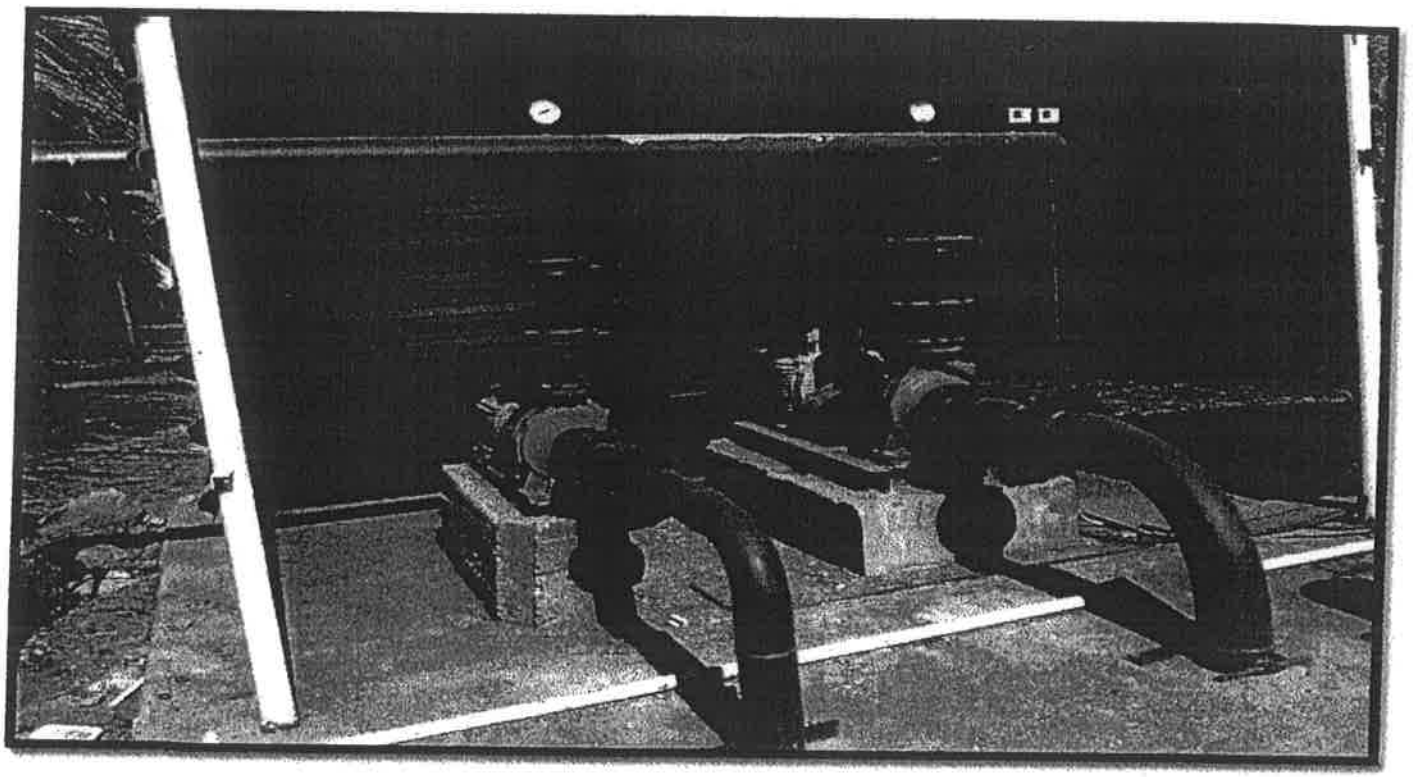
7. REVERSE OSMOSIS PLANT:

- We have installed six reverse osmosis plants 2 for boy's hostel, 3 for girl's hostel and one for dialysis unit in nephrology unit in the hospital
- Total Capacity is 5300 litters 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

The institute may monitor the environmental conditions in the respective campus 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. Ho-w 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^3. 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, and 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 caste etc.)
- **Green**: General waste
- **Red**: Microbiology and biotechnology waste, solid waste (Cotton, dressings, soiled plaster caste 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.

Sr. No.	Name of Plants and Trees	Quantity
1	Bahunia blakeana	210
2	Cordia sebestena	53
3	Cassia nodusa	60
4	Anthocephalus chinesis	40
5	Wodyetia bifurcate	19
6	Milligtonia hortensis	36
7	Filicium decipiens	20
8	Allistemon forgate	14
9	Brassiaa ctinophylla	4
10	Plumeria rubra	20
11	Azadirachta indica	50
12	Ficus religiosa	2
13	Ficus bengalensis	1
14	Delonixregia	2
15	Albiziasaman	5
16	Prunusdulsis	2
17	Araucaria cookill	3
18	Dypsislutescus	20
19	Umbrella tree	2
20	Tabubia argentina	50
21	Platoform tree	62
22	Ficus racemosa	3
23	Spathodea campanulata	7
24	Brucida angustifolia	26
25	Cocos nucifera	300
26	Annona squamosa	10
27	Annona reticulate	8
28	Manikara zapota	14
29	Solanum nigrum	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	Tamarindus indica	17
40	Albizzia richadiana	2
41	Anacardium occidentale	2
42	Chrysophyllum cainito	2
43	Apple boar	2
44	Mulpighia emarginata	2
45	Lihi tree	2
46	Sweet naringa	2
47	Paper lemon tree	4
48	Mangifera indica	30
49	Guava tree	12
50	Musa acuminata	20
51	Thuja orientalis	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	Mimusops elengi	18
65	Bottlebrush pulandi	5
66	London pine tree	1
67	Gold crist trees	7
68	Sakeshwar trees	25
69	Alstonia scholaria	5
70	Pimparni trees	16
71	Milletiapinnata	2
72	Gulbhendi trees	17
73	Michellia Champaca	3
74	Subabhul trees	2
75	Fillicium decipiens	20

76	Kadipatta tree	8
77	Shevaga (Drum-Stick) tree	2
78	Greville arobusta	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	Tabebui aargentina	9
90	Tabebuia avellanedae	6
91	Jatropha	20
	Total	**1954**

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, Bale, Nirgundi, etc.

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

100 Cocosnucifera plants were planted by the students at the time of "**Vruksha Dindi Abhiyan**".

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. Is 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.

M.S.E.D.C.L BILL CHART

Month	Unit	Bill Demand (KVA)	Bill Amount
Jan - 2021	2,91,804	673	38,93,570=00
Feb-2021	2,16,895	591	29,21,910=00
Mar - 2021	2,96,289	667	38,98,250=00
Apr - 2021	2,78,487	743	34,33,630=00
May - 2021	2,72,138	686	35,33,060=00
Jun - 2021	2,55,030	674	33,35,360=00
Jul - 2021	2,91,378	684	37,80,240=00
Aug - 2021	2,80,556	650	36,40,420=00
Sep – 2021	2,65,658	692	34,92,910=00
Oct - 2021	2,53,076	649	33,05,590=00
Nov - 2021	2,42,235	672	31,98,230=00
Dec - 2021	2,33,923	651	31,00,640=00

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, and 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 photo-voltaic cells for energy production.

We have installed on-grid solar power system which has capacity 475 KW. It helps us to reduce electricity bill to the tune of 8 lakh rupees per month herewith attached monthly consumption details as per actual reading.

Monthly Import/Export & Solar Generation Meter Reading

Month	Total Solar Generation Units	Total Amount Solar Generation Units Cost	Units Export	Units Imports	Total Current Consumption Cost
Feb - 2021	**44341**	6,35,470=00	10	203890	2921910=00
Mar - 2021	**70272**	9,83,576=00	85	278590	3898250=00
Apr - 2021	**73248**	9,69,009=00	65	259610	3435630=00
May- 2021	**67797**	6,42,378=00	160	254325	3533060=00
Jun - 2021	**52781**	7,59,391=00	420	232210	3335360=00
Jul - 2021	**50513**	7,07,709=00	220	270020	3780240=00
Aug - 2021	**54975**	7,71,180=00	120	259625	3640420=00
Sep – 2021	**50757**	7,10,598=00	250	248090	3492910=00
Oct - 2021	**68511**	9,68,060=00	600	233890	3305590=00
Nov - 2021	**53053**	7,52,291=54	965	225445	3198230=00

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 is 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. Re care -

vi. CSSR- MRI – O_2 plants, cooking, heating etc.

2. How does your college/ institute store water? Is 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 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.

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

Nearly 15000 kilos – litres 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