MIET **Meerut Institute of Engineering & Technology**
N.H. 58, Delhi-Roorkee Highway, Baghpat Road, Meerut - 250 005. UP (India)

Date: 10/08/2023

To

The Director,

Meerut institute of Engineering and Technology

Meerut

Subject: Submission of Environment, Energy and Green Audit Report of the institute for the year 2022-23.

Sir,

The Environment, Energy and Green Audit Report of the institute had been conducted for the year 2022-23.

Kindly find attached the Environment, Energy and Green Audit Report for the institute for the year 2022-23 for your kind perusal and approval.

Thanking you

Sincerely

Mr. Praveen Chakravarti
Head
EEM Cell

Approved

Date: 07 August 2023

Environmental Audit Report

(For the Academic Year-2022-23)

1. Preface

Institutional self-inquiry is a natural and necessary outgrowth of quality of higher education. Concern about environmental degradation and realization of values of environment are logical consequences of scholarly research, teaching and learning process. In its pursuit for improving environmental quality and to maintain a pristine environment for the future generation of students, institute has made a self-inquiry on environmental quality of the campus with the following objectives:

i. To establish a baseline of existing environmental conditions with focus on natural and physical environment.
ii. To understand the current practices of sustainability with regard to the use of water and energy, generation of wastes, purchase of goods, transportation, etc.
iii. To promote environmental awareness through participatory auditing process.
iv. To create a report that document baseline data of good practices and provide future strategies and action plans towards improving environmental quality for future.

This report is compiled by a committee constituted by MIET. As there was no standard model for such an environment/green audit of campuses in the state, the committee brainstormed and evolved a questionnaire. With the help of student volunteers, the major part of the data was compiled, which the committee analyzed. The remaining part which involved measurement of quality was entrusted with the Department of Civil Engineering, MIET

2. Audit Summary

i. **Energy Management:** The Institution has facilities for alternate sources of energy and energy conservation measures are being practiced. The institute had installed Grid connected rooftop project/ small power plant in the hostels and academic blocks.
ii. **Water Management:** As such, wise use of water is an established practice in Institute. Sensor based automated system has been placed for putting the water pumps and motors on and off as per the water requirement. Regular maintenance and repair activities are carried out for

prevention of water leakage. The institute has established a proper rain water harvesting system for aquifer recharge. The rainwater harvesting system has been established as per the norms of local administrative authorities.

iii. **Solid Waste management:** Priority is being given to eco-friendly brands followed by those that are recyclable or made from recycled material for purchases. Waste segregation is being carried out strictly through different coloured bins kept near every department for proper segregation of waste.

iv. **Liquid Waste management:** The institute has set up a Sewage Treatment Plant (STP) in the campus with a capacity of 135KLD (Kilo Litres per Day). The treated water is used for watering the gardens and lawns maintained in the campus.

v. **E-waste management:** The collected e-waste is handed over to a certified agency "Pro e-waste recycling" for the proper disposal as per norms.

vi. **Landscape/environment:** Institute maintains gardens properly and the campus is greener with fair biodiversity around. Long-term Eco restoration programs for replacing exotic Acacia plantations and land use and development planning should be undertaken.

vii. **Green Campus Initiatives:** Institute facilitates the faculty & staff members with provision of busses to bring them to the campus from a designated point to discourage use of personal vehicles. Faculty and staff members should be motivated to use car pool to commute.

viii. **Biomedical Waste** – Institute has signed an MOU with Synergy Waste Management Pvt. Ltd (Subharti Dental University, Meerut) for management of bio waste generated from pharmacy department

3. Recommendations

i. Environmental and energy auditing should be conducted every year, under the auspices of the EEM Cell.

ii. Periodical maintenance of rainwater harvesting facilities should be continued as per the schedule.

iii. Specific waste management plans should be adopted to manage solid waste in the campus, with the assistance of State Swachh Mission and use of plastic carry bags, thermocole cups/plates and flex boards are banned inside the Campus.

iv. For managing organic wastes, biogas plants may be commissioned at different locations, canteens, and staff quarters. The wastes generated can be used for promoting organic farming activities within the campus and the products can be used in hostels and canteens. The system for the management of hazardous wastes should be strengthened.

v. The public lights within the campus may be run with solar panels and the replacement of existing lights should be done with LED lamps.

vi. Frame long-term Eco restoration programs for replacing exotic Acacia plantations with indigenous trees and need of the hour is to frame a holistic campus development plan to foresee the future developmental needs in tune with green charter adopted by Institute.

vii. Green habitat concept should be adopted for all the building construction activities of the campus in future, which may help a long way in reducing energy usage, increasing aesthetic appeal of the buildings and class rooms. besides reducing carbon foot print.

viii. Further, more green spaces should be established all around the campus around larger trees and shades for the benefit of the students.

ix. Vehicle pooling should be promoted both among students and faculty should be promoted as a policy of Institute.

x. Irrespective of the subjects, environmental education is a part of curriculum. Certificates may be given to students participating in environmental conservation/awareness activities.

xi. All the purchases in future should be restricted to star rating equipment so that conservation of energy can be done.

xii. Treated waste water should be used in gardening and plantation purpose in the whole campusto achieve utilization of TWW.

xiii. Student Intervention programme is required to make student understand the problem and the solution.

4. Detailed Audit Report

Part A:Quality of Life Support Systems

A2. Water Quality Measurement

Bore well water: water samples were collected from wells near to Raman block (W1), Behind Faculty Residence (W2) and Boys Hostel (W3) of MIET Campus. The analyzed parameters included pH, Colour, Electrical Conductivity, Total Dissolved Solids, Dissolved Oxygen, Acidity, Alkalinity, Sulphate, Chlorine, Nitrate, Phosphate, Iron, Total Hardness, Calcium Hardness and Total Coliforms. All the parameters were within standard desirable limits of drinking water quality (BIS IS: 10500:1991). All well water samples (W1, W2, and W3) are slightly basic in nature, and Hard water (<300 mg/lt).

Tap water: Out of the three tested tap water samples (Raman Block, W1), the tap water from the Tap 1 shows slightly basic pH. Bacteriological quality results indicated the absence of coliform bacteria in all tested tap water samples. Hardness of water was found to be below 20 mg/lt which are below acceptable limit.

Part B: Internal Audit Report

B1.1 Physical-Chemical water quality parameters analysis

Sl. No.	Blocks	pH	EC	TDS (mg/l)	Temperature
1.	Chandra Sen `Agrawal Block	7.32 ± 0.41	Absent	88 ±5	21^{0}C± 0.32
2	Schroff Block	7.12 ± 0.42	Absent	90 ±5	21^{0}C± 0.46
3	Raman Block	**7.12 ± 0.41**	Absent	85 ±5	22^{0}C± 0.26
4	Visvesvaraya Block	7.11 ± 0.42	Absent	95 ±5	21^{0}C± 0.46
5	Azim Premji Block	7.22 ± 0.41	Absent	81 ±5	21^{0}C± 0.26
6	Khorana Block	7.14± 0.40	Absent	86 ±5	23^{0}C± 0.24
7	JRD Tata Block	7.13 ± 0.44	Absent	85 ±5	21^{0}C± 0.36
8	Bhabha Block	7.20 ± 0.44	Absent	87 ±5	21^{0}C± 0.36
9	Boys Hostel I	7.15 ± 0.42	Absent	85 ±5	22^{0}C± 0.46
10	Boys Hostel II	7.03 ± 0.41	Absent	59 ±5	21^{0}C± 0.26
11	Faculty Residence A	7.12 ± 0.42	Absent	90 ±5	22^{0}C± 0.46
12	Faculty Residence B	7.20 ± 0.41	Absent	80 ±5	21^{0}C± 0.26
13	Girls Hostel	7.19± 0.40	Absent	79 ±5	21^{0}C± 0.24

Notes/Observations:

- The physical water quality parameters analysed came within the permissible range prescribed by BIS standards **(IS 10500:2012).**
- Periodically cleaning was monitored

Mr Yogesh Mohan

Member , EEM Cell

B1.2 Waste Management

Establishment of separate bins for the segregation of waste at various source of generation.

Sl. No.	Blocks	Green Bins for Wet Waste	Blue Bins for Dry Waste	Red Bin for /Hazardous/ E- Waste
1.	Chandra Sen `Agrawal Block	√	√	√
2	Schroff Block	√	√	√
3	Raman Block	√	√	√
4	Visvesvaraya Block	√	√	√
5	Azim Premji Block	√	√	√
6	Khorana Block	√	√	√
7	JRD Tata Block	√	√	√
8	Bhabha Block	√	√	√
9	Boys Hostel I	√	√	√
10	Boys Hostel II	√	√	√
11	Faculty Residence A	√	√	√
12	Faculty Residence B	√	√	√
13	Girls Hostel	√	√	√
14	Canteen & Guest House	√	√	√
15	Animal House	√	√	√

Notes/Observations:

1. Segregation of waste is a crucial management step required for further waste management.
2. Recyclable wet waste can be used as animal fodder in nearby villages.
3. Recycling dry waste may be sent to the authorized dealers

Mr Sanjay Vashisth

Member , EEM Cell

1. Energy Audit

B2.1. Energy Management

Sl. No	Block	No of Tubes(Normal tube light[NTL] /(Led Tube Light)[LTL]/Bulbs/CFL	No. of A/C	No of LCD Projector	No of Photocopier/Fridge/Geyser	Computer + Printer	LEDs	Non-Conventional Solar	No of Fans/Exhaust/Remote Fan/WallFan /EE Fan
1	Admin (1+2)	106NTL+87 LTL	5Window+49split+	03	1(Fr)	110 (MCA) +35 (BT) +30 (MBA)+20 (CH)	247	125kWp	209 (F) + 9(E)+8(R)+4(WF)
2	MBA Department-Admin (3)	21NTL+ LTL+18CFL	19Window+9split	12	NA		139		159(F) + (E)+ (R)+(WF)
3	BioTech-Admin (4,5)	263NTL+ LTL+18CFL	12Window+10split	6	NA		2		214(F) + 9(E)+ (R)+1(WF)
4	Centre Library (6)	11NTL+ 32LTL	1Window	NA	NA	45	4	unspecified	64(F) + 4(E)+ (R)+2(WF)
5	B-Pharma Admin (7,8)	223 NTL+2LTL+17B	6Window+2Split	10	NA	42	11	unspecified	206 (F) + 30(E)
6	Schroff Block (9+10)	178 NTL+14LTL	34 Window+1 Split	13	NA	588	12	unspecified	149 (F) + 10(E)
7	MIET Canteen & Guest House(11)	20NTL	11W+1 S	NA	5(Fr)+1Oven+7Geyser	NA	73	unspecified	25 (F) + 3(E)+2(WF)
8	Azim Premji Block (1213, 14,15,16)	317NTL+67LTL	58W+5S	74	NA	60 (CSDS)+ 505(CSE)+ 135(IT)+ 31(IOT)+ 59 (AIML)	80	unspecified	462 (F) + 19 (E)
9	Visvesvaraya Block (17,18)	200 TL	8 W + 17 S	37	NA	157 (AS)	45		128 (F) + 7 (E)+113(EEF)

10	Raman Block (19,20, 21,22)	344TL +78LTL	34 W+3S+3Ceiling AC	19	NA	96 (CE) + 97 (EC)	97	unspecified	318 (F) + 34(E)+7(WF)
11.	Khorana Block (23,24, 25)	142 TL +8LTL	8W+1S	2	NA	32 (CCS) +10 (B.Ed)	15	75kWp	189(F)+ 18(E)
12	Bhabha Block (26,27)	138 TL + 15LTL	NA	14	NA	NA	1	unspecified	121(F)+8(E)
13	JRD Tata Block (28,29)	190 TL + 845 CFL	11 W +1 S	12	NA	30 (EE) + 90 (ME)	8	unspecified	210 (F)+ 13 (E)
14	Animal House(30)	12NTL + 23LTL	04W +4S	NA	NA	NA	7	unspecified	16 (F) + 1 (E)
15	Boys Hostel I(31-38)	6NTL + 190B+87CFL	NA	NA	13(G)	NA	274	Unspecified	27 (F) +1(E) + 167 (EE)
16	Boys Hostel II(39-46)	203NTL + 1B+43CFL	NA	NA	1(Fr)+8(G)	NA	158	100kWp	36(F) +13(E) + 228 (EE)
17	SBH Hostel I(47-55)	43NTL + 2B+CFL	NA	NA	8(G)	NA	365	175kWp	59(F) +7(E) + 260 (EE)

Notes/Observations:

1. Maximum consumption of energy per year due to AC and it might be due to the large numbers of AC s.
2. Fans, tube lights, summer coolers and geysers share about equal energy per year .
3. Bulbs in hostel were replaced by tubelights and LEDs which resulted in energy saving.

Mr. Avinash Kumar

Member , EEM Cell

Environmental Audit Report

(For the Academic Year-2022-23)

2. Green Audit

B3.1. Land Scape/ Environment

Sl. No	Block	Over all Green Cover	Garden (sqmt)	Overall Bio diversity	Landscape Management Plans
1	Chandra Sen `Agrawal Block	26485	4345	√	√
2	Schroff Block		892	√	√
3	Raman Block		3924	√	√
4	Visvesvaraya Block		1330	√	√
5	Azim Premji Block		6590	√	√
6	Khorana Block		2323	√	√
7.	JRD Tata Block		345	√	√
8	Bhabha Block		1453	x	√
09	Boys Hostel I		2123	√	x
10	Boys Hostel II			x	√
11	Faculty Residence A		1345	√	x
12	Faculty Residence B			√	√
13	Girls Hostel			√	√
14	Canteen & Guest House		1298	√	√
15	Animal House		517	√	√

Notes/Observations:

1. **Eco-friendlier initiative to be taken.**
2. **Ramps to be made better in hostels also for movement if differently abled people.**
3. **Green coverage has to be provided in Hostel also.**

Mr Dilip Rawat

Member , EEM Cell

B3.2. Built Up Environment

Sl. No	Block	No of Floors	Ground Coverage in sq.mt.	Eco friendliness	Fire Prevention Provisions	Serenity of Class Rooms	Recreation Room	Provisions for differently abled	Toilets for Men, Women, differently abled
1	Chandra Sen `Agrawal Block	3	5685	√	√	√	N.A.	√	√
2	Schroff Block	4	862	√	√	√	N.A.	√	√
3	Raman Block	4	1934	√	√	√	N.A.	√	√
4	Visvesvaraya Block	4	1377	√	√	√	N.A.	√	√
5	Azim Premji Block	8	1499	√	√	√	N.A.	√	√
6	Khorana Block	4	1157	√	√	√	N.A.	√	√
7.	JRD Tata Block	4	840	√	√	√	√	√	√
8	Bhabha Block	4	627	√	√	√	N.A.	√	√
9	Boys Hostel I	4	2533	√	√	√	N.A.	√	√
10	Boys Hostel II	4	1656	√	√	N.A.	√	√	√
11	Faculty Residence A	4	417	√	√	N.A,	√	√	√
12	Faculty Residence B	4	417	√	√	N.A.	√	√	√
13	Girls Hostel	4	1275	√	√	N.A.	√	√	√
14	Canteen & Guest House	3	268	√	√	N.A.	√	√	√
15	Animal House	1	211	√	√	N.A.	√	√	√

Notes/Observations:

1. **Eco-friendlier initiative to be taken.**
2. **Ramps to be made better for movement if differently abled people. In the case of absence Lift should be provided.**
3. **Green coverage needs to be improved.**

Mr Dilip Rawat

Member , EEM Cell

B3.3. Green Agenda

Sl. No.	Courses	Environmental Education in Syllabus	Green Research (Project/Mini Project)
1	B. Tech	√	√
2	M. Tech	No	√
3	M.B.A	No	√
4	M.C.A.	No	√
5	B. Pharm	No	√
6	M.Pharm	No	√

Notes/Observations:

1. **Less weightage of environment in syllabus**
2. **More projects/ Mini projects to create more awareness**

Mr Dilip Rawat

Member , EEM Cell

Environmental Audit Report

B3.4. Transportation

Sl. No	Block	Institute Vehicle No	Member with Vehicle	Member using Public Transportation (%)	Vehicle Pooling	Institute buses on different routes
1	Chandra Sen Agrawal Block	07	36	62%	√	20(7CNG+13Diesel)

Notes/Observations:

1. **Faculty, staff and students should be advised to use the pooled vehicle instead of individual vehicles on same route, so as to reduce the carbon footprints in the campus.**
2. **MIETians those who are residing in the within 2-3 km, should be encouraged to use the bicycles instead of two or four- wheeler.**
3. **Diesel buses should be replaced by CNG buses.**

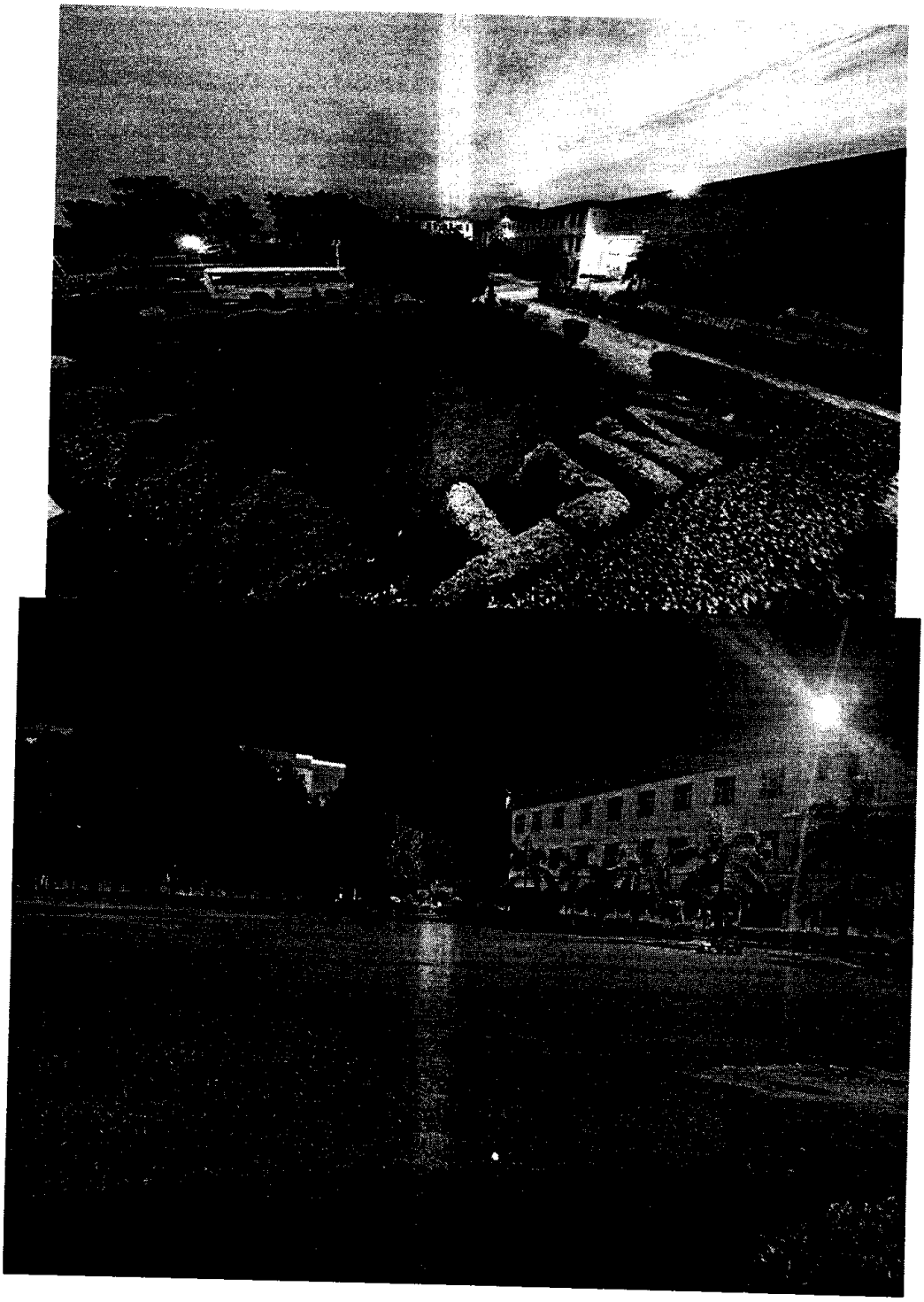
Mr Sanjay Vashisth

Member , EEM Cell

Appendix 1: List of Student Volunteers

Student Volunteers
1. AAYUSH KUMAR (CE 3Year)
2. ABHINAV GAUTAM (CE 3Year)
3. HEMANT TRIPATHI (CE 4Year)
4. SAGAR MALIK (CE 2 Year)
5. ROHAN KUMAR (CE 2 Year)

Appendix 2: Campus Environment Snap Shots



Meerut Institute of Engineering & Technology
N.H. 58, Delhi-Roorkee Highway, Baghpat Road, Meerut - 250 005. UP (India)

Date: 14.08. 2023

All the members of EEM cell are informed that a meeting for environment, energy and green audit report and discussion on future plan has been scheduled in HRD room on 17 August 2023

All are requested to attend the meeting and put forward their valuable suggestions.

Mr. Praveen Chakravarti
Head
EEM Cell

Cc:

1. Director
2. EEM cell members

Minutes of Environmental Energy Management Cell (EEM) Meeting held on Thrusday, 17st August 2023 in the HRD Room.

Participants: Mr. Avinash, Mr Yogesh Mohan, Mr Dilip Rawat, Mr. Sanjay Vashisth (Registrar)

Chair: Mr Praveen Kumar Chakravarti (Head EEM Cell)

Sr. No.	Agenda	Discussion/Decision Taken
1	Opening Remark	Head EEM Cell opened the meeting with welcome note. The agenda points and audit report have been discussed and future projections with respect to creating EEM cell were discussed.
1	Treated Wastewater	Treated water is to be re-used for horticulture purpose within the campus.
2	Energy saving	The fluorescent Lamps (Tube lights and CFL etc) of the Boys-block could be replaced with LED lights.
3	Construction Site	Safeguarding excavation soil to be used again for backfilling by adopting phased construction. Preserving the top rich soil from construction sites to be used for flowerpots plantation

Head EEM Cell concluded the meeting with thanks.

Copy to: Director

Members (EEM Cell)

Mr Praveen Kumar Chakravarti

Head EEM Cell

MEERUT INSTITUTE OF ENGINEERING& TECHNOLOGY, MEERUT

Date:08/08/2022

To

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Notes/Observations:

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Mr Yogesh Mohan

Member , EEM Cell

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3	Raman Block	√	√	√
4	Visvesvaraya Block	√	√	√
5	AzimPremji Block	√	√	√
6	Khorana Block	√	√	√
7	JRD Tata Block	√	√	√
8	Bhabha Block	√	√	√
9	Boys Hostel I	√	√	√
10	Boys Hostel II	√	√	√
11	Faculty Residence A	√	√	×
12	Faculty Residence B	√	√	×
13	Girls Hostel	√	√	×
14	Canteen & Guest House	√	√	×
15	Animal House	√	√	√

Notes/Observations:

1. Segregation of waste is a crucial management step required for further waste management.
2. Recyclable wet waste can be used as animal fodder in nearby villages.
3. Recycling dry waste may be sent to the authorized dealers

Mr Sanjay Vashisth

Member , EEM Cell

1. Energy Audit

B2.1. Energy Management

Sl. No	Block	No of Tubes(Normal tube light[NTL]/(Led Tube Light)[LTL]/Bulbs/CFL	No. of A/C	No of LCD Projector	No of Photocopier/Fridge/Geyser	Computer + Printer	LEDs	Non-Conventional Solar	No of Fans/Exhaust/Remote Fan/WallFan/EE Fan
1	Admin (1+2)	146NTL+97 LTL	5Window+49split+	03	1(Fr)	80 (MCA) +20 (BT) +30 (MBA)+20 (CH)	197	125kWp	209 (F) + 9(E)+8(R)+4(WF)
2	MBA Department-Admin (3)	41NTL+ LTL+28CFL	19Window+9split	12	NA		109		159(F) + (E)+ (R)+(WF)
3	BioTech-Admin (4,5)	263NTL+ LTL+18CFL	12Window+10split	6	NA		2		214(F) + 9(E)+ (R)+1(WF)
4	Centre Library (6)	11NTL+ 32LTL	1Window	NA	NA	45	4	unspecified	64(F) + 4(E)+ (R)+2(WF)
5	B-Pharma Admin (7,8)	223 NTL+2LTL+17B	6Window+2Split	10	NA	42	11	unspecified	206 (F) + 30(E)
6	Schroff Block (9+10)	178 NTL+14LTL	34 Window+1 Split	13	NA	490	12	unspecified	149 (F) + 10(E)
7	MIET Canteen & Guest House(11)	20NTL	41W+1 S	NA	5(Fr)+1Oven+7Geyser	NA	43	unspecified	25 (F) + 3(E)+2(WF)
8	AzimPremji Block (1213, 14,15,16)	340NTL+79 LTL	58W+5S	74	NA	45 (CSDS)+ 505(CSE)+ 125(IT)+ 25(IOT)+ 54 (AIML)	45	unspecified	462 (F) + 19 (E)
9	Visvesvaraya	222 TL	8 W + 17 S	37	NA	157 (AS)	23		128 (F) + 7 (E)+113(EEF)

	Block (17,18)								
10	Raman Block (19,20, 21,22)	362TL +100LTL	34 W+3S+3Ceiling AC	19	NA	96 (CE) + 97 (EC)	57	unspecified	318 (F) + 34(E)+7(WF)
11.	Khorana Block (23,24, 25)	142 TL +8LTL	8W+1S	2	NA	32 (CCS) +10 (B.Ed)	15	75kWp	189(F)+ 18(E)
12	Bhabha Block (26,27)	138 TL + 15LTL	NA	14	NA	NA	1	unspecified	121(F)+8(E)
13	JRD Tata Block (28,29)	190 TL + 845 CFL	11 W +1 S	12	NA	30 (EE) + 90 (ME)	8	unspecified	210 (F)+ 13 (E)
14	Animal House(30)	12NTL + 23LTL	04W +4S	NA	NA	NA	7	unspecified	16 (F) + 1 (E)
15	Boys Hostel I(31-38)	46NTL + 220B+87CFL	NA	NA	13(G)	NA	204	Unspecified	27 (F) +1(E) + 167 (EE)
16	Boys Hostel II(39-46)	248NTL + 16B+43CFL	NA	NA	1(Fr)+8(G)	NA	98	100kWp	36(F) +13(E) + 228 (EE)
17	SBH Hostel I(47-55)	163NTL + 22B+CFL	NA	NA	8(G)	NA	225	175kWp	59(F) +7(E) + 260 (EE)

Notes/Observations:

1. Maximum consumption of energy per year due to the large numbers of AC s.
2. Fans, tube lights, summer coolers and geysers share about equal energy per year.
3. Largest consumption in hostel was seen in heating elements such as geysers which only used 120 days nearby but its wattage value is very high. Furthermore, bulbs also contributed for large amount of energy consumption

Mr. Avinash Kumar

Member , EEM Cell

Environmental Audit Report

(For the Academic Year-2021-22)

2. Green Audit

B3.1. Land Scape/ Environment

Sl. No	Block	Over all Green Cover	Garden (sqmt)	Overall Bio diversity	Landscape Management Plans
1	Chandra Sen `Agrawal Block	26485	4345	√	√
2	Schroff Block		892	√	√
3	Raman Block		3924	√	√
4	Visvesvaraya Block		1330	√	√
5	AzimPremji Block		6590	√	√
6	Khorana Block		2323	√	√
7.	JRD Tata Block		345	√	√
8	Bhabha Block		1453	x	√
09	Boys Hostel I		2123	√	x
10	Boys Hostel II			x	√
11	Faculty Residence A		1345	√	x
12	Faculty Residence B			√	√
13	Girls Hostel			√	√
14	Canteen & Guest House		1298	√	√
15	Animal House		517	√	x

Notes/Observations:

1. **Eco-friendlier initiative to be taken.**
2. **Ramps to be made better in hostels also for movement if differently abled people.**
3. **Green coverage has to be provided in Hostel also.**

Mr Dilip Rawat

Member , EEM Cell

B3.2. Built Up Environment

Sl. No	Block	No of Floors	Ground Coverage in sq.mt.	Eco friendliness	Fire Prevention Provisions	Serenity of Class Rooms	Recreation Room	Provisions for differently abled	Toilets for Men, Women, differently abled
1	Chandra Sen `Agrawal Block	3	5685	√	√	√	N.A.	√	√
2	Schroff Block	4	862	√	√	√	N.A.	√	√
3	Raman Block	4	1934	√	√	√	N.A.	√	√
4	Visvesvaraya Block	4	1377	√	√	√	N.A.	√	√
5	AzimPremji Block	8	1499	√	√	√	N.A.	√	√
6	Khorana Block	4	1157	√	√	√	N.A.	√	√
7.	JRD Tata Block	4	840	√	√	√	√	√	√
8	Bhabha Block	4	627	√	√	√	N.A.	√	√
9	Boys Hostel I	4	2533	√	√	√	N.A.	√	√
10	Boys Hostel II	4	1656	√	√	N.A.	√	√	√
11	Faculty Residence A	4	417	√	√	N.A,	√	√	√
12	Faculty Residence B	4	417	√	√	N.A.	√	√	√
13	Girls Hostel	4	1275	√	√	N.A.	√	√	√
14	Canteen & Guest	3	268	√	√	N.A.	√	√	√

	House								
15	Animal House	1	211	√	√	N.A.	√	√	√

Notes/Observations:

1. **Eco-friendlier initiative to be taken.**
2. **Ramps to be made better for movement if differently abled people. In the case of absence Lift should be provided.**
3. **Green coverage needs to be improved.**

Mr Dilip Rawat

Member , EEM Cell

B3.3. Green Agenda

Sl. No.	Courses	Environmental Education in Syllabus	Green Research (Project/Mini Project)
1	B. Tech	√	√
2	M. Tech	No	√
3	M.B.A	No	√
4	M.C.A.	No	√
5	B. Pharm	No	√
6	M.Pharm	No	√

Notes/Observations:

1. **Less weightage of environment in syllabus**
2. **More projects/ Mini projects to create more awareness**
3. **Seminars and workshop are held for sustainable development.**

Mr Dilip Rawat

Member , EEM Cell

Environmental Audit Report

B3.4. Transportation

Sl. No	Block	Institute Vehicle No	Member with Vehicle	Member using Public Transportation (%)	Vehicle Pooling	Institute buses on different routes
1	Chandra SenAgrawal Block	07	40	52%	√	20(7CNG+13Diesel)

Notes/Observations:

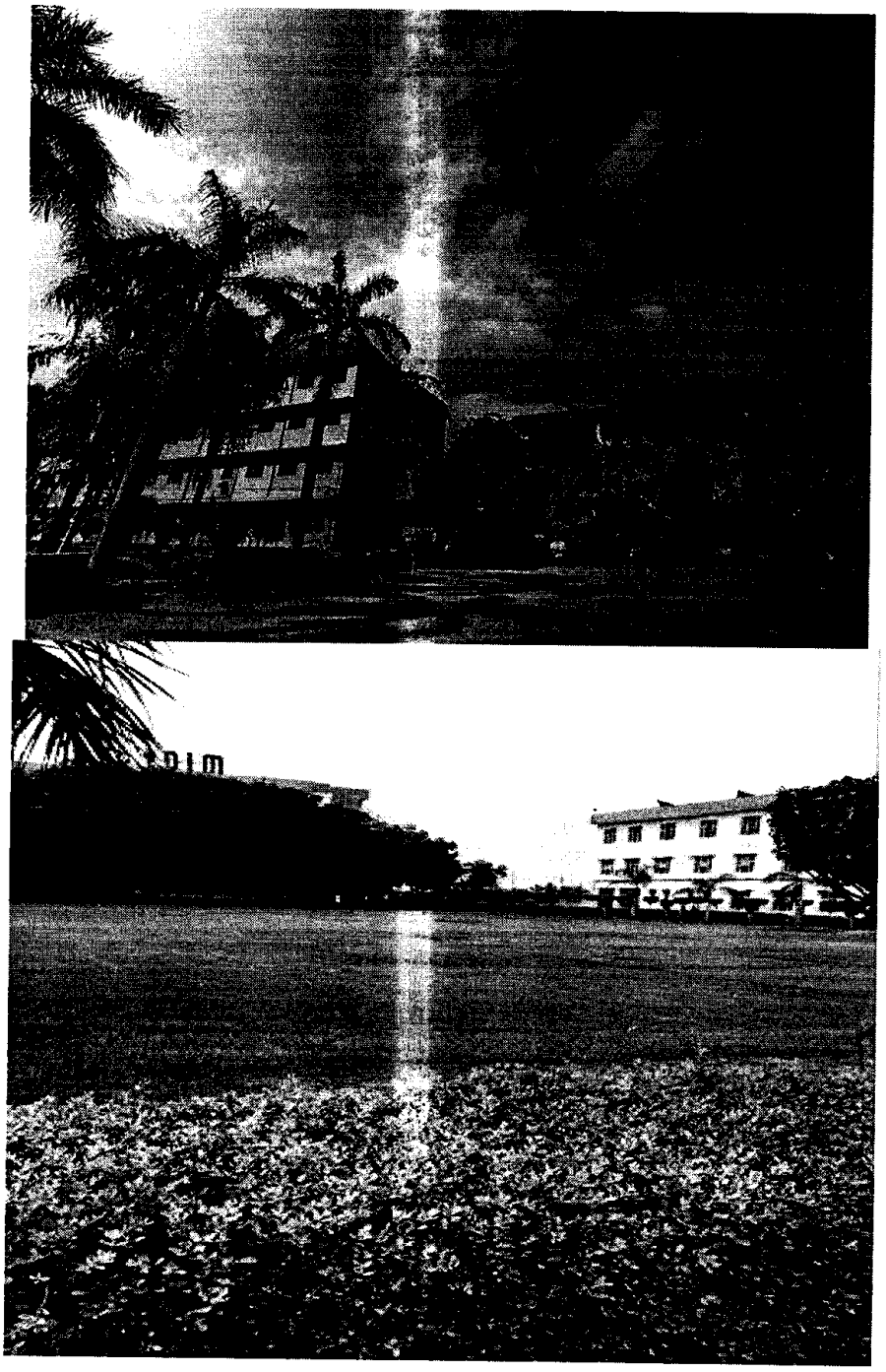
1. **Faculty, staff and students should be advised to use the pooled vehicle instead of individual vehicles on same route, so as to reduce the carbon footprints in the campus.**
2. **MIETians those who are residing in the within 2-3 km, should be encouraged to use the bicycles instead of two or four- wheeler.**
3. **Diesel buses should be replaced by CNG buses.**

Mr Sanjay Vashisth
Member, EEM Cell

Appendix 1: List of Student Volunteers

Student Volunteers
1. AAYUSH KUMAR (CE 2Year)
2. ABHINAV GAUTAM (CE 2Year)
3. HEMANT TRIPATHI (CE 3Year)
4. PRINCE SINGH (CE 3 Year)
5. PRATHAM KUMAR (CE 4 Year)

Appendix 2: Campus Environment Snap Shots



MEERUT INSTITUTE OF ENGINEERING& TECHNOLOGY, MEERUT

Date: 12.08. 2022

All the members of EEM cell are informed that a meeting for environment, energy and green audit report and discussion on future plan has been scheduled in HRD room on 17 August 2022

All are requested to attend the meeting and put forward their valuable suggestions.

Mr. Praveen Chakravarti
Head
EEM Cell

Cc:

1. Director
2. EEM cell members

Minutes of Environmental Energy Management Cell (EEM) Meeting held on Wednesday, 17st August 2022 in the HRD Room.

Participants: Mr. Avinash, Mr Yogesh Mohan, Mr Dilip Rawat, Mr. Sanjay Vashisth (Registrar)

Chair: Mr Praveen Kumar Chakravarti (Head EEM Cell)

Sr. No.	Agenda	Discussion/Decision Taken
1	Opening Remark	Head EEM Cell opened the meeting with welcome note. The decision taken in last meeting were reviewed. Future agenda points and audit report were discussed, and decision were taken accordingly.
2	Green Campus	An awareness rally on significance of plantation among nearby villages Plantation drives in campus to be organized.
3	Potable Water	Potable water Supply at MIET is solely dependent on ground water. Therefore, ground water **quality analysis** is a crucial factor with respect to public health.
4	Energy	All the faculties and staff of the institute are to be instructed to switch off all the lights AC, light, Fan before leaving their office/cabin.

Head EEM Cell concluded the meeting with thanks.

Copy to: Director

Members (EEM Cell)

Mr Praveen Kumar Chakravarti

Head EEM Cell

MEERUT INSTITUTE OF ENGINEERINNG AND TECHNOLOGY, MEERUT

Ref.No.MIET/993
Date:07.08. 2021

To

The Director,
Meerut institute of Engineering and Technology
Meerut

Subject: Submission of Environment, Energy and Green Audit Report of the institute for the year 2020-21.

Sir,

The Environment, Energy and Green Audit Report of the institute had been conducted for the year 2020-21.

Kindly find attached the Environment, Energy and Green Audit Report for the institute for the year 2020-21 for your kind perusal and approval.

Thanking you

Sincerely

Mr. Praveen Chakravarti
Head
EEM Cell

Date: 05 August 2021

Environmental Audit Report

(For the Academic Year-2020-21)

1. Preface

Institutional self-inquiry is a natural and necessary outgrowth of quality of higher education. Concern about environmental degradation and realization of values of environment are logical consequences of scholarly research, teaching and learning process. In its pursuit for improving environmental quality and to maintain a pristine environment for the future generation of students, institute has made a self-inquiry on environmental quality of the campus with the following objectives:

i. To establish a baseline of existing environmental conditions with focus on natural and physical environment.
ii. To understand the current practices of sustainability with regard to the use of water and energy, generation of wastes, purchase of goods. transportation, etc.
iii. To promote environmental awareness through participatory auditing process.
iv. To create a report that document baseline data of good practices and provide future strategies and action plans towards improving environmental quality for future.

This report is compiled by a committee constituted by MIET. As there was no standard model for such an environment/green audit of campuses in the state, the committee brainstormed and evolved a questionnaire. With the help of student volunteers, the major part of the data was compiled, which the committee analyzed. The remaining part which involved measurement of quality was entrusted with the Department of Civil Engineering, MIET

2. Audit Summary

i. **Energy Management:** The Institution has facilities for alternate sources of energy and energy conservation measures are being practiced. The institute had installed Grid connected rooftop project/ small power plant in the hostels and academic blocks.
ii. **Water Management:** As such, wise use of water is an established practice in Institute. Sensor based automated system has been placed for putting the water pumps and motors on and off as per the water requirement. Regular maintenance and repair activities are carried out for

prevention of water leakage. The institute has established a proper rain water harvesting system for aquifer recharge. The rainwater harvesting system has been established as per the norms of local administrative authorities.

iii. **Solid Waste management:** Priority is being given to eco-friendly brands followed by those that are recyclable or made from recycled material for purchases. Waste segregation is being carried out strictly through different coloured bins kept near every department for proper segregation of waste.

iv. **Liquid Waste management:** The institute has set up a Sewage Treatment Plant (STP) in the campus with a capacity of 135KLD (Kilo Litres per Day). The treated water is used for watering the gardens and lawns maintained in the campus.

v. **E-waste management:** The collected e-waste is handed over to a certified agency "Pro e-waste recycling" for the proper disposal as per norms.

vi. **Landscape/environment:** Institute maintains gardens properly and the campus is greener with fair biodiversity around. Long-term Eco restoration programs for replacing exotic Acacia plantations and land use and development planning should be undertaken.

vii. **Green Campus Initiatives:** Institute facilitates the faculty & staff members with provision of busses to bring them to the campus from a designated point to discourage use of personal vehicles. Faculty and staff members should be motivated to use car pool to commute.

viii. **Biomedical Waste** – Institute has signed an MOU with Synergy Waste Management Pvt. Ltd (Subharti Dental University, Meerut) for management of bio waste generated from pharmacy department

3. Recommendations

i. Environmental and energy auditing should be conducted every year, under the auspices of the EEM Cell.

ii. Periodical maintenance of rainwater harvesting facilities should be continued as per the schedule.

iii. For managing organic wastes, biogas plants may be commissioned at different locations, canteens, and staff quarters. The wastes generated can be used for promoting organic farming activities within the campus and the products can be used in hostels and canteens. The system for the management of hazardous wastes should be strengthened.

iv. Specific waste management plans should be adopted to manage solid waste in the campus, with the assistance of State Swachh Mission and use of plastic carry bags, thermocole cups/plates and flex boards are banned inside the Campus.

v. The public lights within the campus may be run with solar panels and the replacement of existing lights should be done with LED lamps.

vi. Green habitat concept should be adopted for all the building construction activities of the campus in future, which may help a long way in reducing energy usage, increasing aesthetic appeal of the buildings and class rooms, besides reducing carbon foot print.

vii. Frame long-term Eco restoration programs for replacing exotic Acacia plantations with indigenous trees and need of the hour is to frame a holistic campus development plan to foresee the future developmental needs in tune with green charter adopted by Institute.

viii. As far as practicable, all the blocks in the campus should develop a garden in surrounding of the buildings.

ix. Further, more green spaces should be established all around the campus around larger trees and shades for the benefit of the students.

x. Vehicle pooling should be promoted both among students and faculty should be promoted as a policy of Institute.

xi. Irrespective of the subjects, environmental education is a part of curriculum. Certificates may be given to students participating in environmental conservation/awareness activities.

xii. All the purchases in future should be restricted to star rating equipment so that conservation of energy can be done.

xiii. Treated waste water should be used in gardening and plantation purposes in the whole campus to achieve utilization of TWW.

xiv. Student Intervention programme is required to make student understand the problem and the solution.

4. Detailed Audit Report

Part A: Quality of Life Support Systems

A2. Water Quality Measurement

Bore well water: water samples were collected from wells near to Raman block (W1), Behind Faculty Residence (W2) and Boys Hostel (W3) of MIET Campus. The analyzed parameters included pH, Colour, Electrical Conductivity, Total Dissolved Solids, Dissolved Oxygen, Acidity, Alkalinity, Sulphate, Chlorine, Nitrate, Phosphate, Iron, Total Hardness, Calcium Hardness and Total Coliforms. All the parameters except pH and Iron were within standard desirable limits of drinking water quality (BIS IS: 10500:1991). All well water samples (W1, W2, and W3) are slightly acidic in nature, and Hard water (<300 mg/lt).

Tap water: Out of the three tested tap water samples (Raman Block, W1), the tap water from the Tap 1 shows slightly basic pH. Bacteriological quality results indicated the absence of coliform bacteria in all tested tap water samples and hardness of water was found to be below 20 mg/l which is below acceptable limit.

Part B: Internal Audit Report

B1.1 Physical-Chemical water quality parameters analysis

Sl. No.	Blocks	pH	EC	TDS (mg/l)	Temperature
1.	Chandra Sen `Agrawal Block	7.11 ± 0.40	Absence	95 ± 5	22^{0}C± 0.30
2	Schroff Block	7.13 ± 0.43	Absence	90 ± 5	21^{0}C± 0.43
3	Raman Block	7.07 ± 0.42	Absence	89 ± 5	22^{0}C± 0.26
4	Visvesvaraya Block	7.13 ± 0.44	Absence	85 ± 5	22^{0}C± 0.45
5	AzimPremji Block	7.10 ± 0.43	Absence	90 ± 5	22^{0}C± 0.22
6	Khorana Block	7.07± 0.42	Absence	89 ± 5	22^{0}C± 0.28
7	JRD Tata Block	7.04 ± 0.41	Absence	99 ± 5	22^{0}C± 0.38
8	Bhabha Block	7.08 ± 0.41	Absence	89 ± 5	21^{0}C± 0.36
9	Boys Hostel I	7.08 ± 0.45	Absence	93 ± 5	23^{0}C± 0.40
10	Boys Hostel II	7.10 ± 0.43	Absence	89 ± 5	23^{0}C± 0.22
11	Faculty Residence A	7.15 ± 0.40	Absence	88± 5	22^{0}C± 0.40
12	Faculty Residence B	7.13 ± 0.40	Absence	91 ± 5	22^{0}C± 0.22
13	Girls Hostel	7.15± 0.42	Absence	92 ± 5	21^{0}C± 0.26

Notes/Observations:

- The physical water quality parameters analysed came within the permissible range prescribed by BIS standards **(IS 10500:2012).**
- Periodically cleaning was monitored

Mr Yogesh Mohan

Member , EEM Cell

B1.2 Waste Management

Establishment of separate bins for the segregation of waste at various source of generation.

Sl. No.	Blocks	Green Bins for Wet Waste	Blue Bins for Dry Waste	Red Bin for /Hazardous/ E- Waste
1.	Chandra SenAgrawal Block	√	√	√
2	Schroff Block	√	√	√
3	Raman Block	√	√	√
4	Visvesvaraya Block	√	√	√
5	AzimPremji Block	√	√	√
6	Khorana Block	√	√	√
7	JRD Tata Block	√	√	√
8	Bhabha Block	√	√	√
9	Boys Hostel I	√	√	×
10	Boys Hostel II	√	√	×
11	Faculty Residence A	√	√	×
12	Faculty Residence B	√	√	×
13	Girls Hostel	√	√	×
14	Canteen & Guest House	√	√	×
15	Animal House	√	√	√

Notes/Observations:

1. Segregation of waste is a crucial management step required for further waste management.
2. Recyclable wet waste can be used as animal fodder in nearby villages.
3. Recycling dry waste may be sent to the authorized dealers

Mr Sanjay Vashisth
Member , EEM Cell

1. Energy Audit

B2.1. Energy Management

Sl. No	Block	No of Tubes(Normal tube light[NTL]/(Led Tube Light)[LTL]/Bulbs/CFL	No. of A/C	No of LCD Projector	No of Photocopier/Fridge/Geyser	Computer + Printer	LEDs	Non-Conventional Solar	No of Fans/Exhaust/Remote Fan/WallFan/EE Fan
1	Admin (1+2)	244NTL+116 LTL	5Window+49split+	03	1(Fr)	80 (MCA) +20 (BT) +30 (MBA)+20 (CH)	80	125kWp	209 (F) + 9(E)+8(R)+4(WF)
2	MBA Department-Admin (3)	120NTL+LTL+28CFL	19Window+9split	12	NA		30		159(F) + (E)+(R)+(WF)
3	BioTech-Admin (4,5)	263NTL+LTL+18CFL	12Window+10split	6	NA		2		214(F) + 9(E)+(R)+1(WF)
4	Centre Library (6)	11NTL+32LTL	1Window	NA	NA	45	4	unspecified	64(F) + 4(E)+(R)+2(WF)
5	B-Pharma Admin (7,8)	223 NTL+2LTL+17B	6Window+2Split	10	NA	42	11	unspecified	206 (F) + 30(E)
6	Schroff Block (9+10)	190 NTL+14LTL	34 Window+1 Split	13	NA	490	0	unspecified	149 (F) + 10(E)
7	MIET Canteen & Guest House(11)	50NTL	41W+1 S	NA	5(Fr)+1Oven+7Geyser	NA	13	unspecified	25 (F) + 3(E)+2(WF)
8	AzimPremji Block (1213, 14,15,16)	370NTL+79 LTL	58W+5S	74	NA	419(CSE)+95(IT)	15	unspecified	462 (F) + 19 (E)
9	Visvesvaraya Block (17,18)	245 TL	8 W + 17 S	37	NA	157 (AS)	0		128 (F) + 7 (E)+113(EEF)

10	Raman Block (19,20, 21,22)	392TL +100LTL	34 W+3S+3Ceiling AC	19	NA	46 (CE) + 57 (EC)	27	unspecified	318 (F) + 34(E)+7(WF)
11.	Khorana Block (23,24, 25)	157 TL +8LTL	8W+1S	2	NA	32 (CCS) +10 (B.Ed)	0	75kWp	189(F)+ 18(E)
12	Bhabha Block (26,27)	139 TL + 15LTL	NA	14	NA	NA	0	unspecified	121(F)+8(E)
13	JRD Tata Block (28,29)	198 TL + 845 CFL	11 W +1 S	12	NA	30 (EE) + 90 (ME)	0	unspecified	210 (F)+ 13 (E)
14	Animal House(30)	12NTL + 23LTL	04W +4S	NA	NA	NA	7	unspecified	16 (F) + 1 (E)
15	Boys Hostel I(31-38)	106NTL + 320B+87CFL	NA	NA	13(G)	NA	44	Unspecified	27 (F) +1(E) + 167 (EE)
16	Boys Hostel II(39-46)	248NTL + 76B+43CFL	NA	NA	1(Fr)+8(G)	NA	38	100kWp	36(F) +13(E) + 228 (EE)
17	SBH Hostel I(47-55)	163NTL + 202B	NA	NA	8(G)	NA	45	175kWp	59(F) +7(E) + 260 (EE)

Notes/Observations:

1. Maximum consumption of energy per year due to AC and it might be due to the large numbers of AC s.
2. Fans, tube lights, summer coolers and geysers share about equal energy per year.
3. Major energy consumption was from bulbs and ceiling fans in hostel.

Mr. Avinash Kumar

Member , EEM Cell

Environmental Audit Report

(For the Academic Year-2020-21)

2. Green Audit

B3.1. Land Scape/ Environment

Sl. No	Block	Over all Green Cover	Garden (sqmt)	Overall Bio diversity	Landscape Management Plans
1	Chandra Sen `Agrawal Block	26485	4345	√	√
2	Schroff Block		892	√	√
3	Raman Block		3924	√	√
4	Visvesvaraya Block		1330	√	√
5	AzimPremji Block		6590	√	√
6	Khorana Block		2323	√	√
7.	JRD Tata Block		345	√	√
8	Bhabha Block		1453	x	√
09	Boys Hostel I		2123	√	x
10	Boys Hostel II			x	√
11	Faculty Residence A		1345	√	x
12	Faculty Residence B			√	√
13	Girls Hostel			√	√
14	Canteen & Guest House		1298	√	√
15	Animal House		517	√	x

Notes/Observations:

1. **Eco-friendlier initiative to be taken.**
2. **Ramps to be made better in hostels also for movement if differently abled people.**
3. **Green coverage has to be provided in Hostel also.**

Mr Dilip Rawat

Member , EEM Cell

B3.2. Built Up Environment

Sl. No	Block	No of Floors	Ground Coverage in sq.mt.	Eco friendliness	Fire Prevention Provisions	Serenity of Class Rooms	Recreation Room	Provisions for differently abled	Toilets for Men, Women, differently abled
1	Chandra Sen `Agrawal Block	3	5685	√	√	√	N.A.	√	√
2	Schroff Block	4	862	√	√	√	N.A.	√	√
3	Raman Block	4	1934	√	√	√	N.A.	√	√
4	Visvesvaraya Block	4	1377	√	√	√	N.A.	√	√
5	AzimPremji Block	8	1499	√	√	√	N.A.	√	√
6	Khorana Block	4	1157	√	√	√	N.A.	√	√
7.	JRD Tata Block	4	840	√	√	√	√	√	√
8	Bhabha Block	4	627	√	√	√	N.A.	√	√
9	Boys Hostel I	4	2533	√	√	√	N.A.	√	√
10	Boys Hostel II	4	1656	√	√	N.A.	√	√	√
11	Faculty Residence A	4	417	√	√	N.A,	√	√	√
12	Faculty Residence B	4	417	√	√	N.A.	√	√	√
13	Girls Hostel	4	1275	√	√	N.A.	√	√	√
14	Canteen & Guest House	3	268	√	√	N.A.	√	√	√
15	Animal House	1	211	√	√	N.A.	√	√	√

Notes/Observations:

1. **Eco-friendlier initiative to be taken.**
2. **Ramps to be made better for movement if differently abled people. In the case of absence Lift should be provided.**
3. **Green coverage needs to be improved.**

Mr Dilip Rawat

Member , EEM Cell

B3.3. Green Agenda

Sl. No.	Courses	Environmental Education in Syllabus	Green Research (Project/Mini Project)
1	B. Tech	√	√
2	M. Tech	No	√
3	M.B.A	No	√
4	M.C.A.	No	√
5	B. Pharm	No	√
6	M.Pharm	No	√

Notes/Observations:

1. **Less weightage of environment in syllabus**
2. **More projects/ Mini projects to create more awareness**

Mr Dilip Rawat

Member , EEM Cell

Environmental Audit Report

B3.4. Transportation

Sl. No	Block	Institute Vehicle No	Member with Vehicle	Member using Public Transportation (%)	Vehicle Pooling	Institute buses on different routes
1	Chandra SenAgrawal Block	07	42	47%	√	20(7CNG+13Diesel)

Notes/Observations:

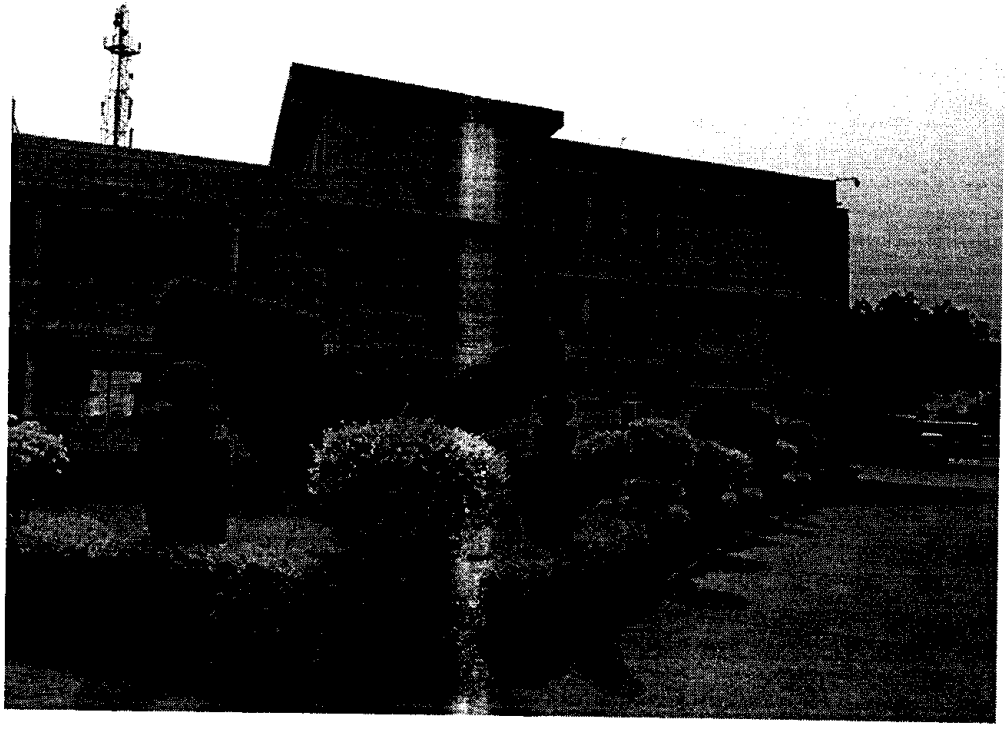
1. **Faculty, staff and students should be advised to use the pooled vehicle instead of individual vehicles on same route, so as to reduce the carbon footprints in the campus.**
2. **MIETians those who are residing in the within 2-3 km, should be encouraged to use the bicycles instead of two or four- wheeler.**
3. **Diesel buses should be replaced by CNG buses.**

Mr Sanjay Vashisth
Member , EEM Cell

Appendix 1: List of Student Volunteers

Student Volunteers
1. HEMANT TRIPATHI (CE 2Year)
2. PRINCE SINGH (CE 2 Year)
3. PRATHAM KUMAR (CE 3 Year)
4. VASU SHARMA (CE 3 Year)
5. MOHAMMAD KAIF (CE 4 Year)

Appendix 2: Campus Environment Snap Shots



MEERUT INSTITUTE OF ENGINEERINNG AND TECHNOLOGY, MEERUT

Date: 17.08. 2021

All the members of EEM cell are informed that a meeting for environment, energy and green audit report and discussion on future plan has been scheduled in HRD room on 19 August 2021

All are requested to attend the meeting and put forward their valuable suggestions.

Mr. Praveen Chakravarti
Head
EEM Cell

Cc:

1. Director
2. EEM cell members

Minutes of Environmental Energy Management Cell (EEM) Meeting held on Thrusday, 19st August 2021 in the HRD Room.

Participants: Mr. Avinash, Mr Yogesh Mohan, Mr Dilip Rawat, Mr. Sanjay Vashisth (Registrar)

Chair: Mr Praveen Kumar Chakravarti (Head EEM Cell)

Sr. No.	Agenda	Discussion/Decision Taken
1	Opening Remark	Head EEM Cell opened the meeting with welcome note. The agenda points and audit report have been discussed and future projections with respect to environment were discussed.
1	Treated Wastewater	Treated water is to be re-used for horticulture purpose within the campus.
2	Energy saving	The fluorescent Lamps (Tube lights and CFL etc) of the Admin-Block could be replaced with LED lights.
3	Construction Site	Safeguarding excavation soil to be used again for backfilling by adopting phased construction. Preserving the top rich soil from construction sites to be used for flowerpots plantation

Head EEM Cell concluded the meeting with thanks.

Copy to: Director

Members (EEM Cell)

Mr Praveen Kumar Chakravarti
Head EEM Cell

MEERUT INSTITUTE OF ENGINEERINNG AND TECHNOLOGY, MEERUT

Ref.No.MIET/872
Date:04.05. 2021

To

The Director,
Meerut institute of Engineering and Technology
Meerut

Subject: Submission of Environment Management Plan for the institute

Sir,

The Environment management plan for the institute has been made.

Kindly find attached Environment management plan for the institute for your kind perusal and approval.

Thanking you

Sincerely

Mr. Praveen Chakravarti
Head
EEM Cell

Environment Management Plan and System

1. Aim:

The aim of the Environment Management Plan is to reduce the environmental impact of various day-to-day activities of the institute and make the campus eco-friendly and to work with a professional and systematic approach towards achieving environmental sustainability. It also leads to developing environmental consciousness in the minds of young professionals who graduate from the institute as well as faculty and staff members.

The primary field of focus for the Environment Management Plan is reduction of energy use/energy efficiency, waste management, pollution prevention, and resource and energy conservation. It also aims to maximize the 4R rules of waste management & energy conservation.

2. Environmental Policy

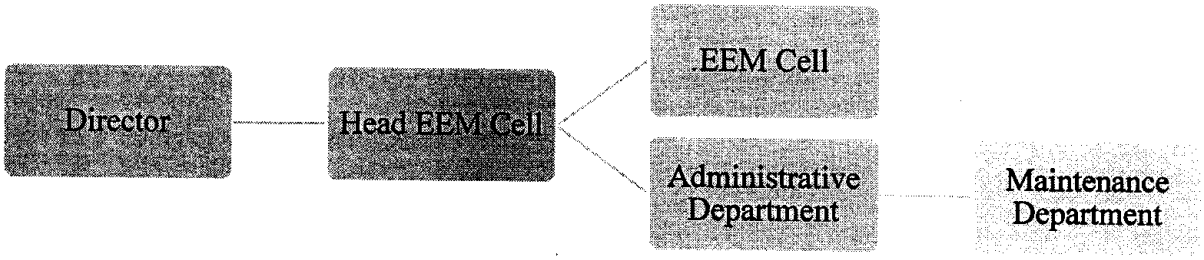
The institute aims to involve stakeholders in reducing the environmental impacts and integrate the environmental concern in all policies, plans and management systems. The institute acknowledges and understands its role in striving towards global environmental sustainability. It aims to set standards in terms of on-campus environmental performance through its continuous endeavors. In this regard, the institute shall:

a) Comply with all requisite environmental legislation and government guideline, wherever applicable
b) Ensure that there is optimum utilization of resources and waste generation is minimized
c) Integrate environmental concerns in decision-making, e.g. purchasing policy
d) Prepare and implement an Environmental Management Plan (EMP)
e) Strive towards continual reduction in ecological footprint of the institute as it grows.

3. Description of Environmental Management Plan and System:

3.1 Management Structure

For successful implementation of the Environmental Management Plan, MIET has a well-defined and structured system in place. The system includes all stakeholders of the institution comprising top management authorities of the institute and the functional teams. Each of them has the defined roles and responsibilities The institution promotes all endeavors that could lead to make the campus eco-friendly and sustainable.



3.2 Environmental Domains

The primary domains in consideration include energy, water, waste (solid and hazardous), ambient/indoor air, and landscaping/biodiversity. Following sections define the management plan for each of the domains:

3.2.1 Energy Management

One of the key areas of focus in energy management is energy conservation. Energy conservation has its potential to reduce overall energy demand, costs and consumption. Energy conservation also plays an important role in addressing environmental Impact. It is often the most economical strategy to advance climate protection efforts and provides an environmentally safe alternative to increased energy production and consumption. The Institution has facilities for alternate sources of energy and energy conservation measures are in place.

Solar Energy- The institute has installed Grid connected rooftop project/ small power plant of 275KWp capacity in 2016 in two phase. Later in 2017, it has been upgraded with a total capacity of 450 KWp for conservation measure for alternate source of energy. The plant is connected on Net-Metering to save the wastage of power. Number of modules and total array capacity is 1661 No's and 450 KWp. This is three phase low voltage supply system (up to 100 KWp SPV systems). It is also provided with the arrangement of generation data collection through remote monitoring system. The main objective of implanting this plant in the campus is for self-consumption. In this, we have installed the solar panels on 05 of our campus buildings namely Chandra Sen Agrawal Block, Visvesvaraya Block, Khorana Block, Boys Hostel II and Sarojni Girls hostel building.

3.2.2 Water Management

Water is a precious and essential component of the ecosystem. Today we all are heading toward the scarcity of water, and this is mainly because of the lack of water conservation and pollution of water bodies. The institute aims to make efficient and environmentally responsible use of water, including identifying opportunities for water recycling and reuse. As such, wise use of water is an established practice in Institute. Sensor based automated system has been placed for

putting the water pumps and motors on and off as per the water requirement. Water footprint calculation of the institute including canteen and hostel facilities is in practice. This allows institute to know the share of water consumption for various activities and accordingly strategies are devised for reducing the water footprint. Regular maintenance and repair activities are carried out for prevention of water leakage.

Recommended policy:

Recommended policies for adoption by the college, in order to promote conservation, water management and sustainable use of resources, are mentioned below:

- Efforts will be made to organize awareness activities to conserve water resources and waste management through information, education and communication campaign.
- Physico-chemical water quality analysis of ground water at various sampling station to check drinking water quality.
- To conserve the ground water quality, we have already replaced chemical fertilizers with organic biofertilizer as a mitigation measure.
- Chemical used for tertiary treatment in waste water treatment unit needed to be replaced with any other eco-friendly alternative technology.
- Rain water harvesting has already been implemented. There are total of 13 No's rain water harvesting units installed and collector trench for the same is also available at different locations in our institute to conserve water resource.
- Water getting wasted from leaked taps of hostel's bathrooms, sinks, messes etc. are repaired and monitored regularly.

Rain Water Harvesting: The institute is working since long towards saving of water level, stoppage of wastage of water and conservation of rain water. In this context we have established a proper rain water harvesting system for aquifer recharge. The rain water harvesting system has been established as per the norms of local administrative authorities. There are total of 13 rainwater harvesting units installed and collector trench for the same is also available at different locations in our institute so as to stop the wastage of single drop of Rain water.

3.2.3 Waste Management

Over the years, waste management has become a grave issue that has taken on an increasing sense of urgency in the society. Environmental protection inevitably includes the cleansing of environment through the responsible management of waste. The various types of waste generated at the institute are listed below in the table:

Sl. No	Waste Type	Description
1	Solid waste	Waste being generated in the canteen, classrooms, administrative block and washrooms
2	Liquid Waste	Waste being generated in the canteen, classrooms, administrative block and washrooms
3	Chemical and Biomedical waste	Waste generated in chemical, environmental and Pharmacy Labs
4	E-waste	Computers, liquid crystal displays, telephones, etc.
5	Paper waste	Waste being generated in the canteen, classrooms, administrative block and academic activities

The institute aims to follow the three-tier approach for waste management. This three-tier approach of waste management is being incorporated in the institute administrative policy, daily operations, and also in campus culture. This three-tier waste management approach includes:

1. Waste avoidance and reduction
2. Reuse and recycling
3. Eco-friendly disposal

3.2.3.1 Solid Waste Management

The institution and its stakeholders comprehend it their prime responsibility to initiate the responsible and productive disposal of waste products.

Recommended policy:

Recommended policies for adoption by the college, in order to promote conservation, solid waste management and sustainable use of resources, are mentioned below:

- Waste like paper, water bottles, liquor bottles, soft drink canes, tetra packs, fruit wastes, wrappers etc. not to litter, throw or dispose of. These wastes should not be burn or burry on streets, open public spaces, drains, water bodies and to segregate the waste at source and hand over the segregated waste to authorized waste pickers or waste collectors authorized by the local bodies.
- Arrangements of collection facility of segregated waste from entry gate and other designated location inside MIET campus.
- Bins for storage of biodegradable wastes shall be painted green, those for storage of recyclable wastes shall be printed white and those for storage of other wastes shall be printed black (As per Solid Waste Management Rules, 2016)
- The incoming waste at site should be stored properly prior to further processing of bio-degradable waste. To the extent possible waste storage areas should be covered.

- Necessary precaution should be taken to minimize nuisance of odor, flies, rodents, birds menace and fire hazard.
- In case of breakdown or maintenance of plant, waste intake shall be stopped and arrangements be worked out for diversion of waste to temporary processing site or temporary sites.
- Pre-process and post- process rejects shall be removed from the processing facility on regular basis and shall not be allowed to pile at the site. Recyclables shall be routed through appropriate vendors.
- The end product compost should meet the standards prescribed under fertilizer control order notified from time to time. Efforts should be made to organize awareness activities to conserve resources and waste management through information, education and communication campaign

Existing Practices:

The practices, which are being exercised in the field of solid waste management are listed below:

- Priority is being given to eco-friendly brands followed by those that are recyclable or made from recycled material for purchases.
- Use of paper cups is being discouraged and people are being motivated to use their own mugs/cups instead of paper cups.
- On-campus use of plastic bags is discouraged.
- Paper usage is being minimized. The institute also has a ERP system which basically helps in reducing reduce paperwork and records are maintained for the students, faculty and staff members online.
- Students are encouraged to submit their assignments and quizzes papers online through ERP Portal.
- Double-sided printing option is being used at all terminals with access to printers.
- Waste segregation is being carried out strictly through different coloured bins kept near every department for proper segregation of waste.

3.2.3.2 Biodegradable Waste Management

Recommended policy:

Recommended policies for adoption by the college, in order to promote conservation, Biodegradable Waste Management, are mentioned below:

- Experimental animals from animal house produces animal anatomical waste like experimental animal carcasses, body parts, organs, tissues during experimentation, which

shall be segregated into containers or bags in yellow colored non-chlorinated plastic bags at the point of generation of waste prior to storage, transportation, treatment and disposal. (As per Schedule I of The Bio-Medical Waste Management Rules, 2016)

- The untreated animal anatomical waste or biotechnological waste shall not be stored beyond a period of forty-eight hours. Provided that in case for any reason it becomes necessary to store such waste beyond such a period, the occupier shall take appropriate measures to ensure that waste does not adversely affect human health and the environment.
- After segregation biomedical waste is handover to bio-medical waste treatment facility for treatment, processing and final disposal.

Existing Practices:

The practices, which are being exercised in the field of biodegradable waste management are listed below:

- Institution releases biodegradable solid waste as kitchen and yard waste from canteens, hostel mess and lawns.
- Management of this waste is very crucial as per eco-friendly point of view and as per rules too.
- Institute has signed an MOU with Synergy Waste Management Pvt. Ltd (Subharti Dental University, Meerut) for management of bio waste generated from pharmacy department

3.2.3.3 Liquid waste management

Recommended policy:

Recommended policies for adoption by the college, in order to promote conservation, liquid waste management and sustainable use of resources, are mentioned below.

- Water wasted from water coolers, water purifiers, AC, shall be reused.
- Public awareness related to water conservation and its significance.
- Efforts will be made to organize awareness activities to conserve water resources and waste management through information, education and communication campaign
- Liquid waste generated from laboratories should be channelized to a different stream for further disposals.
- Waste water treatment facility shall include a substitute for chlorine treatment during tertiary water treatment.

Existing Practices:

The practices, which are being exercised in the field liquid waste management are listed below:

- The liquid wastes generated in the campus include sewage, laboratory, laundry, hostel

and canteen effluent waste.

- The above waste is treated through Sewage Treatment Plant (STP) setup in the institute with a capacity of 135 KLD (Kilo Litres per Day).
- The entire treated water is used for watering the gardens and lawns maintained in the campus.
- The sludge settled in the STP is removed and is dried and used as manure for the gardens. Therefore, the entire waste water generated in the campus is treated and reused.
- The laboratory waste water does not contain hazardous chemicals and periodical monitoring is done by the maintenance team.
- The wastewater entering the STP is tested for its characteristics like Chemical Oxygen Demand (COD), Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS), Total dissolved Solids (TDS), pH and Colour etc. on a timely basis.

3.2.3.4 E-waste management

Recommended policy:

Recommended policies for adoption by the college, in order to promote conservation, E-waste management and sustainable use of resources, are mentioned below:

- E waste generated at MIET shall ensure that e-waste generated by them is channelized through authorized dealer or recycler.
- For the management of hazardous chemicals and radioactive waste management an occupier shall follow the following steps, namely
  a) Prevention
  b) Minimization
  c) Reuse
  d) Recycling
  e) Recovery
  f) Safe disposal through authorized disposal facility

Existing Practices:

The practices, which are being exercised in the field of E-waste management are listed below:

- Although, electronic goods are put to optimum use and repairs are set right by the laboratory assistants and technical staff for reuse.
- But, being a higher education institution that runs on latest computer technologies, and that follows an IT enabled teaching system and practices, the campus generates e-waste.

Effective disposal of e-waste forms one of the prime responsibilities of the institution.

- The e-waste collected is handed over to a certified vendor "pro e-waste recycling," who buys our damaged computers and other non-reparable e-waste and recycle them as per norms. The company assures that the E-waste does not end up in a landfill.

3.2.3.5 Paper waste management

- Paper usage is being minimized. The institute also has a ERP system which basically helps in reducing reduce paperwork and records are maintained for the students, faculty and staff members online.
- Students are encouraged to submit their assignments and quizzes papers online through ERP Portal.
- Double-sided printing option is being used at all terminals with access to printers.
- Paper waste is sent to an external recycling unit and reused.

3.3 Green Campus Policy and Initiatives:

Green Campus initiatives or eco-friendly activities constitute the intrinsic part of the beliefs and ethos of the institute. Some of the Green Initiatives in practice are listed below:

3.3.1 Reduced use of automobiles

A key concern area for the ambient air quality is transportation. Although the institute is located at the main road and the public transport is available, but many staff members as well as students are using private transport for commuting to and fro from the institute. The staff and students are being encouraged to use carpool and alternatives like cycling, walking, etc. Many students at the institute are staying within a radius of three to five kilometers of the institute and hence, such initiatives are expected to be successful. However, the institute understands that mere motivation and encouragement will not lead to increased use of public transportation and some measures which are being taken include:

- Institute facilitates the faculty & staff members with provision of busses to bring them to the campus from a designated point to discourage use of personal vehicles.
- Use of public transport is encouraged.
- Faculty and staff members commuting from the same areas are encouraged to use car pool.

3.3.2 Pedestrian-friendly pathways

For the smooth and safe walking movement inside the campus, pedestrian-friendly pathways have been constructed in the campus.

3.3.3 Ban on the use of Plastics

On-campus use of plastic bottles, cups and bags are discouraged. Stake holders are promoted to use ecofriendly alternatives.

3.3.4 Landscaping with trees and plants

Institute maintains garden and the campus is greener with fair biodiversity around and gardens are well maintained. There is a practice to ensure that the kind of plants that are planted in the campus are suited to the local conditions. Efforts for minimizing use of potable water for irrigation as well as minimal use of pesticides and fertilizers in the gardens are in practice.

4 Monitoring Mechanism

A monitoring mechanism has been established which will ensure a regular check on implementation of the EMP as well as impact of the plan in improving environmental performance of the institute. Following are some practices that have been undertaken for monitoring of the implementation and functioning of the EMP:

- Internal audits will be conducted annually on a regular basis.
- Besides routine internal audits, surprise checks are also in the pipeline in order to ensure that there are no concern areas in implementation.
- Once in a year, an external audit will be conducted.

Responsibility of Committee:

The Committee has the following responsibility:

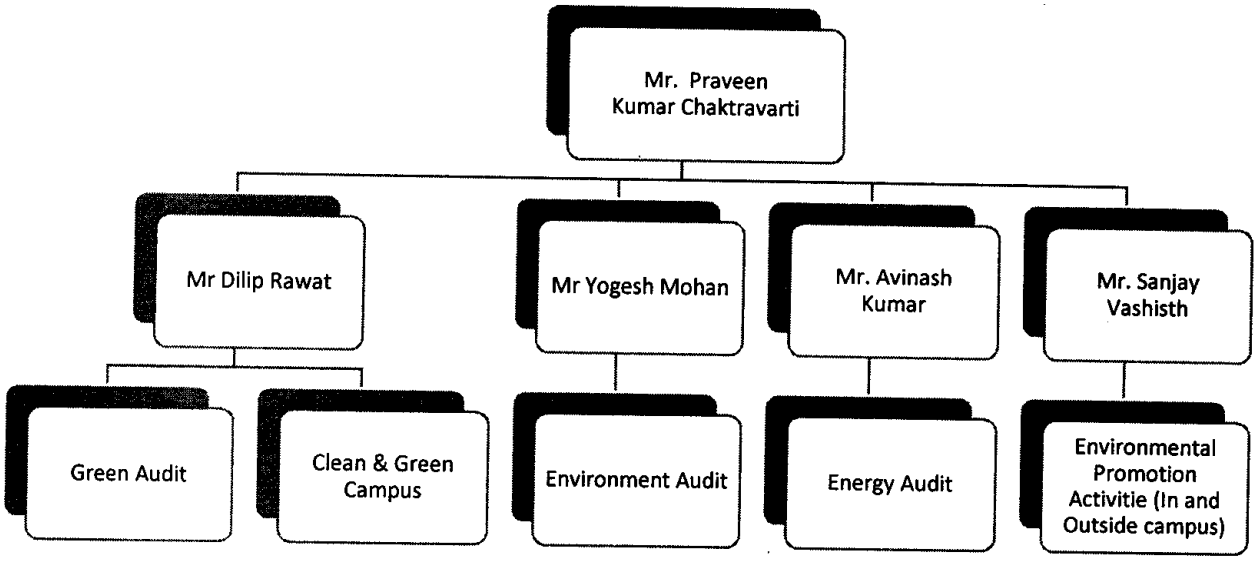
1. To raise environmental awareness among all constituents of the college.
2. To recommend policies for adoption by the college, in order to promote conservation, energy efficiency and sustainable use of resources.
3. To assess the environmental and energy state of the college on a regular basis.
4. Annually all activities/updates about any of the head will informed to the Director Office (for kind perusal).
5. Efforts will be made to organize activities in all sectors viz. Energy, environment, and Green campus.
6. Annually performing internal audits and submission of reports and certifying

based on summary report. (Annexure -A)

Members of Committee:

S.No.	Name	Department
1.	Mr Praveen Kumar Chaktravarti	Head EEM Cell
2.	Mr. Sanjay Vashisth	Registrar
2.	Mr Dilip Rawat	Civil Engineering
3.	Mr Yogesh Mohan	Civil Engineering
4.	Mr. Avinash	Electrical Engineering

Structure of Committee:



Programme Goals: The Institute initiative targets energy consumption reductions by 25% by the Year 2025. The initiative is comprised of seven (7) steps to meet the targeted **2025 goal**. The following represents the Governors initiatives:

(i) Improve Building Operations by energy reduction of 5 percent
(ii) Expand usage of Energy Performance contracting (ESPC)
(iii) Purchase and application of Energy Star Products
(iv) Ensure accountability

Annexure "A"

Periodic Internal Audit:

- To ensure this policy is successfully implemented, internal audits will be conducted periodically by the Committee Members
- Audits will cover all sections of this plan, and all Campus facilities.
- Audit results will be documented and retained by the committee.
- Audit findings will be addressed to Director. (for necessary action, if required)

Three main audits are conducted: **Environmental audits, Energy audits** and **Green audits** (to verify whether the campus meets its stated and functional objectives (such as for water and electricity).

Objectives: The key objectives of an audit therefore are to:

- Determine how well the environmental management systems and equipment are performing, minimize human exposure to risks from environmental, health and safety problems
- Controlling the pollution.
- It also helps in improving the production safety and to making sure the prevention and reduction of the e- waste.
- It also provides performance reviews of working facilities and its possible impact on the surroundings

For the above objectives, emphasis will be given to:

Quality Management: The first topic to be considered for audit is quality management. This is to review how processes are performing, as well as checking to make sure that objectives are clear to achieve the Goal 2025.

Also, issues found and how improvement corresponds to previous corrective actions will be some of the things that will be looked for as well.

Continuous Improvement: The next topic that is analyzed is continuous improvement. In this it has to be assessed that what are the modifications required? How it can be taken to next levels etc

Process Improvement: Process monitoring deals with Ensuring improvements within the process. i.e. measuring the effectiveness of the process, as well as its efficiency.

Process-activity map: