ESTD. 1875

GOVERNMENT MOHINDRA COLLEGE PATIALA

(Affiliated to Punjabi University, Patiala)

NAAC ACCREDITED GRADE A+ CYCLE-I

NAAC REACCREDITED GRADE A (CGPA 3.86) CYCLE-II

AISHE CODE: C-22146

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IQAC

GOVERNMENT MOHINDRA COLLEGE, PATIALA

Supporting Documents/Additional Information

Title- **7.1.3: Quality audits on environment and energy regularly undertaken by the Institution.**

The institutional environment and energy initiatives are confirmed through the following

1. **Green audit / Environment audit**

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Environment & Green Audit

Report of

Government Mohindra College, Patiala

Prepared and Submitted By

Innovative Energy Conservation Solutions

ISO 9001:2015(Certificate No: 1205Q169822)

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Sep-2023

ACKNOWLEDGEMENT

We want to convey our heartfelt gratitude to the management of **Government Mohindra College, Patiala** for taking the commendable initiative of conducting Audits for Environment & Green As per NAAC. Their dedication to environmental responsibility is truly commendable.

We would like to express our sincere appreciation for the unwavering cooperation that was extended to our team throughout the study**. Professor Mr. Amarjit Singh, the Principal, and his dedicated team at Government Mohindra College, Patiala,** deserve special mention for their proactive support and unwavering courtesy during our field study. Their commitment to the success of this audit was evident, and it greatly contributed to the study's comprehensive nature.

Furthermore, we would like to extend our thanks to all the other officials from Government Mohindra College, Patiala, who played an integral role in facilitating the data collection process. Their cooperation and support were invaluable in ensuring the accuracy and completeness of our findings.

In addition to the college staff, we are deeply grateful to everyone we interacted with during the audit process. Their insights and knowledge provided us with valuable operational perspectives, enriching the depth of our report.

With great pleasure, we hereby submit the Environment & Green Audit Report, confident that it will serve as a valuable reference for further environmental initiatives and sustainable practices. Once again, our heartfelt thanks to Government Mohindra College, Patiala, for their outstanding commitment to a greener future.

Date of Report Submission.
21/9/23

M/s Innovative Energy Conservation Solutions

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CHAPTER 1 INTRODUCTION

In a world experiencing rapid city growth and economic development locally, regionally, and globally, we face tough environmental problems. To tackle these, we need eco-friendly practices and green campuses. Government Mohindra College in Patiala, a respected educational institution, recognized the urgency of these issues and launched 'The Green Campus' program several years ago. This program aimed to promote environmental protection and sustainability.

An Environment and Green Audit is a vital first step. It measures how much resources a place uses, how much waste it makes, and its impact on the environment. This information helps suggest new ideas for the campus, like collecting rainwater, improving waste and water management, and saving energy. These ideas follow the green rules that buildings should be eco-friendly and save energy.

An important part of this program was the Environment and Green Audit. It ensured that the college's actions matched its green goals. This audit covered many things, from saving water and planting trees to managing waste, using less paper, and protecting nature. It also checked if the college followed the rules for being eco-friendly. The results of this audit could help students, the college's costs, and the environment a lot.

The audit used strict rules and suggestions tailored to the college's needs. We hope the ideas and advice in this report will help Government Mohindra College become more eco-friendly.

Through this report, we want to offer affordable solutions that help save resources. We have shown the data we collected in easy-to-understand pictures. And for those who want to know more, we have added a glossary, short forms, units of measurement, and sources to read more about the audit.

It is important to know that this Environment and Green Audit Report is for academic and research purposes only. It cannot be used as evidence in any legal case in India or anywhere else. However, it shows Government Mohindra College's dedication to protecting the environment and can inspire other schools to be eco-friendly too.

CHAPTER 2 OBJECTIVE, SCOPE & METHODOLOGY OF THE STUDY

2.1 Objective of Environment and Green Audit

- Investigating waste reduction strategies, especially for hazardous materials, and safe waste disposal
- Assessing the level of environmental conservation awareness among employees and learners.
- Acknowledging the organization's efforts in promoting environmental conservation.
- Examining the reciprocal impacts between the organization and the environment.
- Ensuring the proper utilization of natural resources in alignment with national environmental policies.
- Exploring initiatives related to water conservation and effective water management.
- Analysing the involvement and contributions of various stakeholders in environmental conservation and management.
- Diagnosing environmental issues and seeking solutions.
- Providing stakeholders with comprehensive guidance on waste management practices.

2.2 Scope of Work

- Water Consumption & Management
- Waste Management System
- Outdoor Environment -AQI
- Noise Level Survey
- Carbon Footprint Auditing
- Health and Wellbeing Assessment

2.3 Methodology

Table 1: Methodology adopted to conduct environment and green audit

Step	Objective	Activities
Step 1	Audit of historical data	A comprehensive review of past records and policies was conducted to assess the university's efforts in environmental conservation. This involved examining office records, visitor logs, purchase records, official communications, and documents from administrative bodies. Additionally, published materials like prospectuses, annual reports, bulletins, and magazines were studied to gather relevant data.
Step 2	Screening survey or walk-through audit	The audit team conducted two initial walk-through audits, followed by additional visits to verify data accuracy. They visited various campus areas like departments, centers, the library, and the canteen. General information was gathered through observations and interviews. Special guided tours were organized with the college team and staff, marking the initial data collection phase for building drawings, utility bills, and environmental management plans.
Step 3	On-site investigations	Site inspected for water, waste, and environmental data. Detailed measurements for electrical and electro-mechanical devices, such as lights, fans, motors, pumps, ACs, and water equipment. Online data verified through ground survey. Inspection of water, waste, and environmental aspects, including flood and stormwater systems.
Step 4	Data Analysis	Data analyzed and presented visually with pie-charts, bar graphs, and tables in each audit area. Assessed against benchmarks and standards, leading to recommendations for sustainable ECO campus development.
Step 5	Documentation and Report	Preparation of detailed report with documentation, calculation and all technical information, summary, and recommendations

CHAPTER 3 ABOUT THE COLLEGE

Government Mohindra College in Patiala stands as a cherished gift from H.H. Maharaja Mohinder Singh (1852-76) to his subjects. Established in 1875, it is one of North India's oldest and most magnificent institutions, a beacon of grandeur. In its early days, it was the sole institution of its kind spanning from Lahore to Delhi, aiming to provide free education to a region in dire need.

The foundation stone was laid by His Excellency, The Earl of Northbrook, Viceroy of India, in 1875, and it took nine years to complete the majestic building. Viceroy Lord Ripon inaugurated it on March 17, 1884, when it was affiliated with Calcutta University. The college provided free education to state subjects until 1937, a tradition still upheld for female students up to the graduation level.

Initially, it offered education in Sanskrit, Persian, and Arabic, later expanding to English and Mathematics. In 1880, intermediate classes commenced, and in 1887, to honor Queen Victoria's 50th reign year, it was upgraded to B.A. standard under Punjab University, Lahore. Over the years, post-graduate programs in various subjects were introduced, maintaining affiliations with Punjab University, Chandigarh.

Distinguished figures like Sh. S. Radhakrishnan and E.M. Forster visited the college, showcasing its stature. In its 140-year journey, bolstered by dedicated faculty and accomplished alumni, it excelled in academics, sports, culture, civil and defense services, industry, commerce, politics, and more. It stands as a symbol of hope, providing quality education amidst the proliferation of expensive private institutions.

Recognized nationally, the college earned the highest NAAC grade, Model College status, and numerous accolades, staying true to its mission and goals. It continues to excel in academics, sports, and culture, maintaining its premier position in North India.

Table 2: courses offered by the college

Degrees	Courses
B.Sc.	Non-Medical
	B.Sc. Medical
	B.Sc. Non-Medical with Computer Application
	B.Sc. CSM
	B.Sc. (Hons.) Bio-Technology
	B.Sc. Agriculture
B.A.	B.A
	(Hons. Sch.) English

Degrees	Courses
	B.A. (Hons. Sch.) History
	B.A. (Hons. Sch.) Political Sci.
	B.A. (Hons. Sch.) Economics
	B.A. LL.B.
M.Sc.	M.Sc. Geography
	M.Sc. Physics
	M.Sc. Chemistry
	M.Sc. Mathematics
	M.Sc. IT
M.A.	Hindi
	M.A. Punjabi
	M.A. English
	M.A. History
	M.A. Political Science
	M.A. Economics
	M.A. Sociology
	M.A. Public Administration
	M.A. Psychology
Others	PG Diploma in Yoga
	M.Com.
	BCA
	B.Com (Hons.)
	BBA
	BJMC
	PGDCA

Google Map – Satellite View of Campus

CHAPTER 4 ENVIRONMENT AUDIT

4.1 Water Consumption & Management

Water audit is a systematic process of objectively obtaining a water balance of the Unit by measuring flow of water from the source of water withdrawal or treatment, through the distribution system, and into areas where it is used, treated, and finally discharged or re-used.

4.1.1 Objectives of Water Audit

Conducting a water audit involves calculating the existing water use and water balance, and then identifying and prioritising the options for saving water so as to achieve an improved water balance within a defined time period.

A detailed description of the current and the achievable water balance is an important deliverable of the Water Audit Report. This includes assessing the water quantity and quality at various user points which are mapped to assist in developing reduction, recycle and reuse opportunities.

4.1.2 Methodology followed for conducting water system study

Step 1: Reconnaissance or Walk-through survey to Understanding of existing water sourcing, storage, and distribution facility. Assessing the

- water consumption
- water quality
- water treatment
- water discharge
- Water Monitoring
- re-use pattern

Step 2: Secondary Data Collection through the Discussion with Institute executives, past records, Available technical literature/specifications

Step 3: Site Water Audit Planning (based on site operations and practices)

- Preparation of water flow measurement plan to quantify water use at various locations & Wastewater flow measurement and sampling plan.
- Instruments availability like Ultrasonic Water Flow Meter, Doppler type Flow meter, Stop Watch, measuring cylinders, Power Analyser etc.

Step 4: Conduction of Detailed Water Audit & Measurements

Step 5: Preparation of Water Audit Report with Sustainable Water Management Plan

4.1.3 Existing Scenario:

The Institute withdrawn the data from bore well to fulfill the whole requirement in the campus. has own bore well, and extract the water for the requirement. Raw water extract from the bore well is stored in the overhead main tank. From the overhead tank further water distribution for domestic use like drinking, hand washing, canteen, flushing etc. It is observed that the supply water is of good quality and used in all areas of institute for domestic activities.

Table 3: Population details of college

GOVERNMENT MOHINDRA COLLEGE, PATIALA COURSE WISE STUDENTS 2023-2024		
Sr No	**Class**	**Current Strength**
1	BA Hons Sch in Eco Sem-I	35
2	BA Hons Sch in Eco Sem-III	13
3	BA Hons Sch in Eco Sem-V	18
4	BA Hons Sch in English Sem-I	49
5	BA Hons Sch in English Sem-III	28
6	BA Hons Sch in English Sem-V	35
7	BA Hons Sch in History Sem-I	53
8	BA Hons Sch in History Sem-III	41
9	BA Hons Sch in History Sem-V	36
10	BA Hons Sch in Pol. Sc. Sem-I	56
11	BA Hons Sch in Pol. Sc. Sem-III	34
12	BA Hons Sch in Pol. Sc. Sem-V	32
13	BA Sem-I	1408
14	BA Sem-III	1403
15	BA Sem-V	988
16	BSc Medical Sem-I	105
17	BSc Medical Sem-III	53
18	BSc Medical Sem-V	40
19	BSc Non-Med Sem-I	90
20	BSc Non-Med Sem-III	71
21	BSc Non-Med Sem-V	92
22	BSc Non-Med(Comp Sc) Sem-I	53
23	BSc Non-Med(Comp Sc) Sem-III	46
24	BSc Non-Med(Comp Sc) Sem-V	54
25	MA Economics Sem-I	17
26	MA Economics Sem-III	12
27	MA English Sem-I	25

GOVERNMENT MOHINDRA COLLEGE, PATIALA		
COURSE WISE STUDENTS 2023-2024		
28	MA English Sem-III	21
29	MA Hindi Sem-I	15
30	MA Hindi Sem-III	16
31	MA History Sem-I	28
32	MA History Sem-III	31
33	MA Pol. Sc. Sem-I	35
34	MA Pol. Sc. Sem-III	30
35	MA Punjabi Sem-I	16
36	MA Punjabi Sem-III	19
37	MSc Geography Sem-I	5
38	MSc Geography Sem-III	6
39	BBA Sem-I	49
40	BBA Sem-III	36
41	BBA Sem-V	26
42	BCA Sem-I	152
43	BCA Sem-III	123
44	BCA Sem-V	101
45	BCom Hons Sem-I	176
46	BCom Hons Sem-III	137
47	BCom Hons Sem-V	113
48	BJMC (Journ & Mass Comm) Sem-I	46
49	BJMC (Journ & Mass Comm) Sem-III	18
50	BJMC (Journ & Mass Comm) Sem-V	9
51	BSc CSM (Comp.Stat.Math) Sem-I	34
52	BSc CSM (Comp.Stat.Math) Sem-III	9
53	BSc CSM (Comp.Stat.Math) Sem-V	14
54	BSc Hons in Biotech Sem-I	27
55	BSc Hons in Biotech Sem-III	6
56	BSc Hons in Biotech Sem-V	15
57	MA Psychology Sem-I	20
58	MA Psychology Sem-III	12
59	MA Public Admn Sem-I	17
60	MA Public Admn Sem-III	29
61	MA Sociology Sem-I	11
62	MA Sociology Sem-III	19
63	MCom Sem-I	28
64	MCom Sem-III	11

GOVERNMENT MOHINDRA COLLEGE, PATIALA		
COURSE WISE STUDENTS 2023-2024		
65	MSc Chemistry Sem-I	12
66	MSc Chemistry Sem-III	11
67	MSc IT Sem-I	12
68	MSc IT Sem-III	11
69	MSc Maths Sem-I	10
70	MSc Maths Sem-III	14
71	MSc Physics Sem-I	11
72	MSc Physics Sem-III	7
73	PG Diploma In Yoga Sem-I	33
74	PGDCA Sem-I	60
75	BA LLB Sem-I	121
76	BA LLB Sem-III	109
77	BA LLB Sem-V	105
78	BA LLB Sem-VII	99
79	BA LLB Sem-IX	73
Total		**7035**

- In India, the design of water supply systems has been done using certain standards. Currently the standard being used is NBC, 2016. This specifies a consideration of use of the following:
- For communities with a population of between 20,000 to 100,000 @ 100 to 135 liters per head per day (Max. 135 lpcd has been considered).
- Persons working in normal working hours i.e., Staff @ 45 liters per head per day
- Visitors in the institute @ 15 liters per head per day

4.1.4 Water Storage Profile

Institute had one Main water storage tank and many water tanks over building rooftop to meet the daily water needs.

Water Storage Tanks

4.1.5 Management & Conservation of Water Resources

Rainwater Harvesting

The College collecting water from the rooftop catchment through down take pipes fitted with filter which is used to recharge the groundwater.

Overview of Rain Water collection System in College Campus

Photograph of Pipes connecting from Rooftop to ground (Manhole and lawns)

Pipes connecting from Rooftop to ground (Manhole and lawns)

Photograph of Rain Water Collection Pits

Collection pits

Collection pits having connecting from Rooftop to ground water through R.C.C. Pipes

Photograph of Rain Water Collection structure

Collection pits having connecting from Rooftop to ground water through R.C.C. Pipes

4.1.6 Recommendation

- **Reduce Water consumption in Toilets for flushing.**
  Flush tank capacities are about 6-10 liters/flush. Use tank bank in existing flush tanks to reduce 2-3 liters water per flush or install water efficient cistern/flush tank with capacity 3/6 liters per flush.

  It is suggested to install following water efficient fixtures in the buildings to save domestic water consumption. Overall, 15-20% domestic water consumption will be reduced by installing and maintaining suggested fixtures:

- **Retrofit flow restrictors in hand washing taps and other taps:**

  Retrofit high flow rate hand washing taps with 'aerators and flow restrictors' so as to have 3-5 lpm flow rate in hand washing taps and 7 lpm flow rate in pantry and other taps in the buildings. Water flow rates in hand washing taps vary from 1.5 to 12 lpm; however, about 25 % sampled taps have flow rates > 5 lpm as shown in table below. Although Institute have optimized the water flow in handwashing taps in the common hand wash area of unit by installing foot operated taps where the flow in taps is > 5 lpm. Similarly, it is suggested to install flow restrictors in the hand washing taps of the other Institute area to reduce the excess flow in hand wash taps to 5 lpm. Generally, the water efficient hand washing taps use 3-5 lpm only.

- **Enhance Training and awareness of the employees and student at all levels and placing 'water saving' posters/slogans at various locations:**

  It is suggested that the Institute student & employees at all levels should be made aware and trained on 'Water Saving & Conservation' and 'Good Housekeeping Practices.'

  Therefore, it is recommended to periodically organize Awareness Programs for student & employees including workers on Water Conservation. This will create awareness & sense of responsibility among staff/employees/visitors.

- **Maintain logbook of daily Inlet Water from Municipal corporation**

  The Institute is suggested to continue record the water consumption data by maintaining logbook. The following format may be used for maintaining and recording the meter data on daily basis:

Format for maintaining logbook for water meters

Meter no.	Date DD/MM/YYYY	Initial reading (A)	Final reading (B)	Water quantity used (m^3) [B-A]	Cumulative total (m^3)

- Automatic switching system is not installed for pump sets used for overhead tank filling. We recommend to install automatic switching of pump based on the tank level to reduce excess operation of pump & avoid the over flow of water.

- Quality of water in terms of fresh water supply and domestic and effluent discharges need to check periodically by NABL and MoEF & CC approved laboratory.

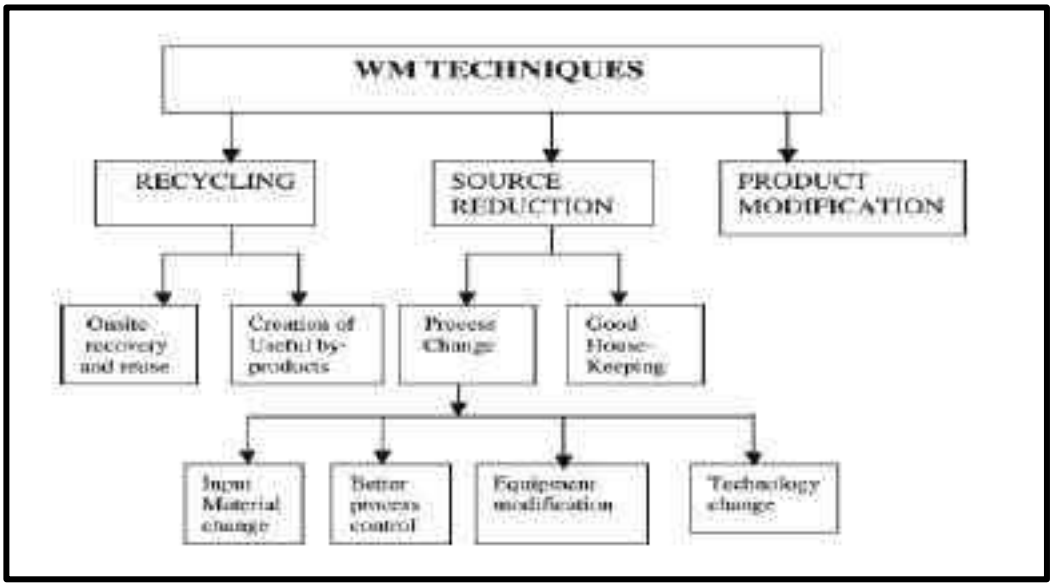
4.2 Waste Management System

4.2.1 Introduction to waste disposal

Waste disposal include the activities and actions required to manage waste from its inception to its final disposal. This includes the collection, transport, treatment, and disposal of waste, together with monitoring and regulation of the waste management process.

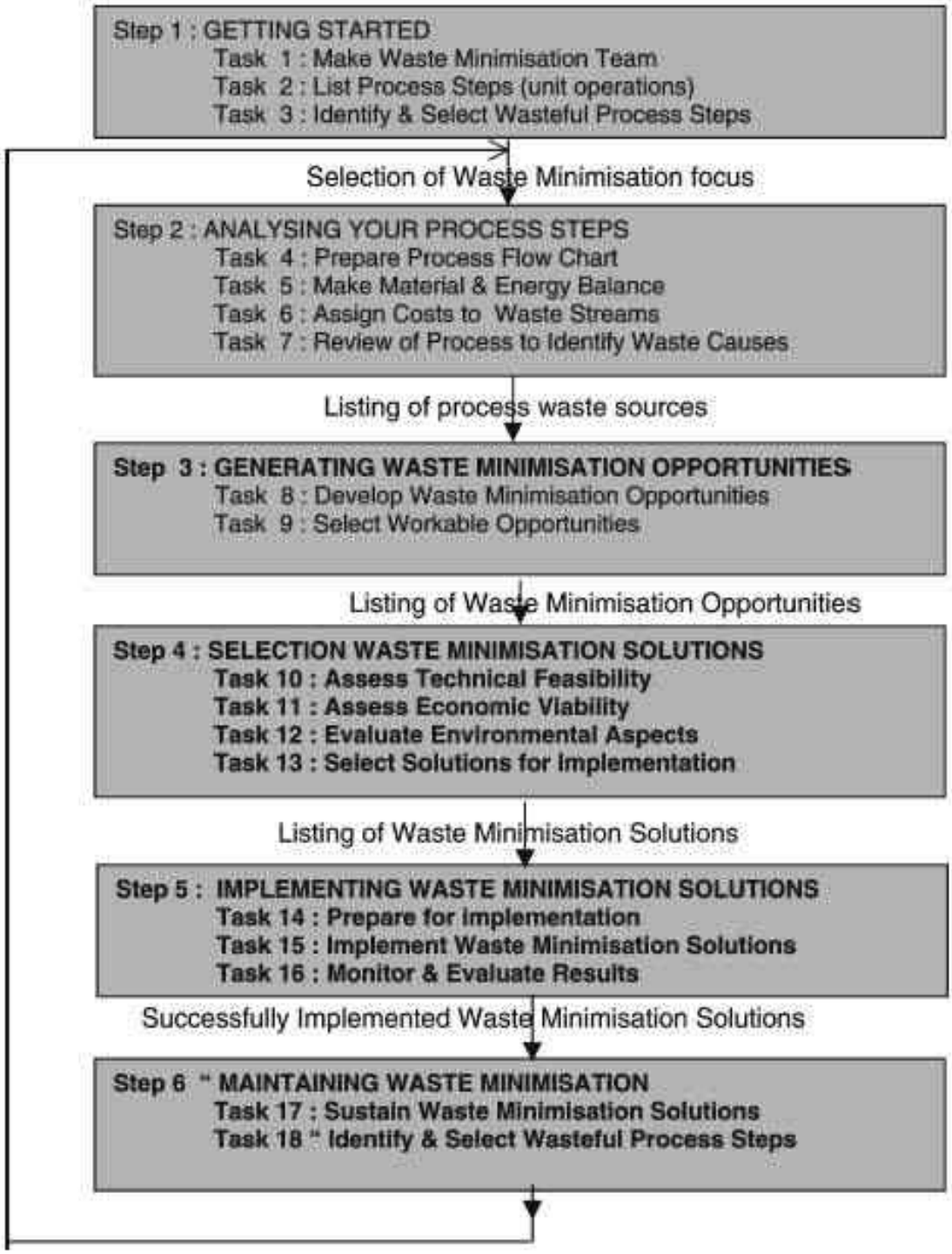
Waste can be solid, liquid, or gas, each type has different methods of disposal and management. Waste management deals with all types of waste, including industrial, biological, and household. In some cases, waste can pose a threat to human health. Waste is produced by human activity, for example, the extraction and processing of raw materials. Waste management is intended to reduce adverse effects of waste on human health, the environment or aesthetics.

Waste management practices are not uniform among countries (developed and developing nations) regions (urban and rural areas), and residential and industrial sectors all can take different approaches.



A large portion of waste management practices deal with municipal solid waste which is the bulk of the waste that is created by household, industrial, and commercial activity. Institute has employed waste bins for proper segregation of solid wastes in the campus.

Stepwise strategies for implementation of waste management system



4.2.2 Existing Scenario:

The Institution has taken up various initiatives to maintain an environment friendly campus by considering the management of the *degradable and non-degradable waste*. The Institution implements effective waste management through waste segregation, reusing and recycling of the waste. Students and faculties actively involved by knowing their perspective about the waste management techniques in the campus.

Institute further encourages environment friendly practices mentioned as follow:

- **Solid waste management**

The wastes generated in the college is segregated on daily basis as wet and dry waste in green and blue colored dust bins respectively, installed at different places, however no data is available with Institute regarding the quantity of waste (Biodegradable, Non-biodegradable, and E Waste) generated in the Institute.

The College has kept 2 different colored dustbins (i.e., Blue, and Green) for collecting waste from all around the college campus & hostels. Dry waste like plastic bottles, paper, cardboard etc. is segregated and collected in blue dustbins, wet waste like organic waste or kitchen waste such as vegetable peels, left-over food etc. is segregated and collected in green dustbins and e-waste is collected in black dustbins.


RECYCLABLE
Patiala, Punjab, India
Google


Patiala, Punjab, India
Google


Patiala, Punjab, India
Google


Patiala, Punjab, India
Google

Various eco-friendly approaches were used throughout the year. Special efforts were put in by the college for reusing and recycling wastes. Various Pits were dug then finally to make compost which is being used in college lawns.

Compost Pits

Recycled ♻ Old dustbins

Institution also conducts discussions with students, teaching and non-teaching staff to make them aware about the liquid waste management techniques and reduction methods.


GPS Map Camera
Patiala, Punjab, India
Mohindra College Lower Mall, Patiala, Punjab 147001, India
Lat 30.315417°
Long 76.396762°
24/04/23 10:25 AM GMT +05:30
Google

- Colour coded dustbins for example black for domestic hazardous waste, blue for dry waste /recyclable waste, green for wet waste/ biodegradable waste have been arranged in the college for the waste collection.

Dry & Wet Dustbins

4.2.3 Recommendations to improve the existing practice of waste management

- **Learn to repair rather than to discard things**

Another efficient measure to improve your eco-footprint is to repair your things rather than to buy new ones. As a society, we often tend to dispose of our used items pretty soon, even if they only have minor issues. Rather than disposing of these items, try to repair them. In our nowadays world, repairing things is pretty easy since we have numerous free videos online on how to repair things of your daily life.

- **Reuse and recycle rather than throughout campus**

You should also try to reuse your old things. For instance, if you have family members or friends who do not want to use old but still working items anymore, ask them if you can have them in order to reuse those items.

Conversely, if you have old things, you do not use anymore, offer them to family or friends who may be happy to reuse those items.

If no one wants to have your old items, at least make sure that you separate your waste properly in order to make recycling processes as efficient as possible.

- **Avoid buying of single-use batteries**

In order to reduce waste, do not use single-use batteries. Instead, use rechargeable batteries which can be used several times in order to save our natural resources and to fight resource depletion. Moreover, batteries often contain elements that can be quite toxic to our environmental system. Thus, make sure that you dispose of them according to your local waste disposal regulations and do not dispose of them in the household garbage!

- **Avoid buying and usage of Plastic bottled water**

The use of bottled water is still quite common. However, especially the use of plastic bottled water is a quite big environmental issue since it implies the production of excessive levels of unnecessary plastic waste.

In many regions, there is even no need to use bottled water since tap water quality is excellent. Since we live in the region where water quality is reasonably good. Hence, use tap water instead of bottled water in order to reduce your waste production.

- **Reusable containers**

To improve your ecological footprint even further, use reusable containers made out of metals or glass instead of plastic ones. By doing so, college can reduce the production of plastic waste & can use reusable containers many times instead of using disposable containers which will often end up in the trash bin after just a single use. Moreover, you may also be able to improve your health, since plastic is often associated with unhealthy components which could contaminate your food under certain circumstances.

- **Use a meal plan**

On a global scale, enormous amounts of food are wasted every day, while many people suffer from starvation at the same time. Thus, in order to avoid this kind of unnecessary food waste, you should start to use a meal plan. By doing so, you know exactly what you have to buy every day or week. You also save yourself from buying too much food which may end up in the trash bin. Using this meal plan on your smartphone instead of paper would further improve your eco-footprint since you would also save paper.

- **Avoid plastic packaging**

The production of plastic waste is one of our biggest environmental problems which we have to fight as humanity. Plastic waste not only ends up in our ocean and leads to significant water pollution, it also contributes to global warming since a big fraction of plastic waste is burned, which leads to the emission of harmful greenhouse gases like carbon dioxide.

- **Reduce garbage production**

In general, you should try to reduce your waste production in every part of your daily life whenever possible. Waste is quite harmful to our environmental system since the burning of waste leads to significant levels of greenhouse gas emissions. Moreover, the waste that ends up in landfills can lead to soil pollution and also to groundwater pollution. Making things worse, waste production in general implies the depletion of our natural resources. Thus, make sure to reduce your waste production in your daily life.

4.3 Air Quality Monitoring

Since air quality plays a vital role for good health. Air quality monitoring instrument is used to monitor quarterly the criteria pollutants. The most important air quality parameters, which are measured, are Humidity, PM 2.5 & PM 10. The other criteria pollutants such as Ozone, Carbon Monoxide, NO2, SO2 and Lead are not measured because there are no nearby industries located near the institute, which are emitting these pollutants.

Air Quality Index (AQI) transforms complex air quality data of criteria pollutants into a single number (index value), with nomenclature and Color. AQI was launched on 17 October 2014 in India to disseminate information on air quality in an easily understandable form for the general public. AQI has six categories of air quality which are defined as Good, Satisfactory, Moderately Polluted, Poor, Very poor and Severe. AQI is considered as 'One Number- One Color-One Description' for the common man to judge the air quality within his vicinity.

Table 4: AQI Index Details

AQI	Associated Health Impacts
Good (0–50)	Minimal Impact
Satisfactory (51–100)	May cause minor breathing discomfort to sensitive people.
Moderately polluted (101–200)	May cause breathing discomfort to people with lung disease such as asthma, and discomfort to people with heart disease, children, and older adults.
Poor (201–300)	May cause breathing discomfort to people on prolonged exposure, and discomfort to people with heart disease
Very Poor (301–400)	May cause respiratory illness to the people on prolonged exposure. Effect may be more pronounced in people with lung and heart diseases.
Severe (401-500)	May cause respiratory impact even on healthy people, and serious health impacts on people with lung/heart disease. The health impacts may be experienced even during light physical activity.

4.3.1 Existing Scenario:

The ambient air quality has been assessed through scientifically designed ambient air quality monitoring network. The monitoring network was designed based on the following considerations:

- Meteorological conditions
- Topography
- Likely impacts and sensitive receptors

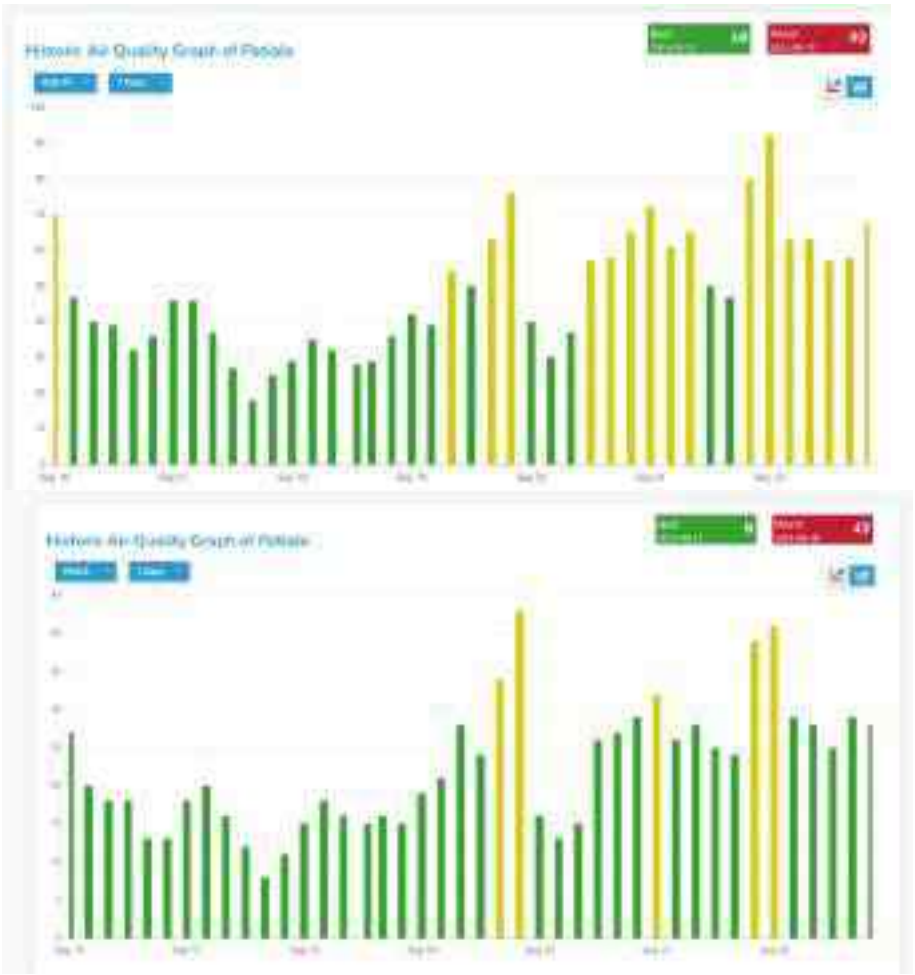
Ambient air quality monitoring network was established as per CPCB guidelines in triangular method @120-degree orientation of three sampling locations. Ambient air quality monitoring was done. Parameters & Methods of Air Quality Monitoring.

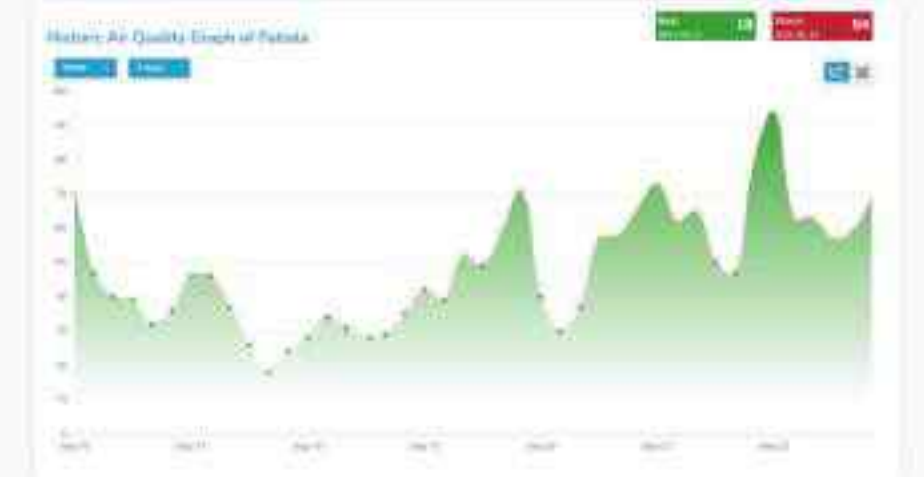
Table 5: AQI parameters values

Date	PM 2.5 (µg/m³)	PM10 (µg/m³)
18/09/23 to 23/09/23	**15-18**	**37-39**

Table 6: Test Results of Air Quality Index

Air Quality Index	Air Quality Status
57-68	**Satisfactory (51–100)**





4.3.2 Observation& Recommendation

During the visit it is observed that plant as already planted many plants near classroom and corridor but more plants can be added. Since the building is naturally ventilated, indoor air quality is not a major concern. More Indoor plants can be added in administrative areas and hanging pots in corridors can be added to increase biodiversity improve air quality can be provided in the administrative areas on all floors.

Recommended Indoor plants - Dieffenbachia amoena, Chlorophytum comosum and Epimnum auries

4.4 Sound Pollution Monitoring

The human ear is constantly being assailed by man-made sounds from all sides, and there remain few places in populous areas where relative quiet prevails. There are two basic properties of sound, (1) loudness and (2) frequency.

Loudness is the strength of sensation of sound perceived by the individual. It is measured in terms of Decibels.

Table 7: Details of sound level dB of different sources

S. No	Particulars
1	Just audible sound is about 10 dB,
2	A whisper about 20 dB,
3	Library place 30 dB,
4	Normal conversation about 35-60 dB,
5	Heavy street traffic 60-75 dB,
6	Boiler factories 120 dB,
7	Jet planes during take-off is about 150 dB,
8	Rocket engine about 180 db.

The loudest sound a person can stand without much discomfort is about 80 db. Sounds beyond 80 dB can be regarded as pollutant as it harms hearing system. The WHO has fixed 45 dB as the safe noise level for a city to avoid sleep disturbances. For international standards a noise level up to 65 dB is considered tolerable. Frequency is defined as the number of vibrations per second. It is denoted in Hertz (Hz). Sound pollution is another important parameter that is considered for green auditing of the College Campus. On the Sampling Basis at different sites were chosen for the monitoring purpose. Noise Levels are tabulated below.

4.4.1 Existing Scenario:

During the visit, the sample for DB Levels has been taken for different classrooms. Survey of DB was done with DB Meter to know the noise and pollution levels due to internal and external noise presence in different areas. Following table shows the result out measurement.

Table 8: DB Levels reading by measurement done at different rooms

Sr No	Particular	Maximum DB level Recorded	Minimum DB Level Recorded
1	Visitors Room	51	46
2	Principal Room	53	45
3	Superintendent Staff Room	45	44
4	Lab room	47	44
5	Class Room-1	51	45
6	Class Room-2	39	34
7	Class Room-3	38	37
8	Class Room-4	30	29
9	Administrative Office	51	45
10	Hostel Mess Hall	39	34
11	Hostel Mess Cooking Area	38	37
12	Hostel Common Room	30	29
13	Hostel Room & Others	41	41
14	Classroom-5	40	38
15	Lab Room	45	41
16	Staff Room	44	42
17	Reference Section Library	51	46
18	Newspaper, Periodical & Magazine Section Library	53	45
19	Library Staff Room	52	44
20	Staff Room	39	37
21	Classroom-6	56	51
22	Faculty Room	51	41
23	Auditorium	48	44

There were few areas of higher DB Levels because the college academic building is just situated near to road side which sometimes creates noise otherwise DB levels are within limits and the College campus has no noise pollution.

4.5 Carbon Footprint Auditing

Commutation of stakeholders has an impact on the environment through the emission of greenhouse gases into the atmosphere consequent to burning of fossil fuels (such as petrol and diesel vehicles). The most common greenhouse gases are carbon dioxide, water vapour, methane, nitrous oxide, and ozone. Of all the greenhouse gases, carbon dioxide is the most prominent greenhouse gas, comprising 402 ppm of the Earth's atmosphere. The release of carbon dioxide gas into the Earth's atmosphere through human activities is commonly known as carbon emissions.

An important aspect of doing an audit is to be able to measure your impact so that we can determine better ways to manage the impact. In addition to the water, waste, energy, and biodiversity audits we can also determine what our carbon footprint is, based on the amount of carbon emissions created. One aspect is to consider the distance and method travelled between home and College every day. It undertakes the measure of bulk of carbon dioxide equivalents exhaled by the organization through which the carbon accounting is done. It is necessary to know how much the organization is contributing towards sustainable development. It is therefore essential that any environmentally responsible institution examine its carbon footprint.

4.5.1 Efforts to Reduce Carbon Footprints

- Campus as installed 20 kWp rooftop SPV plant on the Administrative building

Solar Panel on the Main Administrative Building

Solar Panel on the Main Administrative Building

Solar Panel on the Main Administrative Building

Solar Panel on the Main Administrative Building

- Ensuring that the lights, fans, computers, and other systems on campus are turned off, unplugged, or kept in power saving mode when they are not in use.

4.5.2 Recommendations

- Develop the policy associated with reduction of carbon emission as primary aim.
- To reduce carbon footprint and pollution of transportation to the campus through use of buses, public transport, walking, bicycling and E-vehicles.
- The Green computing or E- work is helping the organization to reduce footprint very effectively.
- Improve the awareness among the faculty, students, and other employees regarding Clean Development Mechanism (CDM) to reduce the consumption of electricity and natural resources.
- Establish a system of carpooling among the staff to reduce the number of four wheelers coming to the College.
- Establish a more efficient cooking system to save gas.
- Discourage the students using two wheelers for their commutation.
- If Possible, make the campus Vehicle free for at least a day in the week

4.6 Health and Wellbeing Assessment

The world health organization (WHO) defined health with a phrase that modern authorities still apply. Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity. In 1986, the WHO again updated definition of health as- A resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal resources, as well as physical capacities."

Health and well-being are a critical component of any green or environment audit. Overall health and well beings of occupants is the most important aspect of Indian Green Building Congress-Campus rating system also.

The observations in health and wellbeing covers areas as below:

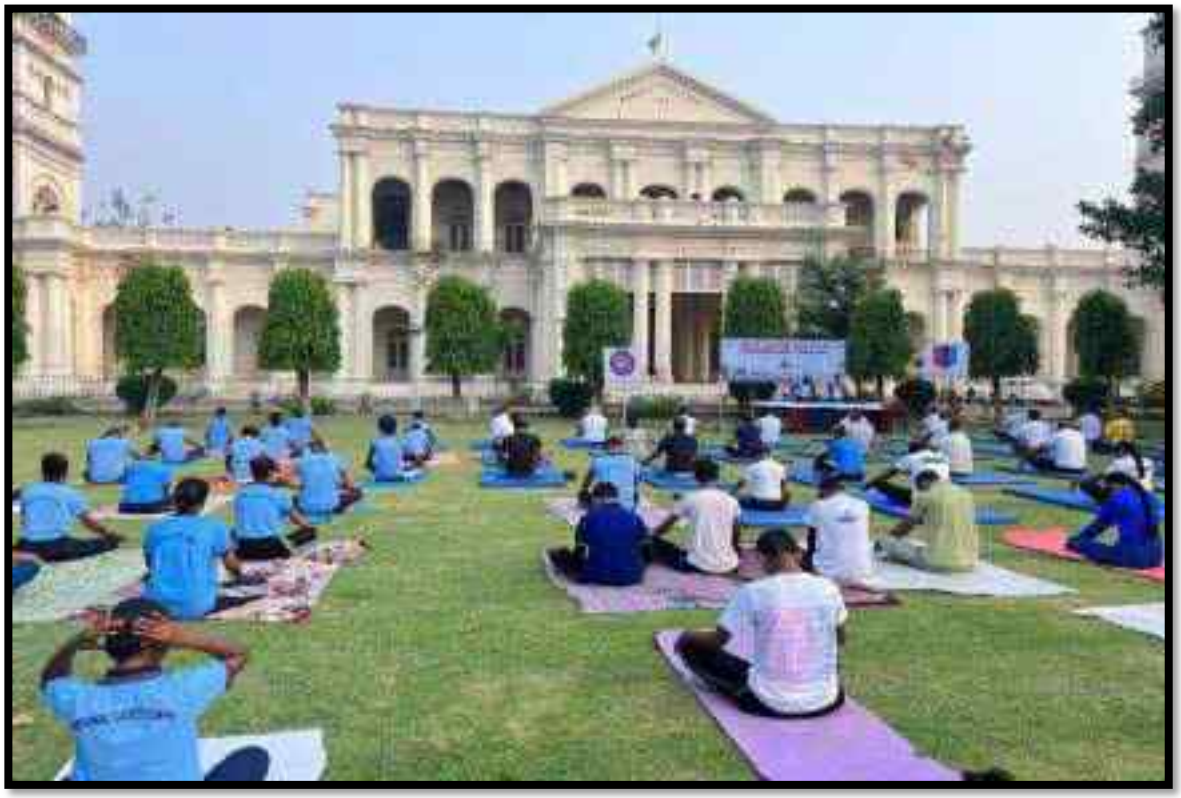
1. Providing clean ambient atmosphere to the occupants.
2. Ensure that the campus design caters to differently abled and senior citizens
3. Provide access to all basic amenities, so as to encourage walking and thereby improve quality of life
4. Provide health & wellbeing facilities, so as to enhance physical, emotional, and spiritual well-being of campus occupants- health 7 well-Being facilities include, but not limited to, aerobics, gymnasium, swimming pool, yoga, meditation, indoor games, outdoor games, playground, etc. Additionally, provide healthcare, emergency & security facilities within the campus such as first-aid/ clinic, pharmacy, emergency alarm, surveillance system etc., in the campus
5. Promote welfare of the construction workforce by providing safe and healthy work conditions.
6. Work for other personal, inter-personal and community issues like mental health, anti-ragging, hygiene etc.

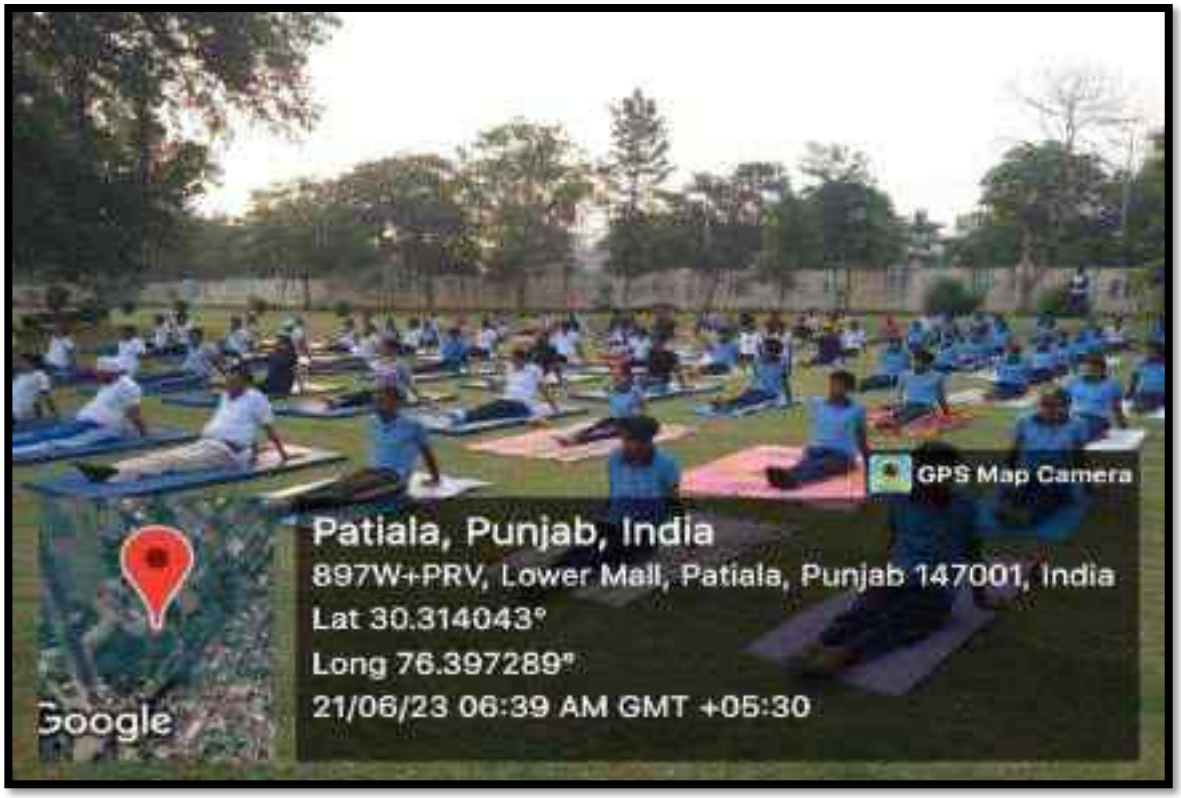
4.6.1 Observation:

1. Government Mohindra College has been found to provide the right and best atmosphere for developing and sustaining an individual and community health and well-being in the best possibly way.
2. The institute campus is complete friendly to differently abled and senior citizens.
3. All facilities inside the campus are easily and conveniently available.
4. The institute regularly conducts seminars, workshops, and community programs in addition to having counselling and helpline nos. Through various clubs, committees and associations

related to mental health through helpline, hygiene, anti-ragging initiatives, balanced diet etc.

4.6.2 Awareness and initiative taken by college regarding the social health improvement

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Blood Donation Camp at Campus


Patiala, Punjab, India
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Patiala, Punjab, India
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YOUTH REDCROSS SOCIETY
ST. JOHN AMBULANCE ASSOCIATION
GOVT MOHINDRA COLLEGE PATIALA
Patiala, Punjab, India
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Health and Well-being Club

Environment awareness and tree plantation by campus

Earth day Celebration

Plant Plantation at Campus

Cycle Rally at Campus

Swachh Bharat Abhiyan Awareness Program


CLEAN INDIA


N.S.S.

Earth Day Celebration at Campus


EARTH DAY CELEBRATION


Environment Education Programme
LIFE


GREEN

CHAPTER 5 GREEN AUDIT

5.1 Biodiversity status of the college campus

Government Mohindra College, Patiala is situated in the center of the Patiala city but campus is full rich in biodiversity. To conserve this biodiversity, our first need is to learn about the existing biodiversity of the place. Unless we know whom to conserve, we will not be able to plan proper conservation initiatives. Also, it is important to understand the bio-diversity of an area so that the local people can be aware of the richness of bio-diversity of the place they are living in and their responsibility to maintain that richness.

In one year, a single mature tree will absorb up to 48 pounds of carbon dioxide from the atmosphere, and release it as oxygen. The amount of oxygen that a single tree produces is enough to provide one day's supply of oxygen for people. So, while we are busy studying and working on earning those good grades, all the trees on campus are also working hard to make the air cleaner for us. Trees on campus impact our mental health as well; studies have shown that trees greatly reduce stress, which a huge deal is considering many students are under some amount of stress.

The main objective of this study is to get a baseline data of bio-diversity of the area which will include:

- Documentation of the floral diversity of the area, its trees, herbs, shrubs, and climbers.
- Documentation of the major faunal groups like mammals, reptiles, amphibians, birds, and butterflies.
- Documentation of the specific interdependence of floral and faunal life.

5.1.1 Method of Study:

Brief methodology for the floral and faunal survey is given below.

- Sampling was done mostly in random manner.
- The total area was surveyed by walking at day time.
- Surveys were conducted for the maximum possible hours in day time.
- Tree species were documented through physical verification on foot.

- For faunal species we emphasized mainly on the direct sighting. Also call of various birds and amphibians and nesting of some faunal species were considered as direct evidences.
- Observing mammals depend critically on the size of the species and its natural history. Diurnal species are common and highly visible. Nocturnal species, however, are rare and difficult to detect.
- Birds are often brightly coloured, highly vocal at certain times of the year and relatively easy to see. Sampling was done on the basis of direct sighting, call determination and from the nests of some bird species.
- Reptiles were found mostly by looking in potential shelter sites like the under surface of rocks, logs, tree hollows and leaf litter and also among and underneath the hedges.
- Amphibians act as potential ecological indicators. However, most of them are highly secretive in their habits and may spend the greater part of their lives underground or otherwise inaccessible to biologists. These animals do venture out but typically only at night. They were searched near pond, road beside wetland and in other possible areas. Diurnal search operations are also successful.
- Active invertebrates like the insects require more active search. For larger
- Winged insects like butterflies, random samplings were carried and point sampling was also done.
- The easiest way to observe many of the invertebrates is simply looking for them in the suitable habitat or microhabitat. Searching was carried out under stones, logs, bark, in crevices in the walls and rocks and also in leaf litter, dung etc. Slugs and snails are more conspicuous during wet weather and especially at night when they were found using a torch.

5.1.2 Existing Biodiversity Status

The college has diverse range of flora and fauna in the campus. Environment team has been formulated in the college to ensure the sustainable protection of the biodiversity within the college premises. College has well maintained herbal garden which mainly includes the herbal and medicinal plants. In addition to these different types of variety of trees, plants, shrubs etc. are grown in different areas of the college details of which are as follows:

S.No.	Major Areas of College	No. of Plants
1.	Triangular Area (In Front of Science Block	25

S.No.	Major Areas of College	No. of Plants
2.	Parking Area	7
3.	In front of Sri Gurudwara Sahib (Square Area)	43
4.	Lawn Area (In front of Science block)	273
5.	Agri Farm	160
6.	Backside of Science Block (Rose Garden)	155
7.	In front of Principal office	44
8.	Basketball court Ground	08
9.	Sport Ground	12
10.	Botanical Garden	110

5.1.3 Environment Society.

Botanical garden

To educate students about medicinal Plants used in day-to-day life and to enable them to identify herbal plants, a small botanical garden was created in the college campus for the knowledge of students. Different type of medicinal plant is grown in the Botanical Garden.


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Blooming Cassia Fistula (Amaltas) Near Library

Gul Mohar (Delonix regia) near sabha bhavan


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Trail Hill Forest
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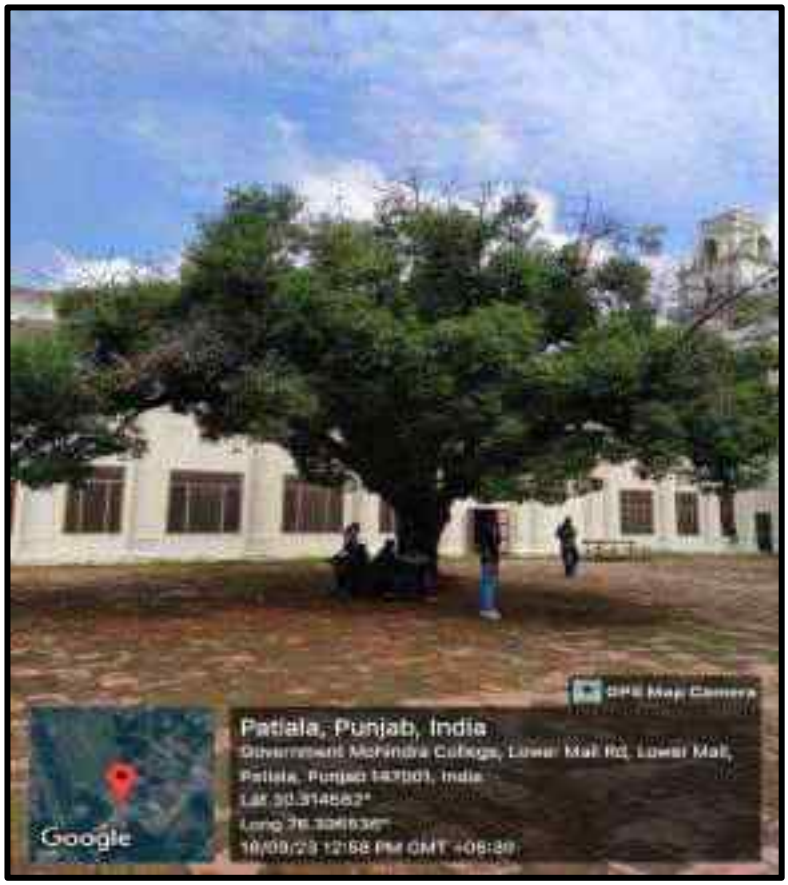
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5.1.4 Activities in press / newspaper


ਕਾਲਜ 'ਚ ਧਰਤੀ ਦਿਵਸ ਨੂੰ ਸਮਰਪਿਤ ਸਮਾਗਮ ਕਰਵਾਇਆ


ਮਹਿੰਦਰਾ ਕਾਲਜ 'ਚ ਜਾਗਰੂਕਤਾ ਪ੍ਰੋਗਰਾਮ ਕਰਵਾਇਆ


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ਮਹਿੰਦਰਾ ਕਾਲਜ 'ਚ ਵਾਈ-20 ਵਿਸ਼ੇ ਸਿਹਤ ਤੰਦਰੁਸਤੀ ਤੇ ਖੇਡਾਂ 'ਤੇ ਜਾਗਰੂਕਤਾ ਪ੍ਰੋਗਰਾਮ ਕਰਵਾਇਆ

ਮਹਿੰਦਰਾ ਕਾਲਜ 'ਚ ਮਨਾਇਆ ਵਿਸ਼ਵ ਸਾਈਕਲ ਦਿਵਸ

ਸਰਕਾਰੀ ਮਹਿੰਦਰਾ ਕਾਲਜ ਵਿਖੇ ਵਿਸ਼ਵ ਸਾਈਕਲ ਦਿਵਸ ਮਨਾਏ ਜਾਣ ਦਾ ਦ੍ਰਿਸ਼।

दैनिक सवेरा

महिंद्रा कालेज में लगाई 2 दिवसीय योग वर्कशाप

योग करते हुए कालेज के छात्र, अध्यापक व अन्य।

ਸਰਕਾਰੀ ਮਹਿੰਦਰਾ ਕਾਲਜ ਵਿਖੇ ਵਾਤਾਵਰਨ ਦਿਵਸ ਮਨਾਏ ਜਾਣ ਦਾ ਦ੍ਰਿਸ਼।

ਵਾਤਾਵਰਨ ਸੰਭਾਲ ਦਾ ਦਿੱਤਾ ਹੋਕਾ

ਪੱਤਰ ਪ੍ਰੇਰਕ, ਪਟਿਆਲਾ : ਸਰਕਾਰੀ ਮਹਿੰਦਰਾ ਕਾਲਜ ਪਟਿਆਲਾ ਵਿਖੇ ਵਿਸ਼ਵ ਵਾਤਾਵਰਨ ਦਿਵਸ ਮਨਾਇਆ ਗਿਆ। ਇਸ ਦੌਰਾਨ ਐੱਨਸੀਸੀ ਨੇਵੀ ਅਤੇ ਏਅਰ ਵਿੰਗ ਦੇ ਵਿਦਿਆਰਥੀਆਂ ਨੇ ਵਾਤਾਵਰਨ ਸੁਰੱਖਿਆ ਅਤੇ ਟਿਕਾਊ ਵਿਕਾਸ ਲਈ ਪੋਸਟਰ ਬਣਾਏ। ਕਾਲਜ ਪ੍ਰਿੰਸੀਪਲ ਅਮਰਜੀਤ ਸਿੰਘ ਦੀ ਅਗਵਾਈ ਹੇਠ ਐੱਨਸੀਸੀ ਕੈਡਿਟਾਂ ਅਤੇ ਐੱਨਐੱਸਐੱਸ ਵਾਲੰਟੀਅਰਾਂ ਨੇ ਵਾਤਾਵਰਨ ਦੀ ਸੰਭਾਲ ਲਈ ਤਨਦੇਹੀ ਨਾਲ ਯਤਨ ਕਰਨ ਦਾ ਪ੍ਰਣ ਲਿਆ। ਇਸ ਮੌਕੇ ਕਾਲਜ ਦੇ ਵਿਦਿਆਰਥੀਆਂ ਨੇ ਕਾਲਜ ਕੈਂਪਸ ਅੰਦਰ ਵੱਖ-ਵੱਖ ਥਾਵਾਂ 'ਤੇ ਬੂਟੇ ਵੀ ਲਾਏ।

ਪ੍ਰੋਗਰਾਮ ਦੌਰਾਨ ਕਾਲਜ ਪ੍ਰਿੰਸੀਪਲ ਪ੍ਰੋ. ਅਮਰਜੀਤ ਸਿੰਘ ਤੇ ਸਟਾਫ।

ਮਹਿੰਦਰਾ ਕਾਲਜ ਵਿਖੇ ਪ੍ਰੋਗਰਾਮ ਕਰਾਇਆ

ਪੱਤਰ ਪ੍ਰੇਰਕ, ਪਟਿਆਲਾ : ਸਰਕਾਰੀ ਮਹਿੰਦਰਾ ਕਾਲਜ ਦੇ ਮਨੋਵਿਗਿਆਨ ਵਿਭਾਗ ਨੇ ਪ੍ਰਿੰਸੀਪਲ ਪ੍ਰੋ. ਅਮਰਜੀਤ ਸਿੰਘ ਦੀ ਯੋਗ ਅਗਵਾਈ ਹੇਠ ਨਸ਼ੀਲੇ ਪਦਾਰਥਾਂ ਦੀ ਦੁਰਵਰਤੋਂ ਵਿਰੁੱਧ ਜਾਗਰੂਕਤਾ ਪੈਦਾ ਕਰਨ ਲਈ ਵਿਸ਼ੇਸ਼ ਉਪਰਾਲਾ ਕੀਤਾ। ਇਸ ਉਪਰਾਲੇ ਦੇ ਅੰਤਰਗਤ ਮਨੋਵਿਗਿਆਨ ਵਿਭਾਗ ਵੱਲੋਂ ਪੋਸਟਰ ਮੇਕਿੰਗ, ਸਲੋਗਨ, ਹਸਤਾਖਰ ਮੁਹਿੰਮ ਅਤੇ ਵੈਬੀਨਾਰ ਕਰਵਾਇਆ ਗਿਆ। ਜਿਸ 'ਚ ਸਰਕਾਰੀ ਮਹਿੰਦਰਾ ਕਾਲਜ ਦੀ ਸਮੂਹ ਫੈਕਲਟੀ ਅਤੇ ਵਿਦਿਆਰਥੀਆਂ ਨੇ ਸ਼ਿਰਕਤ ਕੀਤੀ। ਇਸ ਤੋਂ ਇਲਾਵਾ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਨਸ਼ਾ ਮੁਕਤ ਰਹਿਣ ਦੀ ਸਹੁੰ ਵੀ ਚੁਕਵਾਈ ਗਈ। ਇਸ ਮੌਕੇ ਸਹੁੰ ਚੁੱਕਣ ਵਾਲੇ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਈ-ਸਰਟੀਫਿਕੇਟ ਵੀ ਪ੍ਰਦਾਨ ਕੀਤੇ ਗਏ।

दैनिक सवेरा

गवर्नमैंट महिंद्रा कालेज में मनाया पृथ्वी दिवस

सवेरा न्यूज / बीर, पटियाला : सरकारी महिंद्रा कॉलेज पटियाला के बॉटनी विभाग द्वारा इंटरनल क्वालिटी एश्योरेंस सेल के सहयोग से 24 और 25 अप्रैल को दो दिवसीय पृथ्वी दिवस मनाया गया। पहले दिन विभाग की ओर से पेपर वाचन प्रतियोगिता व स्लोगन प्रतियोगिता का आयोजन किया तथा दूसरे दिन कॉलेज के बाहर सामने बाजार में जागरूकता रैली निकाली गई, जिसके क्रम में विभाग के प्रोफेसर अवनीत पाल सिंह ने भाग लिया। वनस्पति विज्ञान, पंजाबी विश्वविद्यालय, पटियाला द्वारा दैनिक जीवन में अनाज विषय पर विशेष व्याख्यान दिया गया। यह दो दिवसीय कार्यक्रम प्राचार्य अमरजीत सिंह के नेतृत्व में हुआ। इस मौके पर प्रि. अमरजीत सिंह के नेतृत्व में पौधे लगाए गए और विद्यार्थियों को पौधे भी बांटे गए। इस दौरान प्रो. अंकिता बेरी, प्रो. रोनी गर्ग, डॉ. जितेन्द्र जैन, प्रो. सुनील गुप्ता, डॉ. राजन भारद्वाज, प्रो. रविंदर रेखी, प्रो. लखविंदर कौर, प्रो. हरप्रीत सिंह, डॉ. गंगा सिंह, प्रो. शानु, प्रो. सोहेल, प्रो. हरविंदर कौर, प्रो. नवनीत कौर, प्रो. हरमनदीप कौर व डॉ. ज्योति सैनी कौर शामिल हुईं।

दैनिक सवेरा

सरकारी महेंद्रा कालेज में विश्व साइकिल दिवस मनाया

साइकिल दिवस मनाते हुए।

सवेरा न्यूज / बीर

पटियाला, 3 जून : सरकारी महिंद्रा कॉलेज, पटियाला में प्रिंसिपल (प्रो.) अमरजीत सिंह के दिशा निर्देशों [illegible] विश्व साइकिल दिवस मनाया गया। [illegible]

5.1.5 Botanical Garden Plants

Sr. No.	Name of the plants	Common name and Families	Number of the plants
1	*Dracaena fragrance*	Corn plant Asparagaceae	8
2	*Cassia fistula*	Amaltaas Fabaceae	2
3	*Ficus glomeratus*	Gullar Moraceae	2
4	*Ficus religiosa*	Peepal Moraceae	1
5	*Ficus bengalensis*	Bohad Moraceae	1
6	*Maleleuca bracteata*	Golden bottle brush Myrtaceae	2
7	*Eleocarpus angustifolius*	Rudrakash Eleocarpaceae	3
8	*Terminalia arjuna*	Arjuna Combretaceae	1
9	*Terminalia belerica*	Beheda Combretaceae	2
10	*Terminalia chebula*	Harad Combretaceae	2
11	*Mangiefiera indica*	Amb Anacardiaceae	2
12	*Mimusops elengi*	Moulsari Sapotaceae	3
13	*Chukrasia velutina*	Mahogany Meliaceae	2
14	*Litchi chinesis*	Lichi Sapindaceae	4
15	*Pinus roxburghii*	Cheel Pinaceae (Gymnosperm)	2
16	*Manilkara zapota*	Chiku Sapootaceae	2
17	*Phyllanthus emblica*	Aanwla Euphorbiaceae	3
18	*Hibiscus rosa-sinesis*	China rose Malvaceae	4
19	*Cycas revoluta*	Kanghi-paam Cycadaceae (Gymnosperm)	4
20	*Dalbergia sissoo*	Tahli Fabaceae	2
21	*Eucalyptus globulus*	safedha Myrtaceae	4
23	*Vernoia amydgyalina*	Asteraceae	3
24	*Lawsonia inermis*	Mehandi Lythraceae	2
25	*Syzygium cumin*	Jamun Myrtaceae	2
26	*Nyctanthus arbor-tristis*	Har-Shingar oleaceae	1
27	*Albizia lebbeck*	Sarrin Fabaceae	2
28	*Punica granatum*	Anar Lythraceae	1
29	*Elettaria cardamom*	Elaichi Lythraceae	1
30	*Nerium oleander*	Kaner Apocynaceae	2
31	*Cymbopogon schoenanthus*	Lemmon grass Poaceae	2
32	*Bauhinia variegata*	Kachnar Fabaceae	2
33	*Thuja occidentalis*	Mor-pankhi Cupressaceae	5
34	*Cinnamomum camphora*	Kapur Lauraceae	2
35	*Citrus sp.*	Narangi Rutaceae	2
36	*Psidium guajava*	Amrood Myrtaceae	1
37	*Melia azedarach*	Dharek Meliaceae	1
38	*Kalanchoe orygyalis*	Flaming katy Crassulaceae	5

Sr. No.	Name of the plants	Common name and Families	Number of the plants
39	*Oscimum sanctum*	Tulsi Lamiaceae	6
40	*Bryophyllum pinnata*	Pathar-chat Crassulaceae	5
41	*Syngonium podophyllum*	Arrowhead plant Areceae	-
42	*Tridescantia pallid*	Spiderwort Commelinaceae	-
43	*Coleus scutellarioide*	Coleus Lamiaceae	-
44	*Dieffenbachia amoena*	Dumbcane Areceae	-
45	*Cordyline fruticosa*	Palm lily Asparagaceae	-
46	*Bryophylum sp*	Pathar chat Crassu	-
47	*Tactona grandis*	teak plant	2
48	*Araucaria araucana*	Christmas tree	2
49	*Prunus persica*	Peach Rosaceae	2
50	*Alstonia scholaris*	Satona Apocynaceae	3

The flora and fauna of Government Mohindra College, Patiala are highly diversified and rich as evidenced from the available types of plants (near about 89 genus and more than 100 species) and birds (near about 40 species) along with insects and reptiles. It not only complements its architectural beauty but serve as important academic resource for its various academic programmers.

5.1.6 Flora diversity has been studied and documented as below:

Triangular Area (In Front of Science Block)

Sr. No.	Botanical name of the Plant	Common name	No. of Plants
1	*Polyalthia longifolia*	False Ashoka	10
2	*Roystonea regia*	Royal Palm	4
3	*Tectona grandis*	Teak	5
4	*Melia azedarach*	Dek/Dharek	3
5	*Melaleuca alternifolia*	Chinaberry	1
6	*Lagerstrowmia*	Jrul/Pride of india	2

Parking Area

Sr. No.	Botanical name of the Plant	Common name	No. of Plants
1	*Delonix regia*	gulmohar	1
2	*Melia Azedarach*	Dek/Dhrek	6

In front of Sri Gurudwara Sahib (Square Area)

Sr. No.	Botanical name of the Plant	Common name	No. of Plants
1	*Rosa indica*	Rose / gulab	27

2	*Hibiscus rosa-sinesis*	China rose	5
3	*Palm tree sp*	Teak	1
4	*Ficus Sp.*	Fig tree	2
5	*Jatropha integerima*	Ratanjot/fuel plant	6
6	*Acalypha indica*	Three seeded murcury	1
7	*Citrus lemon*	Lemon	1

Lawn Area (In front of Science block)

Sr. No.	Botanical name of the Plant	Common name	No. of Plants
1	*Polyalthia longifolia*	False Ashoka	33
2	*Ficus benghalensis*	Fig	1
3	*Royal palm*	Palm tree	16
4	*Jasminum sambac*	Chameli	16
5	*Thuja sp.*	Morpankhi	29
6	*Chukrasia tabularis*	Redwood	11
7	*Grevillea robusta*	Silver oak	8
8	*Bauhinia sp.*	Kachnar	7
9	*Cassia fistula*	Amaltas	5
10	*Prosopis sp.*	Kikar	2
11	*Jatropa sp.*	Ratanjot	16
12	*Azadirachta indica*	Neem	13
13	*Senna occidentalis*		5
14	*Delonix regia*	Gulmohar	4
15	*Terminalia arjuna*	Arjun	3
16	*Terminalia chebula*	Harad	2
17	*Tecoma stans*	Tecoma	5
18	*Melia azedarch*	Dek	3
19	*Mimosa elengi*	Moulsari	1
20	*Murraya kenigii*	Kadi Patta	52
21	*Citrus sinesis*	Mosambi	9
22	*Phenix dactylifera*	Khajur	10
23	*Morus alba*	Sehtut	3
24	*Ficus rotundus*	Fig	1
25	*Pongamia pinnata*	Sukhchain	2
26	*Punica grantum*	Anar	2
27	*Grevillea robusta*	Silver oak	1
28	*Casuarina equisetifolia*	Coastal she-Oak	5
29	*Aegle marmelos*	Bael/patar bil	8

Agri-farm

Sr. No.	Name of the Plant	Common Name	No. of the Plant
1	*Rosa indica*	Rose	42
2	*Ficus rotundus*	Fig	9
3	*Elaeocarpus angustifolius*	Rudraksh	1
4	*Emblica officinalis*	Anwala	5
5	*Ficus panda*	fig	3
6	*Bombax ceiba*	Simbal	2
7	*Punica granatum*	Anar	1
8	*Chukrasia tubularis*		5
9	*Morus alba*	Sehtut	1
10	*Eucalyptus sp.*	Safedha	6
11	*Euphorbia sp.*		8
12	*Terminalia arjuna*	arjunn	1
13	*Roystonea regia*	Royal palm	1
14	*Lawsonia inermis*	mehandi	2
15	*Moringa oleifera*	sohanjna	5
16	*Aloe vera*	Ghumar	15
17	*Melia azedarch*	Dek	3
18	*Pongamia pinnata*	Sukhchain	1
19	*Tradescantia sp*		12
20	*Diffenbachia sp*		13
21	*Aegel marmelos*		1
22	*Nycrtanthus arborum*	Har-shingar	2
23	*Syzygium cumni*		1
24	*Leucaena leucocephala*	Su-babool	12
25	*Rhoea sp.*	Rhoeo	8

Backside of Science Block (Rose Garden)

S.No	Name of the Plant	Common name	No. of Plants
1	*Alstonia scholaris*	satona	6
2	*Polyalthea longifolia*	False ashoka	13
3	*Phoenix dactylophora*	Khajoor	12
4	*Bauhinia perpurea*	Kachnaar	3
5	*Rosa indica*	Rose	80
6	*Ficus panda*	-	7
7	*Cycas revoluta*	Kanghi-palm	4
8	*Thuja sp*	Morpankhi	8
9	*Cassia fistula*	Amaltas	4
10	*Callistemon sp*	bottle Brush	2

S.No	Name of the Plant	Common name	No. of Plants
11	*Delonix regia*	Gulmohar	1
12	*Plumeria sp.*	Frangipani/champa/gulchin	1
13	*Melia azedarach*	Dek	2
14	*Mangifera indica*	Aamb	1
15	*Cassia fistula*	Amaltas	1
16	*Grevillea robusta*	Silver oak	6
17	*Ficus relegiosa*	Peepal	2
18	*Morus alba*	sehtut	2

In front of Principal office

Sr. No.	Name of the Plant	Common Name	Number of the Plant
1	*Rosa indica*	Rose	15
2	*Ficus panda*	fig	5
3	*Duranta repens*	Golden duranta	Numerous
4	*Tabernamontana divericata*	Chandani	14
5	*Roystonea regia*	Royal palm	10

Basketball court Ground

Sr. No.	Name of the Plant	Common name	Number of Plant
1	*Albizia labbeck*	Sarin	3
2	*Dalbergia sissoo*	Tahli/ Sheesham	3
3	*Ficus bengalensis*	Fig/bohad/banyan tree	1
4	*Ficus religiosa*	Peepal/ fig	1

Sports Ground

Sr. No.	Name of the Plant	Common name	Number of Plant
1	*Terminalia arjuna*	Arjun	6
2	*Bauhinia varigata*	Kachnar	1
3	*Albizia labbeck*	Sarin	2
4	*Azadiractus indica*	Neem	1
5	*Bombax ceiba*	Simbal	2

5.1.7 Fauna diversity has been studied and documented as below:

Fauna

Because of the lush green environment present in the college premises college has become the habitat for the number of birds and animals. Diverse range of birds and animals for example sparrows, myna, parrots, crows, cuckoo, pigeon, owl, woodpecker and monkey, squirrels, mongoose, dogs and cats are living freely in the. Staff and students of college takes care of the food for these birds and animals. Arrangements are made for the bird and animal feeders and houses at the appropriate areas in the college. All these species of flora and fauna work together in the ecosystems in the form of intricate web to maintain the balance and support of all life forms within the college campus.

Our Winged Partners

College is blessed to be a home to a number of beautiful winged friends due to its lush green surroundings & beautiful fruit garden. Students and staff ensure their wellbeing by feeding and caring them. Students and staff create and use different types of bird feeders to attract the birds to visit us

Table 9: List of Birds Visiting college campus

Sr. no.	Common names	Scientific names	Campus
1	Black Kite	*Milvus lineatus*	Campus
2	Shikra	*Accipiter badius*	Campus
3	Oriental Honey Buzzard	*Pernis ptilorhynchus*	Campus
4	Black-winged Stilt	*Himantopus himantopus*	Campus
5	Rock Pigeon	*Columba livia*	Campus
6	Spotted Dove	*Streptopelia chinensis*	Campus
7	Yellow Footed Green Pigeon	*Treron phoenicoptera*	Campus
8	Eurasian Hoopoe	*Upupa epops*	Campus
9	Asian Koel	*Eudynamys scolopacea*	Campus
10	Greater Coucal	*Centropus sinensis*	Campus
11	Grey Francolin	*Francolinus pondicerianus*	Campus
12	Indian Peafowl	*Pavo cristatus*	Campus
13	Common Moorhen	*Gallinula chloropus*	Campus
14	White-Breasted Waterhen	*Amaurornis phoenicurus*	Campus
15	Ashy Prinia	*Prinia socialis*	Campus
16	Black Drongo	*Dicrurus macrocercus*	Campus
17	Black Redstart	*Phoenicurus ochruros*	Campus
18	Brahminy Myna	*Sturnus pagodarum*	Campus
19	Common Myna	*Acridotheres tristis*	Campus
20	House Crow	*Corvus splendens*	Campus
21	Indian Robin	*Saxicoloides fulicata*	Campus
22	Indian Silverbill	*Lonchura malabarica*	Campus
23	Jungle Babbler	*Turdoides striatus*	Campus
24	Oriental Magpie Robin	*Copsychus saularis*	Campus
25	Plain Prinia	*Prinia inornata*	Campus
26	Purple Sunbird	*Nectarinia asiatica*	Campus
27	Indian Treepie	*Dendrocitta vagabunda*	Campus
28	Sind Sparrow	*Passer pyrrhonotus*	Campus

Sr. no.	Common names	Scientific names	Campus
29	Tailor Bird	*Orthotomus sutorius*	Campus
30	Cattle Egret	*Bubulcus ibis*	Campus
31	Indian Pond Heron	*Ardeola grayii*	Campus
32	Brown Headed Barbet	*Megalaima zeylanica*	Campus
33	Coppersmith Barbet	*Megalaima haemacephala*	Campus
34	Lesser Golden Backed Woodpecker	*Dinopium benghalense*	Campus
35	Rose Ringed Parakeet	*Psittacula krameri*	Campus
36	Spotted Owlet	*Athene brama*	Campus
37	Red-wattled Lapwing	*Vanellus indicus*	Campus
38	Red breasted flycatcher	*Ficedula parva*	Campus
39	White Wagtail	*Motacilla alba*	Campus
40	White browed wagtail	*Motacilla maderaspatensis*	Campus
41	Greenish warbler	*Phylloscopus trochiloides*	Campus
42	Indian Grey Hornbill	*Ocyceros birostris*	Campus
43	Red-vented Bulbul	*Pycnonotus cafer*	Campus
44	Eurasian Thick-Knee	*Burhinus oedicnemus*	Campus
45	Brown Rock-Chat	*Cercomela fusca*	Campus
46	Long Tail Shrike	*Lanius schach*	Campus

Table 10: Insects at college campus

Sr. no.	Scientific names	Common Name
1	*Saustus gremius*	Stonefly
2	*Sphenrarium purpuresence*	Spittle bug
3	*Myalbris pustulata*	Indian leaf-hopper
4	*Syntomoides imaon*	Phyllocrania paradoxa

PAWS

PAWS (People for Animal Welfare Society) for a Cause is a unique first of its kind endeavor of the college. It has adopted stray dogs living in the campus. Students & staff take care of food, shelter,

sterilization, treatment and emotional well-being of these loyal friends, the basic aim of Paws for a Cause is to sensitize students about empathy, protection and compassion for all living beings. Let us all pledge to make 'Mother Earth' a peaceful place for all creatures, with shared thoughts of love & kindness.

Polyhouse

Polyhouse or a greenhouse is a house or a structure made of translucent material like glass or polyethylene where the plants grow and develop under controlled climatic conditions. Polyhouse are also helpful in reducing threats such as extreme heat and pest attacks in crops.

5.1.8 Recommendation

- Renovate the Poly house for vegetation as nursery to upcoming plantation for next years

- Plant and tree species that attract birds and butterflies can be planted to increase biodiversity of the campus.
- Plant species attracting birds and butterflies
- Create automatic drip irrigation system during summer holidays.
- Beautify the institute building with maximum use of oxygen generating indoor plants
- Encouraging students and conducting competitions among departments for making students

and staff more interested in making the campus green.

- Enhance the training, awareness campaign, program, and celebration of environment & earth day to improve the knowledge about biodiversity and ecology to student and staff.
- The effort of documenting and collecting detailed information of flora and fauna in the Campus has emerged as one of the innovative endeavors of approaching the current challenges relating to ecology and environmental deterioration. The need to create awareness about various environmental problems, maybe be fulfilled by involving more stakeholders in the biodiversity audit survey.
- The biodiversity audit survey must be conducted every five years to update the information.
- Horticulture and landscaping should be done to ensure biodiversity is maintained.

CHAPTER 6 SUMMARY OF RECOMMENDATIONS

6.1 Conclusion of Audit

An Environment and Green Audit of an educational institution can uncover ways to reduce water usage, enhance waste management, and minimize carbon dioxide emissions in the environment. This process prompts us to examine our contributions to environmental degradation and consider how we can minimize this impact to safeguard the environment for future generations. It allows us to assess our lifestyles and actions and their environmental consequences.

Environment and Green auditing involve identifying and evaluating whether institutional practices are environmentally friendly and sustainable. Traditionally, we have been efficient users of natural resources, but over time, habits like excessive energy, water, and chemical consumption have become common, especially in shared spaces. It is crucial to determine whether our activities consume more resources than necessary and whether we handle waste responsibly. Environment and Green audits help regulate these practices, promoting efficient natural resource utilization.

In an era marked by climate change and resource depletion, it is essential to scrutinize processes and transition to eco-friendly and sustainable practices.

6.2 Water Conservation Recommendations:

- Reduce water consumption in toilets for flushing.
- Install flow restrictors in handwashing and other taps.
- Raise awareness among employees and students about water conservation and display water-saving posters.
- Maintain a logbook to track daily water inlet or consumption patterns.
- Install an automatic switching system for pump sets to prevent water overuse.

6.3 Waste Management Recommendations:

- Promote repairing rather than discarding items.
- Encourage reuse and recycling throughout the campus.
- Discourage the use of single-use batteries.
- Avoid purchasing and using plastic bottled water.
- Promote electronic media over paper.
- Use reusable containers.
- Implement meal plans to reduce waste.
- Minimize plastic packaging.
- Aim to reduce overall garbage production.

6.4 Carbon Footprint Reduction Recommendations:

- Develop a policy focused on reducing carbon emissions.
- Encourage sustainable transportation options such as buses, public transport, walking, biking, and electric vehicles.
- Implement green computing or e-work practices.
- Raise awareness about Clean Development Mechanism (CDM) to reduce electricity and resource consumption.
- Establish a carpooling system for staff.
- Optimize cooking systems to save gas.
- Discourage students from using two-wheelers for commuting.
- Consider making the campus vehicle-free for at least one day a week.

6.5 Biodiversity Improvement Recommendations:

- Renovate the poly house for use as a nursery for future plantations.
- Implement an automatic drip irrigation system during summer holidays.
- Promote daily environmental awareness, not just on special occasions.
- Beautify the institute building with oxygen-producing indoor plants.
- Organize competitions and awareness campaigns to engage students and staff in greening the campus.
- Enhance environmental and Earth Day programs to educate students and staff about biodiversity and ecology.
- Involve more stakeholders in biodiversity audits to raise awareness of environmental issues.
- Conduct biodiversity audits every five years to update information.
- Focus on horticulture and landscaping to maintain biodiversity.

CHAPTER 7 ANNEXURES

Annexure -1 Agency Certification

Otabu

Certificate of Registration

INNOVATIVE ENERGY CONSERVATION SOLUTIONS

#205, ECO TOWER, SHIVALIK ENCLAVE, SECTOR 125, GREATER MOHALI, SAS NAGAR, PUNJAB, 140301, INDIA

has been assessed and Certified by Otabu Certification Pvt. Ltd.
as meeting the requirements of:

ISO 9001:2015

Quality Management System

For the following scope of activities:

DETAILED ENERGY AUDIT, DETAILED GREEN AUDIT, DETAILED ENVIRONMENTAL AUDIT, DETAILED WATER AUDIT, HVAC SYSTEM AUDIT, THERMAL SYSTEM AUDIT, THERMOGRAPHY AUDIT, ELECTRICAL SYSTEM AUDIT, COMMERCIAL AND ADMINISTRATIVE BUILDING AUDIT, COMPRESSED AIR AUDIT, COMPRESSED AIR LEAKAGE TESTING, POWER QUALITY & HARMONICS AUDIT, PUMPING SYSTEM AUDIT, ELECTRICAL SAFETY AND EARTHING SYSTEM AUDIT, ELECTRICAL PLANT DESIGNING & CONSULTANCY, RENEWABLE ENERGY ADVISORY, SUSTAINABILITY ASSESSMENT REPORT, VIBRATION MONITORING AUDIT, NOISE LEVEL TEST AUDIT, ENERGY CONSERVATION TRAINING PROGRAM

Issue No : 01
Date of Certification: 05 December 2022
1st Surveillance Due: 04 December 2023

Revision No ( ) : NA
2nd Surveillance Due: 04 December 2024
Certificate Expiry: 04 December 2025

Certificate No:- 1205Q169822

To Verify this Certificate please visit at www.otabucert.com

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Dr. Anita Gupta

*Validity of the certificate is subject to successful completion of surveillance audit on or before due date. In case surveillance audit is not allowed to be conducted, the certificate shall be suspended/withdrawn. *This Certificate of Registration remains the Property of Otabu Certification Pvt. Ltd. and shall be returned immediately upon request.

Otabu Certification Pvt. Ltd., RZ-9 (Ground Floor), Prem Nagar, Uttam Nagar, New Delhi-110059 (India)

Email:- info@otabucert.com website:-www.otabucert.com

Certificate of Registration

This is to certify that

INNOVATIVE ENERGY CONSERVATION SOLUTIONS
205, ECO TOWER, SHIVALIK ENCLAVE, SECTOR - 125, GREATER MOHALI, SAS NAGAR - 140301, PUNJAB, INDIA.

has been independently assessed by QRO
and is compliant with the requirement of:

ISO 14001:2015
Environmental Management System

For the following scope of activities:

DETAILED ENERGY AUDIT, DETAILED GREEN AUDIT, DETAILED ENVIRONMENTAL AUDIT, DETAILED WATER AUDIT, HVAC SYSTEM AUDIT, THERMAL SYSTEM AUDIT, THERMOGRAPHY AUDIT, ELECTRICAL SYSTEM AUDIT, COMMERCIAL & ADMINISTRATIVE BUILDING AUDIT, COMPRESSED AIR AUDIT & LEAKAGE TESTING, POWER QUALITY & HARMONICS AUDIT, PUMPING SYSTEM AUDIT, ELECTRICAL SAFETY & EARTHING SYSTEM AUDIT, ELECTRICAL PLANT DESIGNING & CONSULTANCY, RENEWABLE ENERGY ADVISORY, SUSTAINABILITY ASSESSMENT REPORT, VIBRATION MONITORING AUDIT, NOISE LEVEL TEST AUDIT, ENERGY CONSERVATION TRAINING PROGRAM

Date of Certification: 13th June 2023
1st Surveillance Audit Due: 12th June 2024
2nd Surveillance Audit Due: 12th June 2025
Certificate Expiry: 12th June 2026

Certificate Number: 305023061338E

Head of Certification

[illegible]
The Validity of this certificate can be verified at www.qrocert.org
[illegible]

India Office : QRO Certification LLP
[illegible]


Certificate of Compliance
INNOVATIVE ENERGY CONSERVATION SOLUTIONS
ISO/IEC 17020:2012

Government Mohindra College, Patiala

Notice

Dated: September 22, 2023

Innovative Energy Conservation Solutions, SAS Nagar, Mohali has conducted Green and Environment Audit of the Government Mohindra College, Patiala and a copy of the detailed report has been submitted to our college in this regard. In the audit report certain recommendations have been made to improve the profile of the college in terms of environmental parameters. In this regard a committee has been formed of the following members to prepare a plan of action to implement the recommendations in the report. The Committee shall submit its report to the undersigned within a month from the issuance of this notice.

1. Prof. Loveleen Parmar, Convener
2. Prof. Yodha Singh, Member
3. Dr. Rai Bahadur Singh

Principal
Govt. Mohindra College
PATIALA