



MIRANDA HOUSE

UNIVERSITY OF DELHI

GREEN AUDIT REPORT

2023-2024



Prepared by
EHS ALLIANCE



TABLE OF CONTENT



CERTIFICATE	2
ACKNOWLEDGEMENT	3
DISCLAIMER	4
CONCEPT AND CONTEXT	5
INTRODUCTION	6
OVERVIEW OF THE COLLEGE	7
AUDIT PARTICIPANTS	12
EXECUTIVE SUMMARY	13
GREEN AUDIT - ANALYSIS	13
1.1 GENERAL INFORMATION	13
1.2 WASTE MINIMIZATION AND RECYCLING	14
1.3 GREENING THE CAMPUS	17
1.4 WATER AND WASTEWATER MANAGEMENT	18
1.5 ANIMAL WELFARE	19
1.6 CARBON FOOTPRINT - EMISSION & ABSORPTION	19
GREEN INITIATIVES BY CAMPUS	21
RECOMMENDATIONS	24
CONCLUSION	24
REFERENCE	25
ANNEXURE – PHOTOGRAPHS OF ENVIRONMENT CONSCIOUSNESS	26



CERTIFICATE



CERTIFICATE

PRESENTED TO

MIRANDA HOUSE UNIVERSITY OF DELHI

GC Narang Road, University Enclave, New Delhi, 110007

Has been assessed by EHS Alliance Services for the comprehensive study of environmental impacts on institutional working framework to fulfill the requirement of

GREEN AUDIT

ACADEMIC YEAR 2023-24

The green initiatives carried out by the institution have been verified on the report submitted and was found to be satisfactory.

The efforts taken by the management and the faculty towards environment and sustainability are appreciated and noteworthy.

SIGNATURE



23.08.2024

DATE OF AUDIT



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ACKNOWLEDGEMENT

EHS Alliance Services would like to thank the management of Miranda House for assigning this important work of Green Audit. We appreciate the co-operation to the teams for completion of assessment.

First of all, we would like to thank **Prof. Bijayalaxmi Nanda, Principal** for giving us an opportunity to evaluate the environmental performance of the campus

We are also thankful to **Prof. Saloni Bahri, Audit Coordinator and Convener IQAC, Miranda House**, for her continuous support and guidance, without which the completion of the project would not have been possible. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements.

We are also thankful to

Dr Nisha Vashistha
Prof. Rekha Kumari
Dr E. Geetanjali

Coordinator, UBA
Convener, MH Vatavaran
Convener, Garden Committee





DISCLAIMER



EHS Alliance Services Audit Team has prepared this report for Miranda House based on input data submitted by the representatives of college complemented with the best judgment capacity of the expert team.

While all sensible care has been taken in its preparation, details contained in this report have been compiled in good faith based on information gathered.

It is further informed that the conclusions are arrived following best estimates and no representation, warranty or undertaking, express or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

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A handwritten signature in blue ink, appearing to read 'H. Singh'.

Signature

LEAD AUDITOR



CONCEPT AND CONTEXT



Beginning with the 2019–20 academic year, all higher education institutions are required by the National Assessment and Accreditation Council, New Delhi (NAAC) to submit an annual Green, Environment, and Energy Audit Report. Green Audit falls under the seventh criterion of the National Assessment and Accreditation Council (NAAC), an autonomous Indian body that assigns grades A, B, or C to institutions based on their accreditation ratings. Additionally, it is a component of higher education institutions' Corporate Social Responsibility to make sure that they use Carbon Footprint reduction strategies to help mitigate global warming.

The College management made the decision to have a qualified external professional auditor perform an external environment assessment study in light of the NAAC circular on green auditing. Examining environmental behaviors both on and off college campuses that have an effect on the atmosphere directly or indirectly is the goal of the green audit. The term "green audit" refers to the methodical identification, measurement, documentation, reporting, and analysis of elements of the campus environment. It was started with the goal of examining the activities carried out by the institutions whose operations may endanger the environment and the health of its residents.

The green audit provides guidance on how to enhance the environment's structure and incorporate various elements that can help safeguard the environment. This audit focuses on the institution's implementation of the Green Campus, Waste Management, Water Management, Air Pollution, Energy Management, and Carbon Footprint, among other things. The following are the audit's concepts, structure, goals, methodology, and analytical tools.



INTRODUCTION

New and creative ideas are being offered to make educational institutions more sustainable and environmentally friendly as a result of their increased awareness of environmental issues. Many educational institutions use a variety of perspectives to address their environmental issues in order to protect the environment within the institution. These include encouraging energy conservation, recycling garbage, reducing water use, harvesting water, and many more strategies.

The institution's operations may potentially have a negative effect on the environment. An official examination of a college's environmental impact is known as a "green audit." The purpose of a green audit is to assess the real situation on campus. A university or college can utilize a green audit as a helpful tool to identify where and how they are using the most energy, water, or resources. Based on the results, the institution can decide how to make adjustments and save money. For a recycling project or to enhance a waste minimization plan, it can also be utilized to ascertain the type and amount of garbage.

Green auditing and the application of mitigation measures is a win-win situation for all the institutions, the learners and the mother earth. It can also result in health awareness and can promote the environmental awareness, values and beliefs. It provides a better understanding to staff and students about the green impact on institution. Green auditing also upholds financial savings through reduction of resource usage. It gives an opportunity to the students and teachers for the development of ownership of the personal and social responsibility. The audit process involves primary data collection, site walk through with the team of university /college including the assessment of policies, activities, documents and records.





OVERVIEW OF THE COLLEGE

Miranda House, college for women, located in the University of Delhi campus, is a premier women's institution. It was established in 1948 by the then Vice Chancellor, Sir Maurice Gwyer. Lady Edwina Mountbatten laid its foundation stone on March 7 in the same year. Originally designed by renowned architect Walter George, Miranda House is built in warm red brick with cool and spacious corridors. The College shares an architectural affinity with other colonial educational institutions of the country. In the past six decades, as the College has grown, several other buildings have been added in consonance with its original design. Special efforts are on to preserve the heritage of its pristine architectural glory.

Miranda House offers liberal education in social sciences, humanities and basic sciences to more than 3500 students. The faculty, renowned for its meritorious basis profile and versatile talent, is dedicated to the cause of liberal education. Through their three years at Miranda, the students develop a sense of social responsibility, intellectual rigour, and practical knowledge. They learn communication, analytical and problem-solving skills, and a demonstrated ability to apply their education to the complex and diverse world. The College has always maintained high academic standards. More significantly, it has provided students an enabling and creative environment to freely develop and express views that help them respond to changes in society.



The College has always maintained high academic standards. More significantly, it has provided students an enabling and creative environment to freely develop and express views that help them respond to changes in society. Being on the University campus, its proximity to other colleges facilitates the participation of Miranda students in several inter-college events, both academic and cultural. Those who



will make the College hostel their home for the next three years have the privilege of residing in one of the most beautiful residential buildings on the University campus The institution's philosophy is guided by a pedagogy that encourages the students to explore new domains, to critically examine the world around them and to question stereotypes.

The Legacy... traditions and institutional values

MH has a rich legacy. Established at dawn of independence it provided a unique opportunity to young women for quality higher education. They set for themselves high goals and ideals. They worked for a new society in which women would enjoy equal opportunity with men in professional and public fields. In this, they were abetted by the founding faculty who were independent minded, and belonged to the select group of highly educated women in independent India with a deep concern for quality of education they imparted. They were also charged with a spirit of adventure, steeped in idealism, and committed to women empowerment and the task of building a nation. Proud of their mission as early pioneers, they worked with single-minded devotion in setting the Miranda traditions. These attributes of total dedication have contributed in a large measure to the position of distinction occupied by the college. Over near seven decades of its existence, the college has grown from strength to strength, continuing to provide an atmosphere of high academic excellence and rich cultural activities to its students. The college has established a niche for itself amongst the globally recognized premiere institutions of higher learning.



Being a college established and maintained by the University, Miranda House has a special place among the women's colleges of the University of Delhi. Its location in the heart of the University Campus, and its close interaction with the various Departments of the University and other campus colleges gives it a unique advantage. Although a women's college, it is not a cloister. It welcomes interaction with other colleges and educational organizations across the country, actively engaging both men and women in all its extramural activities, competing with the best on equal terms.

The extremely distinguished list of alumnae imparts a sense of confidence and immense pride in students. They view themselves as torchbearers of great traditions. All this propels them to often explore uncharted territory, think unfettered, and bend traditions in a bid to create a better world, especially for women.



Mission

The stated mission of the college is to provide

- a stimulating active learning environment attracting young women with exceptional desire to make a difference to the world
- highest quality liberal arts and basic science education through distinctive academic programmes that instill rigour in the pursuit of knowledge
- culturally sensitive inclusive environment upholding core values of respect for diversity
- enriching co-curricular activities linking education to the world of work and communities
- dedicated and responsive faculty of scholars to assist each student fulfill aspirations and reach milestones
- competencies for new domains of knowledge and the future of work in a globally connected world
- early mentoring for leadership instilling capacity to explore new ideas, take intellectual risk, and usher paradigm change

Vision

The Upanishadic maxim in the college logo “Swadhyayann pramaditavyam” enshrines Miranda House’s understanding of what education must accomplish and steers students towards introspection and self-learning. Miranda House envisions a world where women have their rightful place and are given due recognition as leaders to reach top positions in all sectors of human endeavour. To give shape to this vision, Miranda House continually reaffirms and embraces its responsibility to build on its historic legacy of leadership in the education of women. It remains strongly committed to addressing issues of gender in all their complexity and preparing young women to: lead professionally successful lives enriched by the love of learning build personally fulfilling lives radiating integrity and strength of character sustain purposeful engagement with the world with an open mind and balanced perspective develop an understanding of their duty to nation and nation-building meet with confidence the challenges they will encounter in their lives flourish in a different cultural milieu in an increasingly interconnected world uphold the core institutional values of respect for diversity, inclusiveness, and humanism to emerge as leaders charged with new ideas and the capacity to make a difference.

Facilities in the campus

Amenities at Miranda provide far more than academic and administrative facilities on campus. It is dedicated to provide students with an exceptional infrastructure for learning as well as facilities for simplifying the procurement of fundamental skills. To accomplish the goal, Miranda House offers the following :

LIBRARY: The Miranda House Library was established on 7th March 1948 and the first book was accessioned on 22nd July 1948. The foundation stone of the present building was laid by Smt. Indira Gandhi, then Prime Minister of India on 7th March 1973. The Miranda House Library preserves and provides access to a rich and enduring source of knowledge to inform, inspire and engage its users in their intellectual and creative endeavors by the well-known motto "Right Document to the Right Reader



at the Right Time". It takes pride in fulfilling this inherent mission to the hilt. MH has common Digital Resource Centres with a cluster of 80 computers on LAN.

SMART CLASSROOMS: The total of 110 formal lecture spaces provide comfortable seating for students in regular classes with the potential for easily accommodating another 10% at any time. Nearly all lecture venues have neatly arranged custom designed, comfortable desks and benches with shelves for bags; teacher table and chair. Green Ceramic Board for use with dust-free chalk or White Board for use with marker pens. Roof mounted Projector, and a pull-down white display screen for multimedia projection. Custom-designed Lecterns facility to link laptop to multimedia projector. Extra power outlets on front wall for flexible usage of the room. Air-conditioning was considered essential.



Library



Smart Class room



Auditorium

AUDITORIUM: Miranda House has an Auditorium with seating capacity of 450 in the Main Hall. As one of the oldest constructions in the college, it is part of the college building that was designed by Walter George. The architecture is unique. The Miranda House Auditorium and its stage bring alive nostalgic memories and are of historic importance.

MINI-AUDITORIUM: There are 170 seats in Miranda House's mini auditorium, which is arranged in steps so that everyone can see each other. The theatre has large windows that provide a lovely view of the surrounding greenery. is utilized to hold training programs, seminars, conferences, workshops, lectures, and certificate courses.

SEMINAR HALL: The Seminar Hall has a seating capacity of 125. It has a high-quality sound system, wall-mounted speakers, conference table mikes, roving mikes, lapel microphone, provision for recording; Roof-mounted high luminosity projection system. MH hosts several cultural events in its outdoor spaces like the open-air theatre, 2 arcades, cafeteria lawns, front lawns, sports ground, hostel lawns, etc. The bank foyer is periodically used for exhibitions and help desks for events. The Heritage Hall and the Student Activity Center are exquisite learning studios used extensively for organizing indoor music concerts, dance, theatre, workshops, exhibitions of photographs, paintings, art installations, prestigious public lectures, and panel discussions. They are innovatively used for baithak style gatherings.

SPORTS FACILITY: Miranda House has a Sports Ground. Facilities exist for a wide range of indoor as well as outdoor sports. The college has 14 Sport Teams and competitively participates in Archery, Athletics,



Ball Badminton, Basketball, Chess, Cross-country, Netball, Power Lifting, Table Tennis, Taekwondo, Tennis, Weight Lifting, Volleyball and Yoga.



Fitness Centre



Sports ground



Cafeteria

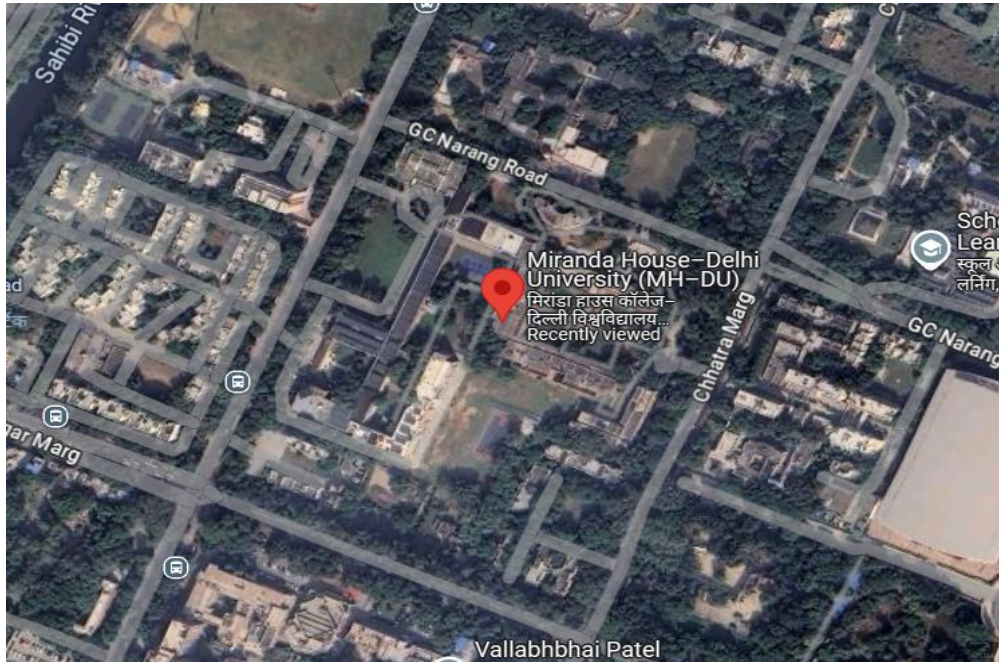
FITNESS CENTRE: MH has an active Physical Education Department that inspires the college community to work on a fitness regime and organizes several intra-college sports events, morning sessions on aerobics, yoga, recreational games, an annual sports festival, and freshers' cross-country race.

The college has an air-conditioned multigym with free weight and cardio training equipment like treadmills, cross-training gears, and bicycles. It also has 2 open gyms.

CAFETERIA: The cafeteria has been aesthetically renovated and is furnished with custom designed furniture. It includes a well-ventilated open kitchen for the preparation of certain food items, with chimney hoods above burner stoves. Utmost hygiene is maintained at the food counters, dedicated storage spaces for grocery, cookware crockery and cutlery and dishwashing area. An additional large room adjoining the main hostel kitchen and opening into the cafeteria complex is used for preparation work and most of the heavy-duty cooking. Water supply for cooking and drinking purposes is from the Hostel Reverse Osmosis Water Purification Plant.

HOSTEL: The hostel designed by the renowned architect Walter George, with the foundation stone laid by Lady Edwina Mountbatten, lends to the college a historical charm and a sense of legacy. It is laid out in an aesthetically designed quadrangle enclosing well-kept gardens paced out by a majestic bottle palm-lined pathway. The long corridors, the dining hall with a high arched ceiling, and stonework balconies add to its charm.

Geo Location
Geo Coordinates
from
Google maps:
28.6926942,77.210
2438



AUDIT PARTICIPANTS

On behalf of Miranda House

Name	Designation
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Dr Nisha Vashistha	Coordinator, UBA
Prof. Pushpa Singh	Member, IQAC
Dr. E. Geetanjali	Convener, Garden Committee
Prof. Hena Oak	Member, IQAC
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On behalf of EHS Alliance Services

Name	Position	Qualifications
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EXECUTIVE SUMMARY

Green auditing is a crucial step in identifying and assessing the ecological and sustainable nature of institutional processes. We have historically used natural resources in an honest and effective manner. But over time, excessive use of resources like gasoline, electricity, water, and so forth has become commonplace, particularly in urban and semi-urban areas. Is now a good moment to see if our process is using more resources than it needs to? Are we making prudent use of our resources?

This is the fourth attempt to conduct a green audit of this campus for fulfilment of NAAC criteria. This audit was mainly focused on greening indicators like consumption of energy in terms of electricity and fossil fuel, quality of soil, water usage, vegetation, waste management practices and carbon footprint of the campus. Initially, a questionnaire was shared to know about the existing resources of the campus and the resource consumption patterns of the students and staff in the campus.

Green audit offers an effective method of using natural resources and standardizes all such processes. Re-examining the procedures and making them greener and more sustainable is essential in an era of resource depletion and climate change. Green auditing offers a method for doing the same.

GREEN AUDIT - ANALYSIS

1.1 GENERAL INFORMATION

1. Has any Green Audit been conducted earlier?

Yes, this is the fourth external audit organized by the College

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

Students

Male: 0 Female: 5031 Total: 5031

Teachers (including guest faculty)

Male: 41 Female: 221 Total: 262

Non-Teaching Staff

Male: 62 Female: 12 Total: 74

Total Strength

Male: 103 Female: 5264 Total: 5367



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

There are one hundred and eighty working days in a year.

4. Where is the campus located?

The campus is located at GC Narang Road, New Delhi, Delhi 110007

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

<i>Garden area</i>	<i>Available</i>
<i>Playground</i>	<i>Available</i>
<i>Kitchen</i>	<i>Available</i>
<i>Toilets</i>	<i>Available</i>
<i>Garbage Or Waste Store Yard</i>	<i>Available</i>
<i>Laboratory</i>	<i>Available</i>
<i>Canteen</i>	<i>Available</i>
<i>Hostel Facility</i>	<i>Available</i>
<i>Guest House</i>	<i>Available</i>

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

<i>Municipal dump yard</i>	<i>Not in the vicinity of the institute</i>
<i>Garbage heap</i>	<i>No Garbage heaps</i>
<i>Public convenience</i>	<i>Public convenience is available</i>
<i>Sewer line</i>	<i>Approximately 2.0 KM sewer line within campus</i>
<i>Stagnant water</i>	<i>No stagnant water</i>
<i>Open drainage</i>	<i>No</i>
<i>Industry – (Mention the type)</i>	<i>No</i>
<i>Bus / Railway Station</i>	<i>Metro Station and Bus stop</i>
<i>Market / Shopping complex</i>	<i>Available</i>

1.2 WASTE MINIMIZATION AND RECYCLING

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

Yes, the following types of waste are generated by the campus

FOOD WASTE

- *Average mess and canteen generate approximately 10 kg of food waste a day.*
- *Immediate attention is given to the food waste minimization techniques.*

RECYCLABLE PAPER, CARDBOARD, PLASTIC, GLASS AND CANS

- *Paper is recycled at the paper recycling plant*
- *Cardboards are reused*
- *MoU signed with Bisleri to collect all Single Use Plastic for recycling purpose*



- The college has promoted initiatives like “Bring your Own Mug” in order to discourage Single Use Plastic (SUP).
- MH received the ‘Plastic Free College of the Year’ award from the Indian Institute of Ecology and Environment (IEEE) and the National Institute of Cleanliness Education and Research (NICER), on World Environment Day.

STUDENT CLOTHES AND HOUSEWARES

- Various societies of the college, including NSS, UBA and MH Vatavaran regularly organize old clothes collection drives with NGO and organizations such as WWF-India.
- Workshops are also conducted to convert recycled old clothes in carry bags, etc.

E–WASTE

- The college has well-established recycling programs and tie-ups with external agencies.
- MoU signed with M/S Shiv Shakti Metals for collection and recycling of E-waste.

CHEMICAL WASTE

- The Department of Chemistry conducts laboratory experiments by following Green Practices - with waste minimization techniques, dilution techniques and re-use of chemicals whenever possible.
- Used chemicals are safely disposed-off in a pit.

BIOLOGICAL WASTE

- MH has an Institutional Biosafety Committee to ensure the proper disposal of biological waste.

FURNITURE

- Re-used as much as possible.
- Annually sold to junk dealers.

BOOKS/MAGAZINES/NEWSPAPERS

- The Department of English and societies such as NSS regularly conduct old book collection drives and sales in partnership with various NGOs.
- Students of Miranda House donate their textbooks and the reference material.

C & D WASTE -

- Disposed-off according to the guidelines of CPCB/SPCB.

SOLID WASTE

- After proper segregation of waste, it is discarded in color coded dustbins placed throughout the college campus.
- MH has a well-established Composting unit to convert food waste from Hostel Mess and leaf litter from college lawns into compost. The generated compost is used for both in house application and also available for purchase in the MH Souvenir shop. Any remaining waste is sent to Municipal Corporation on a daily basis for further disposal.
- The college also offered a Certificate Course on Waste Management during 2023-2024 for college students.

HORTICULTURE WASTE

- Horticulture waste is managed by an in-house composting system.



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

Biodegradable waste - 80 Kg
Non-biodegradable waste -15 Kg
Hazardous Waste - 2 Kg
Others < 2 Kg

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

- The college has an MoU with M/S Shiv Shakti Metals for e-waste (computers, mobile, printers, servers, printers) and send it for recycling.
- Composting Unit: Biodegradable waste from the MH Hostel Mess and leaf litter from the college gardens is aerobically composted to make organic compost in the Composting Unit
- Recycling: Paper recycling plant: Used paper is recycled into a variety of products - folders, carry bags, postcards and greetings cards, which are available for sale at the MH Souvenir Shop set up on the college campus.
- A total of 74 students were enrolled in a three months course on Green Paper Bag Making - offered by Skill Hub, Miranda House in collaboration with MH Vatavaran.
- Skill hub Miranda House in collaboration with Singer offers certificate courses in tailoring to underprivileged women.
- Old clothes are re-used and remade into various products – bags, folders, placemats, etc.

4. Do you use recycled paper in the institute?

Used paper is recycled into a variety of products - folders, carry bags, postcards and greetings cards, which are available for sale at the MH Souvenir Shop set up on the college campus.

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

- Following are the ways through which the college is spreading awareness about recycling
- MH Vatavaran holds various events: webinars and seminars, poetry writing, essay writing, video making, slogan writing and poster making competitions, documentary screenings, workshops on recycling.
 - Installation of Dustbins for waste plastic collection, e-waste collection and recycling
 - Tie-ups with authorized e-waste collection agency.
 - Awareness among the Students by Webinars, seminars, Sign Boards, Posters, etc.
 - Seminars and add-on courses for students and faculty.
 - MH Vatavaran works in conjunction with other societies and NGOs, WWF-India to further spread awareness.
 - Reuse waste paper for internal assessments, poster-making and rough works.

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



MH is in the process of achieving zero garbage.

- *MH is working with MCD (Civil Lines) to achieve Zero waste status.*
- *MH Staff flats and non-teaching flats have received Zero waste awards.*

1.3 GREENING THE CAMPUS

1. Is there a garden in your institute?

Yes, about 398279 Sq ft areas are developed as Gardens.

2. Do students spend time in the garden?

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

3. Total number of Plants in Campus?

Plant type with approx. count

<i>Full-grown Trees</i>	<i>872</i>
<i>Small Trees</i>	<i>1572</i>
<i>Hedge Plants</i>	<i>15218</i>
<i>Grass Cover sqm</i>	<i>398279 Sq ft</i>

4. Is the College campus having a Horticulture Department? (If yes, give details)

Yes, a total of 9 staff (mali) are employed.

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

- *6 Plantation Drives are Organized by the campus in the last year*
- *The survival rate is more than 75%.*
- *Mission LIFE (Life for the environment) on 28 August 2023-27 plant species were planted as Under the Mission LIFE (Life for the environment) held on 28 August 2023, a total of 27 different plant species were planted.*

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

- *Yes, plant distribution drives are conducted in nearby Villages under Unnat Bharat Abhiyan.*
- *Moreover, the college has a practice where all guests are given a planter as a gift rather than a bouquet of flowers.*
- *On 7 Oct, 101 plant saplings were distributed on the occasion of the Golden Jubilee celebration of the Botany Department.*

8. Is there any Plant Ownership Program?

MH has a designated Kitchen Garden to grow vegetables. MH Vatavaran is continuously encouraging the students to adopt a tree in their neighbourhood.



1.4 WATER AND WASTEWATER MANAGEMENT

1. List uses of water in your institute

Details of water usage in campus:

Drinking – 129.00 KL/month

Gardening – 186.24 Kl/month

Kitchen and Toilets – 1019.19 KL/month

Others – 75.33 KL/month

Hostel – 963.90 KL/Month

Total = 2373.66 KL/Month

2. How does your institute store water? Are there any water-saving techniques followed in your institute?

College stores water in overhead and underground tanks. Storage capacity along with quantity is mentioned below.

OVER HEAD TANK	500	75	37500
OVER HEAD TANK	1000	19	19000
OVER HEAD TANK	2000	3	6000
OVER HEAD TANK	3000	1	3000
UNDERGROUND TANK (Fire tank)	5000	3	15000
UNDERGROUND TANK	34000	3	102000
UNDER GROUND HEAD TANK	10000	1	10000

TOTAL STORAGE CAPACITY 192500

Saving Techniques

- *MH ensures regular water tank maintenance and checks water quality standards on campus.*
- *The water tanks and water coolers are checked every three months, and RO systems are regularly changed.*
- *Water Conservation awareness for new students.*
- *Sprinklers usage for gardening and grass cover.*
- *College has installed sensor-based taps and push taps to save water.*
- *To avoid overflow, water control valves are provided in the water supply system.*
- *The college has a small-scale Hydroponic Unit where grey water from the hostel mess is used for growing plants.*
- *MH has a large underground storage tank with a capacity of 2 lakhs liters to store rainwater which is used for gardening.*
- *Reuse of reject water generated by the Reverse Osmosis systems in flush tanks.*



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

Entry - The primary source of water is the Delhi Jal Board (MCD) and borewells.

Exit- From Canteen, Toilets, Hostel, bathrooms and Labs through covered drainage which is connected to municipal sewage.

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

Basic ways:

- The college will continue to ensure that the faucets in the washrooms and water filtration units are checked regularly and do not have any leakages.
- The college has initiated the installation of auto-push taps to reduce water wastage in all the water outlets.
- The college will try to increase the rain water storage capacity.
- The college has resolved to increase its green cover by planting more and more trees.
- The college has initiated growing plants native to the semi-arid regions, requiring less water to survive.
- Various Water Conservation awareness programmes are conducted for students and staff.

These initiatives have significantly reduced water usage on campus while promoting sustainable water management practices.

1.5 ANIMAL WELFARE

1. List the animals (wild and domestic) found on the campus (dogs, cats, squirrels, birds, insects, etc.)

3 Cats, 25+ butterfly species, 100+ Squirrels and 20+ Bird species are found on campus. A variety of bird's species and other flora and fauna are found in the college showcasing the institute's efforts for biodiversity conservation.

2. Does your institute have a Biodiversity Program or a KARUNA CLUB?

Yes, Miranda House's Environment society Vatavaran and Garden Committee actively organizes various campaigns and activities including seminars, poster competition, etc. for generating awareness.

1.6 CARBON FOOTPRINT - EMISSION & ABSORPTION

1. Electricity used per year - CO2 emission from electricity

$(\text{electricity used per year in kWh}/1000) \times 0.84$
 $= 611500 / 1000 \times 0.84$
 $= 513.66 \text{ tons}$



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

$(\text{LPG/PNG used per year in KG}) \times 2.68$
 $= 600 \times 2.68$
 $= 1.61 \text{ tons}$

3. Diesel used per year CO₂ emission from HDS (Diesel)

$(\text{Diesel used per year in litres}) \times 2.99$
 $= 114.12 \times 2.99$
 $= 0.34 \text{ tons}$

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

There are no college-owned vehicles.

Total CO₂ emission per year is 515.61 tons

After considering the carbon absorption capacity of the campus, the total carbon emission is 468.36 tons

CARBON ABSORPTION BY FLORA IN THE INSTITUTION

There are 872 full-grown trees and 1572 semi-grown trees of different species, on the campus spread over 398279 sq ft.

Carbon absorption capacity of one full-grown tree 872 kg CO₂ Therefore Carbon absorption capacity of 872 full-grown trees $872 \times 22 \text{ kg CO}_2 = 19.19 \text{ tons of CO}_2$.

The carbon absorption capacity of 1572 semi-grown trees is 30% of that of full-grown trees. Hence the carbon absorption $1572 \times 6.8 \text{ kg of CO}_2 = 10.69 \text{ tons of CO}_2$

There are approximately Hedge Plants 15218 of various species being raised in the gardens and grown in the areas where no buildings are built Carbon absorption of bush plants varies widely with their species. Certain bushes absorb very high level of CO₂ whereas some others absorb very low levels of CO₂ In the absence of a detailed scientific study, 200g of CO₂, absorption is taken per bush (in consultation with Environmental Science specialists). Based on this, the total carbon absorption of bushes is $15218 \times 200 \text{ g} = 3.04 \text{ tons of CO}_2$

The lawns on the campus have buffalo grass, Mexican grass, and indigenous grass species and cover a total area of 398279 sq. ft. Carbon absorption capacity of a 10 sq. ft. area of lawn is 1 g per day Therefore, carbon absorption by lawn area $398279 \times 365 \times 0.1 \text{ g CO}_2 = 14.54 \text{ tons CO}_2 \text{ per year}$.

The total of carbon absorption capacity of the campus is 47.46 tons.



GREEN INITIATIVES BY CAMPUS



➤ Solid Waste Management

- College does composting for horticulture waste
- Reduce the use of paper by supporting the digitization of attendance and internal assessment records.
- Reduce the requirement of printed books by updating the e-books and e-journals collection of the college library.
- Take initiatives to spread awareness amongst students about food wastage and ways of minimizing it
- The habit of reusing and recycling non-biodegradable products
- Organizing workshops for students on solid waste management.
- There is a ban on single-use plastic and plastic crockery in the campus.
- Systematically engage with the 3Rs of environment friendliness (Reduce, Reuse and Recycle).

➤ Liquid Waste Management

- Maintain leakproof water fixtures.
- Minimize the use of water by constructing more Indian-style toilets instead of Western-style toilets.
- Continued employment of a caretaker to take immediate steps to stop any water leakage through taps, pipes, tanks, toilet flush etc.
- Reuse of wastewater generated by the Reverse Osmosis (RO) system in washrooms.

➤ E-waste Management

- The college has a separate storeroom for the safe storage of electronic waste. After a certain interval of time the college disposes of the E-waste to concerned agencies through the auction process.

➤ Rainwater harvesting

- College has 3 rainwater harvesting pits for better groundwater recharge. The stored water in this tank can be used for gardening purposes.

➤ Renewable Energy

- The college has installed solar PV (157 KW) on the rooftop of the building .
- The College is using solar lights for street lights.
- College has signed an agreement with a third party solar power provider for 1 MW.

➤ Air Pollution Reduction

- Personal Vehicles (Students) are not allowed on campus.
- Leaf litter is not burnt. It is used to make compost.
- Fume hoods are installed in laboratories for using volatile chemicals.



➤ **Environment Committee – MH Vatavaran Initiatives**

Throughout the academic year 2023-24, MH Vatavaran, the environmental society of Miranda House, embarked on a remarkable journey of raising environmental awareness and instilling a sense of responsibility among students. The society conducted numerous events, competitions, workshops, and campaigns to promote environmental awareness and climate action, leaving an indelible mark on the campus. MH Vatavaran successfully participated in various Swachh Bharat activities throughout the year, such as Swachhta hi Seva, Swachhta Pakhwada, and Swachhta Shramdaan. Under the leadership of the Principal, Prof. Bijayalaxmi Nanda, students, and faculty participated in the “Ek Tareek Ek Ghanta” Swachhta hi Seva campaign on 1st October 2023. MH Vatavaran also organized several cleanliness drives within the campus and adopted villages of the college, including, the Clean Your Campus Drive, in North Campus, University of Delhi. Volunteers participated in the drive and removed all paper waste used during student election campaigning, which was then recycled at the Paper Recycling Plant of Miranda House. Plantation drives were regularly organized in collaboration with various organizations to create a bigger and more meaningful impact. These drives included partnerships with the Garden Committee of Miranda House, the Department of Chemistry, and the Mission for Life Campaign (Govt. of India), as well as a part of the World Environment Day celebrations.

➤ **Accolades & Awards**

- MH Society successfully participated and completed the Apex District ECO-SDG Championship 2023 and received an outstanding performance grade of “S” for North Campus in October 2023.
- MH Vatavaran was acknowledged for its participation in Global Roti Day organized under the Poshan Abhiyan Scheme, Govt. of India.
- Team Miranda House received the following awards in the 66th Annual Flower Show of University of Delhi held on 16 February 2024:
 - The Vice Chancellor’s Cup
 - The Department of Sanskrit Cup
 - The Hans Raj Cup
 - The Flower show Committee Cup
 - The Lady Irwin College Cup
 - The Devi Prasad Sarin Cup
 - The Department of Business Management Cup
 - The Kirorimal Cup
 - The University Office Cup
 - 2nd prize in tree shrubs and climbers
 - 3rd prize in college lawn
 - 3rd prize in best green practices

Activities Carried out (June 2023 – June 2024)

- On June 5, volunteers from MH Vatavaran engaged in collaborative events with WWF, India and IIT, Delhi to commemorate World Environment Day
- On July 4, a Plantation Drive was conducted which aimed at enhancing campus greenery and highlighting the importance of afforestation



- On July 11, the Polythene Bag Biography Challenge provided members with a creative platform to explore and address the environmental impacts of polythene bags.
- Later in the month, on July 28, MH Vatavaran conducted a Cleanliness Drive, reinforcing the commitment to maintaining a pristine environment. This event was complemented by a Quiz on World Nature Conservation Day
- College's active representation at the G20 @ India: Making India Count event on July 30 demonstrated the dedication to global sustainability discussions.
- The EcoProduct Sales Drive, which took place on August 16
- MH Vatavaran highlighted World Bamboo Day on the 18th with a blog that underscored the role of bamboo in sustainable development.
- Cleanliness Drive was conducted on September 15, further reinforcing the commitment to environmental cleanliness.
- On November 7th, the Bottles for Change Event was held, focusing on the recycling of plastic bottles and promoting the principles of a circular economy.
- On January 30th, MH organized a Poster Making Competition
- World Wildlife Day was celebrated on March 18th, which focused on biodiversity and wildlife protection
- MH Vatavaran in collaboration with Bisleri's Bottles for Change CSR Initiative, worked towards creating a Zero Waste event. All types of used plastic waste – from plastic bottles and chips packets, were discarded in designated trash bins, collected and subsequently sent to Bisleri's recycling partners with the aim to ensure the proper recycling of these materials generated during the two-day event.
- On April 25th, we held a Vertical Gardening Workshop in collaboration with Bisleri and MH Vatika. The month also included a Photography Contest, an Online Quiz, and a Paper Presentation Competition, all designed to engage the community and raise awareness on various environmental issues
- World Environment Day was celebrated on 5 June, 2024. The day was marked with the launch of MH Vatavaran's Annual Magazine – 'Madhuban'. In addition, a plantation drive and oath taking ceremony was conducted.





RECOMMENDATIONS



- Environmental parameters shall be included in the purchase policy to achieve a cradle-to-grave approach for sustainability.
- Arrange more training programs on environmental management systems and nature conservation for schools and local people.
- College should apply for borewell permission from CGWA.
- Water Meters should be installed at every building of the institute for monitoring of water consumption per capita.
- Green building guidelines for future expansion projects of the campus.

CONCLUSION



Meetings with key personnel and extensive team discussions on a range of environmental-related subjects are part of this audit. Resource conservation is encouraged by Miranda House's Environment Society-Vatavaran.

Miranda House is 75% landscaped overall. The college considers the environmental impact of most of its operations and makes a great effort to act in an environmentally friendly manner. The report's recommendations offer additional strategies for the college to enhance its operations and transform into a more sustainable establishment.

Starting a few initiatives is crucial, such as motivating employees and students to take part in environmental conservation-related community outreach initiatives.



REFERENCE



- The Environment [Protection] Act – 1986 (Amended 1991) & Rules-1986 (Amended 2010)
- The Petroleum Act: 1934 – The Petroleum Rules: 2002
- The Central Motor Vehicle Act: 1988 (Amended 2011) and The Central Motor Vehicle Rules:1989 (Amended in 2005)
- Energy Conservation Act 2010.
- The Water [Prevention & Control Of Pollution] Act – 1974 (Amended 1988) & the Water (Prevention & Control of Pollution) Rules – 1975
- The Air [Prevention & Control Of Pollution] Act – 1981 (Amended 1987) The Air (Prevention & Control of Pollution) Rules – 1982
- The Gas Cylinders Rules – 2016 (Replaces the Gas Cylinder Rules – 1981)
- E-waste management rules 2016
- Electrical Act 2003 (Amended 2001) / Rules 1956 (Amended 2006)
- The Hazardous Waste (Management and Handling and Trans-boundary Movement) Rules, 2008 (Amended 2016)
- The Noise Pollution Regulation & Control rules, 2000 (Amended 2010)
- The Batteries (Management and Handling) rules, 2001 (Amended 2010)
- Relevant Indian Standard Code practices

ANNEXURE – PHOTOGRAPHS OF ENVIRONMENT CONSCIOUSNESS

ii



Well Maintained Campus



Well Ventilated Building



Lush Green Campus



Sports Ground



Paving Stone Installed in Campus



Color Coded Dustbins



Ornamental Plants Nursery in Campus



Indoor Plants in Campus



Plantation Drive



Auditorium



Kitchen Garden



Green House Nursery



College Nursery



Hydroponics System



Awareness message display



Plantation drive



Composting machine



Solar PV installed



Solar Geyser Installed



Solar Lights Installed



Rainwater Storage Tank



Awareness Session on Waste Management



Cleanliness Drive



Echo Challenge 2023



Best Out of Waste Activity



Nukkad Natak



Environment Day Celebration

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