Anjuman-I-Islam's

INSTITUTE OF HOSPITALITY MANAGEMENT

GREEN AUDIT REPORT

2022-2023

PREPARED BY

QUALITY CARE ALLIANCE

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INSTITUTE OF HOSPITALITY MANAGEMENT (AIIHM)

92, Dr. D.N. Road, Opp. CSMT, Mumbai - 400001
Maharashtra, India

Prepared by

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ENERGY AIR QUALITY WATER WASTE

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EXECUTIVE SUMMARY

Green auditing is an essential step to identify and determine whether the institutions practices are sustainable and ecological. Traditionally, we were upright and efficient users of natural resources. But over the period of time, excessive usage of resources like water, electricity, petrol, etc. have become habitual for everyone especially, in urban and semi-urban areas. It is actually the right time to check if we (our process) are consuming more than required resources? Whether we are using resources sensibly?

Green audit standardizes all such practices and provides an efficient way to use natural resources. In the time of climate change and resource exhaustion it is necessary to re-check the processes and convert it in to green and sustainable. Green audit provides an approach for it. It also increases overall awareness among the folks working in institution towards the eco-friendly environment.

This is the first attempt to conduct green audit of this College campus for fulfilment of NAAC criteria. This audit was mainly focused on greening indicators like consumption of energy in terms of electricity, quality of soil, water usage, vegetation, waste management practices and carbon foot print of the campus. Initially a questionnaire was shared to know about the existing resources of the campus and resource consumption pattern of the students and staffs in the university.

CAMPUS INFORMATION

Green Audit Report of AIIHM MUMBAI has been prepared by Quality Care Alliance based on review of findings of internal green & environmental audits conducted by College, desktop review of documents/records, virtual tour of the College campus and telephonic interviews of faculty, non-teaching staff & students.

The audit was conducted in **March 2022.**

The Green Audit Report also presents green initiatives followed and taken up by the College and provides suggestions and recommendations to improve environmental sustainability.

About College (Campus Infrastructure)

College campus consists of two buildings, one is operational and another is under construction. As the under- construction building is non-operational, it is not considered in the Green Audit Scope.

College building has classrooms, well-equipped laboratories, a library and an auditorium. College Sports ground has indoor and outdoor games facilities. There are 4 gardens in the campus including an vertical garden. The area details of the College building is presented in Table 1.

Table1: Facilities Details 502,

Floor	Facilities
Ground floor	**Basic Training Kitchen 2, Bakery 2, 1 Auditorium**
First floor	**Advance Training Kitchen 1, Front Office Lab 2, Housekeeping Lab 2, Guest Room 2, Library, Training and Placement**
Second floor	**Savour Training Restaurant, IT Lab 2, Principal's Cabin, Staff Room, NAAC Room, Admin, Accounts and Reception, Girls' Locker Room, Boy's Washroom,**
Fifth floor	**Quantity Training Kitchen 2, Dining area 2, Classroom No 502, Boy's Washroom, Girl's Washroom**
Sixth Floor	**Classrooms 601, 602 & 603**
Terrace	**Water Tanks**

GREEN INITIATIVES BY CAMPUS

The premises were evaluated against various criterion by the National Assessment and Accreditation Council (NAAC). The major observations are.

- **Solid Waste Management**
  - Waste management is done by composting
  - One sided used paper is re-used for internal assessment and working.
  - There is ban on single use plastic and plastic crockery in the campus.

- **Tree Plantation Drives**
  - Six plantation drives were carried out in the current year in the Campus.
  - Plants survival rate is around 85%
  - Tulsi Van" initiated at CUG on 25th June 2021

- **Renewable Energy**
  - The college has a plan to install solar panels in future.
  - The quantity of plate waste {organic waste with higher starch contents) is negligible, consequently, there is no potential for biogas generation.
  - The plan has been proposed for Installing Compost pit.

- **Green Campus Initiative**
  - The movement of vehicles inside the campus is with vehicles of staff, faculties, students and guests are allowed to enter the campus. And, there is a provision for parking facility inside the campus.
  - There is restriction on the usage of plastic, which may be extended to minimization of usage of Single Use Plastic items in near future at campus.
  - The campus is surrounded by a lot of greenery, trees, and proper landscaping.

- **Environment & Energy Initiative**
  - The Institute has limited campus for green landscaping.
  - Small plants are planted in the compound.
  - In the periphery of the campus, along the rear and wings, a thick belt of large trees is planted to bring down noise and cut down dust storms.
  - Indoor plants can be potted along the corridors and entrance of the building.

- **Air Quality & Ventilation**
  - The class rooms and other area are well ventilated to ensure proper air quality.
  - The fans are appropriately installed to ensure proper air circulation
  - The indoor as well as outdoor plants have also been provided to improve the environment.

- **Lighting System**
  - The usage of natural light is optimized through well designed structure and windows
  - All the lamps are replaced with LED.
  - The switching of the lamps is done manually.

- **Water Quality & Conservation**
  - The water is supplied by the Corporation, which is a common practice in and in

Mumbai.
- Water purifiers & coolers are provided at convenient locations and on each floor.
- The distribution network and piping are more or less satisfactory and adequate.

- **Waste Management**
  - The water is discharged into the common municipal drain, which is a common practice in Mumbai.
  - The organic waste is segregated and disposed of through municipal waste.
  - The electronic gadgets / waste is either donated if useful or handed over to waste collectors.
  - The general solid waste is disposed of through Municipal Corporation.

- **Air Conditioning System**
  - The Air Conditioners are operated as required with manual control. The operation is minimal, consequently automation may not be economical.
  - The room temperature is maintained at 24 to 25 °C, which is well within the recommended values.
  - The Air Conditioners are serviced regularly and properly maintained.
  - Most of the Air conditioners units are energy efficient with star ratings of 3 and above.

- **Infrastructure usage**
  - Ramps are provided on the ground floor to address the needs of differently able people.
  - The on-campus movement is distributed with multiple staircases.
  - There are adequate fire extinguishers located at key areas. The college has initiated appropriate measures to meet the safety requirement.
  - The draining system for washrooms is efficient and effective.
  - No seepage was observed in the building premises.

- **Green IT culture**
  - Energy efficient computers and laptops have been procured.
  - Electronic communication is encouraged to minimize usage of papers.
  - Most of the papers are reused for doubled sided printing to further minimize usage of paper

GREEN AUDIT - ANALYSIS

GENERAL INFORMATION

1. Was any Green Audit conducted earlier?

No, this is very first time AII-IHM has gone for External Green Audit in a systematic way of monitoring their environmental eminence.

2. What is the total strength (people count) of the Institute?

Students

Male: 344 Female: 7 7 Total: 421

Teachers (including guest faculty)

Male: 15 Female: 15 Total: 3 0

Non-Teaching Staff

Male: 17 Female: 4 Total: 2 1

3. What is the total number of working days of your campus in a year?

There are two hundred and sixty days that are working in a year.

4. Where is the campus located?

The campus is located in 92, Dr. D. N. Road, Opp. Chhatrapati Shivaji Maharaj Terminus, Fort, Mumbai, Maharashtra 400001

5. Which of the following are available in your institute?

Garden area	*Available*
Playground	*Available*
Kitchen	*Available*
Toilets	*Available*
Garbage Or Waste Store Yard	*Available*
Laboratory	*Available*
Hostel	*Available*

6. Which of the following are found near your institute?

Municipal dump yard	*Not in vicinity of institute*
Garbage heap Public convenienceSewer line stagnant water Open drainage	*No Garbage heaps*
Industry – (Mention the type)	*Public convenience is available*
	Approximately 4 KM sewer line within campusNo stagnant water
	No
Bus / Railway station	*Chhatarapati Shivaji Maharaj Terminus right opposite College*
	Available

1.2 WASTE MINIMIZATION AND RECYCLING

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

Yes, Solid waste, waste, paper, plastic, horticulture, laboratories waste, e-waste, etc.

2. What is the approximate amount of waste generated per day? (in KG approx.)

Biodegradable waste - 85 Kg

Non-biodegradable waste - 18 Kg
Hazardous Waste < 2 Kg

Others - 2 Kg

3. How is the waste managed in the institute? By Composting, Recycling, Reusing,Others (specify)

- *Composting is done for horticulture waste management.*
- *Aerobin Composters are installed for bio-degradable waste management.*
- *Diluted solutions are used instead of concentrated solutions in laboratories*
- *One side printed Paper is re-used for internal communication.*
- *Solid waste is taken by Municipal Corporation after collecting the BMW separately*
- *Single use plastic is banned in the campus*

4. Do you use recycled paper in institute?

Yes, one side printed Paper is re-used for internal communication in the campus

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

Following are the ways through which University is spreading the awareness about recycling

- *Poster competition activities*
- *Campaigns*
- *Rally*
- *Webinars and seminars*

6. Can you achieve zero garbage in your institute? If yes, how?

Not yet achieved. Possible through waste management policy and planning.

1.3 GREENING THE CAMPUS

1. Is there a garden in your institute?

Yes, about 59201.51 Sq ft areas are developed as Gardens.

2. Do students spend time in the garden?

Yes, students spend around 2-4 Hours during winters.

3. Total number of Plants in Campus?

Plant type with approx. count	
Full grown Trees	*18*
Small Trees	*7*
Hedge Plants	*3877*
Grass Cover SQM	*59201.51 SqFt*

4. Does the Institute has any Horticulture Department? (If yes, give details)

Yes, Total 7 staff is deployed in horticulture department

5. How many Tree Plantation Drives organized by campus per annum?

Six tree Plantation Drives are organized by campus in the last FY. Total 30 trees and 20 hedge plants planted in this Financial Year with more than 85% survival rate.

6. Is there any Plant Distribution Program for Students and Community?

Yes, University has a practice where all guests are given a planter as a gift rather than a bouquet of flowers. Besides this landscape, Plantation is also done in Kakanu Tarapur village by the University

8. Is there any Plant Ownership Program?

No

1.4 WATER AND WASTEWATER MANAGEMENT

1. List uses of water in your institute

Basic use of water in campus:

***Drinking** – 46.44 KL/month*

***Gardening** – 990.00 Kl/month*

***Kitchen and Toilets** – 304.98 KL/month*

***Others** – 111.02 KL/month*

***Hostel** – 1671.30 KL/Month*

Total = 3123.75 KL/Month

2. How does your institute store water? Are there any water saving techniquesfollowed in your institute?

There are total 35 tanks of 1000 litres tanks on terrace.
Along with this, there are underground tanks of capacity 25000 litres and 40000 litres

Saving Techniques

- *Avoid overflow of water controlled valves are provided in water supply system.*
- *Close supervision for water supply system.*
- *Water Conservation awareness for new students*
- *Sprinklers usage for gardening and grass cover*

3. Locate the point of entry of water and point of exit of waste water in your

institute.

Entry *- Water comes from Brihanmumbai Municipal corporation and 2 bore wells*

Exit*- From Toilets, bathrooms, Hostels and Labs through covered drainage which isconnected to sewage*

4. Write down ways that could reduce the amount of water used in your institute

Basic ways:

- *Close the taps after usage*
- *Water Conservation awareness for new students*
- *Maintenance and monitoring of valves in supply system to avoid overflow, leakage and spillage*
- *In new block, push tap are installed to save water*

1.5 CARBON FOOTPRINT - EMISSION & ABSORPTION

1. Electricity used per year - CO2 emission from Electricity

(Electricity used per year in kWh/1000) x 0.84
678684.00 kWh/1000 x 0.84

= 678684.00 /1000x0.84

= 570.09 ton

2. LPG/PNG/CNG used per year - CO2 emission from LPG/PNG/CNG

(LPG used per year in KG) x 2.99
2280 x 2.99

=2280 x 2.99

=6.82 ton

(CNG used per year in KG) x 2.25

488.6 x 2.25

=488.6 x 2.25

=1.10 ton

3. Transportation per year (car) CO2 emission from transportation (Bus and Car)

MOSTLY USE PUBLIC TRANSPORT SYSTEM. i.e. Bus, Railways

1. GREEN AUDIT – INTRODUCTION

1.1 Green Audit - An Effective Efforts towards Environment Sustainability & Energy Conservation

Modernization and industrialization are the two important outputs of the twentieth century that have made human life more luxurious and comfortable. Simultaneously, they are responsible for voracious use of natural resources, exploitation of forests and wildlife, producing massive solid waste, polluting the scarce and sacred water resources, and finally making our mother Earth ugly and inhospitable. Today, people are getting more familiar with global issues like global warming, greenhouse effect, ozone depletion, climate change, etc. Now, it is considered as a final call by mother Earth to walk on the path of sustainable development. The time has come to wake up, unite and combat together for a sustainable environment.

Considering the present environmental problems of pollution and excessive use of natural resources, Honorable Prime Minister, Shri. Narendra Modiji has declared the Mission of Swachch Bharat Abhiyan. Also, University Grants Commission has mentioned the “Green Campus, Clean Campus" mission mandatory for all higher educational institutes. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

Green Audit is the most efficient ecological tool to solve such environmental problems. It is a process of regular identification, quantification, documenting, reporting and monitoring of environmentally important components in a specified area. Through this process, the regular environmental activities are monitored within and outside of the concerned sites which have direct and indirect impacts on the surroundings. A green audit can be one of the initiatives for such institutes to account for their energy, water resource use as well as wastewater, solid waste, hazardous waste generation. The green Audit process can play an important role in the promotion of environmental awareness and sensitization about resource use. It can create consciousness towards ecological values and ethics. Through the green audit, one can get direction about how to improve the condition of the environment.

1.2 Why Green Audit

Green auditing is the process of identifying and determining whether an institution’s practices are eco-friendly and sustainable. Traditionally, we are good and efficient users of natural resources. However, over the period of time excess use of resources like energy, water, chemicals are become habitual for everyone especially, in common areas. Now, it is necessary to check whether our processes are consuming more than the required resources? Whether we are handling waste carefully? Green audit regulates all such practices and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion, it is necessary to verify the processes and convert them into green and clean ones. The green audit provides an approach for it. It also increases overall consciousness among the people working in institutions towards an environment.

1.3 Goals of Green audit

College has conducted a green audit with specific goals as:

- Assess facility of different types of waste management.
- Increase environmental awareness throughout campus.
- Identification and documentation of green practices followed by university.
- Identify strengths and weaknesses in green practices.
- Conduct a survey to know the ground reality about green practices.
- Analyze and suggest solutions for problems identified from the survey.
- Identify and assess environmental risk.
- The long-term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental issues.
- To motivate staff for optimized sustainable use of available resources.

Objectives of Green audit

- To examine the current practices which can impact the environment such as resource utilization, waste management, etc.
- To prepare an Environmental Statement Report on green practices followed by different departments, support services, and administration building.
- To set goals, vision, and mission for Green practices on the campus.
- To identify and analyze significant environmental issues.
- To establish and implement Environmental Management Plan in various departments.
- To assess for better performance in green practices and its valuation.

1.4 About Criteria 7 of NAAC

Universities are playing a key role in the development of human resources worldwide. Higher education institutes campus run various activities with the aim to percolate the knowledge along with practical dimension among the society. Likewise, different technological solutions related to the environment are also provided by the higher education institutes. Different types of evolutionary methods are used to assess the problem concerning the environment. It includes Environmental Impact Assessment (EIA), Social Impact Assessment (SIA), Carbon Footprint Mapping, Green audit, etc.

National Assessment and Accreditation Council (NAAC) is a self-governing organization that rated the institutions according to the scores assigned at the time of accreditation of the institution. Green Audit has become a mandatory procedure for educational institutes under Criterion VII of NAAC. The intention of the green audits is to upgrade the environmental condition inside and around the institution. It is performed by considering environmental parameters like water and wastewater accounting, energy conservation, waste management, air, noise monitoring, etc. for making the institution eco-friendlier.

Students are the major strength of any academic institution. Practicing green action in any educational institution will inculcate the good habit of caring for natural resources in students. Many environmental activities like plantation and nurturing saplings and trees, Cleanliness drives, Bird watching camps, no vehicle day, Rainwater harvesting, etc. will make the students good citizens of the country. Through Green Audit, higher educational institutions can ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

1.5 Benefits of Green Audit to an Educational Institute

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

- It would help to protect the environment in and around the campus.
- Recognize the cost-saving methods through waste minimization and energy conservation.
- Empower the organization to frame a better environmental performance.
- It portrays a good image of the institution through its clean and green campus.
- More efficient resource management
- To create a green campus
- To enable waste management through reduction of waste generation, solid and waste
- To create plastic-free campus and evolve health consciousness among the stakeholder
- Recognize the cost-saving methods through waste minimizing and managing
- Authenticate conformity with the implemented laws
- Empower the organizations to frame a better environmental performance
- Enhance the alertness for environmental guidelines and duties
- Impart environmental education through systematic environmental management approach and Improving environmental standards
- Benchmarking for environmental protection initiatives
- Financial savings through a reduction in resource use
- Development of ownership, personal and social responsibility for the College and its environment
- Developing an environmental ethic and value systems in youngsters.
- Green auditing should become a valuable tool in the management and monitoring of environmental and sustainable development programs of the College.
- Finally, it will help to build a positive impression through green initiatives for the upcoming NAAC visit.

1.6 Role of Educational Institutions in India

Educational institutions are playing important role in a nation's growth and development which starts from maintenance of green campus without harming the environment. A clean and healthy environment in an Organization determine effective learning and provides a conducive learning environment to the students. Educational institutions are asked both Central and State Governments to give eco-friendly atmosphere to the stakeholders. In addition, all the Educational institutions are asked to save the environment for future generations and to solve the environmental problems such as recycling of solid wastes and wastewaters, plastics usage, napkin disposal water consumption, water harvesting and storage mechanisms, etc. through Environmental Education. Implementing Swachh Bharath Abhiyan Scheme launched by the Indian Government plays by the Educational institutions plays a major role in terms of giving neat and clean environment to tribal, rural and urban people across the country, besides, the regular and conventional activities carried out by Nature club, Eco club, Science club, Fine Arts club, Flora and Fauna club, You Red cross unit, etc. Seminar, Conference, Workshop, training and awareness programmes on Biodiversity conservation education, environmental awareness programmes, etc. may be conducted periodically by the Management and Administrative people of an Organization to the stakeholders.

Green campus auditing is a systematic process whereby an organization's environmental performance is checked against its environmental policies and compliances of the Government guidelines. This audit process is definitely useful for the Educational institutions to maintain the

campus neatly and can give pure atmosphere to the students and staff members including Management people. It is like an official examination of the environmental effects on an organization's campus as per the Government guidelines. The audit report may be useful to improve the organization's campus significantly by following the recommendations and suggestions given in the report.

1.7 Green Campus and Environment Policy

The green campus and environment policy aims to provide an education and awareness in a clean and green environment to the stakeholders with regards to environmental compliance. The scope of this policy applies to all employees and students of the Institution to provide an eco-friendly atmosphere. Policy making dealt with cleanliness on the campus is maintained through proper disposal of wastes and steps taken to recycle the biodegradable wastes. Utilization of eco-friendly supplies and an effective recycling programme to maintain the campus free from hazardous wastes. The concept of eco-friendly culture is disseminated among the students as well as rural community through various awareness programmes, seminars / conferences, reuse and recycle the waste materials. Attempts is made to limit energy usage and also replace non-renewable energy sources with renewable energy sources. The Head of the Organization, Department Heads and Senior Managers including Management Representatives are responsible for monitoring the go green initiatives of the College / College and maintain a clean/green campus. In addition, the staff and student volunteers from Nature club, Eco clubs, Science club, Fine Arts club, Youth Red cross unit, units are also responsible for the implementation of the green campus and environment policy in the Organization.

1.8 Environment Friendly Campus

The organization is responsible to provide an eco-friendly atmosphere to the stakeholders along with making good drinking water facility to the students and staff members. Vermi compost for the cultivation of plants should be adopted. All non-compostable, single-use disposable plastic items, single-use plastic utensils, plastic straws and stirrers should be avoided. Education on the commitment to plastic-free alternatives for all incoming and current students, staff and faculty should be undertaken. Reduction of use of papers alternated with e-services and e-circulars, etc. and proper disposal of wastes, recycling and suitable waste management system should be taken into consideration.

1.9 Infrastructure & Safety

Movement on-campus (Distributed / non-distributed leading to crowds)

- The premises are provided with multiple staircases with necessary entrances to ensure quick and effective movement in normal as well as emergency situations.
- Staircases are fitted with railings for safety.
- The movement of vehicles inside the campus is with vehicles of staff faculties, students and guests is permitted.
- There is restriction on the usage of plastic, which may be extended to completely ban plastic usage inside the campus.

Firefighting & fire escape system:

There are efficient fire extinguishers in the premises, which are checked / refitted as per the suppurated frequency.

- The premise is provided with multiple staircases with requisite entrances to ensure quick and effective movement in emergency conditions.

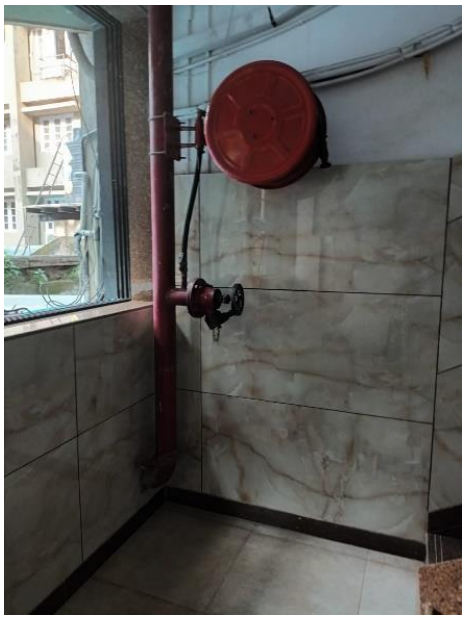
Draining system:

- The drains from the washrooms and other areas are property collected and disposed

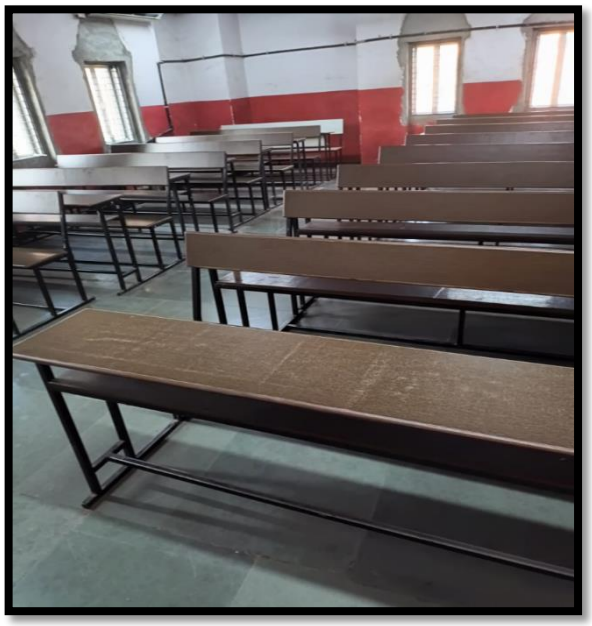
- **Seepage in the building:**
- The premise was visually inspected for seepage. No seepage was observed in any of the places.

Green Culture

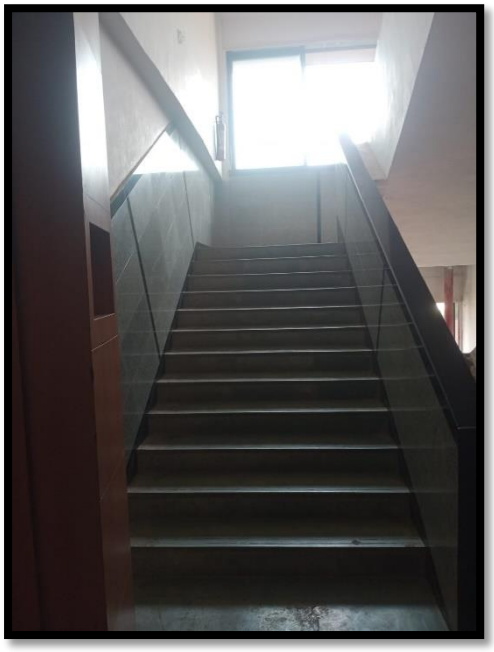
- The LED / LCD monitors laptops have been procured which are efficient
- These monitors are not only energy efficient but also generate minimal heat and cut down on air conditioning load,
- Electronic communication is encouraged to minimize usage of papers.
- Most of the papers are reused for doubled-sided printing to further minimize usage of paper.
- The following steps may be initiated to further enhance the efficiency of the systems.
- An efficient power management system is incorporated.
- Switch off the display if not in use.
- Put the computer in sleep / switch off the machines, if not used for prolonged periods.
- Optimize the brightness of the screen.
- Discourage use of screen savers, which has similar power consumption.
- Paper-less communication
- The major internal as well as external communication is through electronic media.
- Re-using one sided paper for printing:
- It was observed that two sides printed on the back side of used paper in more than 80 % of the cases.

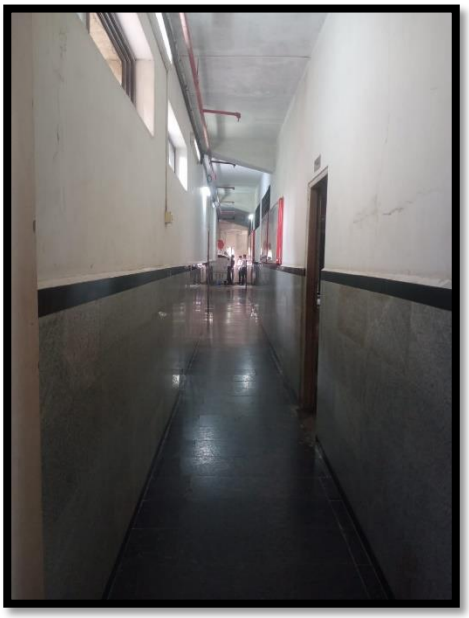


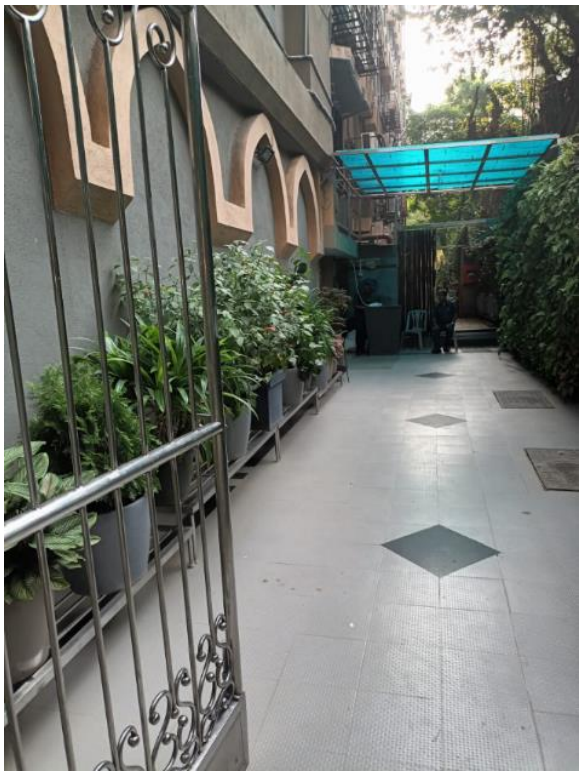
Fire Safety Equipments



Sunlight in Corridor







Inside College - Entry

2. GREEN AUDIT METHODOLOGY

2.1 Pre Audit Stage

A pre-audit meeting provided an opportunity to reinforce the scope and objectives of the audit and pre-audit discussions were held on the basis of green initiatives taken and the current scenario of the College campus. This meeting is an important prerequisite for the green audit because it is the first opportunity to understand the concerns. It was held with the concerned person of the College regarding initiatives taken by the College. The meeting was an opportunity to gather the information that the audit team can study before arriving on the site. The audit protocol and audit plan were handed over at this meeting and discussed in advance of the audit itself. The pre-audit meeting was conducted successfully and necessary documents were collected directly from the College before the initiation of the audit processes. The actual planning of audit processes was discussed in the pre-audit meeting. An Audit team was also selected in this meeting with the help of staff and the College management. The audit protocol and audit plan were handed over at this meeting and discussed in advance of the audit itself.

2.2 Management Commitment

The Management of the College has shown a commitment towards green auditing during the pre-audit meeting. They were ready to encourage all green activities. It was decided to promote all activities that are environmentally friendly such as awareness programs on the environment, campus farming, planting more trees on the campus, etc., after the green auditing. The management of the College was willing to formulate policies based on a green auditing report.

2.3 Objectives of the study

A clean and healthy environment aids effective learning and provides a conducive learning environment. There are various efforts around the world to address environmental education issues. Green Audit is the most efficient and ecological way to manage environmental problems. It is a kind of professional care that is the responsibility of each individual who is part of economic, financial, social, environmental factors. It is necessary to conduct a green audit on a College campus because students become aware of the green audit, its advantages to saving the planet and they become social and responsible citizens of our country. Thus Green audit becomes necessary at the College level. The broad objectives are as follows.

- Diagnosing the environmental problems to eliminate them.
- Environmental education through a systematic environmental management approach.
- Improving environmental standards.
- Benchmarking for environmental protection initiatives.
- Efficient utilization of resources.
- Financial savings through a reduction in resource use.
- Curriculum enrichment through practical experience.
- Development of ownership, personal and social responsibility for the College and its environment.
- Developing environmental ethics and value systems in young people.
- Providing certain recommendations based on environmental audit reports.
- Ensuring compliance, not only with laws, regulations, and standards but also with company policies and the requirements of an Environmental Management System (EMS) standard.
- Enabling environmental problems and risks to be anticipated.
- To demonstrate that College is aware of its impact upon the environment.

2.4 Audit Phase

Green Audit was done with the help of co-associates involving different student groups, teaching, and non-teaching staff. The green audit began with the teams walking through all the different facilities at the College, determining the different types of appliances and utilities as well as measuring the usage per item (Watts indicated on the appliance or measuring water from a tap) and identifying the relevant consumption patterns (such as how often an appliance is used) and their impacts. The staff and learners were interviewed to get details of usage, frequency, or general characteristics of certain appliances. Data collection was done in the sectors such as Energy, Waste, Green Area, Carbon footprint, and Water use. College records and documents were verified several times to clarify the data received through surveys and discussions.

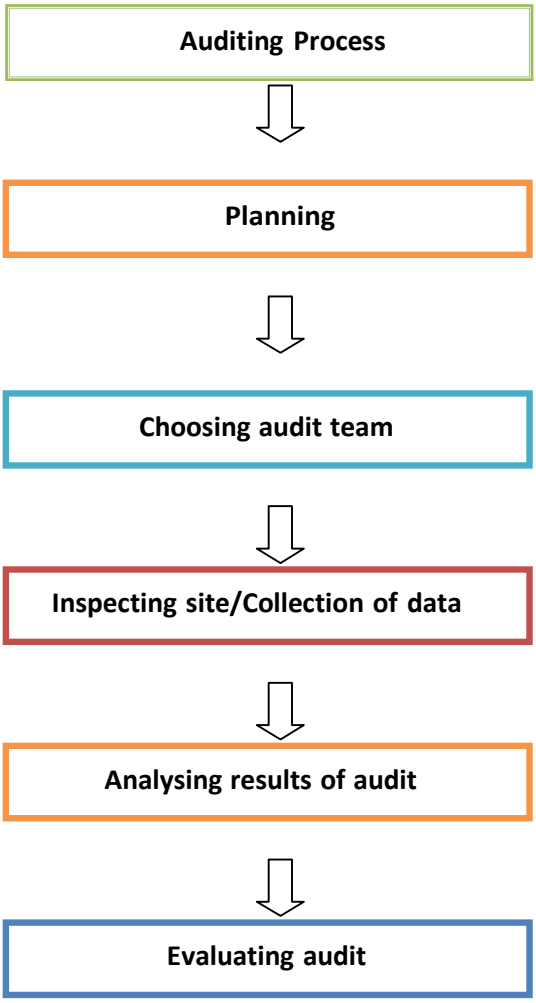
2.4.1 Methodology

The Management of the College has shown a commitment towards green auditing during the pre-audit meeting. They were ready to encourage all green activities. It was decided to promote all activities that are environmentally friendly such as awareness programs on the environment, campus farming, planting more trees on the campus, etc., after the green auditing. The management of the College was willing to formulate policies based on a green auditing report. In order to perform green audits, the methodology included different tools such as preparation of questionnaires, physical inspection of the campus, observation, and review of the documentation, interviewing key persons, and data analysis, measurements, and recommendations. The study covered the following areas to summarize the present status of environmental management on the campus:

- Energy Management
- Water Management
- Waste Management
- Environment Management

2.4.2 Methodology – Step by Step

The audit process was carried out in three phases. At first, all the secondary data required for the study was collected from various sources, like concerned departments such as engineering cell, horticulture section, etc. A broad reference work was carried out to clear the idea of green auditing. Different case studies and methodologies were studied and the following methodology was adopted for the present audit. The methodology of the present study is based on onsite visits, personal observations, and questionnaires survey tools. Initially, based on data requirements, sets of questionnaires were prepared. The surveyors then visited all the departments of the College and the questionnaires were filled. The generated data is subsequently gathered and used for further analysis. From the outcome of the overall study, a final report is prepared.



2.4.3 Onsite Green Campus Audit activities

The opening meeting is the first step between the audit team and auditee. In this meeting, the purpose of the audit, the procedure is to be followed for the conduct of the audit, document verification and the time schedules were discussed in brief along the Management Representatives.

Site inspection is the second step for onsite activity. In this step, the Audit team members visited different sites in AIIHM College and sufficient photographs were taken then and there for preparing the audit report.

During the onsite phase of visit, it is vivid how the various facilities made by AIIHM College Management to the stakeholders without disturbing the landscape, natural topography and vegetation to ensure the green campus.

It is observed how the environment is protected in the campus and by what means an eco-friendly atmosphere is being given to the stakeholders. It assessed the strengths and weaknesses of the Auditee's Management controls and risks associated with their failure in Green campus facilities were recorded.

Gathering audit evidence ie, collecting data and information from the auditee as per the audit protocol were carried out.

An exit meeting was conducted to explain the findings of the audit with the Management Representatives and staff members along with the audit team in brief.

2.5 Climatic conditions

Temperature begins increasing after March. April is the hottest month with near daily maximum temperature of 38.2°C and minimum of 25-26°C. The maximum and minimum temperature may go up to 37°C and 16°C; respectively. Due to the presence of the mountain pass major parts of the district from the south west monsoon in the months from June to August. The rainfall of the south west monsoon is irregular as the masses of clouds are intercepted only very little rain in September. After a warm, humid September, the regular monsoon starts from October lasting till early November. In October north east monsoon sets in heaviest rains are usually or the end of October and throughout November. Out of the total rainfall 25% is received during south west monsoon 49% during October and November and remaining 21% during September.
Annual rainfall is about 60-70 cm, although this rainfall is not enough to sustain the city for the entire year.

Soil edaphic and environmental parameters of AIIHM College

S.No	Details of Parameters	Data collected
Soil edaphic parameters		
1.	Soil pH	6.33
2.	Soil types	Clay, sandy loam and alluvial
3.	Total organic carbon	4.56
4.	Electrical conductivity	0.52-
5.	Water holding capacity	40.23%
6.	Total Nitrogen	3956 ppm
7.	Available Phosphorous	14.56 ppm
8.	Exchangeable Potassium	19.56 ppm
Environmental parameters		
1.	Minimum Temperature	16-22°C
2.	Maximum Temperature	25-37°C
3.	Minimum Relative humidity	66-80%
4.	Maximum Relative humidity	7-100%
5.	Annual Average Rainfall	60-70 cm
6.	Annual Average Sunshine	3-6 hrs/day
7.	Wind speed	15.2-17.8 km/h

2.6 Qualitative Measurements

S.No	Requirements and checklists of the audit	Conformity		
		Yes	No	NA
1.	Have internal Green campus audit procedures been developed and implemented in the Organization?	☐		
2.	Have programmes for the achievement of Green campus Objectives and targets been established and implementedas on today?	☐		
3.	Whether Green campus audit and Environment audit are simultaneously carried out or separately carried out?	☐		
4.	Whether Indian Biodiversity Act as per the Ministry ofEnvironment, Forests and Climate Change, New Delhi,Wildlife protection act and World & Indian Green Building Council concepts followed?	☐		
5.	Have responsibilities been assigned for programmes attach appropriate function and level? (Environmental Engineer & Agriculture Staff working for environment monitoring)	☐		
6.	Are the following environmental aspects considered insufficient detail?			
	a. Drinking water / RO water / Borewell water / Openwell water / Pond water / Municipal or Corporation water use and to check quality of water through Physic-chemical properties analysis	☐		
	b. Wastewater treatment facility	☐		
	c. Sufficient number of trees, shrubs, herbs and lawns	☐		
	d. Solid waste management facility	☐		
	e. Availability of Biogas plant		☐	
	f. Rain harvesting system, water reservoirs, etc	☐		
	f. Aquarium and aquatic (hydrophytes) plants	☐		
	g. Establishment of terrace garden, herbal garden,kitchen, zodiac, ornamental gardens, etc.	☐		
	h. Natural Topography or Forest, Planted vegetation	☐		
	i. Water well, Bore well, lake, water reservoir facility	☐		
	j. Water consumption towards plant cultivation,hostel, machinery cleaning, transport, toilet use	☐		
	k. Treated water consumption towards plant cultivation,machinery cleaning, transport, toilet use and etc.	☐		
	l. Per capita water consumption per day calculated	☐		
7.	Whether plants are tagged properly with their commonname and Botanical name for stakeholders?	☐		
8.	Signing of MoU with Govt. and NGOs to disseminate Green campus motto and pledge	☐		

9.	Biodiversity conservation of plants, animals and wildlife, genetic resources (Endangered and endemicspecies) at each appropriate function and level?		□	
10.	Are any biofertilizers, organic manures, farmyard manures, vermicompost, green manures and chemicalfertilizers used for maintaining plants?	□		
11.	Establishment of herbal garden, zodiac garden, medicinal garden, kitchen garden, terrace garden and ornamental plants garden in the campus	□		
12.	Implementation of Government schemes (SwatchBharath Abhiyan under Clean India Mission)	□		
13.	Functioning of Social Service League for students and staff members on biodiversity conservation, green campus development, etc.	□		
14.	Conduction of awareness programmes and cultural activities on global warming, environmental changes and ecosystem maintenance to the stakeholders.	□		
15.	Conduction of outreach programmes for disseminationof green campus initiatives, natural resources, environmental pollution and biodiversity conservationto rural, tribal and urban people	□		
16.	Implementation of composting pits, vermicompost unit,recycling of kitchen wastes collected from Hostels, Kitchens, Housekeeping Labs, Training Restaurants and other places	□		
17.	Maintenance of plantations in the campus and steps taken for water scarcity during summer season to maintain plants	□		
18.	Steps taken for organic, inorganic, toxic, e-waste, biomedical, food, sewage waste management, segregation of wastes and reuse methods	□		
19.	Usage of Public transport	□		
20.	Observation on the site preservation, soil erosion control and landscape management			□
21.	Projects and Dissertation works and Scholarly publications on environmental science and management carried out by students and staff members	□		
22.	Implementation of advanced methods for watering plantations (Drip irrigation, Sprinkler irrigation, etc.)	□		
23.	Use of metering for water utility		□	
24.	Percentage of Organization's budget for environmentsustainability efforts	□		
25.	Campus facilities for disabled, special needs and or maternity care including security, safety and health infrastructure facilities for stakeholder's wellbeing	□		

2.7 Quantitative Measurements

S. No.	Details of Plant and animal species	Numbers / Percentage
1.	Total number of Flowering plant species inside the Campus	63 species
2.	Total Number of medicinal species inside the Campus	27 species
2.	Total number of Non-Flowering plant species inside the Campus	3 species
3.	Total number of living Mammals inside the Campus	5 species
4.	Total number of visiting Mammals inside the Campus	7 species
5.	Total number of living Birds inside the Campus	18 species
6.	Total number of visiting Birds inside the Campus	14 species
7.	Total number of Grasshopper and Termites	Grasshopper: 18 species Termites: 4 species
8.	Total number of Ambhians and Reptiles	14 species
9.	Total number of Butterflies and Mosquitos	Butterflies : 11 speciesMosquitos: 02 species
10.	Percentage of Forest Vegetation	-
11.	Percentage of Planted Vegetation	55%

3. WATER & WASTE WATER AUDIT

Water is a precious natural national resource available with a fixed quantum. National mission on water conservation was declared by the Honourable Prime Minister as 'Jal Shakti Abhiyan' and appealed to all citizens to collectively address the problem of water shortage, by conserving every drop of water and suggesting conducting water audits for all sectors of water use. Water audit can be defined as a qualitative and quantitative analysis of water consumption to identify means of reducing, reusing, and recycling water. Water Audit is nothing but an effective measure for minimizing losses, optimizing various uses, and thus enabling considerable conservation of water in the irrigation sector, domestic, power, and industrial sectors. A water audit is a technique or method which makes it possible to identify ways of conserving water by determining any inefficiency in the system of water distribution. The measurement of water losses due to different uses in the system or any utility is essential to implement water conservation measures in such an establishment.

Importance of Water Audit

- Systematic process
- May yield some surprising results
- Easier to work on solutions when the problems are identified.
- Attracting mechanism can be put into place.

It is observed that a number of factors like climate, culture, food habits, work and working conditions, level and type of development, and physiology determine the requirement of water. The community which has a population between 20,000 to 1, 00,000 requires 100 to 150 liters per person (capita) per day. The communities with a population over 1, 00,000 require 150 to 200 liters per person (capita) per day. As per the standards provided by WHO Regional Office for Southeast Asia Schools require 2 liters of water per student for drinking purposes; 10-15 liters per student for Water-flush toilets. Administration requires (Staff Accommodation not included) 50 liters per person per day,

3.1 Water Audit

Water usage can be defined as water used for all activities which are carried out on campus from different water sources. This includes usage in all residential halls, academic buildings, on-campus, and on-grounds. Wastewater is referred to as the water which is transported off the campus. The wastewater includes sewerage, residence water used in cooking, showering, clothes washing as well as wastewater from chemical and biological laboratories which ultimately go down in the sink or drainage system.

College Water Resources

The major resource for the water in the College Total building-wise discharge for the campus is 150 Kilo Litres for 8 hours per day.

- Mumbai Municipal Corporation (BMC) supplies water to the institute. BMC has installed water meters to monitor water consumption & for water charges. The charges are as per water consumption in the premises.
- Mops are used for floor cleaning.
- No leaking faucets were seen anywhere in washrooms
- If water leakage is observed, plumber is called immediately to attend to the complaints.
- Water conservation faucets in washrooms were not seen. Installation of such faucets can save water and will help in minimizing the water footprint of the institute.
- No signage emphasizing water conservation were found in the institute.
- Water conservation education lessons & programs are conducted for students and need to be done regularly.
- After college program, administrators and community groups need to be encouraged to conserve water in line with the college practices

	
Water Management System on campus	**Water Management System on campus**

Requirements for Educational Institutions

Filaments	Educational Institutions(Non-residential)	
	For boys	**For girls**
Water closets	1 per 40students	1per25students
Ablution taps	1 in each water-closet	1ineachwater-closet
	1 water tap with draining arrangement/50 students	
Urinals	1per 20students	
Washbasins	1per 60 students,minimum2	1per40students, minimum2
Baths	-	-
Drinking water fountains or taps	1per50students	1per50students
Cleaner's sinks	1perfloor, minimum	

WASTE WATER MANAGEMENT

- Sanitary wastewater generated from washrooms is connected to sewerage system provided by BMC.
- Wastewater generated in labs in the institute is also connected to sewerage system.

		 
Wastewater management harvesting system	**RO for Drinking water**	**Waste Segregation**

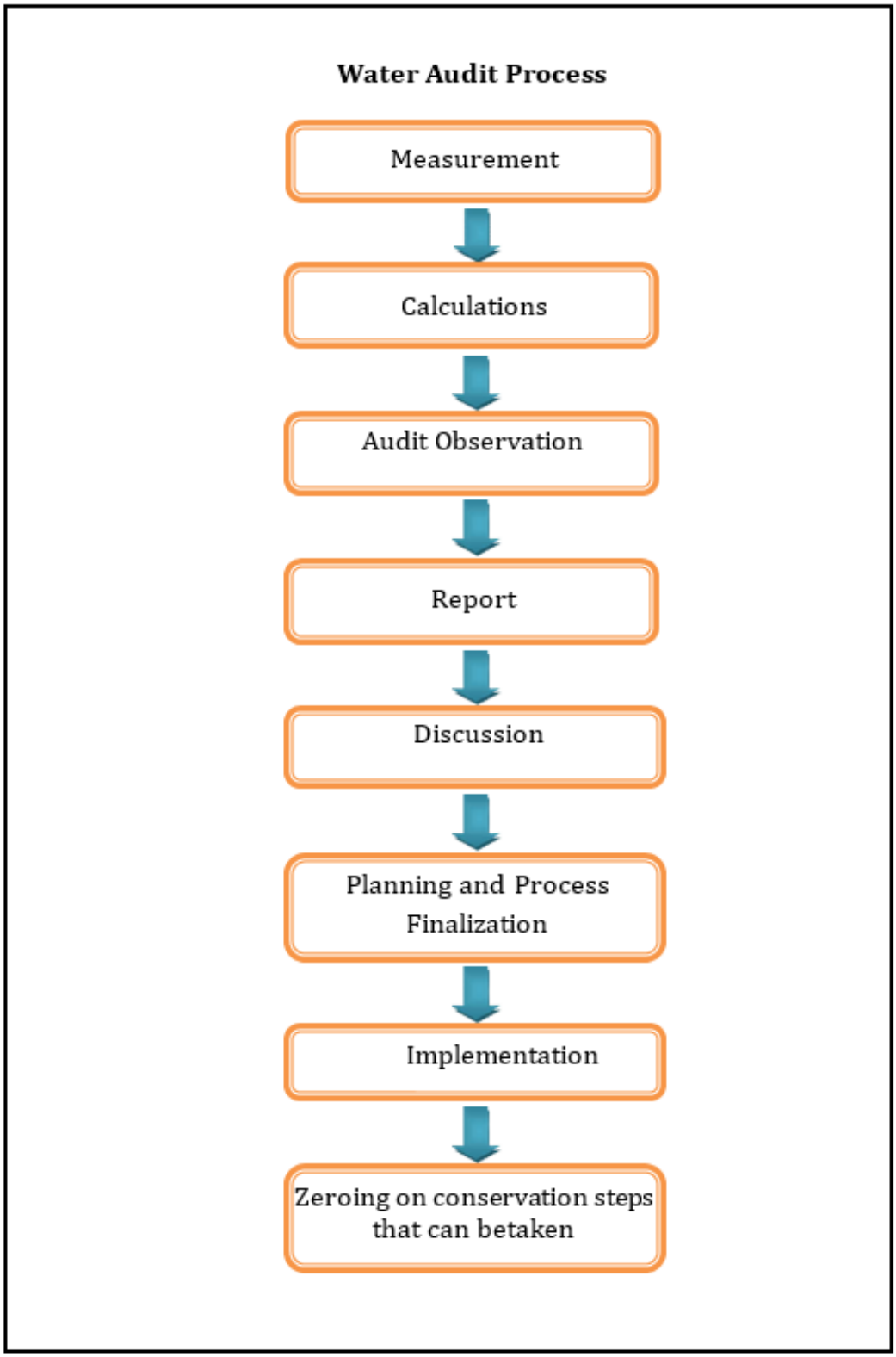
3.1.1 Water consumption in the College

Total consumption of the campus is approx. 980 Kilo Litres per day by operating discharge pumps with a total discharge capacity of 140 Kilo Litres for 8 hours per day. Out of this, 80,000 Litres were utilized against 2 number filtration units with 40,000 Litres capacity each for Kitchen and Park area. Balance 900 Kilo Litres of water is used to cover the total daily consumption in the College Campus including Drinking, Bathroom, Toilet, Garden, Urinals, Wash Basin, Laboratories etc. in the total population of 5500 (Including office staff, strength and residential buildings) of the College campus. Hence total approx. 160 Litres per day per head is used for Bathroom, Toilet, Garden, Urinals, Shower, Drinking, and Laboratories etc.

From the data collected for water audit of College, the water distribution and water consumption pattern is noticed as follows.

Yearly Average Water Consumption at College

Sr. No.	Sector	Total Daily Use (liter)	Total Monthly use (kl)	Total yearly use (kl)	Percentage %
1	Bathroom	192,864	5,785,920	69,431,040	19.68
2	Toilet	268,520	8,055,600	96,667,200	27.4
3	Garden	85,554	2,566,620	30,799,440	8.73
4	Urinals	65,758	1,972,740	23,672,880	6.71
5	Wash Basin	225,792	6,773,760	81,285,120	23.04
6	Laboratories	62,524	1,875,720	22,508,640	6.38
7	Shower	50,470	1,514,100	18,169,200	5.15
8	Drinking	27,832	834,960	10,019,520	2.84
9	Water loss during filling	490	14,700	176,400	0.05
10	Water loss at discharge	196	5,880	70,560	0.02
Total		**980,000**	**29,400,000**	**352,800,000**	**100**


Water Audit Process
Measurement
Calculations
Audit Observation
Report
Discussion
Planning and Process Finalization
Implementation
Zeroing on conservation steps that can betaken

3.1.2 Sustainable Water Practices Watershed Management Practices

AIIHM College has taken many initiatives in water conservation and management of water available on the campus. Now, the College is self-reliant through decentralized water conservation and management practices.

3.1.3 Waste Water Filtration Tank

The College has a huge campus with its administrative setup and there is a lot of waste water collected from laboratories and other open areas which are disposed of in the tank. College has constructed a Mini Water Filtration Tank on the campus. This tank is used to filter the wastewater regularly. This water is utilized for further trees and plants in the College campus as self-filtered water throughout the year.

3.1.4 Rain Water Harvesting Units (SUGGESTED & RECOMMENDED)

The underground water table is decreasing day by day & minute by minute. During the monsoons, lots of water goes waste into the gutters. And this is when Rain Water Harvesting proves to be the most effective way to conserve water. Rainwater can be collected into tanks and prevent it from flowing into drains and being wasted. It is practiced on a large scale in metropolitan cities. Rainwater harvesting comprises the storage of water and water recharging through the technical process. Currently, five numbers of rainwater harvesting exist on the campus further the College is planning to extend and install several units under rainwater harvesting mission including rooftop RWH installation at different buildings for the coming year which will be spread into the mass-scale which covers several units. These units will be utilized for further storing and reusing of natural water.

- Non-teaching staff or peons in the concerned section should take responsibility for monitoring the overflow of water tanks.
- Pipes, overhead tanks, and plumbing systems should be maintained properly to reduce leakages and wastages of water.
- College should install its own Sewage Treatment Plant (STP). By doing so there will be a great reduction in water usage, as the water after treatment can be used for various purposes in the College.
- As College is already planning to set up multiple units of Rain Water Harvesting Units. To set up and install will certainly add value in order to meet the mission of water conservation.

4. SOLID WASTE AUDIT

Solid waste is the unwanted or useless solid material generated from human activities in a residential, industrial, or commercial area. Solid waste management reduces or eliminates the adverse impact on the environment and human health. A number of processes are involved inefficiently managing waste for an organization. It is necessary to manage the solid waste properly to reduce the load on the waste management system. Unscientific handling of solid waste can create threats to public health and environmental safety issues. Thus, it is necessary to manage solid waste properly to reduce the load on the waste management system. The purpose of this audit is to find out the quantity, volume, type, and current management practice of solid waste generation in the AIIHM College campus. This report will help for further solid waste management and to go for green campus development.

5.1 Waste Management

Biodegradable Waste Management – Vermicomposting Unit

College has taken initiative for Biodegradable Waste Management to compost using processes like Dry & Wet Waste Management. Vermicomposting technology relies upon the conjoint action of earthworms and microorganisms to rapidly transform varied types of solid wastes. Considering the simplicity and flexibility of the technology, a vermicomposting unit was established.

Presently, the unit is running successfully to fulfil the need for organic manure for plantation/gardening works of the College. So far, the ready-to-use vermicomposting is produced entirely from garden waste (grass) and leaf litter of the campus.

Initiatives taken by the College for Waste Management

- Glass waste is generated from the laboratory mainly in the form of bottles; Many times bottles are reused for storing other chemicals.
- The e-waste generated at AIIHM College is sent for recycling and reuse.
- College aims at minimizing single-use of plastic.

Recommendations

- Provision for E-waste management should be introduced in the College Campus.
- Paper waste like answer sheets, old bills, and confidential reports should be sent for shredding, pulping, and recycling after completion of their preservation period.
- Recycling facilities should be introduced and should be supported by City Municipality and private suppliers, including glass, cans, white, colored, and brown paper, plastic bottles, batteries, print cartridges, cardboard, and furniture.

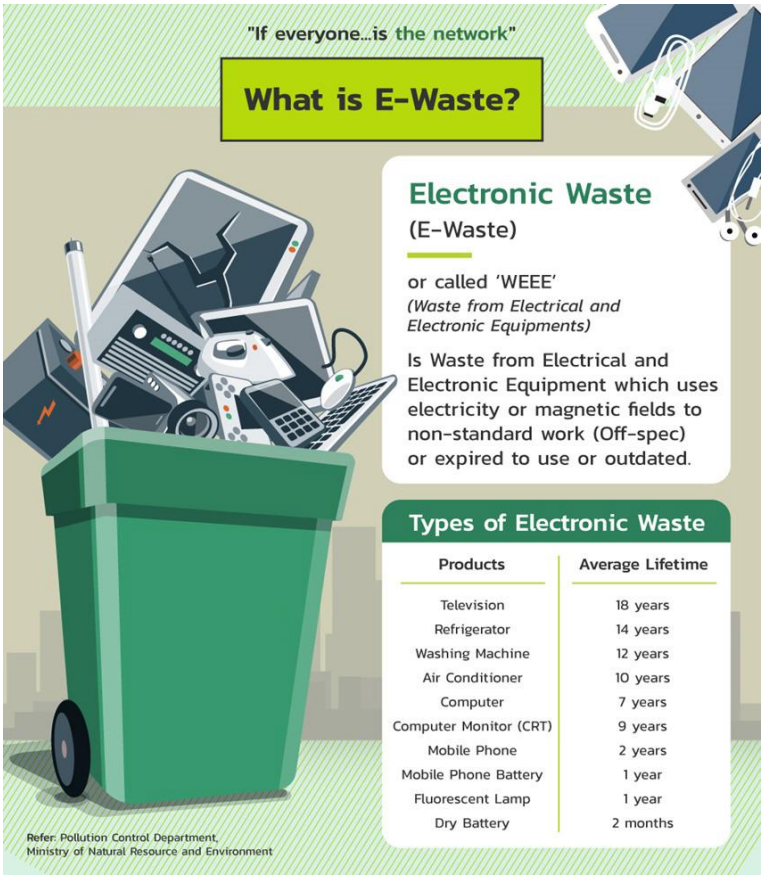
6. E-WASTE MANAGEMENT

The global E-Waste Monitor Report estimates that 53.6 million metric tonnes of e-waste were generated globally in 2019, while in India, around 10.14 lakh tonnes of e-waste were generated in 2019-20 according to The Central Pollution Control Board report. However, the disposal of e-waste without proper management or treatment can have severe consequences for the environment and human health. Toxic chemicals such as lithium, mercury, nickel, arsenic, selenium, and lead can leach into the soil or water bodies, causing damage to the ecosystem.

E-waste generated in the campus is of minimal quantity. It is being effectively managed, keeping in mind the environmental hazards that may arise if not disposed properly.

The cartridges of laser printers are refilled outside the college campus. Awareness programme was conducted by college regarding E-waste Management. The E- wastes and defective items from computer laboratories are being stored properly and recycled in effective Manner.

The dismantled hardware of personal computers are used in PC trouble shooting lab. The dismantled electronic spare parts are immediately sold for reuse. The minimal amount of e- waste that is generated is taken by external vendor.



E-waste management in the campus

E - Communication

The principal's office, all the Departments of the college, Examination cell, and laboratories are very well connected with a good and efficient LAN network. Hence all the inter office correspondence is done through email. This reduces the usage of papers.

7. List of Environmental Promotional Activities

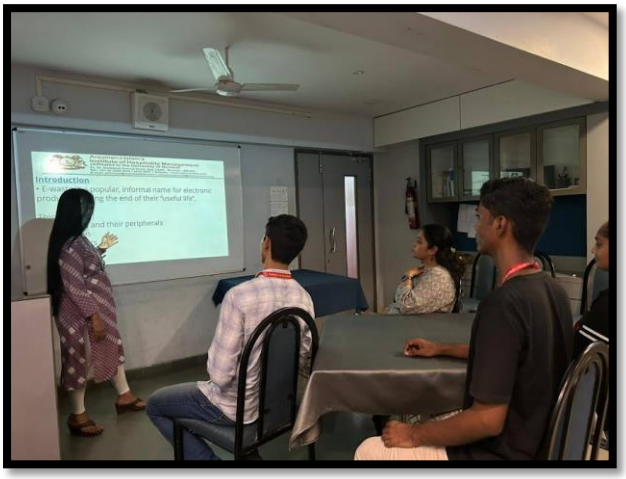
Academic Year 2022 -2023

List of Environmental Promotion Activities

Sr.No.	Date	Title of event	Department
1	26/08/2022	**Tree Plantation at college campus**	Community Work
2	02/09/2022	**Sustainability Awareness Event**	Community Work
3	26/09/2022	**Environmental Awareness Workshop**	Community Work
4	26/07/2022	**Swach Sagar**	DLLE
5	11/01/2023	**Green Marketing trends**	B.Sc. HS
6	13/01/2023	**Environmental sustainability in Business**	B.Sc. HS
7	18/01/2023	**Effects of E-Waste on Environment**	B.Sc. HS
8	19/01/2023	**Session on concept of Green Washing**	B.Sc. HS
9	24/01/2023	**Session on Green Entrepreneurship**	B.Sc. HS
10	25/01/2023	**EMS –Environment Management System**	B.Sc. HS
11	15/02/2023	**Awareness on Trees Plantation and maintenance**	B.Sc. HS
12	04/03/2023	**Say no to plastic – Awareness and plastic trash picking and disposal activity**	B.Sc. HS
13	08/03/2023	**Creating sustainable future**	B.Sc. HS

Tree Plantation at College Campus 26/08/21

Sustainability Awareness Event 02/09/2021



Effects of E-Waste on Environment 18/01/22

Environmental Awareness 26/09/2021

CLEANLINESS DRIVE 26/07/21

SWACH SAGAR 26/07/21

Environmental sustainability in Business 13/01/22

Green Marketing trends 11/01/22

	
Session on concept of Green Washing 19/01/22	**Session on Green Entrepreneurship Entrepreneurship 24/01/22**
	
EMS –Environment Management System 25/01/22	**Awareness on Trees Plantation and maintenance 15/02/22**

Say No to Plastic 04/03/22

Session on creating sustainable future 08/03/22

Say No To Plastic 04/03/22

8. CARBON FOOTPRINTS

Carbon is the basis of life on mother Earth. It is incorporated into the plants through photosynthesis, consumed by animal species through the food, present in the form of carbon dioxide (CO2) in the atmosphere, locked into the rocks like limestone, and compressed into the different fossil fuels such as coal and oil. As CO2 levels in the atmosphere continue to increase, most climate designs or projects that the oceans of the world and trees will keep soaking up more than half of CO2. The plants on land and in the sea, taken up carbon over many years increased the percentage discharged during decay, and this increased carbon became locked away as fossil fuels beneath the surface of the planet. CO2 is a principal component causing global warming.

Carbon Sequestration

Carbon sequestration is the removal of carbon dioxide from the air by plants. Carbon storage is the amount of carbon already bound up in the parts of woody vegetation.

- Thirteen big trees and some small plants are planted to mitigate CO2 emissions and have the potential to enhance carbon sequestration capacity on the campus.

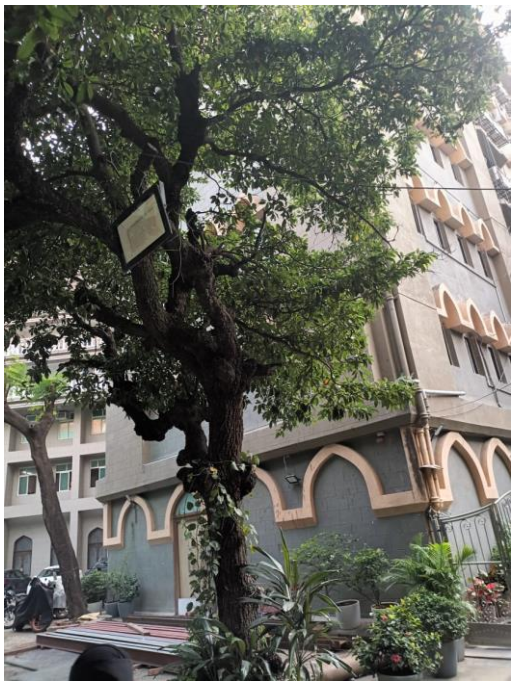
CARBON SEQUESTRATION							
Tree Name	**Botanical Name**	**Wood Density (gm/cm3)**	**Height (cm)**	**Girth(cm)**	**Canopy (cm)**	**Total Biomass (gms)**	**Total carbon sequestration kg/y**
Coconut tree	*Cocos Nucifera*	0.6	1000	85	400	384144	**192**
Rain tree	*Samaneasaman* (Jacq.)Merrill	0.45	10	1.65	9	569422	**284**
Gulmohar	*DelonixRegia*	0.59	6	0.89	3	281296	**140**
Pimpal	*Ficusreligiosa* Linn.	0.44	8	1.45	9	556827	**278**
Amba	*Mangifera indica*Linn.	0.52	8	1.3	6	806313	**403**
Champa	Magnolia champaca	0.58	5	0.86	6	215167	**107**
Jaswand	**Hibiscus rosa**	0.52	8	0.89	6	330563	**165**

Calculation of Carbon Sequestration:

Volume of Tree = 3.14* r * H (r: radius of girth, H: Total height) AGB= above ground level biomass (Volume x wood density of tree) BGB= below ground level biomass (50 % of AGB)

Total dry biomass = AGB+BGB

Carbon Sequestration = Biomass x 50%



8.1 Carbon foot prints

The main cause of global warming is an increase in the concentration of greenhouse gases (GHGs) in the atmosphere due to anthropogenic activities and their level is determined with the help of global warming potential (GWP) and expressed as Carbon Footprint (CF). Carbon Footprint is another phenomenon used for GHGs or carbon dioxide emission in terms of CO2 equivalents. There are various definitions of carbon footprint are in literature. But the most recognized definition given by Wiedmann is “the Carbon footprint is the measure of carbon dioxide emissions directly or indirectly caused by an activity or accumulated over the life stages of a product.” In other words, “A carbon footprint is the total greenhouse gas (GHG) emissions caused directly and indirectly by an individual, organization, event or product.”

As AIIHM College is considered an institutional organization, various energy resources like electricity are used. It is necessary to calculate the carbon footprint of the College to upgrade the Clean Developmental Mechanism (CDM) in various processes. All the data from the various sources were collected from all the sectors where energy resources are used. The collected data is calculated by using standard emission factors.

Efforts for Carbon Neutrality

Air pollution is a matter of serious concern on the campus owing to its urban location. AIIHM College as a responsible institution understands the importance of its carbon footprint and developed a plan to reduce greenhouse gas emissions in all its activities. Strictly ban on burning of dried leaves and waste paper in College.

Electricity carbon footprint

In the College, electricity is used for various purposes like residential, office use, and laboratories. The total electricity used in the College liberates mass kg of CO2 per year. The laboratory equipment consumes the highest electricity which emits a large amount of carbon CO2 per year.

Paper footprint

The papers are used in the institution for various purposes like exam answer sheets, circulars, notices, office work, etc. The papers are responsible for the emission of CO2. The College used a total used 1,765.17 reams of paper which emits 3.67 tons of CO2. On the College campus, various departments follow paperless methods of communication to reduce the footprint by the use of papers. The various sections on the campus save 13, 48,914 papers per year i.e. 2,697 reams. The paperless work reduces approximately 5.61tons of CO2 approximately. A total of 2.80 tons of biomass is saved by paperless communication i.e. green computing.

The total footprint of the College

The total footprint is the addition of all the footprints and it is expressed as tons of CO2 per year. The total footprint of AIIHM College is approx. more than 10,000 tons of CO2 per year approximately. As the College is following the Clean Developmental Mechanism it aims to minimize the paperwork at the College reduces of 18.10 tons of CO2 per year approximately.

CONCLUSION

India's CO2 emission is increased by an estimated 4.6 % in 2017, despite a turbulent year for its economy. The carbon footprint of the nation is measured per person; India's emissions are still very low – at only 1.8 tons of CO2 per capita which is much lower than the world average of 4.2 tons. But those emissions have been increasing steadily, with an average growth rate over the past decade of 6 %. The universities are the organizations which are having large areas which consume high quantities of electricity and LPG for many purposes. The present Clean Development Mechanism practices to reduce the more CO2 per year approximately.

Recommendations

- The food waste generated from College can be converted into biogas which can be further utilized for hostel kitchens.
- Green computing or E- work is helping the organization to reduce footprint very effectively.
- The solar energy-based street lamps on campus will reduce carbon footprint.
- The awareness should be made among the faculty, students, and other employees regarding Clean Development Mechanism (CDM) to reduce the consumption of electricity and natural resources.
- "Carbon Sequestration" survey should be conducted on the campus. Carbon sequestration is a process of converting atmospheric carbon i.e. CO_2 into other sinks of carbon such as vegetation, soil, ocean, etc. in various forms to mitigate global warming audit is one of the important clauses of the Kyoto Protocol.

9. GREEN INITIATIVES

The College has taken the following green initiatives to protect and conserve nature.

Plantation and Nurturing Programme

Plantation drives are organized by the College on its campus. Every year on 5th June i.e. World Environment Day, the College takes Plantation activity. The trees are watered by students of various Departments. They nurture these trees throughout the year. Students of various departments and students make the plantation and nurturing program successful. A total of 23 plant saplings of different species (like ornamental, fruit and medicinal plant, etc.) were planted in various sites of the College campus during this year's environment day program.

Green computing practice

Being an academic institution, papers are used for various purposes like exam answer sheets, circulars, notices, office work, document printing, and Xeroxing. Since the trees are cut for paper manufacturing, the sequestration of carbon is reduced increasing carbon footprint. To cut down the carbon footprint, the College administration and various departments follow paperless methods of communication by using emails, online forms submission, etc. The paperless work was helpful in reducing tons of CO2. The tons of biomass are saved by this green computing practice.

Conferences and workshops on Environmental Sustainability

College organizes Conferences and Workshops based on the theme of environmental sustainability.

The main objective to carry out a green audit is to check the green practices followed by the College and to conduct a well-defined audit report to understand whether the College is on the track of sustainable development.

After completing the audit procedure of the College for green practices, there are the following conclusions, recommendations, and Environmental Management Plan (EMP) which can be followed by the College in the future for keeping campus environment friendly.

- College takes efforts to dispose of majority of waste by proper methods. Green computing i.e. Online payment systems, online circulars, and examination procedures are helpful for reducing the use of papers and ultimately reducing carbon footprint.
- Reducing the use of one-time use plastic bottles, cups, folders, pens, bouquets, decorative items will be useful to solve the problem of plastic pollution to some extent.
- Biodegradable waste is used efficiently for composting and vermicomposting.
- Use of LED lamps and Tube Lights is to be encouraged.
- Toilets and bathrooms are consuming more water in the departments. The replacement of old taps can be beneficial for solving this issue
- The use of electric cars on the campus is a good initiative to save fuel.
- The overall ambient air quality on the campus is good while some air quality issues that may arise due to developmental activities on the campus should be addressed. The

sound levels on the campus are good.

Key Recommendations & Environment Management Plan (EMP)

Following are some of the key recommendations for improving the campus environment and to be considered as Environment Management Plan (EMP).

- An environmental policy document has to be prepared with all the recommendations and current practices carried by the College.
- Generated waste should be measured, monitored, and recorded regularly and information should be made available to the administration.
- The College should develop internal procedures to ensure its compliance with environmental legislation and responsibility should be fixed to carry out it in practice.
- The solid waste should be reused or recycled at maximum possible places.
- Installation of sensor-based electrification items like fans, lights, etc. can save electricity
- Installation of solar panels and rainwater harvesting system to every terrace of the building will be useful in conserving the natural resources.
- Regular checkups and maintenance of pipes, overhead tanks, and plumbing systems should be done by the engineering section to reduce overflow, leakages, and corrosions.
- No such processes or activities were observed at AIIHM College which can deteriorate the environmental quality.
- The said College is in continuous efforts to spread the environmental awareness programs among staff and students.
- It was also observed that the said College is keeping the environmental quality at priority in every developmental stage.

10. GREEN IMPROVEMENT STEPS

OBSERVATIONS AND RECOMMENDATIONS

GREEN CAMPUS AUDIT

OBSERVATIONS

- College has implemented several green initiatives which will help in promoting sustainability. College should develop monitoring mechanism and generate & maintain the performance records of the green infrastructure.

a) Reduce, Reuse and re cycle of the products(At the time of disposal of library material)
b) Recycling beyond books i.e. .paper, aluminums, plastic, e-waste
c) College has 10+ trees, shrubs and potted plants present in the campus.
d) Good no. of trees around the College campus which maintain the CO2 sequencing.
e) Buildings are specifically designed with wide windows and wide passages to utilize sunlight, and for ventilation.
f) Donation of computers to NGO' store furbish and give it to needy people.
g) Solid waste generated in campus includes paper waste, E-waste, plastic waste, food waste from and dry recyclable waste from gardening.
h) Paper waste and E-waste are given to approve agencies for recycle/ disposal. Inventories & management processes of all waste (including food and dry recyclable waste) should be well documented.

SUGGESTION:

a) Indoor College campus greenery and plantation can be increased within the premises, which will improve beautification and green health of college campus.
b) College can establish an 'Eco Club' and 'Garden Committee' in which students and staff arrange different environmental activities such as guest lectures, conferences, cleanliness drives etc.
c) Water consumption can be reduced further through various conservation methods. Replacement of all old water faucets with water saving faucets such as prismatic taps, aerator taps, and jet sprays etc. can save water and help in minimizing the water footprint.
d) Signage regarding water conservation, reduction & segregation of plastic waste, reduction in food waste, waste segregation can be put up in kitchen, dining areas and near drinking water facilities to create awareness among staff and students.
e) Digitization will help increase green environment effectiveness.

INDOOR GARDENING

Indoor plants are commonly used for their aesthetics benefits but they also have vital role reducing airborne pollution. The right choice of plants can be an excellent way of improving indoor air quality and general health. Local and scape contractor can be contacted or supply and rotation of these plants. Volatile organic compounds (VOCs) – VOCs are emitted by paints and lacquers, paint strippers, pesticides, office equipment such as copiers and printers, correction fluids and carbonless copy paper, graphics and craft materials including glues and adhesives, permanent markers, and photographic solutions etc.

Plants	VOC it removes	Indoor source of VOC's	Plant care
 **Aloe Vera**	Formaldehyde, Trichloroethylene and Benzene	Chemical based cleaners and paints	Easy to grow with enough sunlight
 **Bamboo Plant**	Formaldehyde, Trichloroethylene and Benzene	Paints, Plastics, Wood products etc.	Thrives under lowlight conditions aswell as easy to maintain
 **Chinese Evergreen**	Benzene	Paints	Low maintenance plant that prefers low light conditions.
 **English Ivy**	Formaldehyde, Benzene, Air borne fecal matter particles	Wood, Paper products, Air borne fecal – matter particles from pests	Easy to maintain

 **Janet Craig**	Formaldehyde, Benzene and Trichloroethylene	Paints, Plastics, Wood products etc.	Medium to low light tolerant plant. Requires little water for growth.
 **Golden Pothos or Devils Ivy**	Formaldehyde, Cleanses air	Exhaust fumes, carpeting materials, paneling and furniture products made with particle board	Extremely easy to maintain under low to bright light conditions. Fast growing and grows well under Fluorescent light.
 **Mass Cane**	Formaldehyde, benzene and trichloroethylene	Paints, Plastics, Wood products etc.	Medium to low light tolerant plant. Requires little water for growth.
 **Snake plant**	Formaldehyde and trichloroethylene	cooking fuels, wood products, facial tissues, personal care products and waxed papers	Drought resistant and Tolerates a variety Of light conditions. Hard to damage or kill.
 **Peace Lily**	Formaldehyde, benzene and trichloroethylene	Paints, Plastics, Wood products etc.	Relatively easy to maintain. Survives in low light conditions.

 **Red-edged Dracaena**	Formaldehyde and trichloroethylene	cooking fuels, wood products, facial tissues, personal care products and waxed papers	Drought resistant and Tolerates a variety of light conditions. Hard to damage or kill.
 **Spider Plant**	Formaldehyde, benzene, carbon monoxide and xylene	cooking fuels, wood products, Printing	Easy to maintain under medium to bright light condition.
 **Parlor Palm**	Purifies indoor air	-	Easy to maintain

CERTIFICATES

Consultancy & Services

Cert. No.: QC/GAC/21-22/055

Green Audit Certificate

This is to certify that

Anjuman-I-Islam's

INSTITUTE OF HOSPITALITY MANAGEMENT

92, Dr. D.N. Road, Opp. CSMT, Mumbai - 400001. MAHARASHTRA, INDIA

has successfully undergone the "Green Audit" during the period of May to July 2022 under our supervision and the efforts taken by the management and the faculty towards the green campus are highly appreciable.

Certificate issued on : 15-April-2022

Project Head & Green Building Consultant

QUALITY CARE ALLIANCE

www.qualitycare.net.in I qualitycare.in@gmail.com

An Environment and Energy Consultancy developing healthy and sustainable Environment

Consultancy & Services

Cert. No.: QC/AW/21-22/055

Clean & Green Campus Award

This is to certify that

Anjuman-I-Islam's

INSTITUTE OF HOSPITALITY MANAGEMENT

92, Dr. D.N. Road, Opp. CSMT, Mumbai - 400001. MAHARASHTRA, INDIA

has been honoured with "Best Green Campus Award" for maintaining the Campus greenish and offering an Eco-Friendly environment to the stakeholders, The organisation imparts the thrust of enovating new ideas to accomplish Eco-Friendly environment in the Campus. The Organisation underwent 'Green Audit, Environment Audit and Energy Audit' on 15- April- 2022.

This Certificate is Valid till : 15-July-2024

Project Head & Green Building Consultant

QUALITY CARE ALLIANCE

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GREEN AUDIT CHECKLIST

	Good Daylight Design	
Sr. No.	**Design Feature**	
1	Broad door opening	p
2	Clerestory/ High windows	p
3	Openings at the eastern and southern side	p
4	Rectangular building so that sunlight can reach all areas	p
5	Sunshade	-
6	Double or triple glazing on windows	-
7	Enough illumination	p
8	Light colored fabric curtain or blind for window covering	p
9	Operable/ operable windows	p
10	Ultraviolet (UV) filtering windows	-
11	Use of exterior louvers to control glare	-
12	Use of glass as facilitator of natural light	p
13	Use of insulated and tinted glass to filter heat gain	-
	Ventilation	
Sr. No.	**Design Feature**	
1	Downdraft cooling system (a downward flow of air)	-
2	Ceiling height	p
3	Self-movement ventilators in the roof	-
4	Wide corridors	p
5	Operable windows	p
6	Use of exhaust fans	p
	Temperature and Acoustic Control	
Sr. No.	**Design Feature**	
1	Double roof	-
2	Earth air tunnel (cools air in summer and heat it in winter)	-
3	Green roof	-
4	Mud roof	-
5	Openings at the eastern and southern side	p
6	Roof with reflective tile/aluminum/asbestos	-
7	Sand stone cladding outside the walls	p
8	Special walls for temperature control(Thick/Double/cavity/fire/composite	-
	/green)	
9	Use of cool roofing material (mineral wool, rock wool, vermiculite, foams, expanded polystyrene, extruded polystyrene etc.)	-
10	Use of daylight design (Building is constructed in such a way that diffused sunlight allows light but not the heat)	p

11	Use of insulation material (e.g. autoclaved aerated blocks, hollow blocks, Thermo Crete or higher R- value material)	-
12	Use of water bodies/fountain	-
13	Climbing creepers fitted to window in summer	-
14	Lime coating for cool roof	-
15	Retrofitting the existing roofs with cool roof technology	-
16	White wash on the roof	p
17	Use of landscaping as sound barrier	-
	Water Efficiency & Wastewater Management	
Sr. No.	**Measures**	
1	Aerators to water taps	-
2	Automatic toilet faucets	-
3	Drip irrigation (for plant watering system)	-
4	Dual flush toilet with cistern	-
5	Efficient plumbing system	p
6	Sewage treatment plant for sewage recycle	-
7	Rainwater harvesting	-
8	Regular maintenance for leakage free plumbing system	p
9	Use of low flow/flow control water equipment or gadget	-
10	Water free urinals (No flush urinals/Zero flush urinals/Water less urinals/air based flushing system these save water used in toilet)	-
	Energy Efficiency and On-site Energy Generation Mechanism	
Sr. No.	**Measures**	
1	Avoid excessive lighting	p
2	Computerized monitoring of electrical system	-
3	Integrated energy saving design for natural cooling/heating	p
4	On-site energy generation	P
5	Photocell occupancy sensor for automatic light control	-
6	Regular maintenance of electrical system	p
7	Use of day lighting system	p
8	Use of energy efficient equipment	p
9	Use of energy saving bulbs (Compact florescent light/LED lights)	P
10	Solar panel	P
	Sustainable Material for Building and Interior	
Sr. No.	**Strategy adopted**	
1	Use of biodegradable material	p
2	Use of locally sourced material	p
3	Use of material with low embedded energy(i.e. stabilized earth blocks, straw bales, stones, sand stone chips, fly ash)	p
4	Use of nontoxic recycled content material and furniture	p
5	Use of post-consumer recycled material	p

6	Use of salvaged (Discarded or refused) material	p
7	Use of material which can recycled at end of useful life	p
8	Use of material which is simple to install without dangerous adhesive	p
	Waste Management	
Sr. No.	**Measures**	
1	Sale of books to its user for minimal charges	-
2	Sale of books to store or other library	-
3	Sale of weeded books to needy students	-
4	Send books and used papers to recycling organization	p
5	Avoid use of paper by going digital (Paper)	p
6	Lessen the margins while printing	-
7	Printing on both sides of paper	p
8	Reuse of printed paper/ envelops	p
9	Segregation of dry and wet waste	-
10	Setting up recycling area/ composting area	-
11	Creation of specified junctions for collection of E-waste(E-waste)	-
12	Donation of computers to NGO's to refurbish and give it to needy people	p
13	Hand over to organization or recycler who knows proper disposal system	p
14	Implementation of any recycling project or program	-
15	Purchase of electronic products from company's which have after sales	p
	service for the disposal of product with buyback policy	
16	Installation of bins to collect garbage	p
17	Outsourcing recycling of garbage to agency	-
18	Recreating in to new sustainable products	-
19	Use of colored bins with code to collect garbage	p
	Environmental Audit	
Sr. No.	**Type of audit**	
1	Energy audit (includes energy consumption, thermal comfort, visual comfort)	p
2	Sound/ Noise audit (includes indoor noise level, outdoor noise level)	-
3	Water and waste audit (includes water quality, solid waste generation, solid waste disposal process)	-
	Universal Access and Efficient Operation and Maintenance of Building	
Sr. No.	**Design feature**	
1	Easy access to the main entrance of the building	p
2	Elevator	p
3	Preferred car park spaces for specially abled	p
4	Ramp/ stairs with handrails on at least one side	p
5	Restrooms (toilets) in common areas	p
6	Uniformity in floor level	p
7	Audio guidance for specially abled	-

8	Availability of wheel chair	p
9	Braille assistance for specially abled	-
10	Personalized services by staff for differently abled	p
11	Visual warning signage in common and exterior areas	p
12	Follow standard procedures for commissioning of electrical/plumbing system	-
13	Purchase of standardized and quality material for repair	p
14	Regular maintenance of building	p
15	Use of chemical free products for cleaning	-
16	User awareness program to minimize damage of property	p
	Green Program	
Sr. No.	**Green program**	
1	Buying recycled material	p
2	Creation of “Green Team” in the institution/library	-
3	Green education i.e. to become leader in environmental awareness	-
4	College conduct graduate program by library science/Any other department	p
	e.g. “Eco-Friendliness: Changing our communities’ one step at a time.”	
5	Outreach relationships with local groups interested in environmental concern and satisfy their information needs	p
6	Providing external membership to small and local libraries (MOU with other colleges, -internal collegiate library loan)	-
7	Recycling beyond books i.e. paper, aluminum, plastic, e-waste	-
8	Reduce, Reuse and recycle of the products (At the time of disposal of library material)	p
9	Regular purchase of books/ magazines related to sustainability	p
10	Selection of material content of which informs and assesses green practices (green computing, energy conservation, organic gardening etc.)	-
11	Contribute library information on sustainability resources to a campus publication, blog or website	-
12	Creation of topical online resource guide (on sustainability etc.)	p
13	Disseminating expert advice about sustainability to other colleges to make their own college greener	-
14	E Publishing reviews of new green resources in the newsletter or news	P
15	Digitization	p
16	E-archiving	P
17	E-resources : E books, Online Journals, membership of consortium	P
18	Subscription to databases	p

********** END OF THE REPORT **********