

INNOVATIVE ENERGY CONSERVATION SOLUTIONS

An ISO 9001:2015 Certified Organisation,
Certificate No:- 1205Q169822

A: 205, Eco Towers, Shivalik
Enclave Sector 125, Greater
Mohali-140301
E: Pankaj@iecsolutions.in
T: +91-9685613238

No: CERT/2023/09

DATE
February 24, 2023
PLACE OF WORK: CHANDIGARH

Energy, Environment & Green Audit Certificate

Is Issued To

GOVERNMENT HOME SCIENCE COLLEGE SECTOR 10, CHANDIGARH

for successful completion of Energy, Environment & Green Audit of the College for the Period FY 2022-23, conducted by M/s Innovative Energy Conservation Solutions. This Energy, Environment & Green Audit included Sectoral Audits in the reports i.e., Water, Energy, Waste (cum Material, Air Quality & Noise, Bio-diversity, outdoor environment, Health & well-being, Activities and Institutional management aspect cover.

The College is certified to have done exceptionally well to conserve energy, environment and ensuring sustainable development for the assessment period.

Duration of Audit: Feb-2022 to Jan-2023

Date of Issue: 24/02/2023

PANKAJ
DHOTE
Innovative Energy Conservation Solutions

Digitally signed by PANKAJ
DHOTE
Date: 2023.02.24 17:27:16
+0530'

Innovative Energy Conservation Solutions



Innovative Energy Conservation Solutions

An ISO 9001:2015 Certified Organisation,
Certificate No:- 1205Q169822

Thank You

www.iecsolutions.in
Pankaj Dhote



Environment & Green Audit

Report of Government Home Science College, Sector-10, Chandigarh



Prepared and Submitted By
Innovative Energy Conservation Solutions
ISO 9001:2015(Certificate No: 1205Q169822)



ACKNOWLEDGEMENT

We extend our sincere thanks to the management of Government Home Science College Sector-10, Chandigarh for taking up the initiative to conduct Quality Audits of Environment & Green Audit. We appreciate the co-operation extended to our team for the completion of study.

We hereby express our sincere thanks to **Professor Mrs. Sudha Katyal (Principal)** and their team, from **Government Home Science College Sector-10, Chandigarh** for their proactive support and courtesy extended to the IECS team during field study. We also thank other officials from **Government Home Science College Sector-10, Chandigarh** for their cooperation and support provided during data collection. We are also grateful to all those we interacted with, during the audit who gave us some operational insights.

We hereby submit the Environment & Green Audit Report for your reference.

AUDIT PARTICIPANTS

On behalf of college:

Name	Position/Department
Mrs. Sudha Katyal	Professor, Principal- Government Home Science College Sector-10, Chandigarh
Mrs Ranjana Sharma	Associate Professor, In charge Environment Committee- Harita
Mrs Mona Soin	Assistant Professor, Member, Harita
Mrs Annu Deharwal	Assistant Professor, Member, Harita
Mrs Pratibha Thapa	Assistant Professor, Member, Harita
Dr Shikha Garg	Assistant Professor, Member, Harita
Dr Reenu	Assistant Professor, Member, Harita
Ms Akshata Verma	Assistant Professor, Member, Harita
Mrs Raman Bhalla	Superintendent
Mrs Gurjinder Kaur	Care Taker

On behalf of IECS

Name	Position	Qualification
Mr. Vijay Kumar Gupta	Senior Consultant	Chartered Engineer/ Professional/Lead Auditor/Competent Person Serial No- 351338
Mr. Akshat Patni	Consultant	M.Sc. In Environmental Management B.Tech - Civil Engineering
Mr. Pankaj Dhote	Consultant	M. Tech in Energy & Environmental Study B.Tech Electrical Engineering Certified Energy Auditor CEA-28926
Mr. Nikhil Thakur	Associate	B.Tech Electrical Engineering

Table of Contents

Chapter 1	INTRODUCTION.....	1
Chapter 2	OBJECTIVE, SCOPE & METHODOLOGY OF THE STUDY.....	3
2.1	Objective of Environment and Green Audit.....	3
2.2	Scope of Work.....	3
2.3	Methodology.....	4
Chapter 3	ABOUT THE COLLEGE.....	6
Chapter 4	ENVIRONMENT AUDIT	8
4.1	Water Consumption & Management	8
4.1.1	Objectives of Water Audit.....	8
4.1.2	Methodology followed for conducting water system study.....	8
4.1.3	Existing Scenario:	9
4.1.4	Water Storage Profile.....	11
4.1.5	Management & Conservation of Water Resources	12
4.1.6	Recommendation.....	17
4.2	Waste Management System	20
4.2.1	Introduction to waste disposal	20
4.2.2	Existing Scenario:	22
4.2.3	Recommendations to improve the existing practice of waste management.....	32
4.3	Air Quality Monitoring	34
4.3.1	Existing Scenario:	34
4.3.2	Recommendation	35
4.4	Sound Pollution Monitoring.....	36
4.4.1	Existing Scenario:	36
4.5	Carbon Footprint Auditing	41
4.5.1	Efforts to Reduce Carbon Footprints	41
4.5.2	Recommendations	45
4.6	Health and Wellbeing Assessment.....	46
4.6.1	Observation:.....	46
4.6.2	Good Ideas Implemented.....	47
Chapter 5	Green Audit	50
5.1	Biodiversity status of the college campus	50
5.1.1	Method of Study:	50
5.1.2	Existing Biodiversity Status	51

5.1.3	Various type of Gardens Maintained in the college premises.....	52
5.1.4	Details of Tree, Floral, faunal and pot plant are tabulated below.....	64
5.1.5	Herbal Garden Trees	66
5.1.6	Floral diversity has been studied and documented as below:	67
5.1.7	Faunal diversity has been studied and documented as below:.....	69
5.1.8	Recommendation.....	75
Chapter 6	SUMMARY OF RECOMMENDATIONS	77
6.1	Conclusion of Audit.....	77
6.1.1	Water Conservation Recommendation	77
6.1.2	Recommendations to improve the existing practice of waste management.....	78
6.1.3	Carbon Foot Print Reduction Recommendations	78
6.1.4	Health and Wellbeing Recommendations:	78
6.1.5	Biodiversity improvement Recommendation	79
Chapter 7	ANNEXURES	80

List of Table

Table 1: Methodology adopted to conduct environment and green audit.....	4
Table 2: courses offered by the college	7
Table 3: Population details of college.....	9
Table 4: Nos. of Campus residents in the Institute.....	9
Table 5: Nos. of Day Time persons in the Institute.....	9
Table 6: Total permissible water Consumption as per Standards laid as per NBC, 2016.....	10
Table 7: Water Storage capacity details of college.....	11
Table 8: Rain water Harvesting Collection Details	13
Table 9: AQI Index Details	34
Table 10: AQI parameters values.....	35
Table 11: Test Results of Air Quality Index	35
Table 12: Details of sound level dB of different sources	36
Table 13: DB Levels reading by measurement done at different rooms	37

CHAPTER 1 INTRODUCTION

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crisis. On this background it becomes essential to adopt the system of the green campus for the institute which will lead to sustainable development. Government Home Science College Sector-10, Chandigarh is deeply concerned and unconditionally believes that there is an urgent need to address these fundamental problems and reverse the trends. Being a premier institution of higher studies, the college has initiated 'The Green Campus' program few years back that actively promote the various projects for the environment protection and sustainability.

The purpose of this audit was to ensure that the practices followed in the campuses are in accordance with the initiatives adopted by the institution, it works on several factors of Green Campus including water conservation, electricity conservation, tree plantation, waste management, paperless work, mapping of biodiversity etc. With these issues in mind, the specific objectives of the audit are to evaluate the adequacy of the management control framework of environment sustainability as well as the degree to which the departments are in compliance with the applicable regulations, policies and standards. It can make a tremendous impact on students' health and learning, college operational costs and the environment. The criteria, methods and recommendation used in the audit were based on the identified risks. We do hope that this report will be beneficial for the College.

An Environment and Green Audit is the first step to reducing a building's water, waste, energy and carbon footprint and environmental impact. The analysis of the consumption of water and energy as well as the generation of waste is used to provide recommendations on solutions such as rainwater harvesting, water and waste management, and energy management including the addition of renewable energy. The objective of the Environment Audit is to transform to be self-reliant and self-sustainable in water and energy and create a zero-waste campus.

Upcoming and future regulations for buildings will require to following of green norms and energy-efficient measures including the Energy Conservation Building Code (ECBC). Hence, Environment Audits will help buildings to achieve the norms.

Through the audit report, our endeavor is to provide cost-effective and long-term solutions in a continuous process of conservation of resources. The data collected over a period of an audit

duration has been presented through appropriate visual representations for easy understanding of the technical information. Glossary, abbreviations, units of measurement and references are provided for those who are further interested.

This Environment and Green Audit Report is meant for academic and research purposes only. For legal issues, a separate study is required, and hence the results of this report cannot be used as evidence for any legal case within India or abroad.

CHAPTER 2 OBJECTIVE, SCOPE & METHODOLOGY OF THE STUDY

2.1 Objective of Environment and Green Audit

- To understand the awareness of employees and learners towards environmental conservation
- To recognize the initiative taken by organization towards environmental conservation
- To understand and recognize the effects of an organization on the environment and vice versa
- To ensure that the natural resources are utilized properly as per national policy of environment
- To study waste minimization and safe disposal of waste particularly hazardous wastes
- Initiatives for water conservation & its management
- Contribution and participation by various stakeholders in the environmental conservation and management
- To diagnose and find out solutions for the environmental problems
- To facilitate the stakeholders with different aspects of waste management

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	Review of previous records and policies. This was carried out in order to understand the various initiatives taken by the university towards sustainable environmental conservation and amelioration. For the purpose, office registers, visitor's book, purchase registers, office communications, policy level documents of AC/ EC were also examined. Further, the published material such as prospectus, university annual reports, bulletins, and other magazines were also studied by the audit team for getting information / data on the target aspects.
Step 2	Screening survey or walk-through audit	Two walk-through Audits were conducted by the Team which were followed up by a few more visits to review the accuracy of data. The team went to each department, centers, Library, canteen etc. Data about the general information was collected by observation and interview. Special guided visits of the campus were conducted along with College Team and his team of teachers, non-teaching staff. This was preliminary data collection phase communicating with the management of the details of Building drawings analysis, utility bills analysis, various environment management plan etc.
Step 3	On-site investigations	Inspection of site for water, waste, and environment information. Detailed Measurements conducted for all electrical and electro- mechanical devices including lights, fans, motors, pumps, ACs, water equipment. Verification of online data submitted through ground survey and observations Measurement & Inspection of water, waste and environmental issues including flooding, storm water system.
Step 4	Data Analysis	The collected data was analyzed and visually represented using pie-charts, bar graphs, tabulations in each of the audit areas. They were assessed against existing benchmarks and

Step	Objective	Activities
		standards. Details of Recommendations were formulated for the Institute to continue the ongoing journey of sustainable ECO campus.
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 Home Science College is recognized as one of the premier institutions of higher learning and research in the country. Since its inception in 1961, the college is committed to the sustenance and promotion of an environment, favorable to the growth and development of an academic excellence, satisfying contemporary women's professional and specialized needs. Aligning with the objectives of the various developmental schemes initiated by the Government of India such as "Skill India", "Atmanirbhar Bharat" 'Indian Skill Development Service' (ISDS) as well as 'Pradhan Mantri Kaushal Vikas Yojana (PMKVY) to nurture the academic institutes as incubation centers for the professional training of the students, the vision and mission of the college is to equip the students with market-relevant skill training. The rationale is to bridge the gap between skills required by the industry and the skills students acquire during their academic training in the institute.

Over the years, the college has built up great credibility and gained recognition as a premier institute. National Institution Ranking Framework (NIRF) has evaluated the college on the basis of Teaching Learning and Resources (TLR), Research and Professional Practice (RP), Graduation Outcome (GO), Outreach and Inclusivity (OI), and Perception. The College topped amongst city colleges in NIRF ranking fourth time in a row at the National Level. It has been successful in attaining its position in the top 100 institutes of India consecutively for the last three years. This year, the college took a massive jump and figured among the top 50 institutes of India. It has significantly improved its ranking from 78th in 2021 to 46th spot in 2022 in India Rankings 2022 by NIRF, MoE, Government of India 2022.

Table 2: courses offered by the college

Degrees	Courses
B.Sc.	Home Science (Clothing & Textile)
	Home Science (Foods & Nutrition)
	Home Science (Family Resource Management)
	Home Science (Human Development)
	Home Science (Composite)
	Fashion Designing (Self Finance Course)
M.Sc.	Clothing & Textile
	Foods & Nutrition
	Human Development
PG Diploma	Nutrition & Dietetics
	Fashion Designing
	Child Guidance & Family Counselling

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 has water connection from Municipal Corporation, Chandigarh and consumption of about 2968 KL/Month 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. As per details 558 of total population of the Institute.

Table 3: Population details of college

Particulars	Male	Female	Total
Students	-	458	458
Teachers	03	31	34
Non-Teaching Staff	36	15	51
Sub Total	39	504	543
Approximate Number of Visitors (Per day)			15
Total of Population			558

- 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

The details of the residents living in Campus (Day and Night) are as per Table3.

Table 4: Nos. of Campus residents in the Institute

Sl. No	Particulars	Nos
1	Nos. of Student in B.Sc. Hostel	54
2	No of Student in M.Sc. Hostel	50
Total Residents Population		104

Table 5: Nos. of Day Time persons in the Institute

Sl. No	Particulars	Nos
1	Nos. of Non-Hostlers Students in Campus	354
2	No of Staff working in campus	34
3	No. of Non-Teaching Staff	51
4	No of Daily Visitors	15
Total Daytime population		454

Thus, total maximum permissible water Consumption as per Standards laid as per NBC, 2016 is given in Table below

Table 6: Total permissible water Consumption as per Standards laid as per NBC, 2016

Sl. No.	Particulars (Per day)	Nos.	Maximum water consumption per Person per day (Liters)	Total Maximum water consumption Liters per Day
1	Nos. of full-time residents in College Campus	104	135	14040
2	Nos. of Day time persons (Students and staff)	439	45	19755
3	No of Visitors	15	15	225
	Grand Total	558		34.02

An attempt was made as per NBC, 2016 to understand the demand of water supply and waste water generated.

Annual Average Water Intake per day = 96 KL/Day out of which Approx 29-30 KL/days was used in plantation and rest 66 KL/Day used for domestic consumption.

Actual Water Demand = 66000 Liters Per day

Existing water consumption is on the higher side against the standard water consumption but college is very concern and working in water conservation activities to reduce LPCD.

Standard Water Demand = 34020 liters per day.

Waste Water Generation = 80% water consumption= 52800 liters per day.

The source of water requirement is municipal supply water the wastewater generated as 50-52 Kilo liters per day is being discharged into municipal drainage.

4.1.4 Water Storage Profile

Institute had two underground Main water storage tank to meet the daily water needs. The details of tank are as follows.

Table 7: Water Storage capacity details of college

Area/Tank Water Capacity in Litres	Water Tanks & their capacities
Academic Block	3 Nos X 5000 Litre, 8 Nos x 2000 Litres,2 Nos x 500 Litres
Auditorium Block	2 Nos x 2000 Litres,1 Nos X 500 Litres
Multimedia Research Block	2 Nos x 2000 Litres
Old Wings Block	6 Nos x 2000 Litres
New Wings Block	4 Nos x 2000 Litres,1 Nos x 1000 Litres
Old Wings Block Mess	2 Nos x 500 Litres,1 Nos x 300 Litres
M.Sc. Block	2 Nos x 2000 Litres,2 Nos x 1000 Litres,3 Nos x 500 Litres
M.Sc. Block Mess	2 Nos x 500 Litres,2 Nos x 300 Litres



Water Storage Tanks

4.1.5 Management & Conservation of Water Resources

- The institute has taken several initiatives for management & conservation of water resources such as use of sensor-based water taps at high occupant washrooms.



Sensor Water Taps

- Water meter has been installed at an appropriate place to regulate and monitor direct water supply in college.

Water Supply meter near Academic Block



Water Meter of M.Sc. Block



Rainwater Harvesting

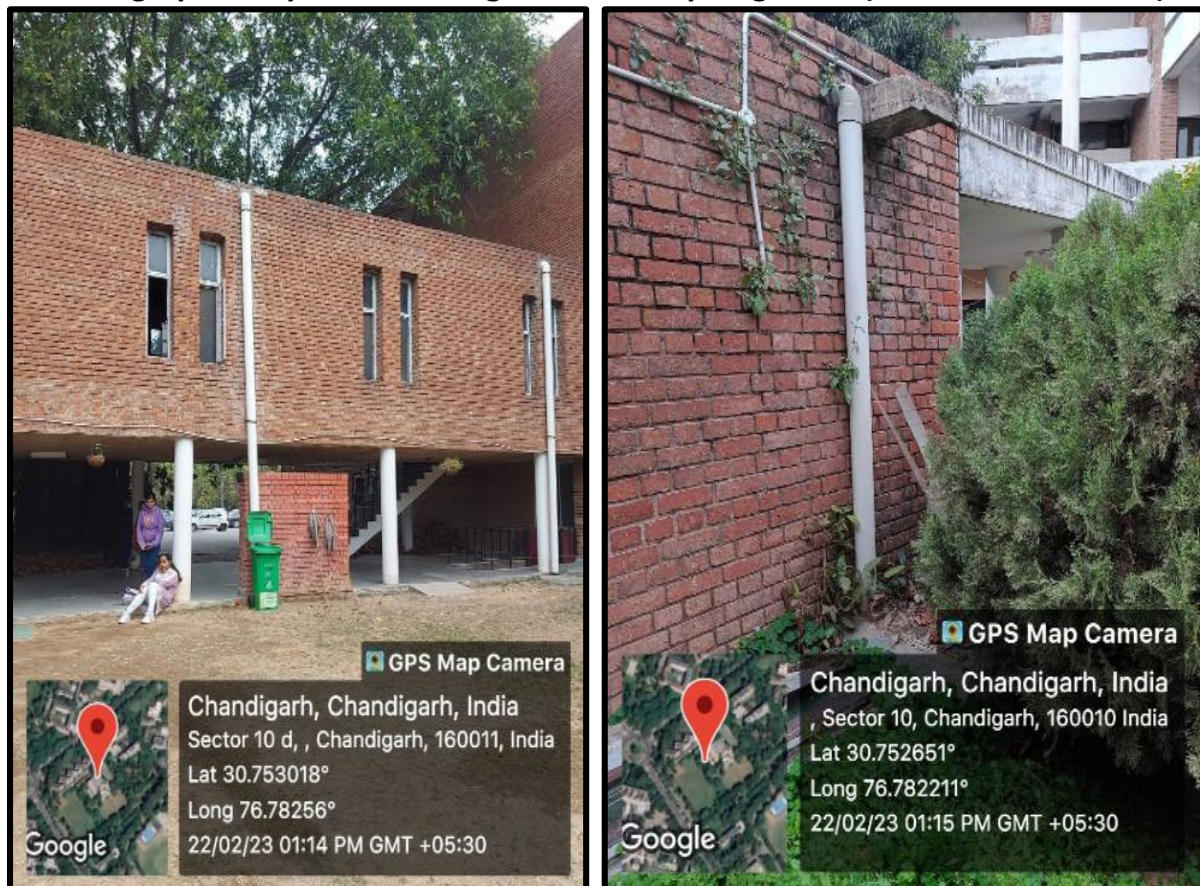
The College has successfully installed a rainwater harvesting system, collecting water from the rooftop catchment through down take pipes fitted with filter which is used to recharge the groundwater. There were 45 Nos of rainwater harvesting pits are there on the campus.

Table 8: Rain water Harvesting Collection Details

S. No	Name of Catchment Area	Area of Catchment in Sq. M	Annual Rainfall in Chandigarh in mm/Year	Rain water Precipitation in Catchment Area (KL/year)
1	Total Plot Area	68725		
2	Total Covered Area	26005	1110.7	28884
3	Remaining Ground Area, Roads Parking area and Sideways	52918	1110.7	58776
Total Recharging of Water				87660

Overview of Rain Water Harvesting 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 Roof Drain Collection Pits



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

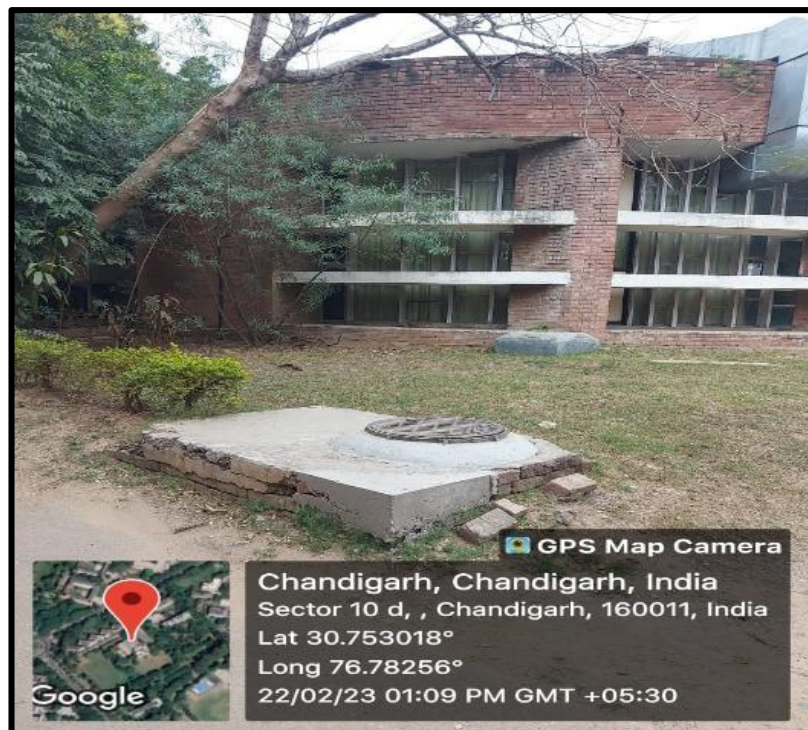


Collection pits having connecting from Rooftop to ground water through R.C.C. Pipes

Photograph of Rain Water Collection structure

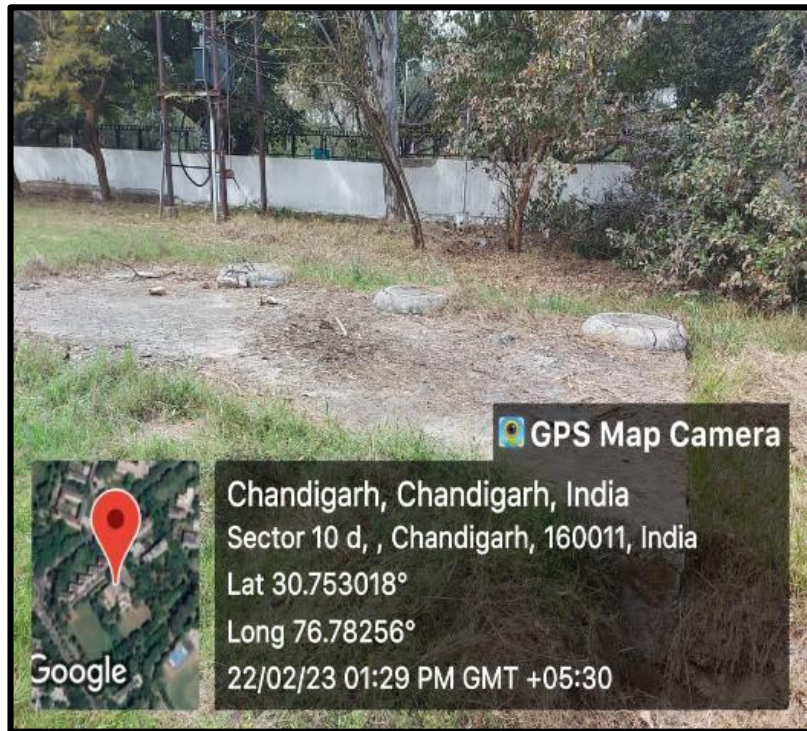


Collection pits having connecting from Rooftop to ground water through R.C.C. Pipes

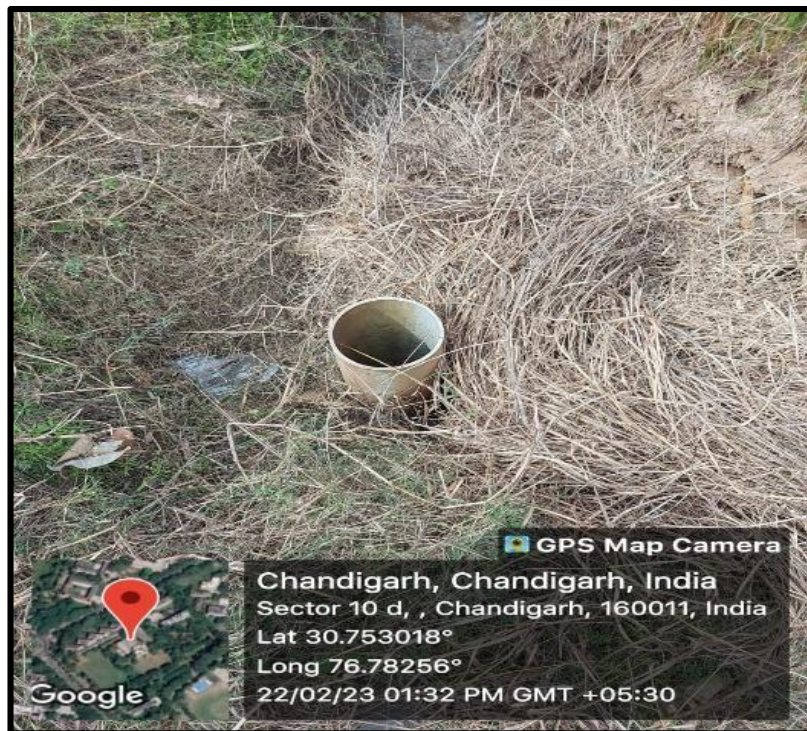


Collection pits having connecting from Rooftop to ground water through R.C.C. Pipes

Photograph of Dig wells for rain water recharging



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



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

Every Rain Water Harvesting system has a collection pit covered with pucca sheds by cemented and concrete as rain water storage. Total three rain water collection pits are used in the college campus. Recently an expenditure of Rs 698000/- was incurred for the renovation of boosting station of the college. The college has facility of drainage pipes connecting from rooftop to the manholes, road gullies, ground and lawns of college so that efficient and maximum collection and utilization of rooftop water can be done. Institute has following facilities for the collection of rooftop water harvesting:

1. Collection pits with the connectivity to the ground water
 - Total Number: 03
 - One at the backside of main academic building (L 27'-3" x W 15' x H 10')
 - Two near the P.G. Hostel & Fruit Garden (L 15'-6" x W 12' x H 10')
2. R.C.C. Pipes
 - Total Number: 17
 - 11 pipes are of capacity 450 mm each and total length 1225' – 0"
 - 06 pipes are of capacity 600 mm each and total length 640' – 0"
3. Road Gullies
 - Total Number: 28
 - Capacity = 300 mm each
 - Total length: 475'-7"

4.1.6 Recommendation

- **Reduce Water consumption in Toilets for flushing.**

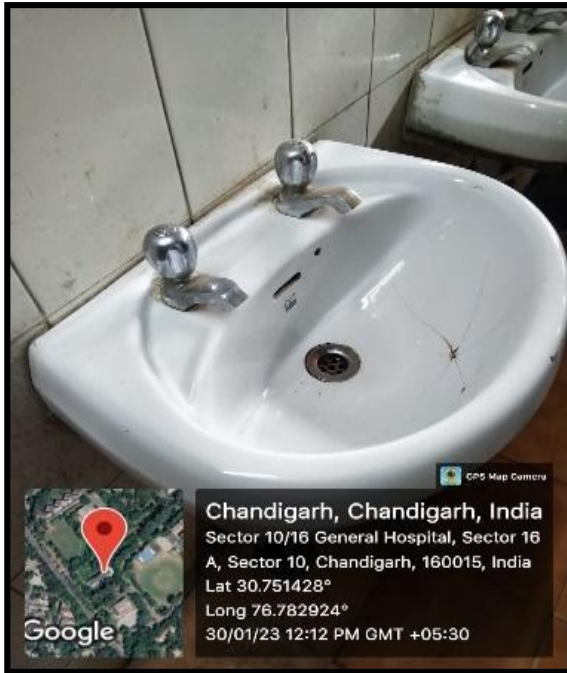
Flush tank capacities are about 6-10 liters/flush. Use tank bank in existing flush tanks to reduce 2-3 liters water per flush or install water efficient cistern/flush tank with capacity 3/6 liters per flush.

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 > 5lpm. 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.



- **Stop use of filtered water in toilet flushing, instead use recycled, treated wastewater or raw water.**

It is suggested to use low quality water for flushing instead of good quality filtered water.

- **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.

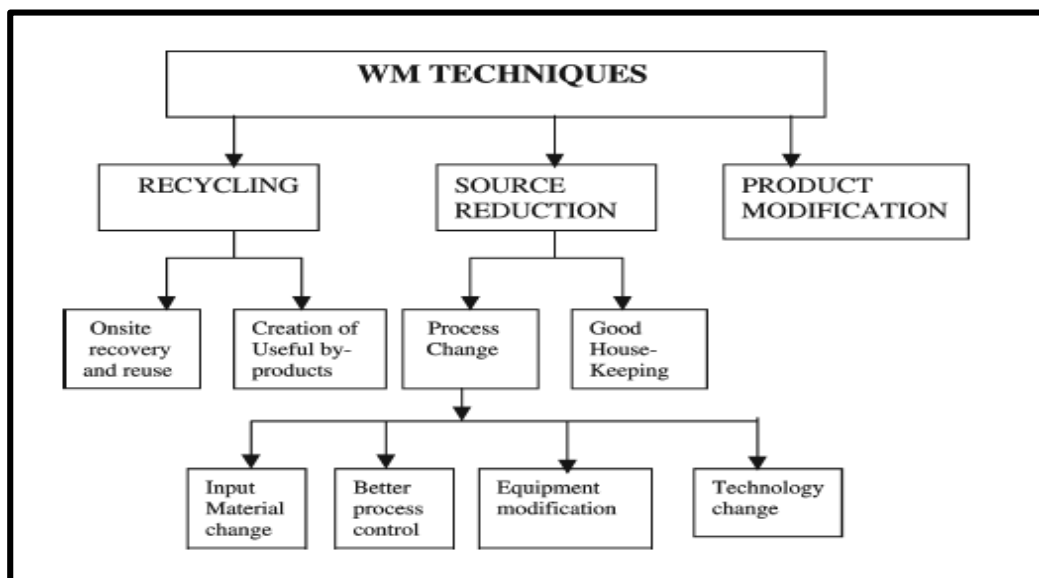
4.2 Waste Management System

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.

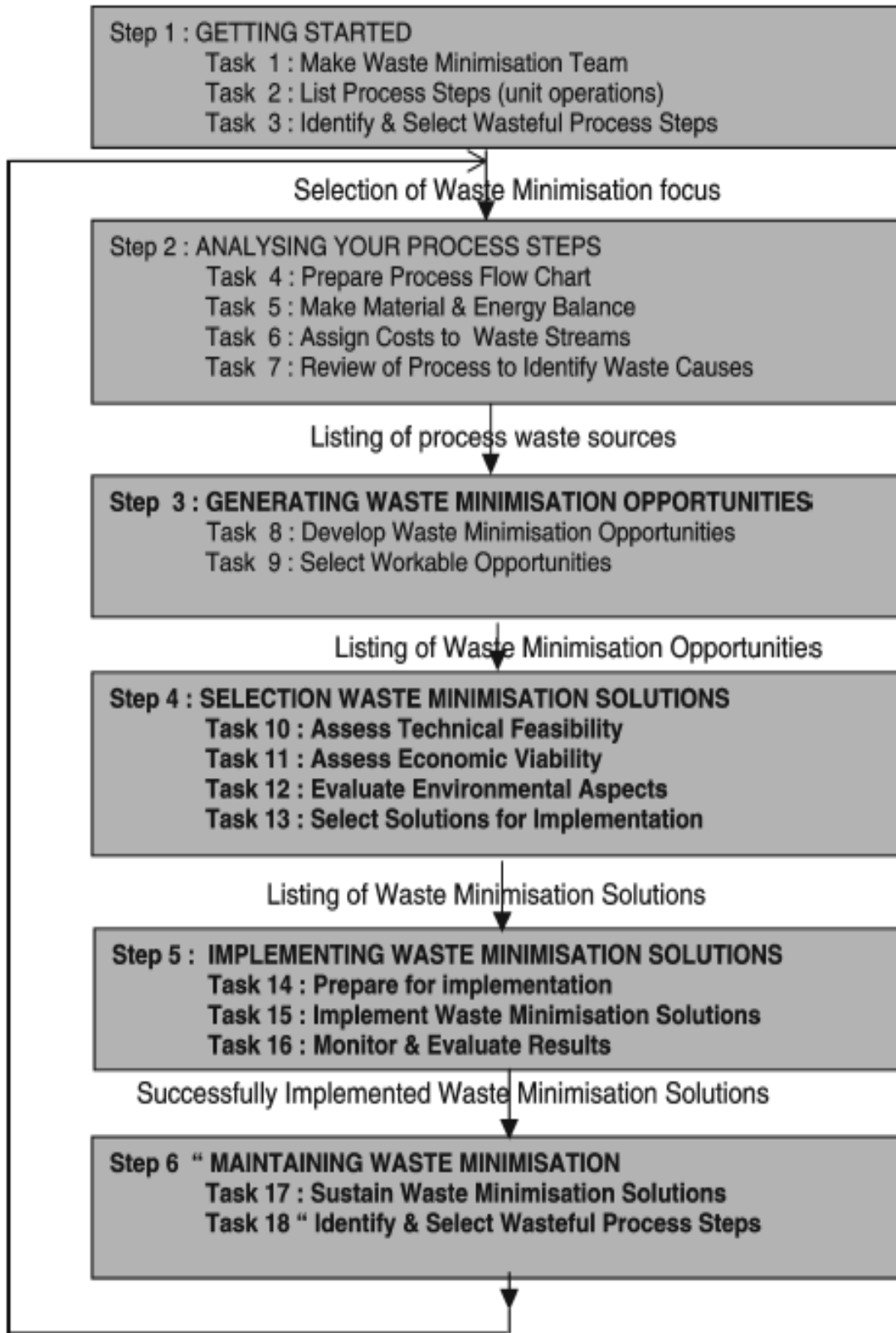
Waste can be solid, liquid, or gas, each type has different methods of disposal and management. Waste management deals with all types of waste, including industrial, biological and household. In some cases, waste can pose a threat to human health. Waste is produced by human activity, for example, the 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 3 different colored dustbins (i.e., Blue, Green and black) 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.





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 near U.G and P.G hostels for segregation of wet and dry waste and then finally to make compost which is being used in college lawns.

- Institute has in house canteen which generates household & kitchen waste. For wet waste disposal college has initiated to construct 8 pits in the college campus i.e., 6 pits at the backside of B.Sc. Hostel and 2 pits near M.Sc. Hostel and also purchased Fully Automatic Compost Machine (25-50 kg) in 2019 through M&S plan.
- The kitchen waste is collected from the Hostel mess and Canteen whereas garden waste is collected from the college different areas. The composting of kitchen waste is done through Compost machine which is kept near M.Sc. hostel. Every day around 10-15 kg wet waste material is composted and as result there is production of good quality organic manure.



Compost Pits



Compost Pits



Compost Pits



Compost Pits

The college has compost making machine for making the manure from the kitchen waste and the compost generated is reported to Municipal Corporation, Chandigarh on monthly basis.



Compost Machine



Waste Management through Recycling and Reusing

Institute undertakes following sustainable campus initiatives regarding solid waste management:

- **Old/ used newspapers were collected and reused to make environment friendly paper bags and beautiful handmade sheets.**
 - Redundant marble slabs and ceramic sinks are used to develop sitting areas for the students in the college lawn.
 - Waste cement and cloth pieces were used to make cement pots as garden accessories.
 - The broken terracotta pots available in the college nursery were utilized for making Mini Gardens.
 - Marbelling (designing) technique on the leftover crockery was demonstrated to the students.



➤ **Liquid waste management**

The College has numbers of grounds and lawns to be irrigated. A huge quantity of water is required to irrigate them through normal water pipe system. Institute uses the tertiary water for the irrigation supplied by the Municipal Corporation of Chandigarh.



Tertiary Water Supply from M.C. Chandigarh

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

Water Conservation Activities

The college is also a part of “**Mission Waste to Wealth**” by Swarmani Youth Welfare Association in collaboration with the office of principal scientific advisor to the Government of India, Municipal Corporation Chandigarh, Chandigarh Pollution Control Committee and Development of Environment, Chandigarh which has started a project “Mission Waste to Wealth” aiming single use plastic free society and E-waste management to make our “City Beautiful greener and

cleaner”. Waste collection drive was held in different phases in college premises. Following activities has been completed by the faculties and students of the college: -

- “**MISSION WASTE TO WEALTH**” was launched in the college premises for the segregation of single use plastic and e-waste management by Swarmani Youth Welfare Association U.T. Chandigarh on 18th May 2022 at 12:20 pm. Students displayed their posters related to e-waste and ban on single use plastic waste on 18th May 2022 for the sensitization of about the hazards of e-waste and plastic waste. On every Wednesday, students and college staff members donate plastic waste and e- waste in the designated area. Around 40-50 kg waste material has been collected in phase I.
- Under this project college has designated **GREEN AMBASSADORS**. Green ambassadors along with their teacher In-charge had been invited for training session from the college. In the training session they have trained regarding the procedure of waste disposal by the government authorized recyclers and unauthorized recyclers so that they know where their collected waste would end up.
- The Green ambassadors further provided this training to their team back and also sensitized all the students about this mission. They further trained rest students of the college regarding the ill effect of plastic and e- waste pollution to achieve minimization of usage of plastic and reduction in e- waste.
- 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.
- Proper segregation of waste as per the type of waste (Biodegradable and Non- Bio degradable) is being done in the college campus.





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 don't 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, don't 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 9: 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 10: AQI parameters values

Date	PM 2.5 ($\mu\text{g}/\text{m}^3$)	PM10 ($\mu\text{g}/\text{m}^3$)
30 Jan-22 to 3 Feb -22	45-40	110-115

Table 11: Test Results of Air Quality Index

Air Quality Index	Air Quality Status
97	Satisfactory (51–100)

4.3.2 Recommendation

Since the building is naturally ventilated, indoor air quality is not a major concern. 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.

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 12: 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 taken into account 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 13: 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	Room No-3 Committee room	49	47
4	Room No-3A First Aid Room	45	43
5	Room No-4 Admin Office	45	44
6	Bio Chemistry lab	47	44
7	Room No-6 Smart Lecture Room-1	51	45
8	Room No-8 Smart Class Room	39	34
9	Room No-9 Class Room	38	37
10	Room No-10 E- Pathshala	30	29
11	Room No-11 Digital Classroom	40	38
12	B.Sc. Food Lab	41	41
13	Room No-12 Food Science Lab/ nutritional assessment lab	37	35
14	Room No-13 Cafeteria/ institutional food Administration lab	57	54
15	Microbiology Lab	62	56
16	Room No – 18 Basement Hall No-2	48	44
17	Room No – 19 Basement Hall No-3	50	43
18	Room No-20 Basement Hall No - 1	47	45
19	B.Sc. Food Lab	43	42
20	Steno	45	42
21	Room No-29 Computer Lab	48	43
22	Room No-30 IQAC Room	37	32
23	Room No-33 Conference Hall	36	35

Sr No	Particular	Maximum DB level Recorded	Minimum DB Level Recorded
24	Room No-34 NCC Cell	29	28
25	Room No-35 Smart Lecture Room-II	39	39
26	Room No-36 CAD Lab	35	33
27	Room No-37 Dyeing Lab	54	51
28	Room No-37.A Printing Lab	59	53
29	Room No-38 Pattern Making Lab	46	42
30	Room No-39 Textile Testing Lab	48	41
31	C.T Lab Staff Room	44	42
32	Room No-40 Heritage Resource Centre	41	40
33	Room No-40.A Weaving & Knitting Lab	42	40
34	Room No-41 PG Garment Construction Lab - I	46	41
35	Room No-42 PG Garment Construction Lab - II	35	31
36	Room No-43 Resource Centre/ library	34	33
37	Room No-44 Seminar Hall	27	26
38	Room No-45 Staff Room	37	37
39	Room No-46 UG garment Lab	33	32
40	Room No-47 Store Room	51	49
41	Room No-48 Smart Class Room	56	51
42	Room No-49 Physics Lab	42	40
43	Room No-50 Nodal officer	39	38
44	Room No-51 Control Room	40	38
45	Room No-52 Chemistry Lab	44	39
46	Room No-53 Staff Room	33	29

Sr No	Particular	Maximum DB level Recorded	Minimum DB Level Recorded
47	Room No – 54 Home Management & Furnishing Lab House	33	32
48	Room No – 55 Ergonomics Lab	26	25
49	Room No-56 Smart Lecture Theatre-III	35	35
50	Room no 57 FRM Staff Room	32	30
51	Room No-58 Class Room	49	46
52	Room No-59-I Smart Class Room/HD Lab	53	48
53	Room No-59-II Smart Class Room/ HD Lab	42	37
54	Room No-60 Counselling Cell	40	38
55	Room No-61 Staff Room	40	38
56	Room No-62 Smart Class Room	37	36
57	Room No-63.A HD Lab-1	38	36
58	Room No-63.B HD Lab-2	42	37
59	Room No-64 HOD Office	49	43
60	Room No-65 HD Staff Room	55	45
61	Room No-66 Botany Lab	44	37
62	Room No-67 Staff Room	46	39
63	Room No-68 HOD Office	38	32
64	Room No-69 zoology Lab	41	31
65	Room No-70 Staff Room	42	32
66	Room No-71 HOD office	49	45
67	Room No-72 Faculty Room	51	41
68	Room No-73 Art Lab	43	43
69	Room No-55 Family Resource Lab	39	37
70	Multimedia Research Block	60	57

Sr No	Particular	Maximum DB level Recorded	Minimum DB Level Recorded
71	Leisure Lounge	65	59
72	Reference Section Library	51	46
73	Newspaper, Periodical & Magazine Section Library	53	45
74	Academic Hall Lobby Ground Floor	49	47
75	Academic Hall Lobby First Floor	45	44
76	Academic Hall Lobby Second Floor	47	44
77	Administrative Office	51	45
78	B.SC. Hostel Mess Hall (OLD Wing)	39	34
79	B.SC. Hostel Mess Cooking Area (Old Wing)	38	37
80	B.SC. Hostel Common Room (Old Wing)	30	29
81	B.SC. Hostel Room & Others (Old Wing)	41	41
82	B.SC. Hostel Room & Others (New Wing)	37	35
83	M.Sc. Hostel Ground Floor	57	54
84	M.Sc. Hostel Rooms & Others	62	56
85	Auditorium	48	44
86	Indoor Badminton Hall	45	43
87	Music room	39	40
88	Physical Education room	48	46
89	Indoor Gym	51	49
90	Chaitanya Nursery School Lab.	53	51

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.

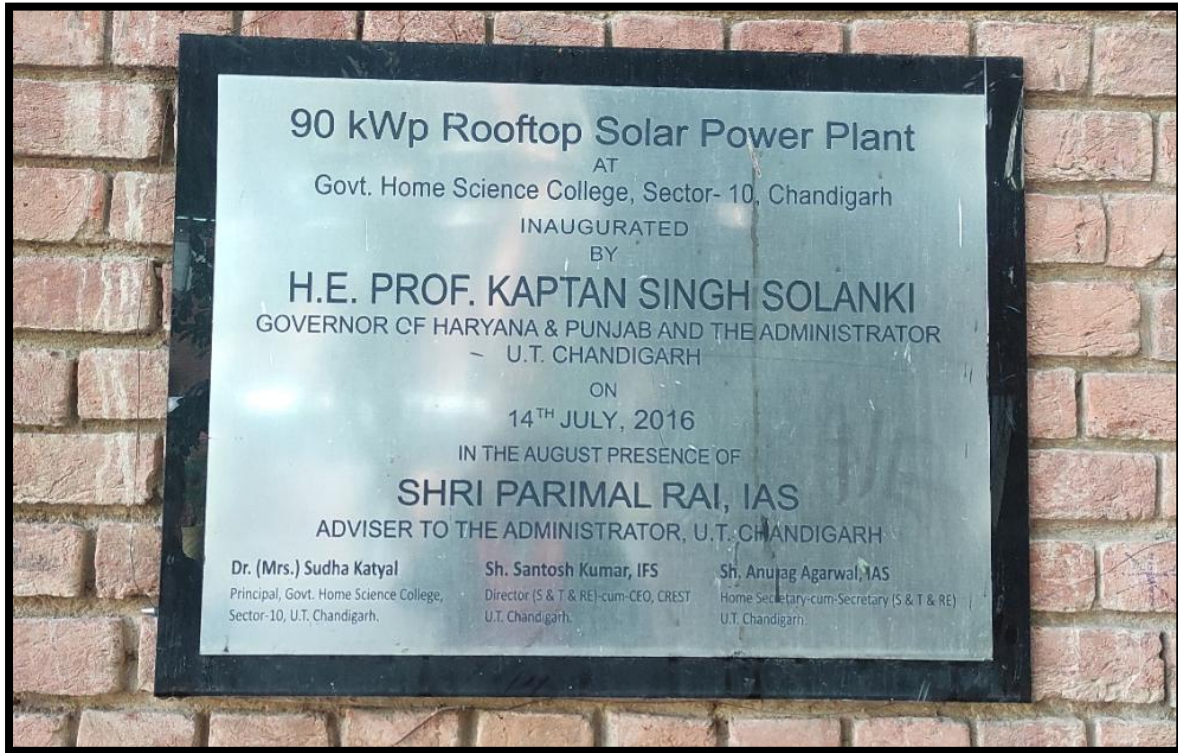
4.5 Carbon Footprint Auditing

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

- Most of students and some employees use cycle to commute.
- Students coming from areas/villages adjoining Chandigarh make use of public transport to reach college.
- With support from CREST, college has installed grid-connected rooftop solar photovoltaic power plant of capacity 190 kWp on various buildings in the college since past 6 years.
 - 90 kWp rooftop SPV plant on the Academic building
 - 50 kWp rooftop SPV plant on B.Sc. hostel building (both old and new)
 - 30 kWp rooftop SPV plant on M.Sc. hostel building
 - 20 kWp rooftop SPV plant on Multimedia Research Block building





Solar Panel on the Main Academic Building



Solar Panel on the Main Research Block Building

- The water geysers, lights and fans in both the hostel buildings run fully on solar power generated by the SPV plant on campus.
- With support from Department of Science and Technology and Renewable Energy, Chandigarh Administration, college installed 13 solar lights in the college campus.



Solar Street in the Campus

- College also took an initiative to replace old tube lights with energy efficient LED lights in:
 - Academic building, B.Sc. Hostel (both wings) and M.Sc. Hostel building, Auditorium, Chaitanya Laboratory Nursery School, Multimedia Research Block and Principal's residence.
 - It also replaced existing solar lights in campus area with 40-watt solar LED light fitting in the college.
 - Replaced existing 2x40 watt street light fitting with 45-watt LED fitting and 125 watt/HPMV fitting in campus area.
- Power efficient re-wiring was also done throughout the campus to increase energy efficiency of its systems, reduce energy loss and improved safety of the building occupants and residents on campus.

- Load enhancement and installation of separate electric Substation, details are shared in Annexure-5
- The college also has a facility of electric bike for commuters to DHE Office and other stakeholders.
- Environment committee- *Harita*, conducted regular energy efficiency awareness programs like inter-college competitions for sensitizing staff and students on energy efficiency, renewable energy, energy monitoring, waste segregation and disposal, water conservation etc.
- An 'Energy Saving Brigade' comprising of students from different classes is constituted in the college in every session that works towards:
 - Spreading awareness about efficient resource conservation and utilization by the use of posters, conducting Nukkad Natak, required signage's, etc. wherever and whenever required.
 - 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. GHSC 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 Good Ideas Implemented



Health Mela



Happiness and Well-being Club

Government Home Science College
Sector 10, Chandigarh
organizes

"YOGA SADHANA"
One Week Online Yoga Session
for Faculty and Students

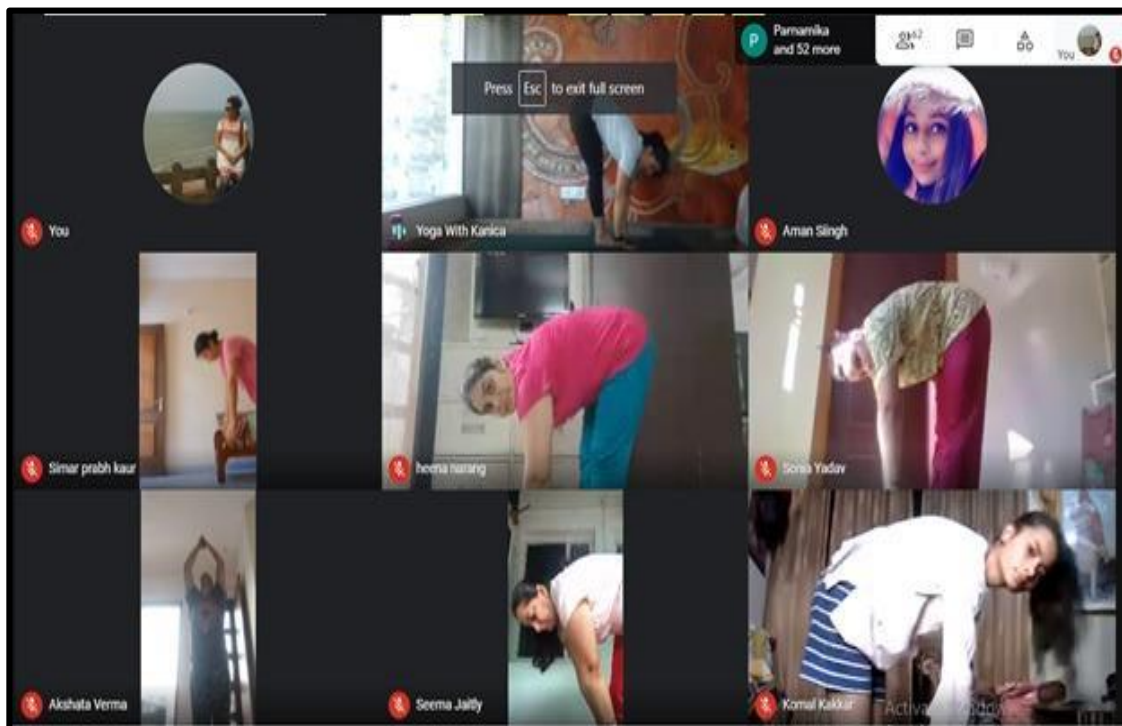


International Yoga Day

Welcomes you!

**Talented Yoga Teacher
&
Fitness Enthusiast**

Ms. Kanica Nayyar

- Running her own venture **Yoga with Kanika**
- Design classes to provide holistic approach for **healthy mind & body**
- Worked as **Associate trainer** in Cult Fit Healthcare Pvt. Ltd.
- Did PG course in Yoga Education from world renowned Institute **Kaivalyadham Ashram, Maharashtra**



Yoga Sadhana Week

CHAPTER 5 GREEN AUDIT

5.1 Biodiversity status of the college campus

GHSC Sector 10, Chandigarh is situated in the center of the Chandigarh 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 have an understanding of 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 small Plants	Trees	Potted plants
1.	Main Entrance and M.Sc. Hostel	22	95	4
2.	Sports ground and Main Road side	11	120	10
3.	Chaitanya Nursery School	25	60	55
4.	Principal Residence	5	32	50
5.	Fruit Garden	12	64	4
6.	B.Sc. Hostel (Old wing and New wing)	03	69	10
7.	Nursery and open area at the back of Principal office	16	34	445
8.	Back side boundary of college and Herbal Garden	08	61	2

5.1.3 Harita Environment Society.

The Environment department, Chandigarh has enrolled the environment society of the college” Harita “for carrying out environmental programmes and activities in the Union Territory of Chandigarh for protection our precious environment. Throughout the year Harita organizes activities in collaborations with department of Forest and Environment Chandigarh Administration UT, and receives number of grants for conducting the activities like, Van Mahotsav, Akshay Urja Diwas, International Ozone Day, Wildlife week celebration, Anti-Firecracker campaign, Wetlands Day, Water Conservation Day, National Science Day, Bio friendly holi, Inter-college competitions, rallies walkathon, workshops, Nukkad natak, poetry recitation etc.

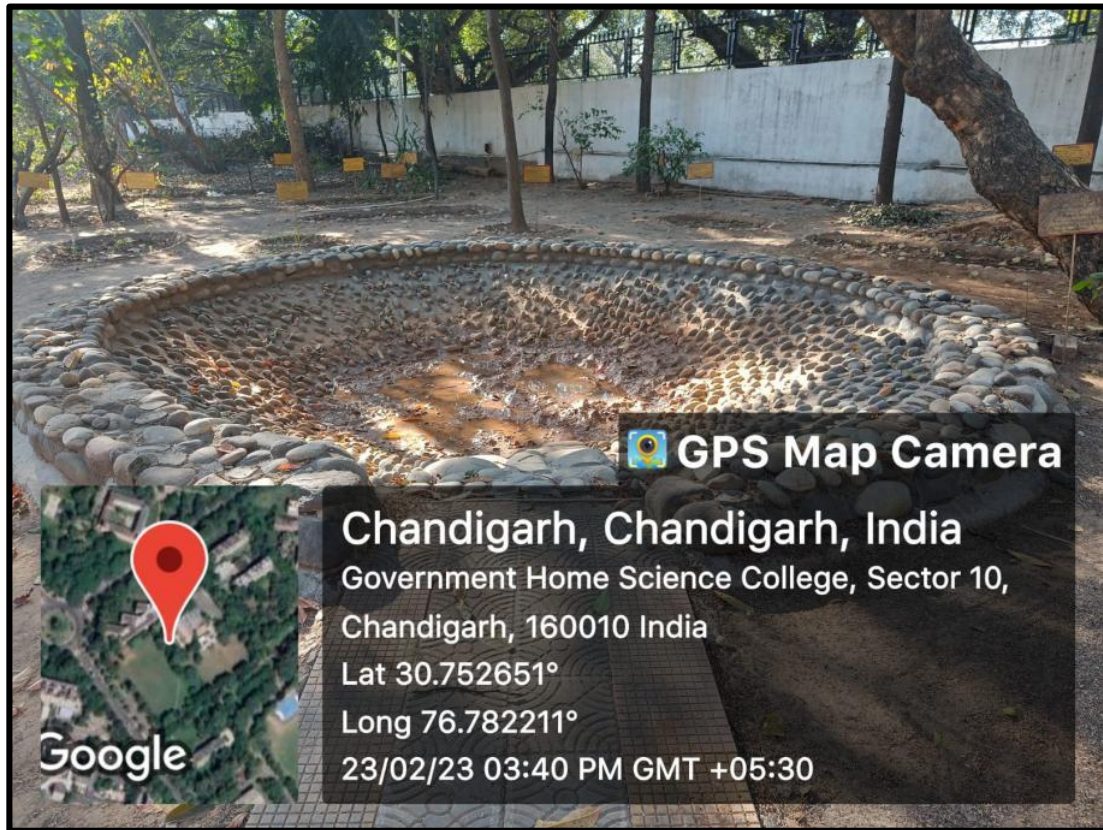
Due to continue efforts of Harita Environment society various gardens have been developed in the college campus as follows

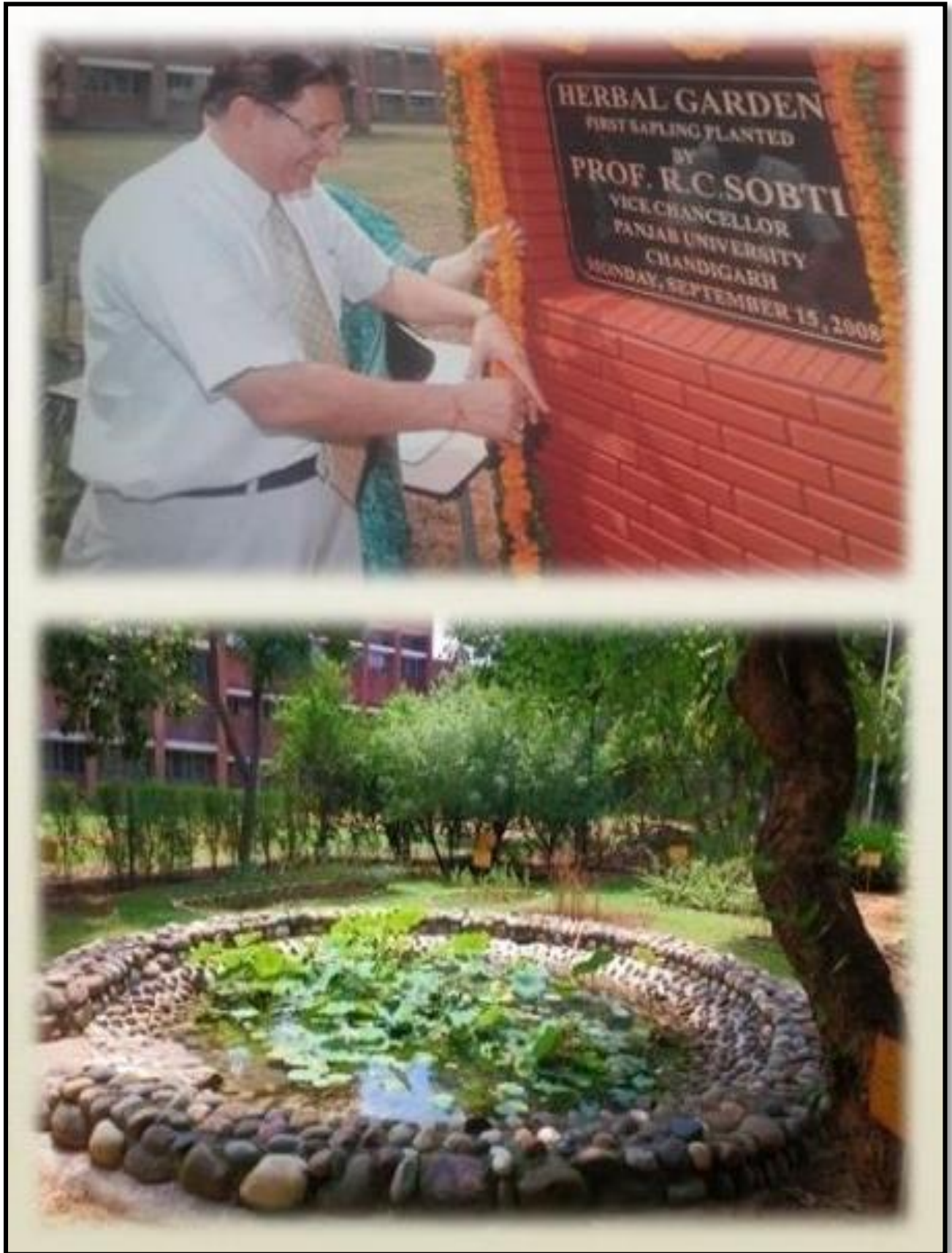
Herbal garden

To educate students about medicinal Plants used in day-to-day life and to enable them to identify herbal plants, a small herbal garden was created in the college campus in collaboration with forest department Chandigarh Admin. UT. About 30 species of different type of medicinal plant are grown in the Herbal Garden.

CREATION OF HERBAL GARDEN in collaboration with Forest Dept. Chd. Admn. UT.







Fruit Garden

To make students aware of different types of fruit trees and their identification, a small fruit garden was created near B.Sc. hostel. More than 15 species of fruits are grown this.



Plant nursery

There is a small plant nursery in the college, where seedlings of seasonal plants are raised, Transplanting Beds and potted plants are kept and maintained.

About 250 foliage and flowering ornamental potted plant of different sizes and approximately 28 different species are maintained in Plant Nursery

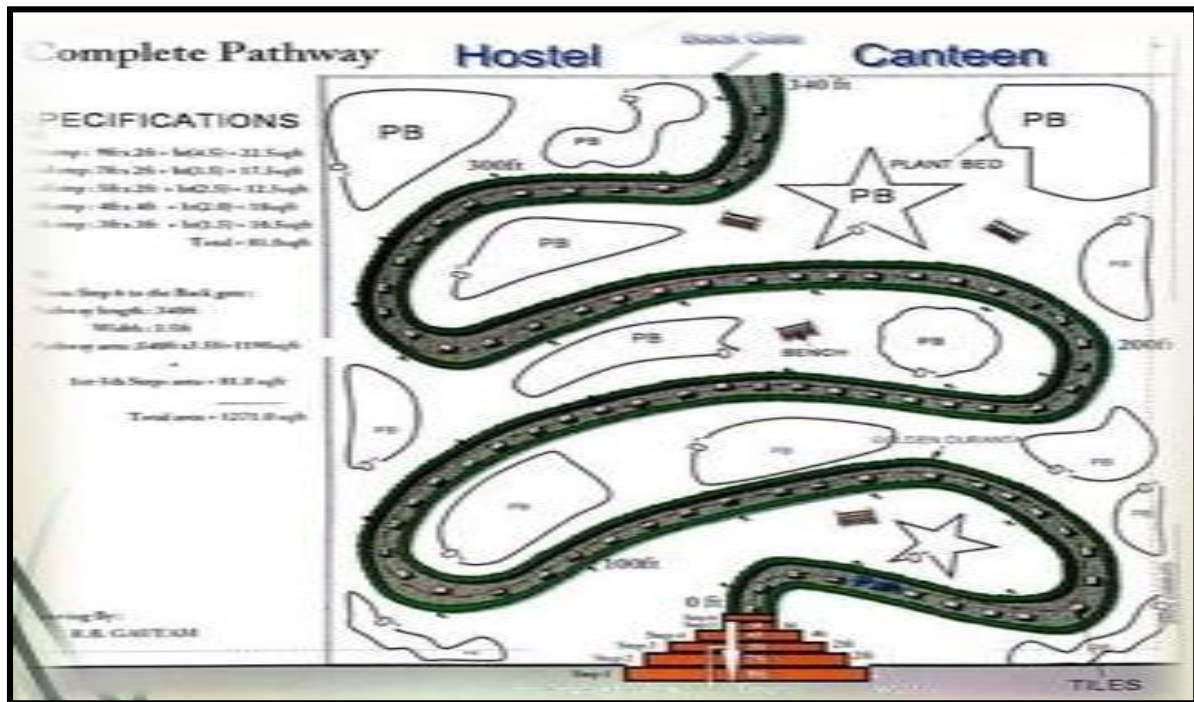


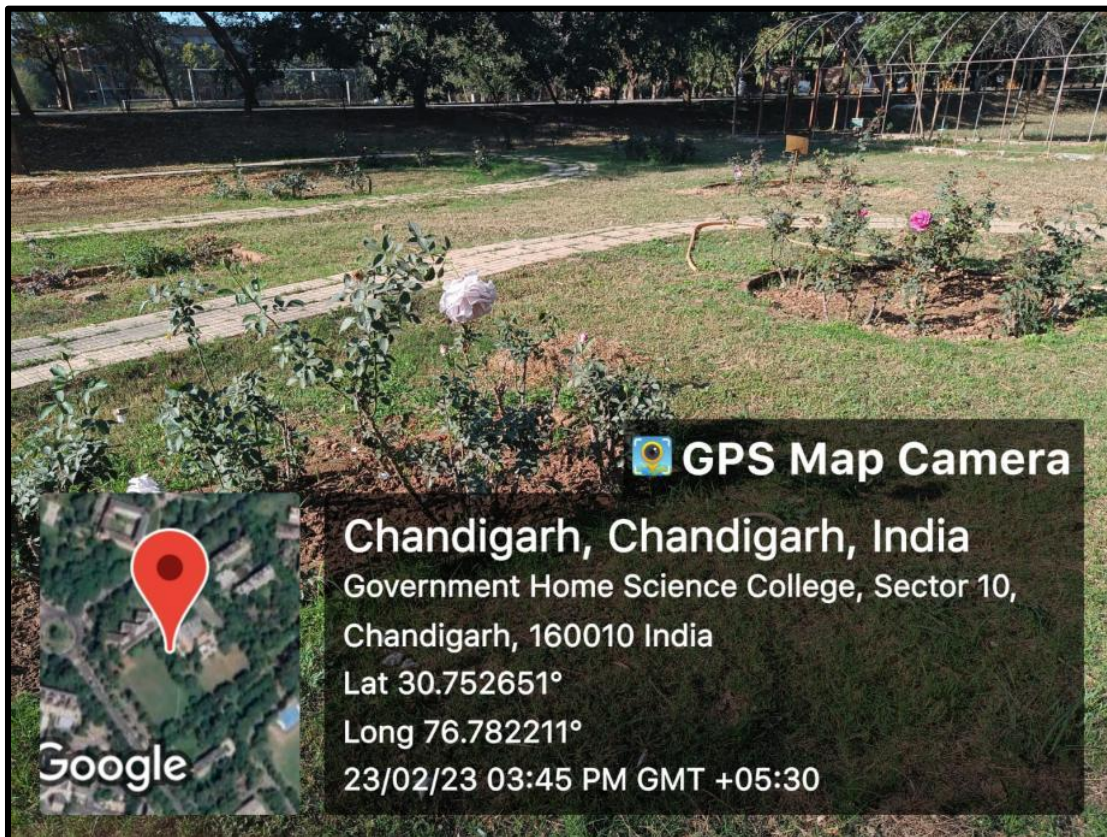


Mini rose garden

Planning and landscaping of area near M.Sc. Hostel was done and a mini rose garden was created to makes students aware of different types of roses. About 24 beds of different shapes were created and about 250 saplings of rose plant of different colors, varieties were planted.

PLANNING & CREATION OF MINI ROSE GARDEN





Mini cactus garden

A small cactus / succulent's plant garden was created near main gate of the college. About 13 species of cactus/ succulents grown in this to make students aware of verities of cactus/ succulents.

CACTUS GARDEN NEAR MAIN GATE



Mini Hill Forest Garden

A Forest Garden is one of the low-maintenance gardens. Forest garden come in many sizes. You don't need acres of land to create one. Forest garden is a garden that mimics a natural forest. Forest gardens are an example of Polyculture, an integrated system of plants that function together to create a thriving system.

If the land is left unmanaged in many regions, trees come to dominate the landscape. Self-sustaining ecosystem develop with a range of complex interactions. It can be an important way to offset carbon emissions and restore balance in the earth's carbon cycle. Forest gardens can store carbon in plants and soil for longer than traditional, tilled agricultural fields. Forest garden, like natural forest can help us combat global warming. We can play our part in protecting our planet and ensure a sustainable future for humanity. Forest also help to preserve our planet's biodiversity. As you may already be aware, biodiversity on earth is decreasing at an alarming rate. By choosing to mimic natural forests in our gardens, we can help to protect a range of species and promote the healthy biodiversity of plants & wildlife.

Layer plants in space and time to make the most of the land area available in a forest garden, there are a no. of layers of planting.

- The taller tree/ canopy layer: Neem, Rubber, Plumeria, Gulmohar, Custard Apple, Jamun, Teak, Mango, Jackfruit, Badhal, Guava, Bottle Palm
- The small tree/shrub: Crotons, Chandni, Ixora, Cassia Biflora, Dracaena, Pomegranate, Tangerine, Palm
- The herbaceous layer: Duranta, Ficus
- Ground cover: Grass
- Vines and climbers: Giloy
- Root crops
- Sub soil ecosystem

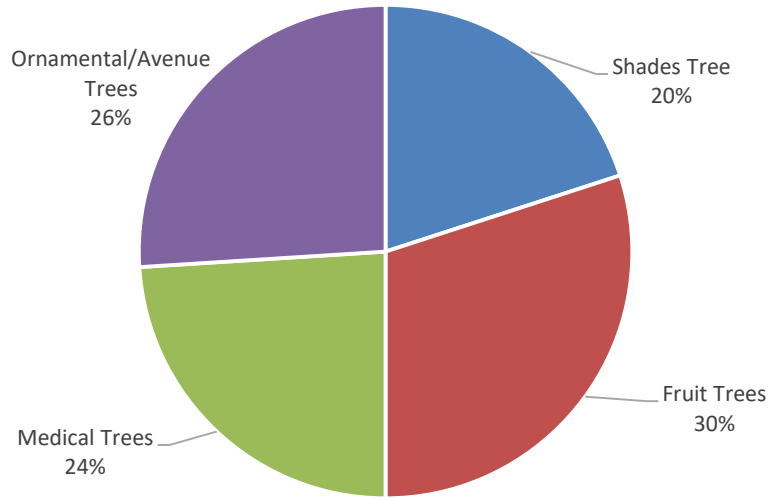




5.1.4 Details of Tree, Flora, fauna and potted plants are tabulated below

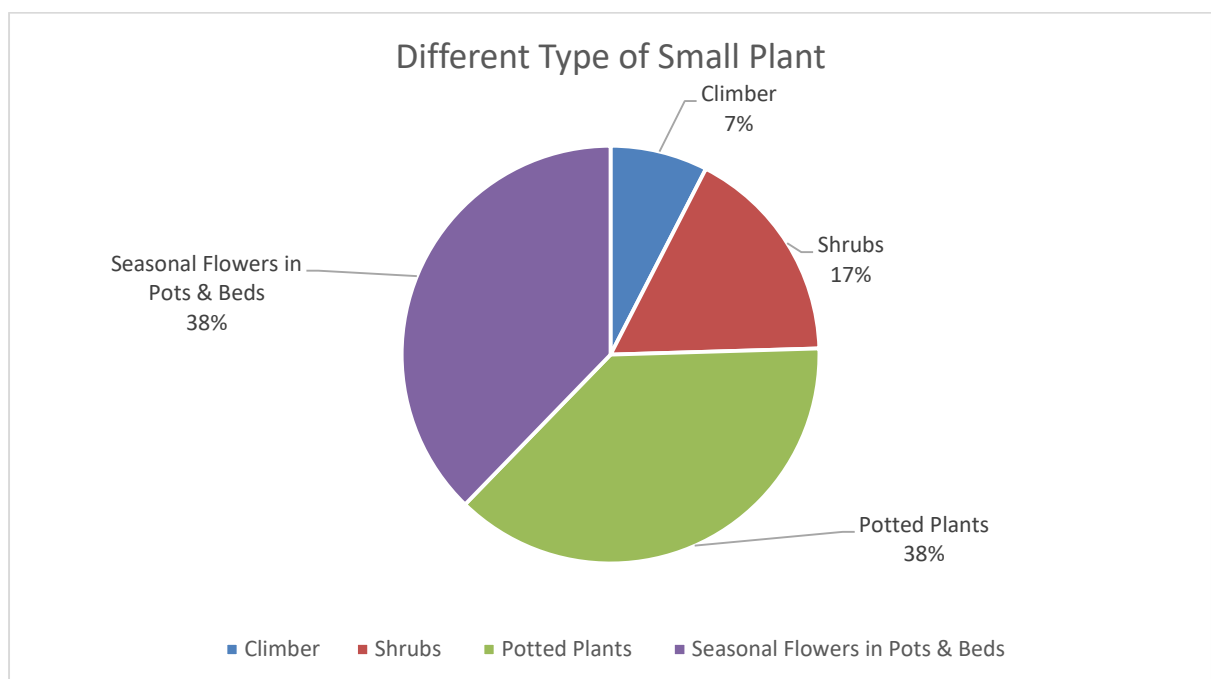
Shades Tree	Fruit Trees	Trees of Medical Value	Ornamental/Avenue Trees
Banyan Tree	Apple	Amaltas	Araucaria
Goolar	Custard	Amla	Ashoka
Harichampa	Dehu	Arjun	Bottle palm
Kadamb	Granade	Bael	Cassia nodosa
Papadi	Guava	Bahera	Cycas Palm
Peepal	Jack Fruit	Neem	Eucalyptus
Pilkhan	Jamun	Mary's heart	Gulmohar
Rubber Plant	Kinno	Monstera	Harsingar
Silver Oak	Lemon	Philodendron	Jacranda
Teak	Loquat	Pilea	Kachnar
	Mango	Ruscus	Lagerstroemia
	Pear	Sansevieria	Tecoma stans
	Pome		Thuja
	Sweet William		
	Verbena		

Type of Existing Trees Distribution



Climber	Shrubs	Potted Plants	Seasonal Flowers in Pots & Beds
Bougain Villea	Albizzia Dwarf	Asparagus	Althaea
Clerodendron	Cassia biflora	Begonia	Aster
Climbing Roses	Chandni	Beloperone	Burf
Pyrostegia	Dela	Bougainvillea	Calendula
	HiB.Sc.us	Calathea	Candytuft
	Ixora	Chlorophytum	Dahlia
	Lagerstroemia	Codiaeum	Dimorphotheca
	Oleander	Coleus	Dog Flower
	Rose	Cycas Palm	Gerbera
		Diffenbachia	Gladiouls
		Dracenea	Larkspur
		Duranta	Lupin
		Erica palm	Marigold
		Fan palm	Namesia

Climber	Shrubs	Potted Plants	Seasonal Flowers in Pots & Beds
		Fern	Pansy
		Fittonia	Petunia
		Grass	Phlox
		Ornamental	Poppy
		Hepatopleurum	Saponaria
		Marantas	Stock



5.1.5 Herbal Garden Plants

S.No.	Name of the Plant
1	Aloe Vera
2	Alstonia Tree
3	Amla
4	Arjun Tree
5	Ashwagandha
6	Asparagus
7	Bael Tree
8	Bahera Tree

S.No.	Name of the Plant
9	Bamboo
10	Bryophyllum
11	Cardamom
12	Chitrak
13	Giloy
14	Harad Tree
15	Harshirngar
16	Heena

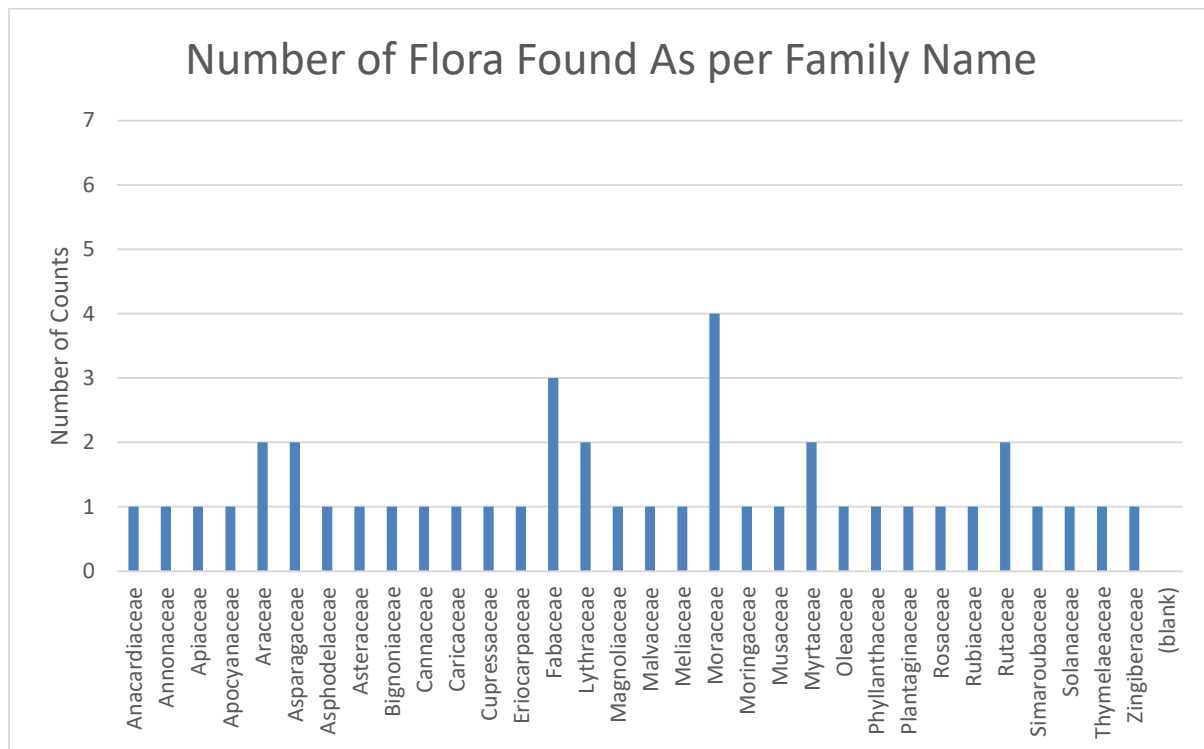
S.No.	Name of the Plant
17	Hibiscus
18	Jamun Tree
19	Kalmegh
20	Laxmi Taru
21	Lemon Grass
22	Lotus and Aquatic plants
23	Neem Tree
24	Nirgundi

S.No.	Name of the Plant
25	Peppermint
26	Reetha
27	Rose
28	Rudraksh Tree
29	Sada Bahar
30	Stevia
31	Tulsi
32	Turmeric

5.1.6 Flora diversity has been studied and documented as below:

Common name	Botanical name	Family
Agru plant	<i>Aquilaria malaccensis</i>	Thymelaeaceae
Ajwain/carom	<i>Trachyspermum ammi</i>	Apiaceae
Ashoka tree	<i>Saraca asoca</i>	Fabaceae
Asparagus fern	<i>Asparagus setaceus</i>	Asparagaceae
Bael/bengal quince	<i>Aegle marmelos</i>	Rutaceae
Banana	<i>Musa acuminata</i>	Musaceae
Banyan	<i>Ficus benghalensis</i>	Moraceae
Brahmi	<i>Bacopa monnieri</i>	Plantaginaceae
Brahmraksas/ Giant taro	<i>Alocasia macrorrhizos</i>	Araceae
Canna plant	<i>Canna indica</i>	Cannaceae
Champa	<i>Magnolia Champaca</i>	Magnoliaceae
China Rose	<i>Hibiscus-rosa-sinensis</i>	Malvaceae
Cluster fig/ gular	<i>Ficus racemosa</i>	Moraceae
Curry tree	<i>Murraya koenigii</i>	Rutaceae
Drumstick tree	<i>Moringa oleifera</i>	Moringaceae
Ghrit Kumari	Aloe vera	Asphodelaceae
Guava	<i>Psidium guajava</i>	Myrtaceae

Common name	Botanical name	Family
Henna	<i>Lawsonia inermis</i>	Lythraceae
Indian gooseberry/amlam	<i>Phyllanthus Emblica</i>	Phyllanthaceae
Indian rosewood	<i>Dalbergia sissoo</i>	Fabaceae
Jamun	<i>Syzygium cumini</i>	Myrtaceae
Jasmine	<i>Jasminum sambac</i>	Oleaceae
Kadamba/Burflower	<i>Neolamarckia cadamba</i>	Rubiaceae
Lakshmi taru	<i>Simarouba glauca</i>	Simaroubaceae
Mango	<i>Mangifera Indica</i>	Anacardiaceae
Money plant	<i>Epipremnum aureum</i>	Araceae
Neem	<i>Azadirachta Indica</i>	Meliaceae
Papaya	<i>Carica papaya</i>	Caricaceae
Peepal	<i>Ficus religiosa</i>	Moraceae
Pomegranate	<i>Punica granatum</i>	Lythraceae
Raatkirani	<i>Cestrum nocturnum</i>	Solanaceae
Rose	<i>Rosa indica</i>	Rosaceae
Rudraksha	<i>Elaeocarpus Ganitrus</i>	Eriocarpaceae
Sadasuhagan/Sadabahr	<i>Catharanthus roseus</i>	Apocyanaceae
Sevanti	<i>Chrysanthemum</i>	Asteraceae
Shahtut/mulberry tree	<i>Morus alba</i>	Moraceae
Shami	<i>Prosopis cineraria</i>	Fabaceae
Sitafal/sugar apple	<i>Annona squamosa</i>	Annonaceae
Snake plant	<i>Dracaena trifasciata</i>	Asparagaceae
Trumpetbushes	<i>Tecoma</i>	Bignoniaceae
Turmeric	<i>Curcuma longa</i>	Zingiberaceae
Vidya/thuja	<i>Thuja</i>	Cupressaceae

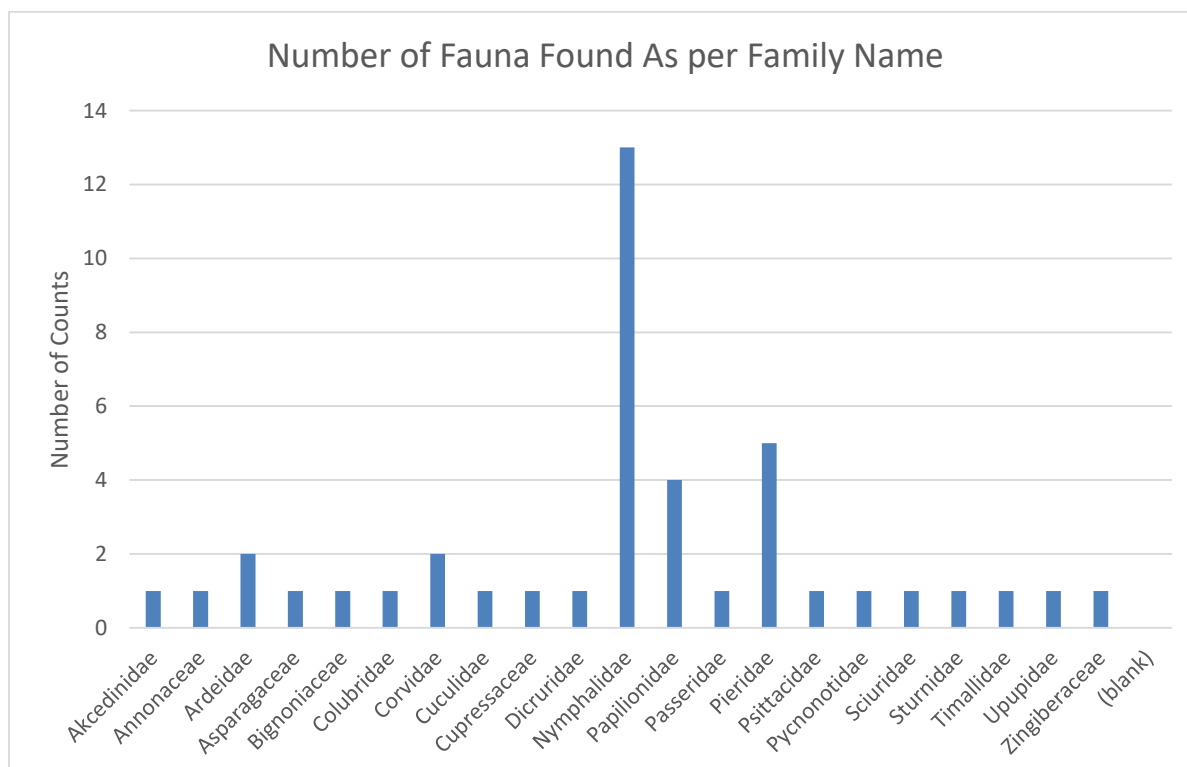


5.1.7 Fauna diversity has been studied and documented as below:

Common name	Scientific name	Family
Angled castor butterfly	<i>Ariadne</i>	Nymphalidae
Baronet butterfly	<i>Euthalianais</i>	Nymphalidae
Black drongo	<i>DicrurusMacrocerus</i>	Dicruridae
Blue moon butterfly	<i>Hypolimnasbolina</i>	Nymphalidae
Blue tiger butterfly	<i>Danaislimniace</i>	Nymphalidae
Common crow butterfly	<i>Euploea core</i>	Nymphalidae
Common emigrant butterfly	<i>Catopsiliacrocale</i>	Pieridae
Common evening brown butterfly	<i>Melantiseda</i>	Nymphalidae
Common grass yellow butterfly	<i>Euremahecabe</i>	Pieridae
Common hoopoe	<i>Upupa epops</i>	Upupidae
Common jay butterfly	<i>Graphiumdoson</i>	Papilionidae

Common name	Scientific name	Family
Common jezebel butterfly	<i>Delias eucharis</i>	Pieridae
Common kingfisher	<i>Alcedo bengalensis</i>	Akcedinidae
Common mormon butterfly	<i>Papiliopolytes</i>	Papilionidae
Common myna	<i>Acidotheres tristis</i>	Sturnidae
Common rose butterfly	<i>Pachlioptaaristolochiae</i>	Papilionidae
Common sailor butterfly	<i>Neptishylas</i>	Nymphalidae
Dark brand-bush brown butterfly	<i>Mycalesismineus</i>	Nymphalidae
Diadem butterfly	<i>Hypolimnasmmissipus</i>	Nymphalidae
Greater coucal	<i>CentropusSinesis</i>	Cuculidae
House crow	<i>Cornus splendens</i>	Corvidae
House sparrow	<i>Pesserdomesticus</i>	Passeridae
Indian palm squirrel	<i>Funambulus palmarum</i>	Sciuridae
Indian pond heron	<i>Ardeolagrayii</i>	Ardeidae
Indian rat snake	<i>Pytus mucosa</i>	Colubridae
Intermediate egret	<i>Ardea intermedia</i>	Ardeidae
Jungle babbler	<i>Turdoidesterricolor</i>	Timallidae
Large billed crow	<i>Corvus Macrorhynchos</i>	Corvidae
Lemon pansy butterfly	<i>Junonialemonias</i>	Nymphalidae
Lime butterfly	<i>Papiliodemoleus</i>	Papilionidae
Motled emigrant butterfly	<i>Catopsiliapyranthe</i>	Pieridae
Plain tiger butterfly	<i>Danaischrysippus</i>	Nymphalidae
Red-vented bulbul	<i>Pycnonotuscafer</i>	Pycnonotidae
Rose ringed parakeet	<i>Psittaculakrameri</i>	Psittacidae
Sitafal/sugar apple	<i>Annona squamosa</i>	Annonaceae

Common name	Scientific name	Family
Snake plant	<i>Dracaena trifasciata</i>	Asparagaceae
Spotted rustic butterfly	<i>Phalantaphalanta</i>	Nymphalidae
Tawny coster butterfly	<i>Acraea violae</i>	Nymphalidae
Three-spot grass yellow butterfly	<i>Euremablanda</i>	Pieridae
Trumpetbushes	<i>Tecoma</i>	Bignoniaceae
Turmeric	<i>Curcuma longa</i>	Zingiberaceae
Vidya/thuja	<i>Thuja</i>	Cupressaceae



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 peacock, sparrows, myna, parrots, crows, cuckoo, pigeon, owl, woodpecker and monkey, squirrels, mongoose, dogs and cats are living freely in the. State bird of Chandigarh that is Grey Hornbill is seen quite often in the College premises. 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 our





Dove



Kingfisher



Eagle



Tailorbird



Green Bee Eater



Red-vented Bulbul



Hoopoe



Brown Headed Barbet



Falcon



Blue Whistling Thrush



Plain Prinia



Robin

PAWS

PAWS (People for Animal Welfare Society) for a Cause is a unique first of its kind endeavor of the college. It has adopted 8 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's all pledge to make 'Mother Earth' a peaceful place for all creatures, with shared thoughts of love & kindness.



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 any academic institution reveals, ways by which institute can reduce water consumption, improve waste management and reduction in emission of carbon dioxide in the environment. It is a process to look into and ask ourselves whether we are also contributing to the degradation of the environment and if so, in what manner and how we can minimize this contribution and bring down to zero and preserve our environment for future generation. This process of green audit enables us to assess our life style, action and assess its impact on the environment. Environment & Green auditing is the process of identifying and determining whether institutional practices are eco- friendly and sustainable. Traditionally, we are good and efficient users of natural resources. But over the period of time excess use of resources, viz., energy, water, chemicals are become habitual for everyone especially, in common areas. Now, it is necessary to check whether our activities are consuming more than required resources? Whether we are handling waste carefully? Environment & 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 it in to green and clean one.

6.1.1 Water Conservation Recommendation

- Reduce Water consumption in Toilets for flushing.
- Retrofit flow restrictors in hand washing taps and other taps:
- Stop use of filtered water in toilet flushing, instead use recycled, treated wastewater or raw water.
- Enhance Training and awareness of the employees and student at all levels and placing 'water saving' posters/slogans at various locations:
- Maintain logbook of daily Inlet Water from Municipal corporation
- 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.
- Arrest the water leakage identified during the study. As there were several points observed

and reported to college coordinator.

6.1.2 Recommendations to improve the existing practice of waste management

- Installation of waste paper recycling plant:
- Learn to repair rather than to discard things
- Reuse and Recycle rather than throughout campus
- Avoid buying of single-use batteries
- Avoid buying and usage of Plastic bottled water
- Use electronic media instead of paper
- Reusable containers
- Use a meal plan
- Avoid plastic packaging
- Reduce garbage production

6.1.3 Carbon Foot Print Reduction 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

6.1.4 Health and Wellbeing Recommendations:

Happiness and Well Being club of the HD department is continuously striving for creating and ensuring a stress -free atmosphere in the college.

- It also aims at encouraging students to express their problems freely.
- The club organizes various activities and workshops throughout the year to

encourage students to inculcate confidence and possess zeal to live a meaningful and happy life.

- The activities conducted under the club ensure holistic development of the students so as to enhance their overall experience of being a happy individual and to serve the society as an asset.
- Celebration of happiness week, conducting of workshops and seminars are some of the activities conducted by the club.
- The club also gives an opportunity to the students to develop their personalities holistically and also train them to introspect themselves so as to understand the actual meaning and significance of happiness.
- The conclusive goal of the club is to create a healthy, positive and happy environment in the college

6.1.5 Biodiversity improvement Recommendation

- Renovate the Poly house for vegetation as nursery to upcoming plantation for next years
- Create automatic drip irrigation system during summer holidays.
- Not just celebrating environment day but making it a daily habit.
- 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 7 ANNEXURES

Annexure -1

Agency Certification



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
(subject to the company maintaining its system to the required standard)

Certificate No:- 1205Q169822
To Verify this Certificate please visit at www.otabucert.com



Dr. Anita Gupta
(Managing Director)

*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, this certificate shall be suspended/withdrawal). *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

Annexure -2

Audit Certificate

INNOVATIVE ENERGY CONSERVATION SOLUTIONS

An ISO 9001:2015 Certified Organisation,
Certificate No:- 1205Q169822

A: 205, Eco Towers, Shivalik
Enclave Sector 125, Greater
Mohali-140301
E: Pankaj@iecsolutions.in
T: +91-9685613238

DATE

February 24, 2023

No: CERT/2023/09

PLACE OF WORK: CHANDIGARH

Energy, Environment & Green Audit Certificate

Is Issued To

GOVERNMENT HOME SCIENCE COLLEGE SECTOR 10, CHANDIGARH

for successful completion of Energy, Environment & Green Audit of the College for the Period FY 2022-23, conducted by **M/s Innovative Energy Conservation Solutions**. This Energy, Environment & Green Audit included Sectoral Audits in the reports i.e., Water, Energy, Waste cum Material, Air Quality & Noise, Bio-diversity, outdoor environment, Health & well-being, Activities and Institutional management aspect cover.

The College is certified to have done exceptionally well to conserve energy, environment and ensuring sustainable development for the assessment period.

Duration of Audit: Feb-2022 to Jan-2023

Date of Issue: 24/02/2023

PANKAJ
DHOTE

Digitally signed by PANKAJ
DHOTE
Date: 2023.02.24 17:27:16
+05'30'

Innovative Energy Conservation Solutions

Innovative Energy Conservation Solutions



Innovative Energy Conservation Solutions

An ISO 9001:2015 Certified Organisation,
Certificate No:- 1205Q169822

Thank You

www.iecsolutions.in
Pankaj Dhote



Annexure -3

Existing Plantation Details

Government Home Science College Harita: Environment Society Activities

Plantation Status

Sadabahar: Sadabahar Have calming effect, reduce blood pressure, possess anticancer properties etc.



Cardamom: It has Flavoring agent, possess antioxidant and diuretic Properties etc.



Chitrak: Used in treating intestinal troubles, dysentery, leucoderma, inflammation, piles, bronchitis, itching, diseases of the liver, and consumption.



Harshirngar: Relief from Chikungunya and Dengue, treat Arthritis possess Anti-allergic, antiviral and antibacterial properties etc.



Hibiscus: To reduce high blood pressure, high cholesterol, increase the production of breast milk, used in hair care etc.



Bryophyllum: it is used for treatment of hypertension, earache, burns, abscesses, ulcer, insect bites, diarrhea and kidney stone etc.



Amla: It helps the body regulate bowel movements, improves eye sight, boosts the immune system, and regulates blood sugar and lipids etc.



Bansa: It used for Asthma, Pain of urinary tract infections, Rheumatic pain.



Lemon Grass: It is used for treating digestive tract spasms, stomach-ache, high blood pressure, convulsions, pain, vomiting, cough, achy joints (rheumatism), fever, the common cold, and exhaustion etc.



Lotus: Lotus flowers are used to stop bleeding, seeds are used for disorders of the digestive tract, including diarrhoea.



Asparagus: It is used as a food source, for treating urinary tract infections, joint pain, obesity etc.



Peppermint: It is used for treatment irritable bowel syndrome (IBS), nausea, digestive issues, common cold and headaches, also used as mouth freshener.



Bael Tree: It is used in treatment of chronic diarrhea, dysentery, and peptic ulcers, as a laxative and to recuperate from respiratory affections in various folk medicines.



Laxmi Taru: The bark and leaves are medicinally important, used as astringent, digestive and menstrual stimulant, possess anti-parasitic properties



Reetha: It Possess Anti-Inflammatory Effects, used in hair care products, Skin Health, Snake bite, respiratory health etc.



Henna: It provides relief from Headaches, Eases Arthritis Pain, Treats a Variety of Skin Conditions, Promotes Healthy Hair etc.



Harad Tree: it improves digestion, used in asthma, blood pressure, washing of eyes, cough etc.



Neem Tree: It is used for leprosy, eye disorders, bloody nose, intestinal worms, stomach upset, loss of appetite, skin ulcers, diseases of the heart and blood vessels (cardiovascular disease), fever, diabetes, gum disease (gingivitis), and liver problems.



Bahera Tree: One of the components of triphala, fruit is anti- bacterial in nature, it is rejuvenating in nature and it is very beneficial for hair growth.



Jamun Tree: It Improves haemoglobin count, Treats diabetes, sour throat, bronchitis, asthma, ulcers and dysentery etc.



Arjun Tree: It is used for blood pressure, heart diseases, earache, asthma, bile duct disorders, scorpion stings, and poisonings etc.



Stevia: It is intensely sweet-tasting plant, used as a non-nutritive sweetener and herbal supplement.



Kalmegh: It protects the liver and gall bladder, used for treating malaria, jaundice, anaemia, bowel complaints and loss of appetite.



Rudraksh Tree: It provides Helps in controlling stress, hypertension and blood pressure, cure various dangerous diseases like small pox, epilepsy, whooping cough.



Tulsi: It Promotes Healthy Heart, Treats Kidney Stones, Relieves Headaches, Fights Acne, Relives Fever, Oral Health.



Turmeric: It is used for conditions involving pain and inflammation, such as osteoarthritis, also used for hay fever, depression, high cholesterol, a type of liver disease, and itching.



Alstonia: It is used in Ayurvedic medicine to treat fever, malaria, and troubles in digestion, tumours, ulcers, asthma, and so forth. The leaves and the latex are applied externally to treat tumours.



Ashwagandha: Ashwagandha is an ancient medicinal herb with multiple health benefits. It can reduce anxiety and stress, help fight depression, boost fertility and testosterone in men, and even boost brain function. Supplementing with ashwagandha may be an easy and effective way to improve your health and quality of life.



Aloe Vera: It is used to treat burns, Improves digestive health, Promotes oral health, and anti-helminthic, used in skin care products.



Giloy: It provides Immunity booster, used for treating chronic fever, dengue, and blood sugar level, improves digestion, and reduces stress and anxiety.



Rose: Roses are best known as ornamental plants, rose petals is as effective as medicines like aspirin or ibuprofen, prevent pain caused by inflammation from physical injury or conditions like arthritis .



Nirgundi: it is Unique and versatile ayurvedic herb, being used both for external application and internal consumption, to treat a host of illnesses like arthritis and menstrual cramps. It augments physical and mental wellness and bestows holistic healing benefits.



Annexure -4 College Activities and Conservation Drives

Environment sustainability and awareness sessions undertaken by the NSS unit of the college

Swachhta Action Plan

- Focus on Swachh Bharat Abhiyan - Cleanliness program throughout the college campus. 100 NSS Volunteers participated in Swachh Bharat Abhiyan
- 80 NSS Volunteers participated in Tree Plantation Drive and sensitizing the masses regarding clean and green environment thereby contributing in creating 'Green and Swachh Bharat'



Display of signboards regarding segregation of waste.

- Various signboards have been displayed in different areas around the college campus and hostels. The prints of wastes belonging to blue and green category have been pasted on the respective dustbin for easy segregation of wastes.



Step Up! Conserve Water on Campus

A team of 20 NSS Volunteers was made and they were oriented regarding the Swachhta vision and mission of the institution. Orientation programme was conducted focusing on significance of Swachhta and water conservation. Role and responsibilities with special reference to Jal Shakti and Swachhta initiatives were discussed thoroughly. Students were orientated regarding the basic rule of water conservation, water quantity and quality, need of good quality, ways to lessen the overburdening of water resources, monitoring of over-head tanks, various sources of the campus water and managing water, harvesting water, recycling and plugging leakages. Various activities were conducted wherein NSS Volunteers were sensitized after making their teams. The entire college was thoroughly surveyed by the volunteers followed by identification of water challenges.



Annexure -5 Electrical Substation details

From: The Executive Engineer,
Electrical Division No. 1,
Chandigarh

To: The Principal,
Govt. Home Science College,
Sector-10, Chandigarh.

Memo No.: E1 / D.B. / 2023 / 294
Dated: 6/1/23

Subject: REQUEST FOR VISIT OF CONCERNED OFFICIALS OF ELECTRICAL DEPARTMENT FOR LOAD ENHANCEMENT AND INSTALLATION OF SEPARATE ELECTRIC SUBSTATION OUTSIDE THE COLLEGE ACADEMIC BUILDING (INCLUDING B.SC. & M.SC. HOSTELS).

Reference: This office memo no.8762, dated 09.06.2022.

Kindly refer to this office memo under reference vide which the Architectural drawing marked with the space of 30'x30' alongwith shop drawing showing the placement of substation equipments and their interleaving distances were sent to your office for taking up the matter with the Chief Architect, Department of Urban Planning, Chandigarh for earmarking the space of 30'x30' and issue the architectural drawing for construction of substation building.

As per the "CPWD Guidelines for Substation and Power Distribution System of Buildings 2019" reproduced as below:-

"While selecting the transformer(s) for a substation it will desirable to provide at least two or more transformers, so that a certain amount of redundancy can be build-in in the system."

In view of above and keeping in view the load requirements, 2 nos. 800KVA transformers are required to cater the load requirements of the building. Accordingly, the shop drawing showing the placement of substation equipments and their interleaving distances and copy of layout plan duly marked with the location of 50'-1½"x50'-1½" have been appended herewith.

It is, therefore, requested to take-up the matter with the Chief Architect, Department of Urban Planning, Chandigarh for earmarking the space of 50'-1½"x50'-1½" and issue of architectural drawings for construction of Substation building and convey to this office so that the estimate of the same could be got approved from the competent authority.

DA/ As above

Endst. No.: E1/ DB/ 2023/

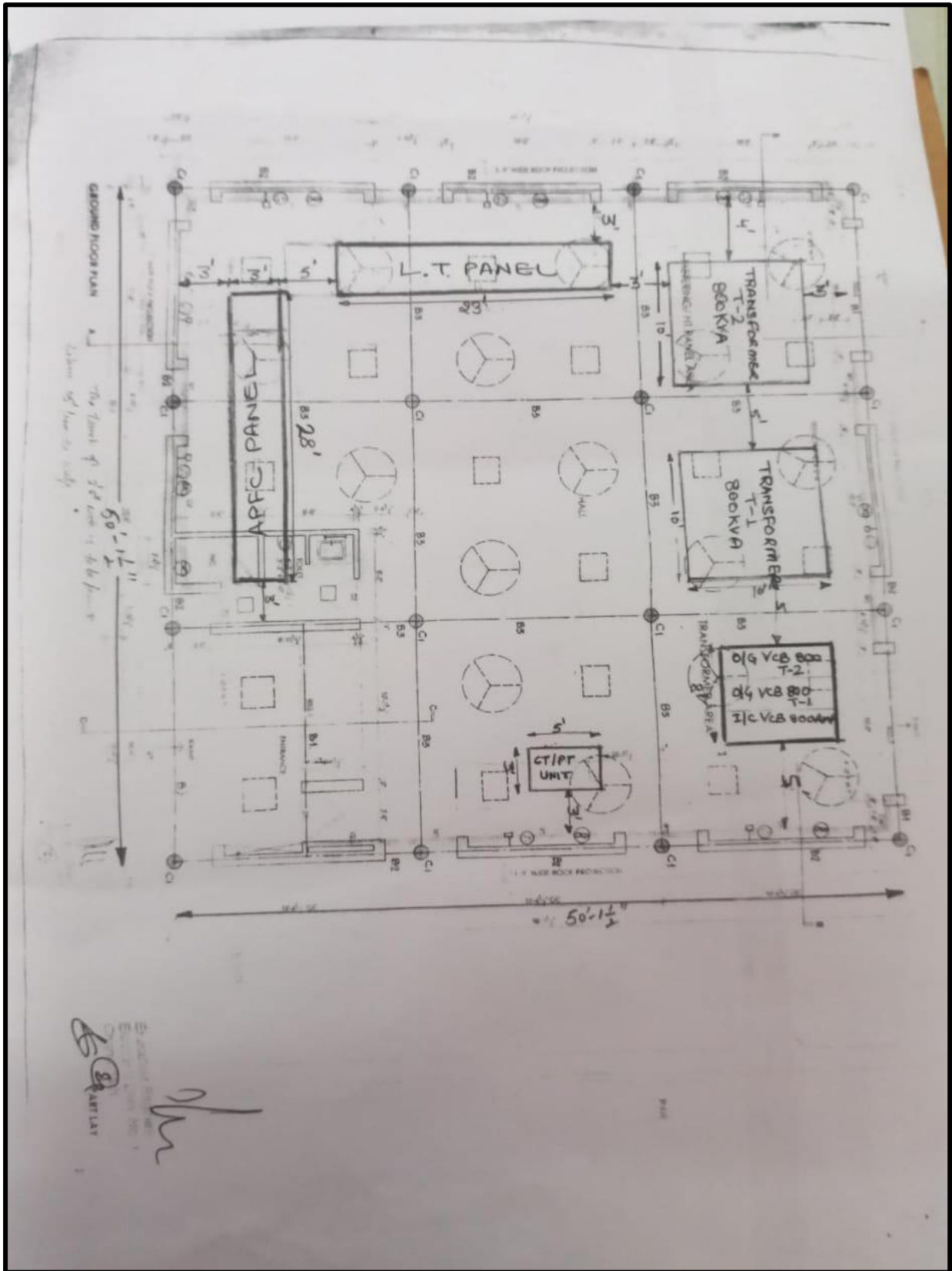
Executive Engineer,
Electrical Division No. 1,
Chandigarh
Dated: 6/1/23

Copy of above is forwarded to the following for information and necessary action:


- 1 The Chief Architect, Department of Urban Planning, Chandigarh w.r.t this office endst. no.8763, dated 09.06.2022 with one set of drawings. Further, it is submitted that the shop drawing has been prepared on the same pattern as already approved by your office for Post Graduate Govt. College for Girls, Sector-42, Chandigarh.
- 2 The Superintending Engineer, Electrical Circle, U.T., Chandigarh.
- 3 The Sub Divisional Engineer, Electrical Sub Divn. No. 5, Chandigarh.
- 4 The HDM, Electrical Division no. 1, Chandigarh.


As Above
DA/ As Above

Executive Engineer,
Electrical Divn No. 1,
Chandigarh.



Annexure -6 Enrollment Certificate Of Environment Society "Harita"

 Department of Environment
Chandigarh Administration





Certificate of Enrollment

Enrollment No. ED/Env.Soc./04 Dated 25th May 2014

The Environment Department, Chandigarh Administration enrolls
ENVIRONMENT SOCIETY OF GOVT. HOME SCIENCE COLLEGE, SECTOR-10,
CHANDIGARH.

as a member under its scheme "Institutional Support and Public Participation" for carrying out environmental awareness programmes/activities in the Union Territory of Chandigarh for protecting our precious Environment.


Additional Director


Director Environment

"Let us join hands to Preserve Environment"

1-14 Feb.
Oil Conservation Week

21st March
World Forestry Day

22nd April
Earth Day

30th April
Water Resources Day

5th June
World Environment Day

1-7 July
Vanmahotsava Week

15th Sept.
Engineer's Day

16th Sept.
International Day for
Preservation of Ozone
Layer

28th Sept.
Green Consumer Day

5th Oct.
World Habitat Day

2-8 Oct.
Wildlife Week

16th Oct.
World Food Day

2nd Dec.
Pollution Prevention
Day

13th Dec.
Energy Conservation
Day

Annexure -7 Award for Best Herbal Garden

