

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School,
Parvati, Pune 411 009 Tel: 09890444795 Email: engress123@gmail.com

UDYAM Regn. No: UDYAM-MH-26-0135636,

MEDA Regn. No: ECN/2023-24/CR-43/1709

ISO: 9001-2015 Certified (Cert No: 23EQKC13),

ISO: 14001-2015 Certified (Cert No: 23EEKW20)



ENVIRONMENTAL AUDIT CERTIFICATE

Certificate No: ES/DBAMA/23-24/03

Date: 22/7/2024

This is to certify that we have conducted Environmental Audit at Shri. Dadasaheb Gavai Charitable Trust, Amravati Education of Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati- 444606, in the Academic year 2023-24.

The College has adopted following Environment Friendly Practices:

- Usage of Energy Efficient LED Fittings
- Segregation of Waste at source
- Provision of Bio Composting Bed, for conversion of Organic Waste
- Implementation of Rain Water Management Project
- Good Internal Road
- Internal Tree Plantation
- Creation of awareness about Plastic Free campus by Display of Posters

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green & Eco Friendly.

For Engress Services,

A Y Mehendale,

B E- Mech, M Tech-Energy, Certified Energy Auditor, EA-8192

ASSOCHAM GEM Certified Professional: GEM: 22/788



ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School,
Parvati, Pune 411 009 Tel: 09890444795 Email: engress123@gmail.com

UDYAM Regn. No: UDYAM-MH-26-0135636,

MEDA Regn. No: ECN/2023-24/CR-43/1709

ISO: 9001-2015 Certified (Cert No: 23EQKC13),

ISO: 14001-2015 Certified (Cert No: 23EEKW20)



ENERGY AUDIT CERTIFICATE

Certificate No: ES/DBAMA/23-24/01

Date: 22/7/2024

This is to certify that we have conducted Energy Audit at Shri. Dadasaheb Gavai Charitable Trust, Amravati Education of Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati 444606, in the Academic year 2023-24.

The College has adopted following Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Maximum usage of Day Lighting

We appreciate the support of Management, involvement of faculty members and students in the process of making the Campus Energy Efficient.

For Engress Services,

A Y Mehendale,

B E-Mechanical, M Tech- Energy

BEE Certified Energy Auditor, EA-8192



ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School,
Parvati, Pune 411 009 Tel: 09890444795 Email: engress123@gmail.com

UDYAM Regn. No: UDYAM-MH-26-0135636,

MEDA Regn. No: ECN/2023-24/CR-43/1709

ISO: 9001-2015 Certified (Cert No: 23EQKC13),

ISO: 14001-2015 Certified (Cert No: 23EEKW20)



GREEN AUDIT CERTIFICATE

Certificate No: ES/DBAMA/23-24/02

Date: 22/7/2024

This is to certify that we have conducted Green Audit at Shri. Dadasaheb Gavai Charitable Trust, Amravati Education of Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati 444606, in the Academic year 2023-24.

The College has adopted following Green & Sustainable Practices:

- Usage of Energy Efficient LED Fittings
- Segregation of Waste at source
- Provision of Bio Composting Bed, for conversion of Organic Waste
- Implementation of Rain Water Management Project
- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp for Divyangajan
- Creation of awareness about Plastic Free campus by Display of Posters

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Engress Services,

A Y Mehendale,

B E- Mech, M Tech-Energy, Certified Energy Auditor, EA-8192

ASSOCHAM GEM Certified Professional: GEM: 22/788



ENERGY AUDIT REPORT

Shri. Dadasaheb Gavai Charitable Trust, Amravati,
Dr. BABASAHEB AMBEDKAR MAHAVIDYALAYA,
Uttam Nagar, Amravati - 444606



Year: 2023-24

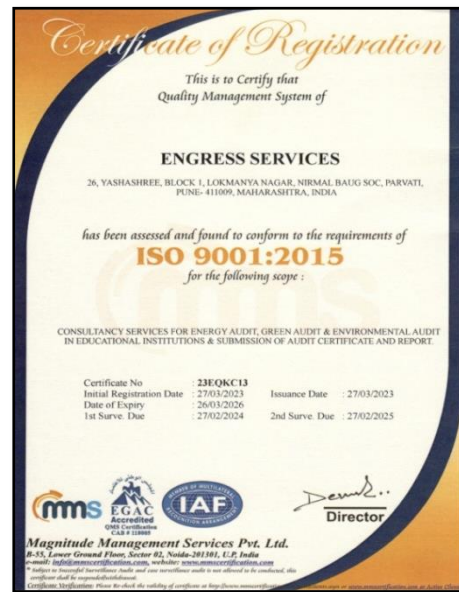
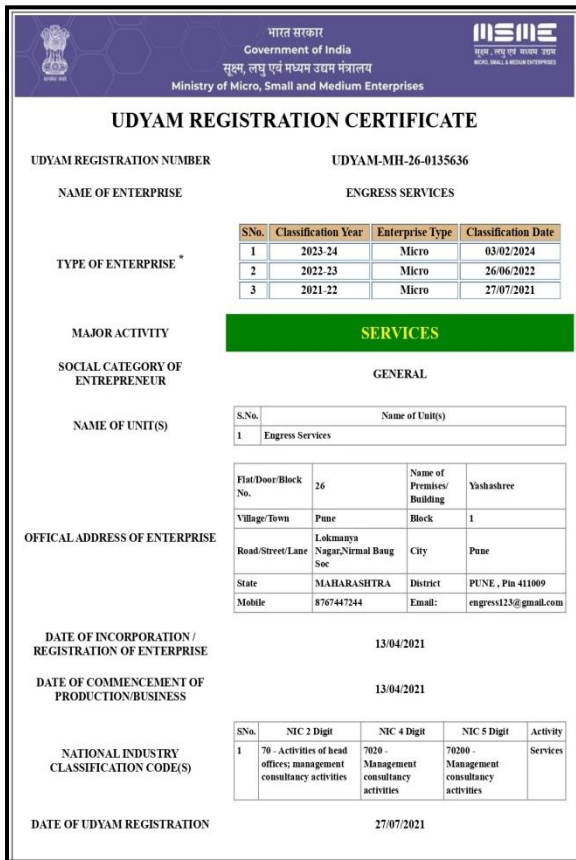
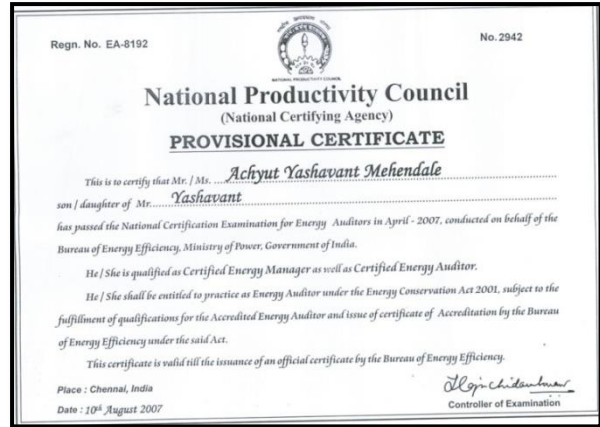
Prepared by:

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society
Near Muktagan English School, Parvati, Pune 411009
Phone: 09890444795 Email: engress123@gmail.com



REGISTRATION CERTIFICATES: BEE, UDYAM, MEDA, ISO-9001 & 14001:



INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	6
1	Introduction	7
2	Study of Connected Load	8
3	Study of Present Energy Consumption	9
4	Study of Energy Performance Index	10
5	Study of Lighting	11
6	Study of Renewable Energy & Energy Efficiency	12

ACKNOWLEDGEMENT

We at Engress Services, Pune, express our sincere gratitude to the management of Shri. Dadasaheb Gavai Charitable Trust, Amravati Education of Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati 444606 for awarding us the assignment of Energy Audit of their campus for the Academic Year: 2023-24.

We are thankful to all the Staff members for helping us during the field study.

EXECUTIVE SUMMARY

1. Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati consumes Energy in the form of Electrical Energy; used for various equipment.

2. Present Connected Load & Energy Consumption:

No	Particulars	Value	Unit
1	Total Connected Load	20	kW
2	Annual Energy Consumed	47126	kWh

3. Per Capita Energy Consumption:

No	Particulars	Value	Unit
1	Total Annual Energy Consumed	47126	kWh
2	Total No of Students	479	Nos
3	Energy Performance Index $= (1) / (2)$	98.38	kWh/Annum

4. Study of % Usage of LED Lighting:

No	Particulars	Value	Unit
1	% of Usage of LED Lighting to Total Lighting Load	74.52	%

5. Renewable Energy & Energy Efficiency Projects:

- Usage of Energy Efficient LED fittings

6. Assumptions:

- 1 kWh of Electrical Energy releases 0.93 Kg of CO₂ into atmosphere

7. References:

- Audit Methodology: www.mahaurja.com
- Energy Conservation Building Code: ECBC-2017: www.beeindia.gov.in
- For CO₂ Emissions: www.ccd.gujarat.gov.in

ABBREVIATIONS

AC	:	Air conditioner
LED	:	Light Emitting Diode
PL	:	Pin Type Light Fitting
kWh	:	kilo-Watt Hour
Qty	:	Quantity
W	:	Watt
kW	:	Kilo Watt
D/L	:	Down Lighter
PC	:	Personal Computer
MT	:	Metric Ton

CHAPTER-I INTRODUCTION

1.1 Introduction:

An Energy Audit is conducted at Shri. Dadasaheb Gavai Charitable Trust, Education of Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati.

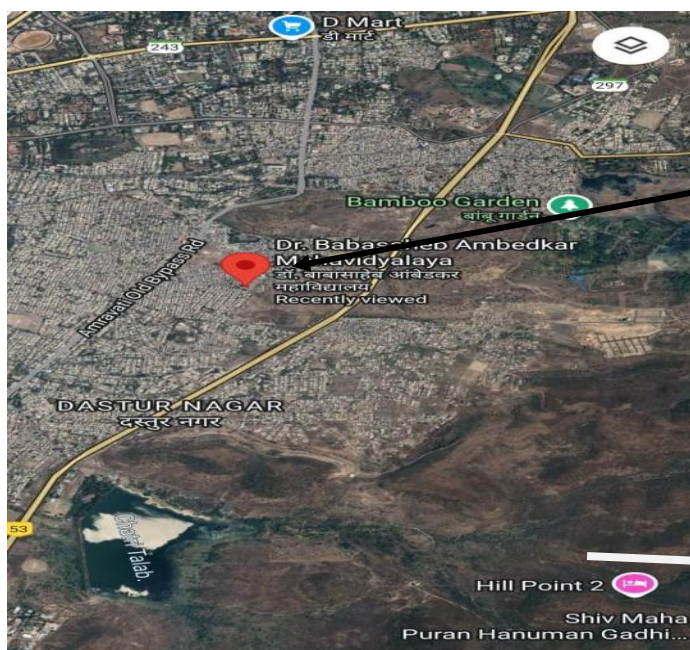
The guidelines followed for conducting the Energy Audit are:

- BEE India's Energy Conservation Building Code: ECBC-2017
- Maharashtra Energy Development Agency (www.mahaurja.com)
- Tata Power: www.tatapower.com

1.2 Key Study Points:

No	Particulars
1	Study of Present Connected Load
2	Study of Present Energy Consumption
3	Study of Per Capita Energy Consumption
4	Study of Lighting
5	Study of Energy Efficiency & Renewable Energy

1.3 College Location Image:



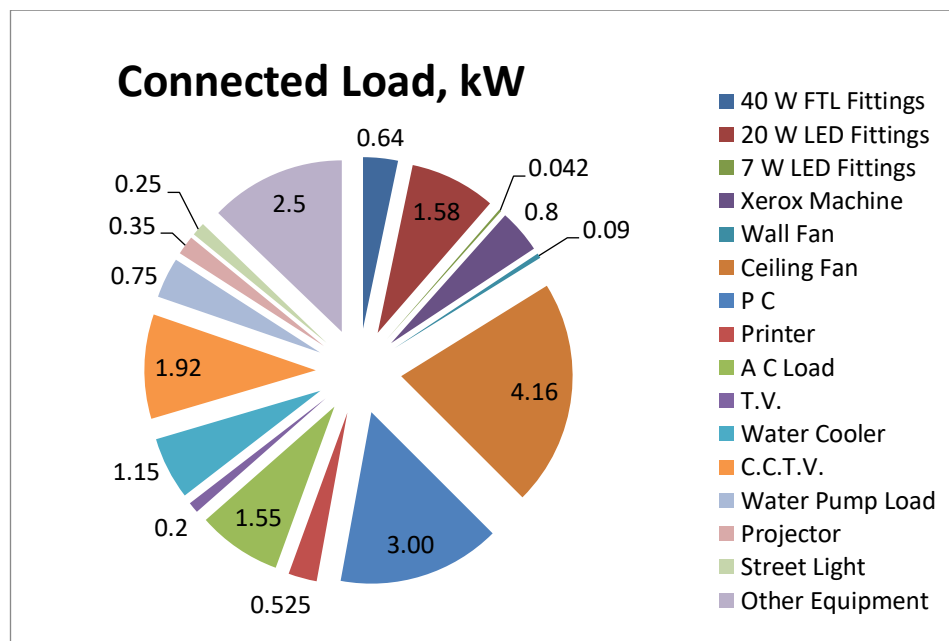
CHAPTER-II STUDY OF CONNECTED LOAD

The major contributors to the connected load of the College include:

Table No 1: Study of Equipment wise Connected Load:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	40 W FTL Fittings	16	40	0.64
2	20 W LED Fittings	79	20	1.58
3	7 W LED Fittings	6	7	0.042
4	Xerox Machine	1	800	0.8
5	Wall Fan	2	45	0.09
6	Ceiling Fan	64	65	4.16
7	P C	20	150	3.00
8	Printer	3	175	0.525
9	A C Load	1	1550	1.55
10	T.V.	1	200	0.2
11	Water Cooler	2	575	1.15
12	C.C.T.V.	16	120	1.92
13	Water Pump Load	1	746	0.75
14	Projector	1	350	0.35
15	Street Light	5	50	0.25
16	Other Equipment	10	250	2.5
17	Total			20

Chart No 1: Study of Connected Load:



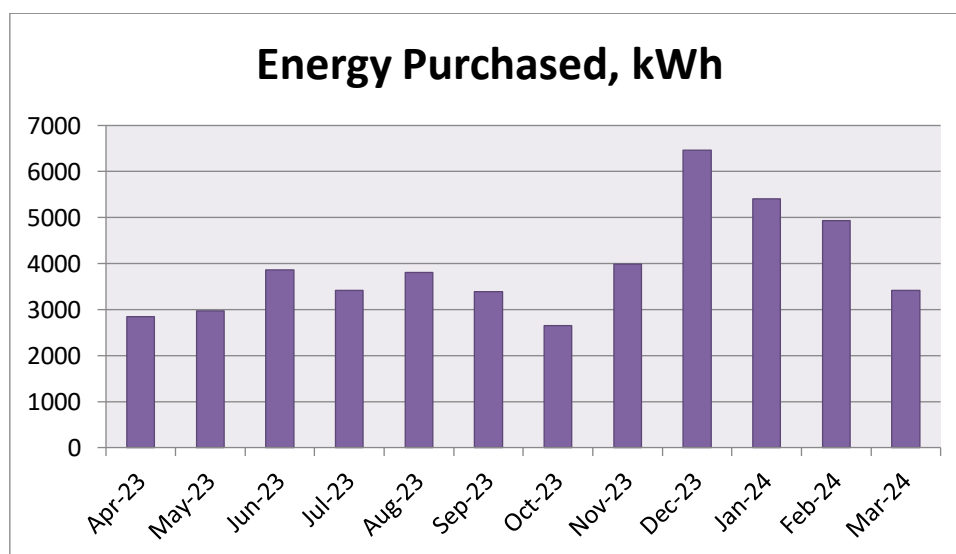
CHAPTER-III STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of Electrical Energy Consumption.

Table No 2: Electrical Energy Consumption Analysis- 2023-24:

No	Month	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Apr-23	2847	2.65
2	May-23	2974	2.77
3	Jun-23	3864	3.59
4	Jul-23	3416	3.18
5	Aug-23	3805	3.54
6	Sep-23	3382	3.15
7	Oct-23	2650	2.46
8	Nov-23	3980	3.70
9	Dec-23	6458	6.01
10	Jan-24	5404	5.03
11	Feb-24	4937	4.59
12	Mar-24	3409	3.17
13	Total	47126	43.83
14	Maximum	6458	6.01
15	Minimum	2650	2.46
16	Average	3927.17	3.65

Chart No 2: Variation in Monthly Energy Purchased, kWh:



CHAPTER-IV

STUDY OF PER CAPITA ENERGY CONSUMPTION

Per Capita Energy Consumption Index: Per Capita Energy Consumption Index of an educational Institute/College is its Annual Energy Consumption in Kilo Watt Hours per student studying in the Institute/College.

It is determined by:

$$\text{Per Capita Energy Consumption Index} = \frac{\text{Annual Energy Consumption in kWh}}{\text{(Total No of students studying)}}$$

Now we compute the EPI for the College as under:

Table No 3: Computation of Energy Performance Index:

No	Particulars	Value	Unit
1	Total Annual Energy Consumed	47126	kWh
2	Total No of Students	479	Nos
3	Energy Performance Index =(1) / (2)	98.38	kWh/Annum

CHAPTER-V

STUDY OF LIGHTING

Terminology:

1. **Lumen** is a unit of light flow or luminous flux. The lumen rating of a lamp is a measure of the total light output of the lamp. The most common measurement of light output (or luminous flux) is the lumen. Light sources are labeled with an output rating in lumens.

2. **Lux** is the metric unit of measure for illuminance of a surface. One lux is equal to one lumen per square meter.

3. **Circuit Watts** is the total power drawn by lamps and ballasts in a lighting circuit under assessment.

4. **Installed Load Efficacy** is the average maintained illuminance provided on a horizontal working plane per circuit watt with general lighting of an interior. Unit: lux per watt per square metre (lux/W/m²)

5. **Lamp Circuit Efficacy** is the amount of light (lumens) emitted by a lamp for each watt of power consumed by the lamp circuit, i.e. including control gear losses. This is a more meaningful measure for those lamps that require control gear. Unit: lumens per circuit watt (lm/W)

Table No 4: Percentage Usage of LED Lighting to Total Lighting Load:

No	Particulars	Value	Unit
1	No of 40 W FTL Fittings	16	Nos
2	Load/Unit of 40 W FTL Fitting	40	W/unit
3	Total Load of 40 W FTL Fitting	0.64	kW
4	No of 20 W LED Fittings	79	Nos
5	Load/Unit of 20 W LEDL Fitting	20	W/unit
6	Total Load of 20 W LED Fitting	1.58	kW
7	No of 7 W LED Fittings	6	Nos
8	Load/Unit of 16 W LEDL Fitting	7	W/unit
9	Total Load of 16 W LED Fitting	0.042	kW
10	No of 50 W LED Fittings	5	Nos
11	Load/Unit of 50 W LEDL Fitting	50	W/unit
12	Total Load of 50 W LED Fitting	0.25	kW
13	Total LED Lighting Load=6+9+12	1.87	kW
14	Total Lighting Load= 3+6+9+12	2.51	kW
15	% of LED to Total Lighting Load= $13*100/14$	74.52	%

CHAPTER-VI

STUDY OF RENEWABLE ENERGY & ENERGY EFFICIENCY

6.1 Usage of Renewable Energy:

The College has yet to install Roof Top Solar PV Plant.

6.2 Energy Efficiency Measures adopted:

- The College has Energy Efficient LED Fittings.

Photographs of LED Lighting:



ENVIRONMENTAL AUDIT REPORT

Shri. Dadasaheb Gavai Charitable Trust, Amravati,
Dr. BABASAHEB AMBEDKAR MAHAVIDYALAYA,
Uttam Nagar, Amravati - 444606



Year: 2023-24


Prepared by:

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society
Near Muktagan English School, Parvati, Pune 411009
Phone: 09890444795 Email: engress123@gmail.com



Registration Certificates: UDYAM, MEDA, ASSOCHAM GEM-CP, ISO: 9001 & 14001:


 भारत सरकार
 Government of India
 सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय
 Ministry of Micro, Small and Medium Enterprises

UDYAM REGISTRATION CERTIFICATE

UDYAM REGISTRATION NUMBER: UDYAM-MH-26-0135636

NAME OF ENTERPRISE: ENGRESS SERVICES

SNo.	Classification Year	Enterprise Type	Classification Date
1	2023-24	Micro	03/02/2024
2	2022-23	Micro	26/06/2022
3	2021-22	Micro	27/07/2021

TYPE OF ENTERPRISE: SERVICES

MAJOR ACTIVITY: SERVICES

SOCIAL CATEGORY OF ENTREPRENEUR: GENERAL

NAME OF UNIT(S):

S.No.	Name of Unit(s)
1	Engress Services

Flat/Door/Block No.	Name of Premises/ Building	Village/Town	Block
26	Yashashree	Pune	1

OFFICIAL ADDRESS OF ENTERPRISE:

Road/Street/Lane No.	City	State	Pin
Lokmanya Nagar, Nirmal Baug Soc	Pune	MAHARASHTRA	PUNE, Pin 411069

DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE: 13/04/2021

DATE OF COMMENCEMENT OF PRODUCTION/BUSINESS: 13/04/2021

S.No.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
1	70 - Activities of head offices; management consultancy activities	7020 - Management consultancy activities	70200 - Management consultancy activities	Services

NATIONAL INDUSTRY CLASSIFICATION CODE(S):

DATE OF UDYAM REGISTRATION: 27/07/2021




 MAHARASHTRA ENERGY DEVELOPMENT AGENCY
 Maharashtra Energy Development Agency
 (Government of Maharashtra Institution)
 Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary,
 Aundh, Pune, Maharashtra 411067
 Ph No: 020-35000450
 Email: ee@maharaja.com, Web: www.maharaja.com

ECN/2022-23/CR-43/1709 10th May, 2022

CERTIFICATE OF REGISTRATION FOR CLASS 'A'

We hereby certify that, the firm having following particulars is registered with MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA) under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

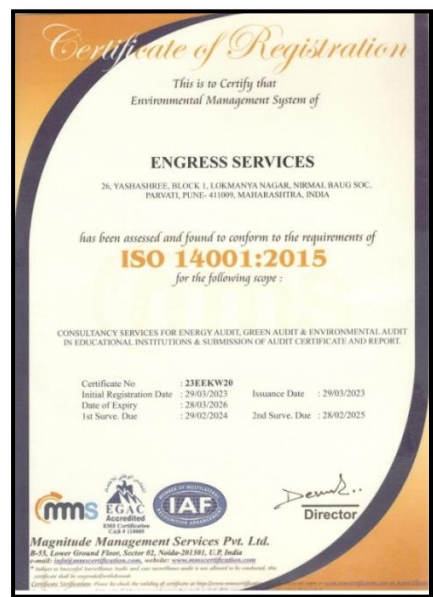
Name and Address of the firm : M/s Engress Services
Yashashree, 26, Nirmal Bag Society,
Near Mukhtangan English School,
Parvati, Pune - 411 009.

Registration Category : Empanelled Consultant for Energy Conservation Programme for Class 'A'

Registration Number : MEDA/ECN/2022-23/Class A/E-A-32.

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empanelment is valid till 09th May, 2024 from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.


 General Manager (EC)



INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	7
1	Introduction	8
2	Study of Resource Consumption & CO ₂ Emission	9
3	Study of Usage of Renewable Energy	11
4	Study of Indoor Air Quality	12
5	Study of Indoor Lux & Noise Parameters	13
6	Study of Rain Water Management	14
7	Study of Waste Management	15
8	Study of Eco Friendly Practices	16

ACKNOWLEDGEMENT

We at Engress Services, Pune, express our sincere gratitude to the management of Shri. Dadasaheb Gavai Charitable Trust, Amravati of Education, Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar Amravati-444606, for awarding us the assignment of Environmental Audit of their campus for the Academic Year: 2023-24.

We are thankful to all the Staff members for helping us during the field study.

EXECUTIVE SUMMARY

1. **Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati** consumes Energy in the form of **Electrical Energy**; used for various equipment.

2. Pollution due to College Activities:

- **Air pollution:** Mainly CO₂ on account of Electricity Consumption
- **Solid Waste:** Bio degradable Garden Waste, Paper & Plastic Waste
- **Liquid Waste:** Human liquid waste

3. Present Energy Consumption & CO₂ Emission:

No	Particulars	Value	Unit
1	Annual Energy Consumed	47126	kWh
2	Annual CO ₂ Emissions	43.83	MT

4. Usage of Renewable Energy:

- The College has yet to installed Roof Top Solar PV Plant.

5. Indoor Air Quality Parameters:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	45	49	60
2	Minimum	75	46	54

6. Indoor Lux & Noise Level Parameters:

No	Parameter/Value	Lux Level	Noise Level, dB
1	Maximum	236	45.6
2	Minimum	215	43.9

7. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Organic Waste	Provision of Bio Composting Bed
3	E Waste	Disposed of by the Parent Society

8. Rain Water Management:

The Rain water falling on terrace is collected through Pipe and is used to increase the underground water table.

9. Environment Friendly Initiatives:

- Tree Plantation in the campus.
- Creation of awareness on Plastic Free Campus by Display of Posters

10. Assumptions:

- **1 kWh** of Electrical Energy releases **0.93 Kg of CO₂** into atmosphere

11. References:

- For CO₂ Emissions: www.ccd.gujarat.gov.in
- For Various Indoor Air Parameters: www.ishrae.com
- For AQI & Water Quality Standards: www.cpcb.com

ABBREVIATIONS

kWh	:	kilo-Watt Hour
Qty	:	Quantity
MT	:	Metric Ton
CO ₂	:	Carbon Di Oxide
kWp	:	Kilo Watt Peak
AQI	:	Air Quality Index
PM2.5	:	Particulate Matter of Size 2.5 microns
PM 10	:	Particulate Matter of Size 10 microns
CPCB	:	Central Pollution Control Board
ISHARE	:	The Indian Society of Heating & Refrigerating & Air Conditioning Engineers

CHAPTER-I INTRODUCTION

1. Important Definitions:

1.1. Environment: Definition as per environment Protection Act: 1986

Environment includes water, air and land and the inter-relationship which exists among and between Water, Air, Land and Human beings, other living creatures, plants microorganism and property

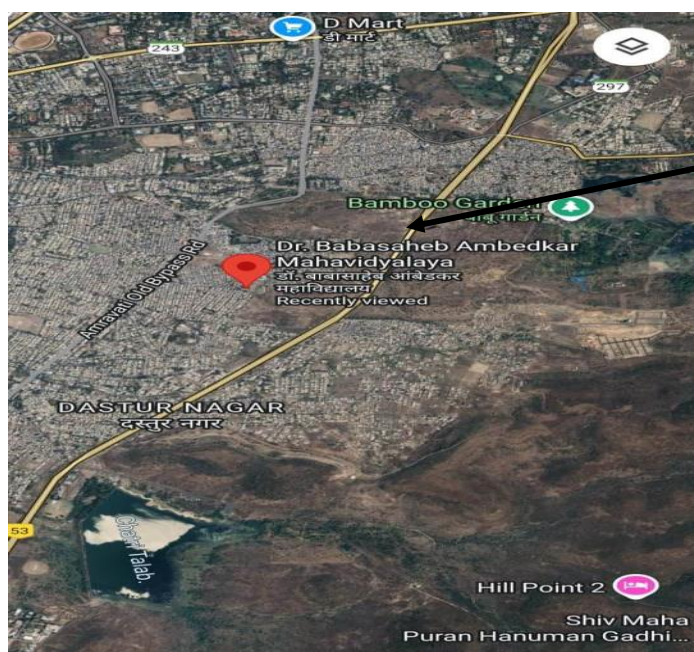
1.2. Environmental Audit: Definition:

According to UNEP, 1990, "Environmental audit can be defined as a management tool comprising systematic, documented and periodic evaluation of how well environmental organization management and equipment are performing with an aim of helping to regularize the environment

1.2 Key Study Points:

No	Particulars
1	Study of Present Resource Consumption & CO ₂ Emission
2	Study of Usage of Renewable Energy
3	Study of Indoor Air Quality
4	Study of Indoor Lux & Noise Level
5	Study of Water Management
6	Study of Waste Management Practices
7	Study of Environment Friendly Practices

1.3 College Location Image:



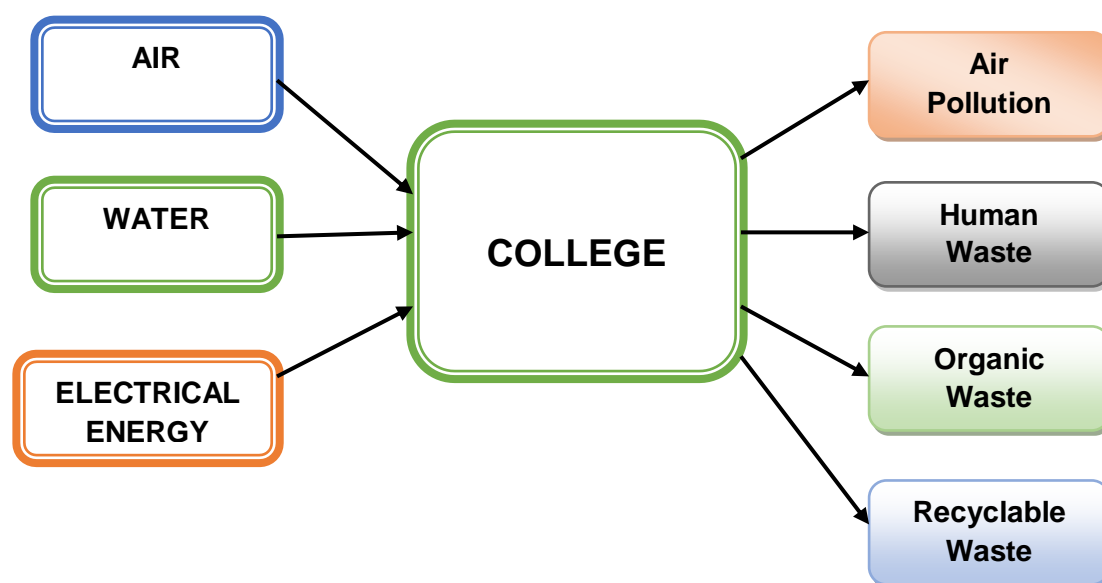
CHAPTER-II STUDY OF RESOURCE CONSUMPTION & CO₂ EMISSION

The College consumes following basic/derived Resources:

1. Air
2. Water
3. Electrical Energy

We try to draw a schematic diagram for the College System & Environment as under.

Chart No 1: Representation of Resource Requirement & Waste of a College:



Now we compute the Generation of CO₂ on account of consumption of Electrical Energy. The basis of Calculation for CO₂ emissions due to Electrical Energy is as under.

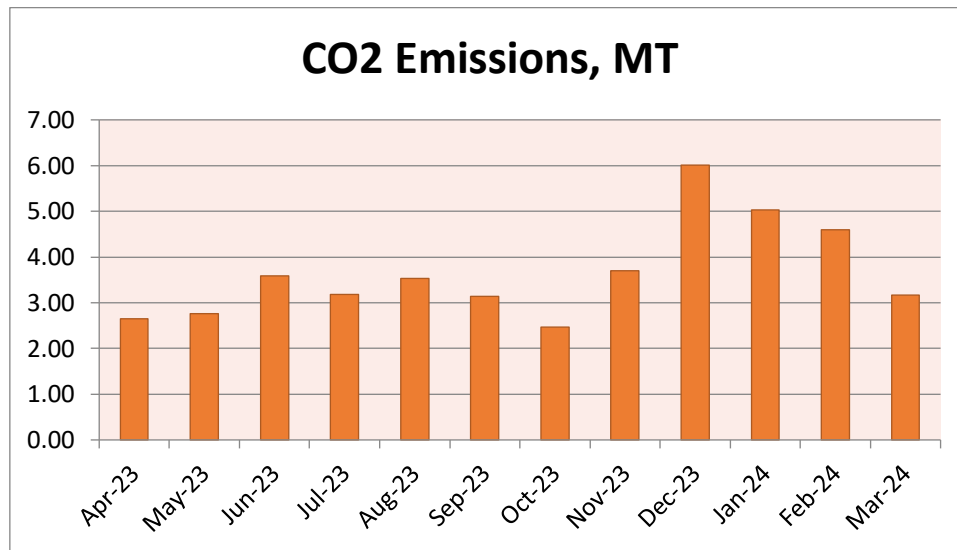
- **1 kWh** of Electrical Energy releases **0.93 Kg of CO₂** into atmosphere

Table No 1: Study of Purchase of Energy & CO₂ Emissions: 2023-24:

No	Month	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Apr-23	2847	2.65
2	May-23	2974	2.77
3	Jun-23	3864	3.59
4	Jul-23	3416	3.18
5	Aug-23	3805	3.54
6	Sep-23	3382	3.15
7	Oct-23	2650	2.46

8	Nov-23	3980	3.70
9	Dec-23	6458	6.01
10	Jan-24	5404	5.03
11	Feb-24	4937	4.59
12	Mar-24	3409	3.17
13	Total	47126	43.83
14	Maximum	6458	6.01
15	Minimum	2650	2.46
16	Average	3927.17	3.65

Chart No 2: Month wise CO₂ Emissions:



CHAPTER III

STUDY OF USAGE OF RENEWABLE ENERGY

The College has yet to install a Roof Top Solar PV Plant.

CHAPTER IV STUDY OF INDOOR AIR QUALITY

1. Air: The common name given to the atmospheric gases used in breathing and photosynthesis.

2. Air quality is a measure of the suitability of air for breathing by people, plants and animals.

3. Air Quality Index: Air Quality Index (AQI) is a number used by government agencies to measure the **Air Pollution** levels and communicate it to the population.

In this Chapter, we present three important Parameters: **AQI**- Air Quality Index, **PM-2.5**- Particulate Matter of Size 2.5 micron and **PM-10**- Particulate Matter of Size 10 micron

Table No 2: Indoor Air Quality Parameters:

No	Location	AQI	PM2.5	PM10
1	Principal Cabin	45	21	47
2	Admin Office	45	21	47
3	Class Room	31	14	33
4	Staff Room	45	21	47
5	Library	45	21	47
	Maximum	45	21	47
	Minimum	31	14	33

Table No 3: Air Quality Index Values & Concentration of PM 2.5 & PM10: (By CPCB):

No	Category	AQI Value	Concentration Range, PM 2.5	Concentration Range, PM 10
1	Good	0 to 50	0 to 30	0 to 50
2	Satisfactory	51 to 100	31 to 60	51 to 100
3	Moderately Polluted	101 to 200	61 to 90	101 to 250
4	Poor	201 to 300	91 to 120	251 to 350
5	Very Poor	301 to 400	121 to 250	351 to 430
6	Severe	401 to 500	250 +	430 +

Conclusion:

From the above measured values, we conclude that the observed values of AQI, PM-2.5 & PM-10 are in the **Good Range**, as per the guidelines given by Central Pollution Control Board.

CHAPTER V STUDY OF INDOOR LUX & NOISE PARAMETERS

In this Chapter, we present the various Indoor Comfort Parameters measured during the Audit. The Parameters include: **Lux Level and Noise Level.**

Table No 4: Study of Indoor Comfort Condition Parameters:

No	Location	Lux Level, Lumen	Noise Level, dB
1	Principal Cabin	256	45.9
2	Admin Office	235	44.3
3	Class Room	236	45
4	Staff Room	218	43.4
5	Library	226	43
	Maximum	256	45.9
	Minimum	218	43

Recommended Lux & Noise Level: As per BEE & ISHRAE Guidelines:

A) Noise Level Reference:		
No	Location	Noise Level Range, dB
1	Offices	45-50
2	Occupied Class Room	40-45
3	Libraries	35-40
B) Reference Lux Level, Lumens:		
1	For Class Rooms	200 Plus
2	For Reading Rooms	200 Plus

Conclusion:

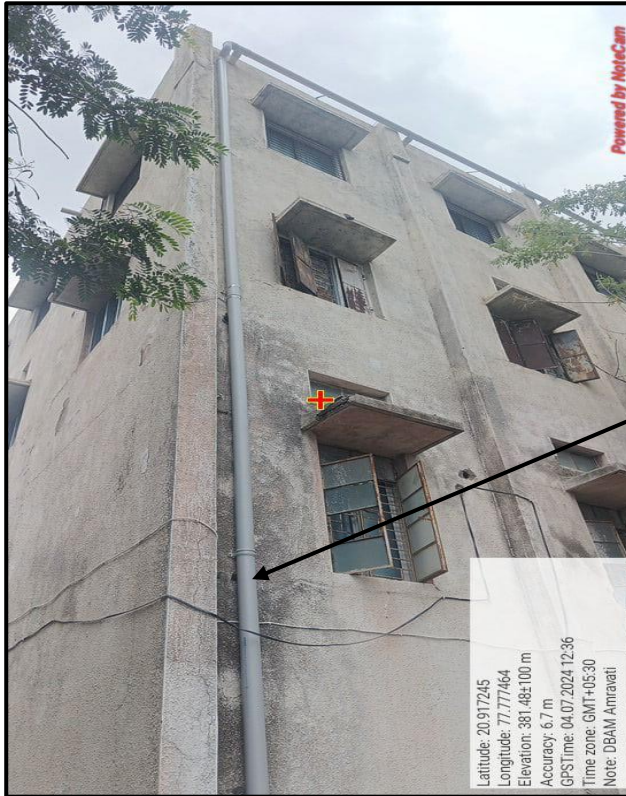
From the above measured values, we conclude that:

- The Noise Level is within the prescribed Limit
- The Lux Level at various locations is Okay

CHAPTER VI STUDY OF RAIN WATER MANAGEMENT

The College has installed Rain Water Management Project; the Rain Water from the terrace is collected through Pipes and is used to increase the Underground Water Table.

Photograph of Rain Water Collecting Pipe Section:






**Rain Water
Collecting Pipe**

CHAPTER-VII STUDY OF WASTE MANAGEMENT

In this Chapter, we present the Waste Management Practices, followed by the College.



Details of Waste Management Practices:

No	Head	Observation	Photograph
1	Solid Waste	Segregation of Waste at Source: Provision of Waste Collection Bins	<p>Waste Collection Bin:</p>  <p>Latitude: 20.516416 Longitude: 77.770919 Altitude: 374.0 meter Accuracy: 14.8921 m Date: 07/19/2024 12:16 PM GPS Time: 04/07/2024 12:16 Time zone: GMT+05:30 Note: DBAM Amravati</p>
2	Organic Waste	Provision of Bio Composting Bed: For conversion into Bio Compost	<p>Bio Composting Bed:</p>  <p>Note: cam lite Address: Juri Kotwali,Amravati,Maharashtra,India Latitude: 20.5175526° Longitude: 77.7709199° Altitude: 374.0 meter Date: 07/19/2024 12:33 PM Accuracy: 3.3900925 meter Time zone: GMT+05:30 Note: Compost Bed</p>
3	E Waste	Provision of E Waste Collection Bin & disposal through Parent Society	<p>Photograph of E Waste Collection Bin</p>  <p>Note: cam lite Address: Juri Kotwali,Amravati,Maharashtra,India Latitude: 20.5172001° Longitude: 77.7720639° Altitude: 374.0 meter Date: 07/19/2024 12:08 PM Accuracy: 4.780149 meter Time zone: GMT+05:30 Note: E waste bin</p>

CHAPTER-VIII STUDY OF ENVIRONMENT FRIENDLY PRACTICES

In this Chapter, we present the Eco Friendly Practices, followed by the College.

Details of Eco Friendly Practices:

No	Head	Observation	Photograph
1	Tree Plantation	Tree Plantation in the Campus	<p>Internal Tree Plantation:</p> 
2	Creation of Awareness among Stake Holders	Display of Poster on Plastic Free Campus	<p>Poster on Plastic Free Campus:</p> 

GREEN AUDIT REPORT

Shri. Dadasaheb Gavai Charitable Trust, Amravati,
Dr. BABASAHEB AMBEDKAR MAHAVIDYALAYA,
Uttam Nagar, Amravati - 444606




Prepared by:

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society
Near Mukhtangan English School, Parvati, Pune 411009
Phone: 09890444795 Email: engress123@gmail.com



Registration Certificates: UDYAM, MEDA, ASSOCHAM GEM-CP, ISO: 9001 & 14001:


 भारत सरकार
 Government of India
 सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय
 Ministry of Micro, Small and Medium Enterprises

UDYAM REGISTRATION CERTIFICATE

UDYAM REGISTRATION NUMBER: UDYAM-MH-26-0135636

NAME OF ENTERPRISE: ENGRESS SERVICES

SNo.	Classification Year	Enterprise Type	Classification Date
1	2023-24	Micro	03/02/2024
2	2022-23	Micro	26/06/2022
3	2021-22	Micro	27/07/2021

TYPE OF ENTERPRISE: SERVICES

MAJOR ACTIVITY: SERVICES

SOCIAL CATEGORY OF ENTREPRENEUR: GENERAL

NAME OF UNIT(S):

S.No.	Name of Unit(s)
1	Engress Services

Flat/Door/Block No.	26	Name of Premises/ Building	Yashashree
Village/Town	Pune	Block	1
Road/Street/Lane	Lokmanya Nagar, Nirmal Baug Soc.	City	Pune
State	MAHARASHTRA	District	PUNE, Pin 411069
Mobile	8767447244	Email:	engress123@gmail.com

OFFICIAL ADDRESS OF ENTERPRISE

DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE: 13/04/2021

DATE OF COMMENCEMENT OF PRODUCTION/BUSINESS: 13/04/2021

S.No.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
1	70 - Activities of head offices; management consultancy activities	7020 - Management consultancy activities	70200 - Management consultancy activities	Services

NATIONAL INDUSTRY CLASSIFICATION CODE(S)

DATE OF UDYAM REGISTRATION: 27/07/2021




 MAHARASHTRA ENERGY DEVELOPMENT AGENCY
 Maharashtra Energy Development Agency
 (Government of Maharashtra Institution)
 Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary,
 Aundh, Pune, Maharashtra 411067
 Ph No: 020-35000450
 Email: ee@maharaja.com, Web: www.maharaja.com

ECN/2022-23/CR-43/1709 10th May, 2022

CERTIFICATE OF REGISTRATION FOR CLASS 'A'

We hereby certify that, the firm having following particulars is registered with MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA) under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

Name and Address of the firm : M/s Engress Services
Yashashree, 26, Nirmal Bag Society,
Near Mukhtangan English School,
Parvati, Pune - 411 009.

Registration Category : Empanelled Consultant for Energy Conservation Programme for Class 'A'

Registration Number : MEDA/ECN/2022-23/Class A/E-A-32.

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empanelment is valid till 09th May, 2024 from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

General Manager (EC)



INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	6
1	Introduction	7
2	Study of Energy Consumption & CO ₂ Emission	8
3	Study of Usage of Renewable Energy	9
4	Study of Waste Management	10
5	Study of Rain Water Management	11
6	Study of Green & Sustainable Practices	12
	Annexure	
I	List of Trees & Plants	13

ACKNOWLEDGEMENT

We at Engress Services, Pune, express our sincere gratitude to the management of Shri. Dadasaheb Gavai Charitable Trust, Amravati of Education, Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati 444606, for awarding us the assignment of Green Audit of their campus for the Academic Year: 2023-24.

We are thankful to all the Staff members for helping us during the field study.

EXECUTIVE SUMMARY

1. Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati consumes Energy in the form of Electrical Energy; used for various equipment.

2. Present Energy Consumption & CO₂ Emission:

No	Particulars	Value	Unit
1	Annual Energy Purchased	47126	kWh
2	Annual CO ₂ Emissions	43.83	MT

3. Usage of Renewable Energy:

- The College has yet to install Roof Top Solar PV Plant.

4. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Organic Waste	Provision of Bio Composting Bed
3	E Waste	Disposed of by the Parent Society

5. Rain Water Management:

The College has installed Rain Water Management Project; the Rain Water from the terrace is collected through Pipes and is used to increase the underground Water Table.

6. Green & Sustainable Practices:

- Maintenance of good Internal Road
- Tree Plantation in the campus.
- Provision of Ramp for Divyangajan
- Creation of awareness on Plastic Free Campus by Display of Posters

7. Assumptions:

- 1 kWh of Electrical Energy releases 0.93 Kg of CO₂ into atmosphere

8. Reference:

- For CO₂ Emissions: www.ccd.gujarat.gov.in

ABBREVIATIONS

BEE	Bureau of Energy Efficiency
kWh	Kilo Watt Hour
LPD	Liters Per Day
Kg	Kilo Gram
MT	Metric Ton
CO ₂	Carbon Di Oxide
Qty	Quantity

CHAPTER-I INTRODUCTION

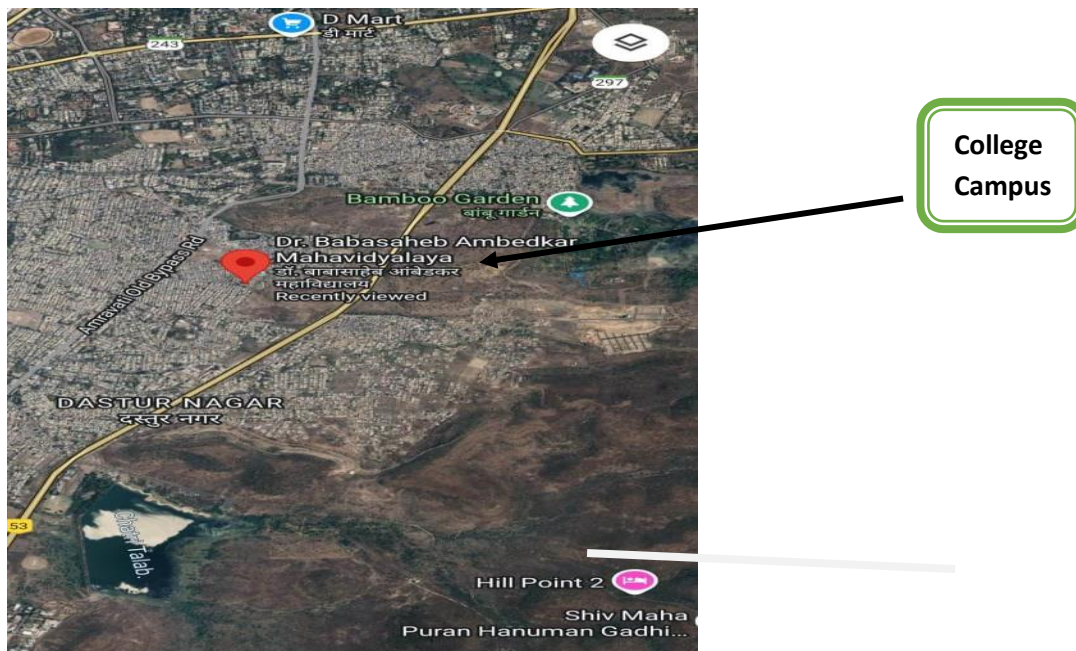
1.1 Introduction:

A Green Audit is conducted at Shri. Dadasaheb Gavai Charitable Trust, Amravati of Education, Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati 444606.

1.2 Key Study Points:

No	Particulars
1	Study of Present Energy Consumption & CO ₂ Emission
2	Study of Usage of Renewable Energy
3	Study of Waste Management Practices
4	Study of Rain Water Management
5	Study of Green & Sustainable Initiatives

1.3 College Location Image:



CHAPTER-II

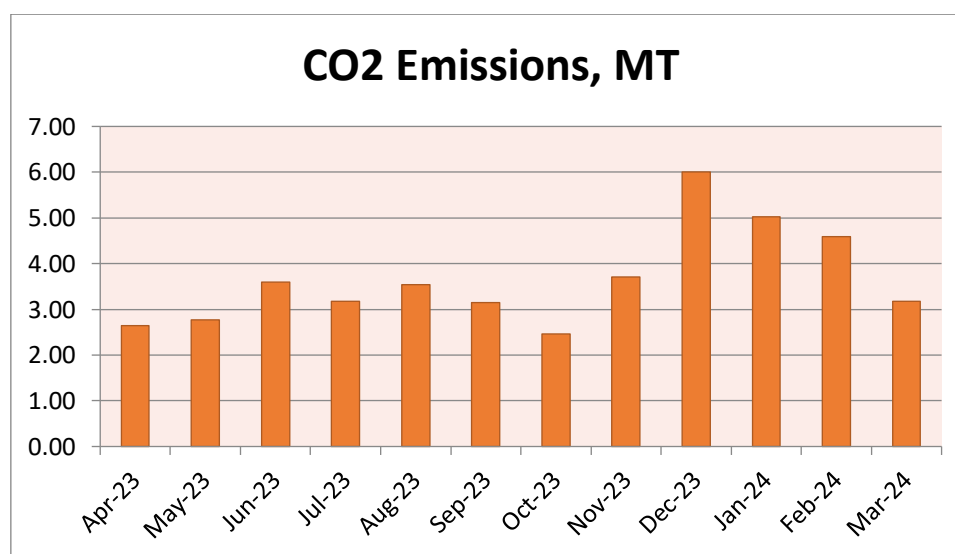
STUDY OF ENERGY CONSUMPTION & CO₂ EMISSION

A **Carbon Foot print** is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO₂ Emissions: 1 kWh of Electrical Energy releases 0.93 Kg of CO₂ into atmosphere.**

Table No 1: Month wise Energy Consumption & CO₂ Emissions:

No	Month	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Apr-23	2847	2.65
2	May-23	2974	2.77
3	Jun-23	3864	3.59
4	Jul-23	3416	3.18
5	Aug-23	3805	3.54
6	Sep-23	3382	3.15
7	Oct-23	2650	2.46
8	Nov-23	3980	3.70
9	Dec-23	6458	6.01
10	Jan-24	5404	5.03
11	Feb-24	4937	4.59
12	Mar-24	3409	3.17
13	Total	47126	43.83
14	Maximum	6458	6.01
15	Minimum	2650	2.46
16	Average	3927.17	3.65

Chart No 1: Month wise CO₂ Emissions:



CHAPTER III



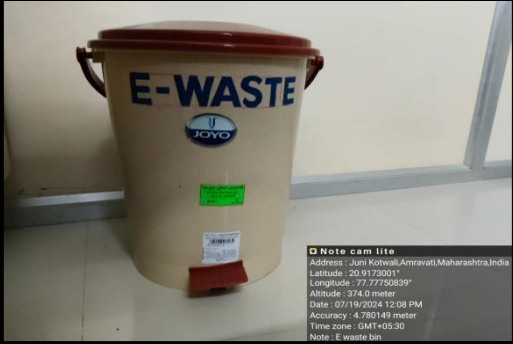
STUDY OF USAGE OF RENEWABLE ENERGY

The College has yet to install Roof Top Solar PV Plant.

CHAPTER IV STUDY OF WASTE MANAGEMENT

In this Chapter, we present the Waste Management Practices, followed by the College.

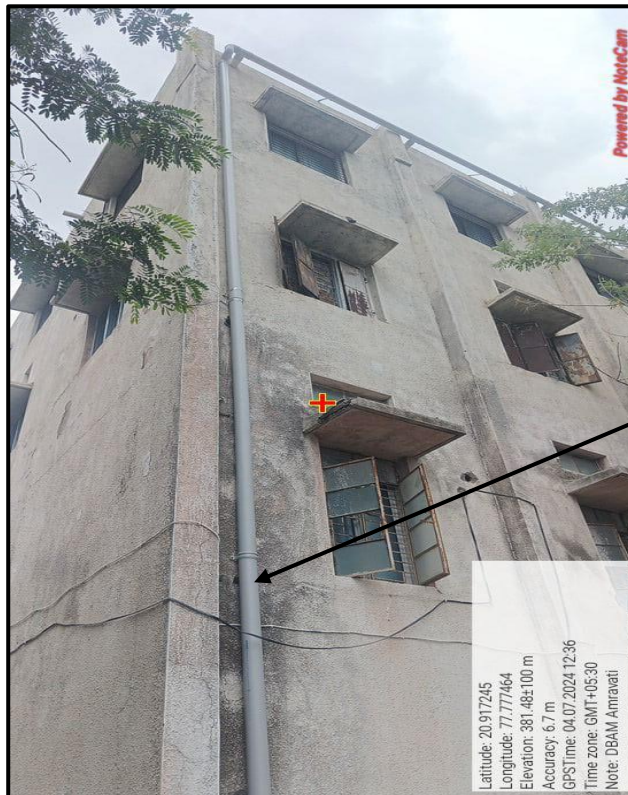
Details of Waste Management Practices:

No	Head	Observation	Photograph
1	Solid Waste	Segregation of Waste at Source: Provision of Waste Collection Bins	<p>Waste Collection Bin:</p>  <p>Latitude: 20.91996 Longitude: 77.77778 Elevation: 165.99100 m Accuracy: 16.0770041217 Date: 07/19/2024 12:17 PM Time zone: GMT+05:30 Note: BSAM Amravati</p>
2	Organic Waste	Provision of Bio Composting Bed: For conversion into Bio Compost	<p>Bio Composting Bed:</p>  <p>Note cam lite Address: Juni Kothwali,Amravati,Maharashtra,India Latitude: 20.9175526 Longitude: 77.7701998 Altitude: 164.0 meter Date: 07/19/2024 12:03 PM Accuracy: 3.7500925 meter Time zone: GMT+05:30 Note: Compost Bed</p>
3	E Waste	Provision of E Waste Collection Bin & disposal through Parent Society	<p>Waste Collection Bin</p>  <p>Note cam lite Address: Juni Kothwali,Amravati,Maharashtra,India Latitude: 20.9172001 Longitude: 77.7729399 Altitude: 374.0 meter Date: 07/19/2024 12:08 PM Accuracy: 4.780149 meter Time zone: GMT+05:30 Note: E waste bin</p>

CHAPTER-V STUDY OF RAIN WATER MANAGEMENT

The College has installed Rain Water Management Project; the Rain Water from the terrace is collected through Pipes and is used to increase the Underground Water Table.

Photograph of Rain Water Collecting Pipe Section:



Rain Water
Collecting Pipe

CHAPTER-VI STUDY OF GREEN & SUSTAINABLE PRACTICES

In this Chapter, we present the Green & Sustainable Practices followed by the College.

Green & Sustainable Practices:

No	Head	Observation	Photograph
1	Easy Movement of Stake Holders	Provision of Good Internal Road within the Campus	<p>Internal Road:</p>  <p>Latitude: 20.917518 Longitude: 77.777471 Elevation: 205.48±100 m Accuracy: 116.1 m GPSTime: 04.07.2024 12:37 Time zone: GMT+05:30 Note: DBAM Amravati</p>
2	Tree Plantation	Internal Tree Plantation in the Campus	<p>Internal Tree Plantation:</p>  <p>Latitude: 20.917554 Longitude: 77.777773 Elevation: 375.08±46 m Accuracy: 18.0 m GPSTime: 04.07.2024 12:30 Time zone: GMT+05:30 Note: DBAM Amravati</p>
3	Facilities for Divyangajan	Provision of Ramp for Divyangajan	<p>Ramp for Divyangajan:</p>  <p>Latitude: 20.917674 Longitude: 77.771405 Altitude: 311.3±45 m Accuracy: 36.6 m GPSTime: 04.07.2024 12:29 Time zone: GMT+05:30 Note: DBAM Amravati</p>
4	Creation of Awareness among Stake Holders	Display of Poster on Plastic Free Campus	<p>Poster on Plastic Free Campus:</p>  <p>Note cam lite Address : Juni Kotwali,Amravati,Maharashtra,India Latitude : 20.91741025° Longitude : 77.7771058°</p>

ANNEXURE-I DETAILS OF TREES IN THE CAMPUS

1. List of Trees:

No	Botanical Name	No	Botanical Name
1	Prunus dulcis	31	Ehretia laevis roxb
2	Saraca asoca	32	Murraya koenigii
3	Ficus religiosa	33	Caesalpinia pulcherriima
4	Azadirachta indica	34	Areca catechu
5	Lawsonia inermis	35	Cycas
6	Thura orientalis	36	Chukrasia tabularis
7	Cocos nucifera	37	Sprengeri asparagus
8	Delonix refia	38	Stercuila foetida
9	Syzygium cumini	39	Rhododendron championiae
10	Catharanthus	40	Ocimum bascillium
11	Terminalia Catappa	41	Cissus verticillata
12	Punica granatum	42	Ficus benjamina
13	Ficus benghalensis	43	Century plant
14	Aloe barbadensis miller	44	Allamanda schoti
15	Rosa rubiginosa	45	Plant Govindi trees greenverz
16	Plumbago zeylanica	46	Zamioculcas black raven
17	Mangifera indica	47	Schefflera plant
18	Nyctanthes arbor-tristis	48	Croton plant codiaeum
19	Musa	49	Croton plant
20	Myroxylon balsamum pereirae	50	Ornamental plant well drained aloe barbadensis
21	Mimusops elengilinn	51	Crossandra infundibuliformis
22	Leucaena leucocephala L de cuit	52	Green ficus
23	Phyllanthus emblica	53	Medicinal plant agnimantha
24	Tamarindus inica linn	54	Syngonium podophyllum
25	Manilkara zapota	55	Elegants palms
26	Ocimum sanctum	56	Chromolaena odorata
27	Bambuseae	57	Spathiphyllum gardenia plant
28	Jasminum sambac		
29	Dalbergia sissoo		
30	Jasminum allriculatam		

ENGRESS SERVICES

Yashashree, 26, Nirnal Bag Society, Near Muktangan English School, Parvati, Pune 411 009
Tel: 09890444795 Email: engress123@gmail.com
MEDA Registration No: ECN/2022-23/CR-43/1709
ISO: 9001-2015 Certified (Cert No: 23EQKC13),
ISO: 14001-2015 Certified (Cert No: 23EEKW20)

ENERGY AUDIT CERTIFICATE

Certificate No: ES/DBAM/22-23/01

Date: 08/07/2023


This is to certify that we have conducted Energy Audit at, Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati in the Academic year 2022-23.

The College has adopted following Energy Efficient practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Maximum usage of Day Lighting

We appreciate the support of Management, involvement of faculty members and students in the process of making the Campus Energy Efficient.

For Engress Services,



A Y Mehendale,
B E-Mechanical, M Tech- Energy
BEE Certified Energy Auditor, EA-8192



ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School,
Parvati, Pune 411 009 Tel: 09890444795 Email: engress123@gmail.com

MEDA Registration No: ECN/2022-23/CR-43/1709

ISO: 9001-2015 Certified (Cert No: 23EQKC13),

ISO: 14001-2015 Certified (Cert No: 23EEKW20)

GREEN AUDIT CERTIFICATE

Certificate No: ES/DBAM/22-23/02

Date: 08/07/2023

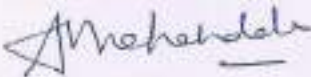
This is to certify that we have conducted Green Audit at Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati in the Year 2022-23.

The Institute has adopted following Green & Sustainable Practices:

- Usage of Energy Efficient LED Fittings
- Maximum usage of Day Lighting
- Segregation of Waste at source
- Implementation of Rain Water Management Project
- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp for Divyangajan
- Creation of awareness about Water Conservation by Display of Posters

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Engress Services,



A Y Mehendale,

B E- Mech, M Tech-Energy, Certified Energy Auditor, EA-8192

ASSOCHAM GEM Certified Professional; GEM: 22/788



ENGRESS SERVICES

Yashashree, 26, Nirnal Bag Society, Near Muktangan English School,
Parvati, Pune 411 009 Tel: 09890444795 Email: engress123@gmail.com

MEDA Registration No: ECN/2022-23/CR-43/1709

ISO: 9001-2015 Certified (Cert No: 23EQKC13),

ISO: 14001-2015 Certified (Cert No: 23EEKW20)

ENVIRONMENTAL AUDIT CERTIFICATE

Certificate No: ES/DBAM/22-23/03

Date: 08/07/2023

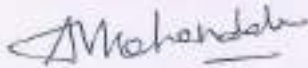
This is to certify that we have conducted Environmental Audit at Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati in the Year 2022-23.

The Institute has adopted following Environment Friendly Practices:

- Usage of Energy Efficient LED Fittings
- Maximum usage of Day Lighting
- Segregation of Waste at source
- Implementation of Rain Water Management Project
- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp for Divyangajan
- Creation of awareness about Water Conservation by Display of Posters

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Eco Friendly.

For Engress Services,



A Y Mehendale,

B E- Mech, M Tech-Energy, Certified Energy Auditor, EA-8192

ASSOCHAM GEM Certified Professional: GEM: 22/788



ENERGY AUDIT REPORT
of
DR. BABASAHEB AMBEDKAR MAHAVIDYALAYA,
Uttam Nagar, Amravati - 444606



Year: 2022-23

Prepared by:

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society
Near Mukhtangan English School, Parvati, Pune 411009
Phone: 09890444795 Email: engress123@gmail.com



ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune 411 009
Tel: 09890444795 Email: engress123@gmail.com
MEDA Registration No: ECN/2022-23/CR-43/1709
ISO: 9001-2015 Certified (Cert No: 23EQKC13),
ISO: 14001-2015 Certified (Cert No: 23EEKW20)

ENERGY AUDIT CERTIFICATE

Certificate No: ES/DBAM/22-23/01

Date: 08/07/2023

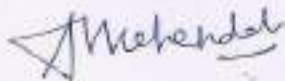
This is to certify that we have conducted Energy Audit at, Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati in the Academic year 2022-23.

The College has adopted following Energy Efficient practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Maximum usage of Day Lighting

We appreciate the support of Management, involvement of faculty members and students in the process of making the Campus Energy Efficient.

For Engress Services,



A Y Mehendale,
B E-Mechanical, M Tech- Energy
BEE Certified Energy Auditor, EA-8192



REGISTRATION CERTIFICATES

AUDITOR CERTIFICATE



MEDA Registration Certificate



ISO: 9001-2015 Certificate



ISO: 14001-2015 Certificate



INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	5
II	Executive Summary	6
III	Abbreviations	7
1	Introduction	8
2	Study of Connected Load	9
3	Study of Present Energy Consumption	10
4	Study of Energy Performance Index	11
5	Study of Lighting	12
6	Study of Renewable Energy & Energy Efficiency	14

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati for awarding us the assignment of Energy Audit of their Uttam Nagar (Amravati) Campus for the Year: 2022-23.

We are thankful to all the staff members for helping us during the field study.



EXECUTIVE SUMMARY

1. Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati consumes Energy in the form of Electrical Energy; used for various Electrical Equipment,

2. Present Connected Load & Energy Consumption:

No	Particulars	Value	Unit
1	Total Connected Load	19	kW
2	Annual Energy Consumed	31230	kWh

3. Energy Performance Index:

No	Particulars	Value	Unit
1	Annual Energy Consumed	31230	kWh
2	Total Built up area of Institute	33791	m ²
3	Energy Performance Index = (1) / (2)	0.92	kWh/m ²

4. Study of Lighting Power Density & % Usage of LED Lighting:

No	Particulars	Value	Unit
1	Lighting Power Density	0.49	W/m ²
2	% of Usage of LED Lighting to Total Lighting Load	76.20	%

5. Renewable Energy & Energy Efficiency Projects:

- Usage of Energy Efficient LED fittings

6. Assumption:

- 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere

7. References:

- Audit Methodology: www.mahaurja.com
- Energy Conservation Building Code: ECBC-2017: www.beeindia.gov.in
- For CO₂ Emissions: www.tatapower.com

ABBREVIATIONS

SDGCT	:	Shri. Dadasaheb Charitable Trust
DBAM	:	Dr. Babasaheb Ambedkar Mahavidyalaya
LED	:	Light Emitting Diode
MSEDCL	:	Maharashtra State Electricity Distribution Company Limited
BEE	:	Bureau of Energy Efficiency
ECBC	:	Energy Conservation Building Code
MEDA	:	Maharashtra Energy Development Agency
PV	:	Photo Voltaic
Kg	:	Kilo Gram
kWh	:	kilo-Watt Hour
CO ₂	:	Carbon Di Oxide
MT	:	Metric Ton

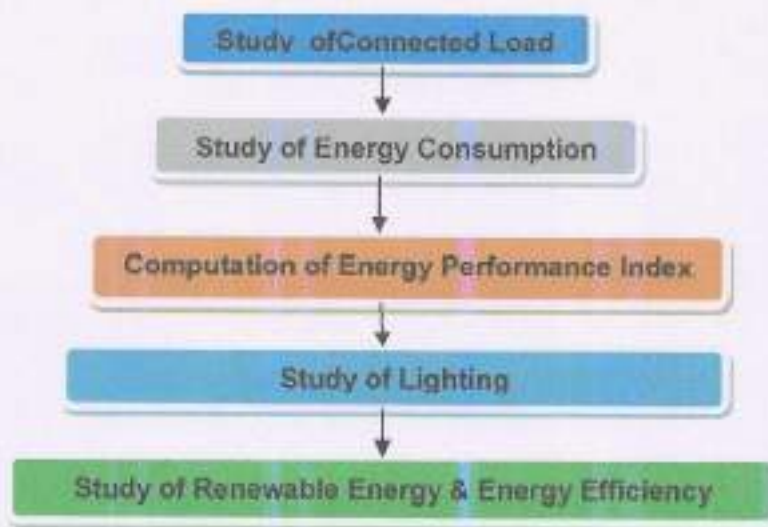
CHAPTER-I INTRODUCTION

1.1 Introduction:

An Energy Audit is conducted at Shri. Dadasaheb Gavai Charitable Trust, Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati. The guidelines followed for conducting the Energy Audit are:

- BEE India's Energy Conservation Building Code: ECBC-2017
- Maharashtra Energy Development Agency (www.mahaurja.com)
- Tata Power: www.tatapower.com

1.2 Audit Procedural Steps:



1.3 Institute Location Image:



Institute
Campus

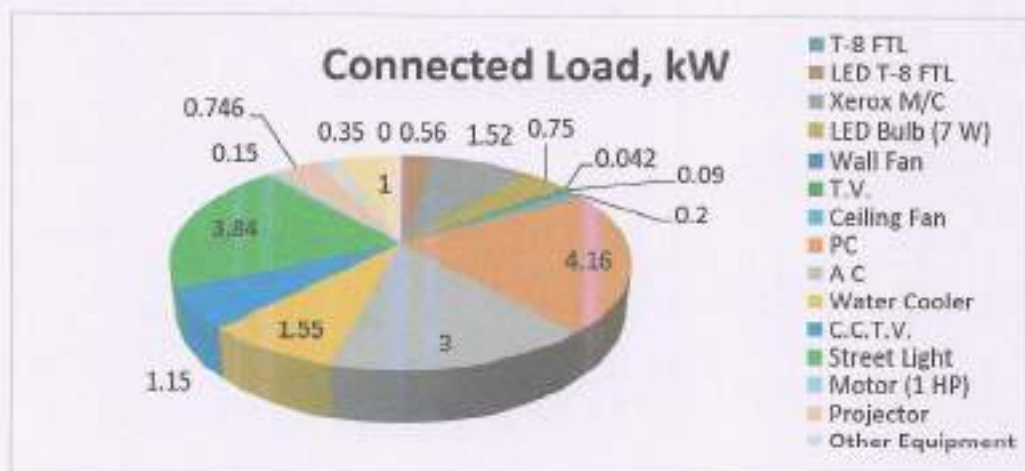
CHAPTER-II STUDY OF CONNECTED LOAD

The major contributors to the connected load of the Institute include:

Table No 1: Study of Equipment wise Connected Load:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	T-8 FTL	14	40	0.56
2	LED T-8 FTL	76	20	1.52
3	Xerox M/C	3	250	0.75
4	LED Bulb (7 W)	6	7	0.042
5	Wall Fan	2	45	0.09
6	T.V.	1	200	0.2
7	Ceiling Fan	64	65	4.16
8	PC	20	150	3
9	A C	1	1550	1.55
10	Water Cooler	2	575	1.15
11	C.C.T.V.	32	120	3.84
12	Street Light	3	50	0.15
13	Motor (1 HP)	1	746	0.746
14	Projector	1	350	0.35
15	Other Equipment	5	200	1
16	Total			19

Chart No 1: Study of Connected Load:



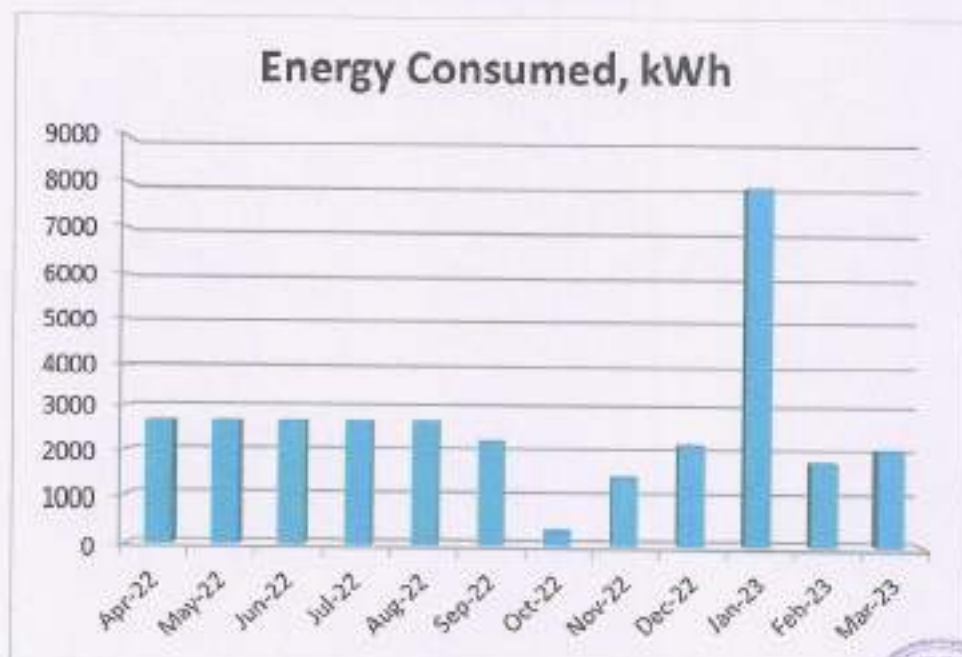
CHAPTER-III STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of Electrical Energy Consumption.

Table No 2: Electrical Energy Consumed Analysis- 2022-23:

No	Month	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Apr-22	2656	2.39
2	May-22	2656	2.39
3	Jun-22	2656	2.39
4	Jul-22	2656	2.39
5	Aug-22	2656	2.39
6	Sep-22	2214	1.99
7	Oct-22	317	0.29
8	Nov-22	1426	1.28
9	Dec-22	2148	1.93
10	Jan-23	8004	7.20
11	Feb-23	1779	1.60
12	Mar-23	2062	1.86
13	Total	31230	28.11
14	Maximum	8004	7.20
15	Minimum	317	0.29
16	Average	2603	2.34

Chart No 2: Variation in Monthly Energy Consumed kWh:



CHAPTER-IV

STUDY OF ENERGY PERFORMANCE INDEX

Energy Performance Index: Energy Performance Index of a Building is its Annual Energy Consumption in Kilo Watt Hours per square meter of the Building

It is determined by:

$$\text{EPI} = \frac{\text{Annual Energy Consumption in kWh}}{\text{Total Built-up area in m}^2}$$

Now we compute the EPI for the Institute as under:

Table No3: Computation of Energy Performance Index:

No	Particulars	Value	Unit
1	Total Energy Consumed	31230	kWh
2	Total Built up area of Institute	33791	m ²
3	Energy Performance Index =(1) / (2)	0.92	kWh/m ²

CHAPTER V STUDY OF LIGHTING

Terminology:

- 1. Lumen** is a unit of light flow or luminous flux. The lumen rating of a lamp is a measure of the total light output of the lamp. The most common measurement of light output (or luminous flux) is the lumen. Light sources are labeled with an output rating in lumens.
- 2. Lux** is the metric unit of measure for illuminance of a surface. One lux is equal to one lumen per square meter.
- 3. Circuit Watts** is the total power drawn by lamps and ballasts in a lighting circuit under assessment.
- 4. Installed Load Efficacy** is the average maintained illuminance provided on a horizontal working plane per circuit watt with general lighting of an interior. Unit: lux per watt per square metre (lux/W/m²)
- 5. Lamp Circuit Efficacy** is the amount of light (lumens) emitted by a lamp for each watt of power consumed by the lamp circuit, i.e. including control gear losses. This is a more meaningful measure for those lamps that require control gear. Unit: lumens per circuit watt (lm/W)
- 6. Installed Power Density.** The installed power density per 100 lux is the power needed per square metre of floor area to achieve 100 lux of average maintained illuminance on a horizontal working plane with general lighting of an interior. Unit: watts per square metre per 100 lux (W/m²/100 lux) 100 Installed power density (W/m²/100 lux)
- 7. Lighting Power Density:** It is defined as Total Lighting Load in a room divided by the Area of that Room in square meters.

In this Chapter we compute the Lighting Power Density of Class Room and the percentage usage of LED Lighting to total Lighting Load of the Institute.

Now, we compute the usage of LED Lighting to Total Lighting Load, as under.

Table No 4: Computation of Lighting Power Density: Class Room: B. A. I:

No	Particulars	Value	Unit
1	Qty of 20 W Fittings in Class Room: B.A. I	2	Nos
2	Load of 20 W Fitting	20	W/unit
3	Total Load of 2 Nos, 20 W Fittings	40	W
4	Built up area of Class Room: B.A. I	81.90	m ²
5	Lighting Power Density = (3)/(4)	0.49	W/m ²

Table No 5: Percentage Usage of LED Lighting to Total Lighting Load:

No	Particulars	Value	Unit
1	No of T-8 FTL fittings	14	Nos
2	Load/per Fitting	40	W/Unit
3	Total Load of T-8 Fittings	0.56	kW
4	No of 20 W LED fittings	76	Nos
5	Load/per Fitting	20	W/Unit
6	Total Load of 20 W LED Fittings	1.52	kW
7	No of 07 W LED fittings	14	Nos
8	Load/per Fitting	7	W/Unit
9	Total Load of 07 W LED Fittings	0.098	kW
10	No of 50 W LED fittings	3	Nos
11	Load/per Fitting	50	W/Unit
12	Total Load of 50 W Square LED Fittings	0.15	kW
13	Total LED Lighting Load =6+9+12	1.768	kW
14	Total Lighting Load = 3+6+9+12	2.328	kW
15	% of Annual Lighting Load met by LEDs= $13 \times 100 / 14$	76.20	%

CHAPTER-VI

STUDY OF RENEWABLE ENERGY & ENERGY EFFICIENCY

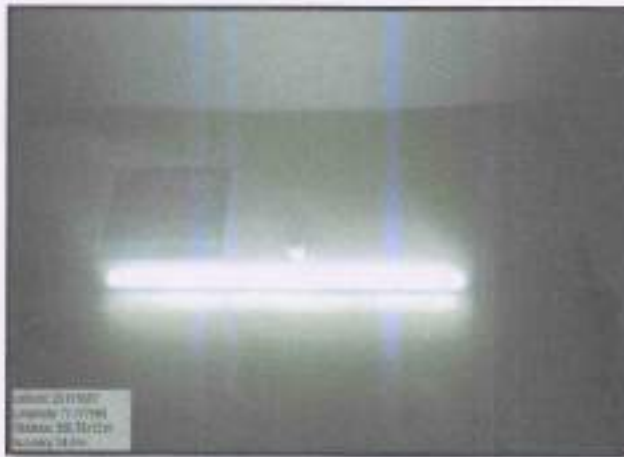
6.1 Usage of Renewable Energy:

The Institute has yet to install Roof Top Solar PV Plant.

6.2 Energy Efficiency Measures adopted:

- The Institute has Energy Efficient LED Fittings.

Photographs of STAR Rated LED Lighting:



ENVIRONMENTAL AUDIT REPORT
of
DR. BABASAHEB AMBEDKAR MAHAVIDYALAYA,
Uttam Nagar, Amravati - 444606



Year: 2022-23

Prepared by:

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society
Near Muktangan English School, Parvati, Pune 411009
Phone: 09890444795 Email: engress123@gmail.com



ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Mukangan English School,
Parvati, Pune 411 009 Tel: 09890444795 Email: engress123@gmail.com
MEDA Registration No: ECN/2022-23/CR-43/1709
ISO: 9001-2015 Certified (Cert No: 23EQKC13),
ISO: 14001-2015 Certified (Cert No: 23EEKW20)

ENVIRONMENTAL AUDIT CERTIFICATE

Certificate No: ES/DBAM/22-23/03

Date: 08/07/2023

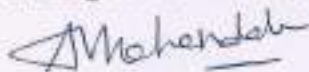
This is to certify that we have conducted Environmental Audit at Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati in the Year 2022-23.

The Institute has adopted following Environment Friendly Practices:

- Usage of Energy Efficient LED Fittings
- Maximum usage of Day Lighting
- Segregation of Waste at source
- Implementation of Rain Water Management Project
- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp for Divyangajan
- Creation of awareness about Water Conservation by Display of Posters

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Eco Friendly.

For Engress Services,



A Y Mehendale,

B E- Mech, M Tech-Energy, Certified Energy Auditor, EA-8192
ASSOCHAM GEM Certified Professional: GEM: 22/788



REGISTRATION CERTIFICATES



MEDA REGISTRATION CERTIFICATE

ASSOCHAM GEM CP CERTIFICATE



ISO: 9001-2015 CERTIFICATE

ISO: 14001-2015 CERTIFICATE

INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	5
II	Executive Summary	6
III	Abbreviations	8
1	Introduction	9
2	Study of Resource Consumption & CO ₂ Emission	11
3	Study of Usage of Renewable Energy	13
4	Study of Indoor Air Quality	14
5	Study of Indoor Comfort Condition Parameters	15
6	Study of Waste Management	18
7	Study of Rain Water Management	17
8	Study of Eco Friendly Initiatives	18
	Annexure	
I	Indoor Air Quality, Noise, & Indoor Comfort Standards	19

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati, for awarding us the assignment of Environmental Audit of their Uttam Nagar (Amravati) Campus for the Year: 2022-23.

We are thankful to all the staff members for helping us during the field study.



EXECUTIVE SUMMARY

1. Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati consumes Energy in the form of Electrical Energy; used for various Electrical Equipment.

2. Pollution due to Institute Activities:

- **Air pollution:** Mainly CO₂ on account of Electricity Consumption
- **Solid Waste:** Bio degradable Garden Waste, Paper & Plastic Waste
- **Liquid Waste:** Human liquid waste

3. Present Energy Consumption & CO₂ Emission:

No	Particulars	Value	Unit
1	Annual Energy Consumed	31230	kWh
2	Annual CO ₂ Emissions	28.11	MT

4. Renewable Energy Usage:

- The College has yet to install Roof Top Solar PV Plant

5. Indoor Air Quality Parameters:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	99	69	79
2	Minimum	90	60	64

6. Indoor Comfort Conditions:

No	Parameter/Value	Temperature, °C	Humidity, %	Lux Level	Noise Level, dB
1	Maximum	32.1	69	198	45
2	Minimum	29	59	132	40

7. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Liquid Waste	Septic Tank installed & cleaned periodically
3	E Waste	Recommended to dispose of through Authorized Agency

8. Rain Water Management:

The Rain water falling on the terrace is used to increase the Underground Water Table.

9. Environment Friendly Initiatives:

- Tree Plantation in the campus.
- Creation of awareness on Water Conservation Display of Posters

10. Assumption:

- 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere

11. References:

- For CO₂ Emissions: www.tatapower.com
- For Various Indoor Air Parameters: www.ishrae.com
- For AQI Quality Standards: www.cpcb.com

ABBREVIATIONS

DBAMA	:	Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati
Kg	:	Kilo Gram
MSEDCL	:	Maharashtra State Distribution Company Limited
MT	:	Metric Ton
kWh	:	kilo-Watt Hour
LPD	:	Liters per Day
LED	:	Light Emitting Diode
AQI	:	Air Quality Index
PM-2.5	:	Particulate Matter of Size 2.5 Micron
PM-10	:	Particulate Matter of Size 10 Micron
CPCB	:	Central Pollution Control Board
ISHRAE	:	The Indian Society of Heating & Refrigerating & Air Conditioning Engineers

CHAPTER-I INTRODUCTION

1. Important Definitions:

1.1. Environment: Definition as per environment Protection Act: 1986

Environment includes water, air and land and the inter-relationship which exists among and between Water, Air, Land and Human beings, other living creatures, plants microorganism and property

1.2. Environmental Audit: Definition:

An audit which aims at verification and validation to ensure that various environmental laws are compiled with and adequate care has been taken towards environmental protection and preservation

According to UNEP, 1990. "Environmental audit can be defined as a management tool comprising systematic, documented and periodic evaluation of how well environmental organization management and equipment are performing with an aim of helping to regularize the environment"

1.3. Environmental Pollutant: means any solid, liquid and gaseous substance present in the concentration as may be, or tend to be, injurious to Environment.

1.4 Audit Procedural Steps:



1.5 Google Earth Image:



College
Campus

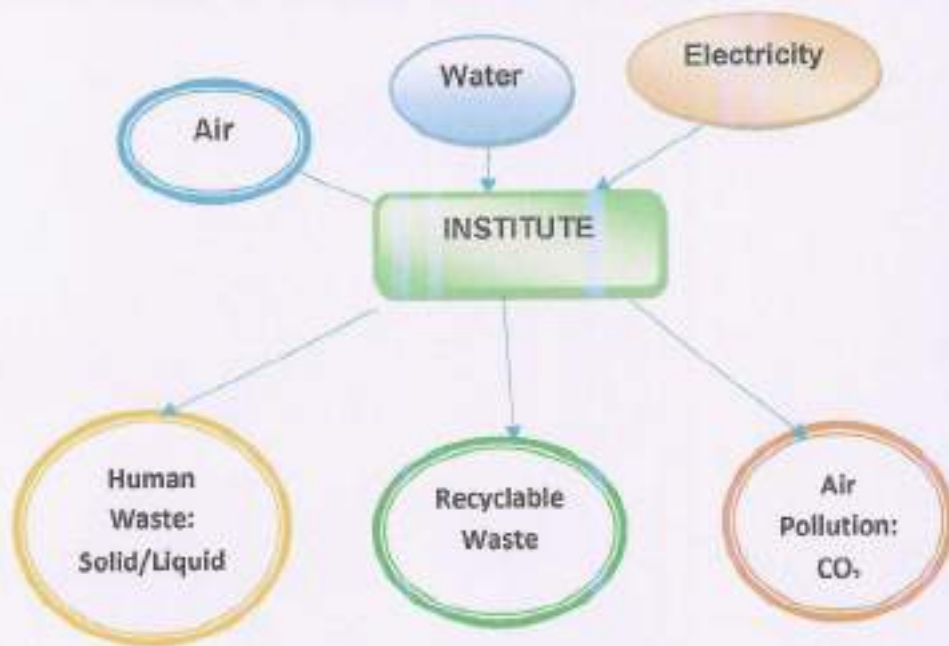


CHAPTER-II STUDY OF RESOURCE CONSUMPTION & CO₂ EMISSION

The Institute consumes following basic/derived Resources:

1. Air
2. Water
3. Electrical Energy

We try to draw a schematic diagram for the Institute System & Environment as under.
Chart No 1: Representation of Institute as System & Study of Resources & Waste



Now we compute the Generation of CO₂ on account of consumption of Electrical Energy. The basis of Calculation for CO₂ emissions due to Electrical Energy is as under.

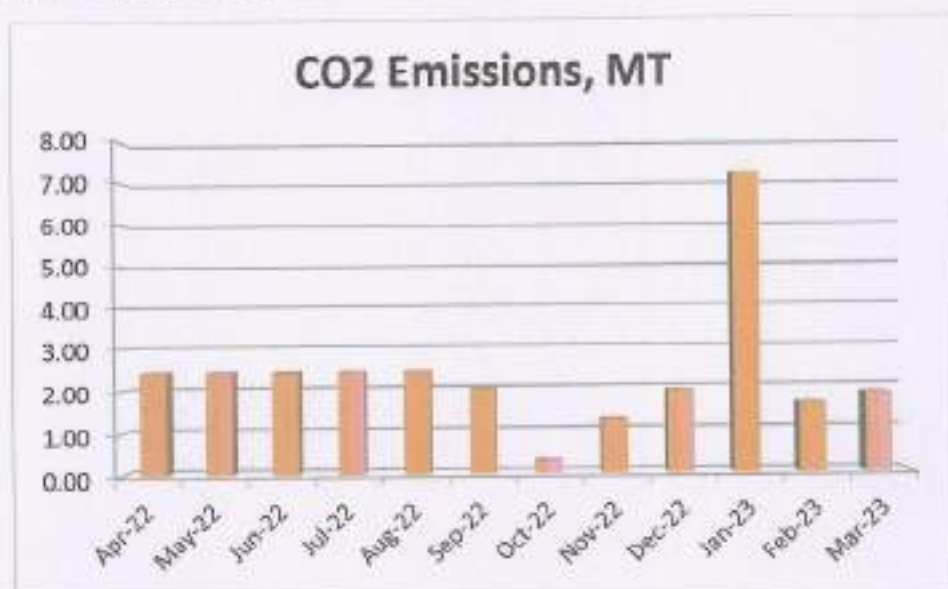
- 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere

Table No 1: Study of Purchase of Energy & CO₂ Emissions: 22-23:

No	Month	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Apr-22	2656	2.39
2	May-22	2656	2.39
3	Jun-22	2656	2.39
4	Jul-22	2656	2.39
5	Aug-22	2656	2.39

6	Sep-22	2214	1.99
7	Oct-22	317	0.29
8	Nov-22	1426	1.28
9	Dec-22	2148	1.93
10	Jan-23	8004	7.20
11	Feb-23	1779	1.60
12	Mar-23	2062	1.86
13	Total	31230	28.11
14	Maximum	8004	7.20
15	Minimum	317	0.29
16	Average	2603	2.34

Chart No 2: Month wise CO₂Emissions:



CHAPTER III

STUDY OF USAGE OF RENEWABLE ENERGY

The College has yet to install Roof Top Solar PV Plant.



CHAPTER IV STUDY OF INDOOR AIR QUALITY

4.1 Importance of Air Quality:

Air: The common name given to the atmospheric gases used in breathing and photosynthesis.

By volume, Dry Air contains 78.09% Nitrogen, 20.95% Oxygen, 0.93% Argon, 0.039% carbon dioxide, and small amounts of other gases.

On average, a person inhales about 14,000 liters of air every day. Therefore, poor air quality may affect the quality of life now and for future generations by affecting the health, the environment, the economy and the city's livability.

Air quality is a measure of the suitability of air for breathing by people, plants and animals.

4.2 Air Quality Index:

An Air Quality Index (AQI) is a number used by government agencies to measure the air pollution levels and communicate it to the population. As the AQI increases, it means that a large percentage of the population will experience severe adverse health effects.

We present herewith following important Parameters.

1. AQI- Air Quality Index
2. PM-2.5- Particulate Matter of Size 2.5 micron
3. PM-10- Particulate Matter of Size 10micron

Table No4: Indoor Air Quality Parameters:

No	Location	AQI	PM-2.5	PM-10
	Ground Floor			
1	Admin Office	90	60	69
2	IQAC Cell	94	67	72
3	Research Centre	99	67	72
4	Auditorium Hall	98	66	71
	First Floor			
5	Class Room-B Com I	97	69	79
6	Computer Centre	92	59	64
7	Meeting Room	91	64	63
8	Class Room	93	65	71
	Maximum	99	69	79
	Minimum	90	60	64

CHAPTER V STUDY OF INDOOR COMFORT CONDITION PARAMETERS

In this Chapter, we present the various Indoor Comfort Parameters measured during the Audit. The Parameters include:

1. Temperature
2. Humidity
3. Lux Level
4. Noise Level.

Table No5: Study of Indoor Comfort Condition Parameters:

No	Location	Temperature, °C	Humidity, %	Lux Level	Noise Level, dB
	Ground Floor				
1	Admin Office	32.2	65	189	45
2	IQAC Cell	31	69	156	42
3	Research Centre	30.1	65	190	41.9
4	Auditorium Hall	32	66	145	45
	First Floor				
5	Class Room-B Com I	31	64	160	44.2
6	Computer Centre	32.2	65	146	43.9
7	Meeting Room	29	64	132	42
8	Class Room	30.5	59	155	40
	Maximum	32.1	69	198	45
	Minimum	29	59	132	40

CHAPTER VI STUDY OF WASTE MANAGEMENT

6.1 Segregation of Waste at Source:

The Waste is segregated at source. Waste collection Bins are placed at strategic locations.

Photograph of Waste Collection Bin:



6.2 Liquid Waste Management:

The Institute has installed a Septic Tank and the tank is cleaned periodically.

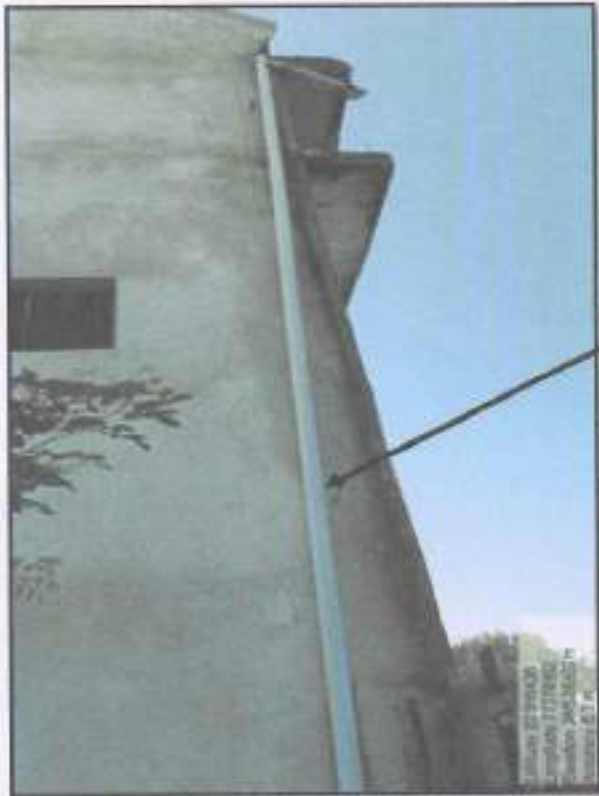
6.3 E Waste Management:

It is recommended to dispose of the E Waste through Authorized Agency

CHAPTER-VII STUDY OF RAIN WATER MANAGEMENT

The Institute has installed Pipes from the terrace and the Rain water falling on the terrace is used to increase the Underground Water Table.

Photograph of Rain Water Carrying Pipe:



Rain Water
Carrying Pipe

CHAPTER-VIII STUDY OF ECO FRIENDLY INITIATIVES

8.1 Internal Tree Plantation:

The Institute has Tree Plantation in the campus.

Photograph of Tree plantation:



8.2 Creation of Awareness about Water Conservation:

The Institute has displayed posters emphasizing on importance of Water Conservation.

Photograph of Poster on Water Conservation:



**ANNEXURE-I:
VARIOUS AIR QUALITY, NOISE & COMFORT STANDARDS:**

1. Category Wise Air Quality Index Values & Concentration of PM 2.5 & PM10:

No	Category	AQI Value	Concentration Range, PM 2.5	Concentration Range, PM 10
1	Good	0 to 50	0 to 30	0 to 50
2	Satisfactory	51 to 100	31 to 60	51 to 100
3	Moderately Polluted	101 to 200	61 to 90	101 to 250
4	Poor	201 to 300	91 to 120	251 to 350
5	Very Poor	301 to 400	121 to 250	351 to 430
6	Severe	401 to 500	250 +	430 +

2. Recommended Noise Level Standards:

No	Location	Noise Level dB
1	Auditoriums	20-25
2	Outdoor Playground	55
3	Occupied Class Room	40-45
4	Un occupied Class Room	35
5	Apartment, Homes	35-40
6	Offices	45-50
7	Libraries	35-40
8	Restaurants	50-55

4. Thermal Comfort Conditions: For Non-conditioned Buildings:

No	Parameter	Value
1	Temperature	Less Than 33°C
2	Humidity	Less Than 70%

GREEN AUDIT REPORT
of
DR. BABASAHEB AMBEDKAR MAHAVIDYALAYA,
Uttam Nagar, Amravati - 444606



Year: 2022-23

Prepared by:

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society
Near Muktangan English School, Parvati, Pune 411009
Phone: 09890444795 Email: engress123@gmail.com



ENGRESS SERVICES

Yashashree, 26, Nirnal Bag Society, Near Mukhtangan English School,
Parvati, Pune 411 009 Tel: 09890444795 Email: engress123@gmail.com

MEDA Registration No: ECN/2022-23/CR-43/1709

ISO: 9001-2015 Certified (Cert No: 23EQKC13),

ISO: 14001-2015 Certified (Cert No: 23EEKW20)

GREEN AUDIT CERTIFICATE

Certificate No: ES/DBAM/22-23/02

Date: 08/07/2023

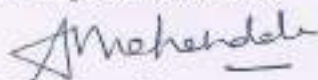
This is to certify that we have conducted Green Audit at Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati in the Year 2022-23.

The Institute has adopted following Green & Sustainable Practices:

- Usage of Energy Efficient LED Fittings
- Maximum usage of Day Lighting
- Segregation of Waste at source
- Implementation of Rain Water Management Project
- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp for Divyangajan
- Creation of awareness about Water Conservation by Display of Posters

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Engress Services,



A Y Mehendale,

B E- Mech, M Tech-Energy, Certified Energy Auditor, EA-8192

ASSOCHAM GEM Certified Professional: GEM: 22/788



INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	5
II	Executive Summary	6
III	Abbreviations	7
1	Introduction	8
2	Study of Energy Consumption & CO ₂ Emission	9
3	Study of Usage of Renewable Energy	11
4	Study of Waste Management	12
5	Study of Rain Water Management	13
6	Study of Green & Sustainable Practices	14
	Annexure	
I	List of Trees & Plants	16

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati for awarding us the assignment of Green Audit of their Uttam Nagar (Amravati) Campus for the Year: 2022-23.

We are thankful to all the staff members for helping us during the field study.



EXECUTIVE SUMMARY

1. Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati consumes Energy in the form of Electrical Energy; used for various Electrical Equipment.

2. Present Energy Consumption & CO₂ Emission:

No	Particulars	Value	Unit
1	Annual Energy Consumed	31230	kWh
2	Annual CO ₂ Emissions	28.11	MT

3. Renewable Energy Usage:

- The College has yet to install Roof Top Solar PV Plant

4. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Liquid Waste	Septic Tank installed & cleaned periodically
3	E Waste	Recommended to dispose of through Authorized Agency

5. Rain Water Management:

The Rain water falling on the terrace is used to increase the Underground Water Table.

6. Green & Sustainable Practices:

- Maintenance of good Internal Road
- Tree Plantation in the campus.
- Provision of Ramp for Divyangajan
- Creation of awareness on Water Conservation Display of Posters

7. Assumption:

- 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere

8. References:

- For CO₂ Emissions: www.tatapower.com

ABBREVIATIONS

SDGCTA	Shri. Dadasaheb Gavai Charitable Trust, Amravati
DBAM	Dr. Babasaheb Ambedkar Mahavidyalaya
BEE	Bureau of Energy Efficiency
kWh	Kilo Watt Hour
LPD	Liters Per Day
Kg	Kilo Gram
MT	Metric Ton
CO ₂	Carbon Di Oxide
Qty	Quantity

CHAPTER-I INTRODUCTION

1.1 Introduction:

A Green Audit is conducted at Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati

1.2 Audit Procedural Steps:



1.3 Institute Location Image:



Institute
Campus

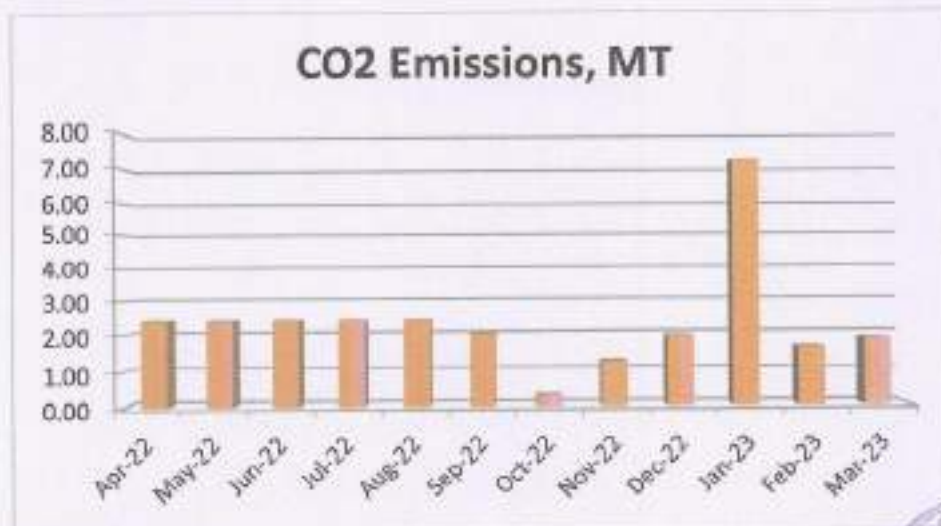
CHAPTER-II STUDY OF ENERGY CONSUMPTION & CO₂ EMISSION

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. Basis for computation of CO₂ Emissions: 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere.

Table No1: Month wise Energy Consumption & CO₂ Emissions:

No	Month	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Apr-22	2656	2.39
2	May-22	2656	2.39
3	Jun-22	2656	2.39
4	Jul-22	2656	2.39
5	Aug-22	2656	2.39
6	Sep-22	2214	1.99
7	Oct-22	317	0.29
8	Nov-22	1426	1.28
9	Dec-22	2148	1.93
10	Jan-23	8004	7.20
11	Feb-23	1779	1.60
12	Mar-23	2062	1.86
13	Total	31230	28.11
14	Maximum	8004	7.20
15	Minimum	317	0.29
16	Average	2603	2.34

Chart No 1: Month wise CO₂ Emissions:



CHAPTER III

STUDY OF USAGE OF RENEWABLE ENERGY

The Institute has yet to install Roof Top Solar PV Plant.



CHAPTER IV STUDY OF WASTE MANAGEMENT

5.1 Segregation of Waste at Source:

The Institute has good housekeeping practices. The Waste is segregated at source. Waste collection Bins are placed at strategic locations.

Photograph of Waste Collection Bins:



5.3 Liquid Waste Management:

The Institute has installed a Septic Tank and the tank is cleaned periodically.

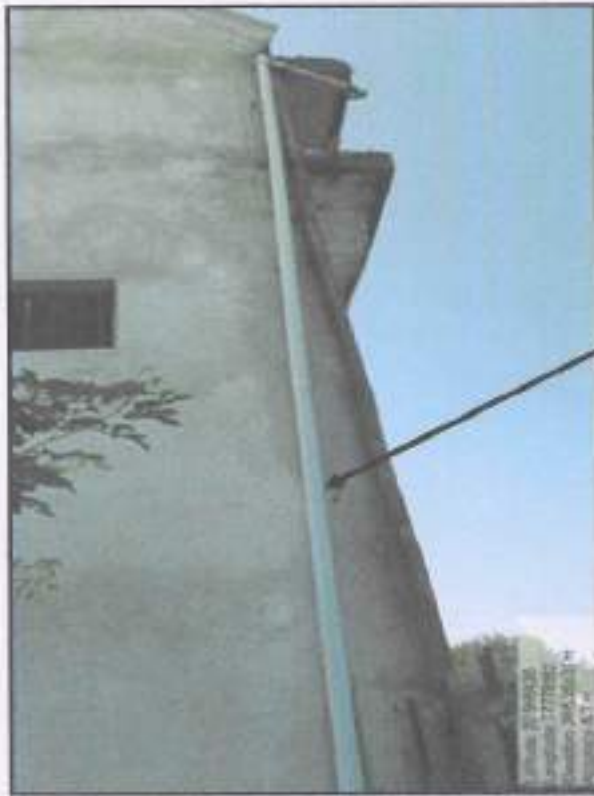
5.4 E Waste Management:

It is recommended to dispose of the E Waste through Authorized Agency

CHAPTER V STUDY OF RAIN WATER MANAGEMENT

The Institute has installed Pipes from the terrace and the Rain water falling on the terrace is used to increase the Underground Water Table.

Photograph of Rain Water Carrying Pipe:



Rain Water
Carrying Pipe

CHAPTER VI

STUDY OF GREEN & SUSTAINABLE PRACTICES

6.1 Pedestrian Friendly Road& Internal Tree Plantation:

The Institute has well maintained internal road to facilitate the easy movement of the students within the campus. The Institute has well maintained landscaped garden in the campus.

Photograph of Internal Road &Tree plantation:



6.2 Provision of Ramp for Divyangajan:

For easy movement of Divyangajan, the Institute has made provision of Ramp.

Photograph of Ramp:



6.3 Creation of Awareness about Water Conservation:

The Institute has displayed posters emphasizing on importance of Water Conservation.

Photograph of Poster on Water Conservation:



ANNEXURE-1:
LIST OF TREES IN THE CAMPUS:

List of Trees in the Campus:

No.	Common Name of Tree
1	Terminaliacatappa
2	Tectonagrandis
3	Ficusreligiosa
4	Delonixregia
5	Azadirachataindica
6	BixaOrellana
7	Dalbergiasissoo
8	Phyllantusemblica
9	Sapindusmukorossi
10	Ficusbenghalensis
11	Arecaceae
12	Ficusrecemosa
13	Saracaasoca
14	Tamarindusindica
15	Cassia fistula
16	Ficusbenghalensis L.
17	Vachellianilotica
18	Ziziphusmauritiana
19	Catharanthusroseus
20	Ehretialaevis
21	Mimusopselengi
22	Annona squamosa
23	Azadirachataindica
24	Bougainvillea
25	Catharanthusroseus
26	Borassusflabellifer
27	Arecaceae
28	Jasminumsambac
29	Saracaasoca
30	Lawsoniainermis
31	Mangiferaindica L.
32	Thuja
33	Bougainvillea
34	Azadirachataindica

ENVIRONMENTAL AUDIT REPORT
of
DR. BABASAHEB AMBEDKAR MAHAVIDYALAYA,
Uttam Nagar, Amravati - 444606

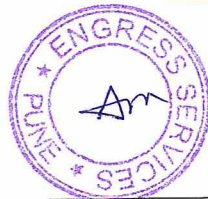


Year: 2021-22

Prepared by

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,
Near Mukhtangan English School, Parvati, Pune 411009
Phone: 09890444795, Email: engress123@gmail.com



MAHARASHTRA ENERGY DEVELOPMENT AGENCY



Maharashtra Energy Development Agency

(Government of Maharashtra Institution)

Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary,

Aundh, Pune, Maharashtra 411067

Ph No: 020-35000450

Email: eee@mahaurja.com, Web: www.mahaurja.com

ECN/2022-23/CR-43/1709

10th May, 2022

**CERTIFICATE OF REGISTRATION
FOR CLASS 'A'**

We hereby certify that, the firm having following particulars is registered with **MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)** under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

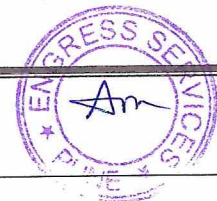
Name and Address of the firm : M/s Engress Services
Yashshree, 26, Nirmal Bag Society,
Near Mukhtangan English School,
Parvati, Pune – 411 009.

Registration Category : *Empanelled Consultant for Energy Conservation Programme for Class 'A'*

Registration Number : *MEDA/ECN/2022-23/Class A/EA-32.*

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empanelment is valid till 09th May, 2024 from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

General Manager (EC)



ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,
Near Mukhtangan English School, Parvati, Pune 411 009
Tel: 09890444795 Email: engress123@gmail.com

Ref: ES/DBAMA/21-22/03

Date: 13/6/2022

CERTIFICATE

This is to certify that we have conducted Environmental Audit at Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati in the year 2021-22.

The College has adopted following Environment Friendly Initiatives:

- Usage of Energy Efficient LED Fittings
- Maximum Usage of Day Lighting
- Usage of BEE STAR Rated Energy Efficient Equipment
- Segregation of Waste at Source
- Implementation of Rain Water Management Project
- Landscaped Garden & Tree Plantation in the campus
- Creation of Awareness by Display of Posters on Conservation of Nature

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Engress Services,

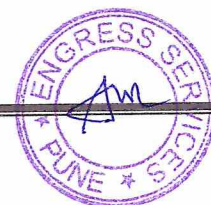


A Y Mehendale,
Certified Energy Auditor
EA-8192



INDEX

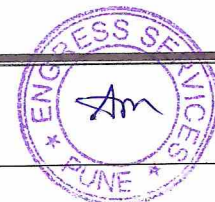
Sr. No	Particulars	Page No
I	Acknowledgement	5
II	Executive Summary	6
III	Abbreviations	8
1	Introduction	9
2	Study of Resource Consumption & CO ₂ Emission	12
3	Study of CO ₂ Emission Reduction	14
4	Study of Indoor Air Quality	15
5	Study of Indoor Comfort Condition Parameters	17
6	Study of Waste Management	18
7	Study of Rain Water Management	19
8	Study of Environment Friendly Initiatives	20
	Annexure	
I	Various Air Quality, Water, Noise & Indoor Comfort Standards	21



ACKNOWLEDGEMENT

We at Engress Services, Pune, express our sincere gratitude to the management of Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati for awarding us the assignment of Environmental Audit of their Amravati (Uttam Nagar) campus for the Year: 2021-22.

We are thankful to all staff members for helping us during the field study.



EXECUTIVE SUMMARY

1. Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati consumes various resources for day to day operations, namely: Air, Water, and Electrical Energy.

2. Pollution due to College Activities:

- Air pollution: Mainly CO₂ on account of Electricity Consumption
- Solid Waste: Bio degradable Kitchen Waste, Garden Waste
- Liquid Waste: Human liquid waste

3. Present Energy Consumption & CO₂ Emissions:

No	Parameter/ Value	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Total	50592	29.71
2	Maximum	31876	17.52
3	Minimum	1156	0.68
4	Average	4216	2.48

4. The various projects already implemented for Environmental Conservation:

- Usage of Energy Efficient BEE STAR Rated Equipment
- Usage of Energy Efficient LED Light Fittings
- Implementation of Rain Water Management Project

5. Usage of Renewable Energy:

The College has yet to install Roof Top Solar PV Plant. It is recommended to install Roof Top Solar PV Plant.

6. Indoor Air Quality Parameters:

No	Parameter/Range	AQI	PM-2.5	PM-10
1	Maximum	99	67	78
2	Minimum	90	59	63

7. Study of Indoor Comfort Parameters:

No	Parameter/ Range	Temperature, °C	Humidity, %	Lux Level	Noise Level Range, dB
1	Maximum	32.4	35.6	198	49
2	Minimum	29	33.9	90	40

8. Waste Management:

8.1 Segregation of Waste at Source:

The Waste is segregated at source. There are Waste Collection Bins for Dry & Wet Waste.

8.2 Organic Waste Management:

It is recommended to convert the Organic Waste into Bio Compost in a Bio Composting Pit.

8.3 E Waste Management:

It is recommended to dispose of the E Waste through Authorized Agency.

9. Rain Water Management:

The College has installed Rain Water Management project, wherein the rain water falling on the terrace is collected through pipes and is used to increase the underground water table.

10. Environment Friendly Initiatives:

- Tree Plantation in the campus.
- Creation of Awareness on Conservation of Nature by Display of Posters

11. Assumption:

- 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere.

13. References:

- For CO₂ Emission computation: www.tatapower.com
- For Various Indoor Air Parameters: www.ishrae.com
- For AQI & Water Quality Standards: www.cpcb.com

ABBREVIATIONS

SDGCT	:	Shri. Dadasaheb Charitable Trust
DBAMA	:	Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati
MSEDCL	:	Maharashtra State Distribution Company Limited
MEDA	:	Maharashtra Energy Development Agency
MT	:	Metric Ton
kWh	:	kilo-Watt Hour
LPD	:	Liters per Day
LED	:	Light Emitting Diode
AQI	:	Air Quality Index
PM	:	Particulate Matter
CPCB	:	Central Pollution Control Board
ISHRAE	:	The Indian Society of Heating & Refrigerating & Air Conditioning Engineers
LPG	:	Liquefied Petroleum Gas

CHAPTER-I INTRODUCTION

1.1 Important Definitions:

1.1.1 Environment: Definition as per environment Protection Act: 1986

Environment includes water, air and land and the inter-relationship which exists among and between Water, Air, Land and Human beings, other living creatures, plants microorganism and property

1.1.2. Environmental Audit: Definition:

An audit which aims at verification and validation to ensure that various environmental laws are compiled with and adequate care has been taken towards environmental protection and preservation

According to UNEP, 1990, "Environmental audit can be defined as a management tool comprising systematic, documented and periodic evaluation of how well environmental organization management and equipment are performing with an aim of helping to regularize the environment"

1.1.3. Environmental Pollutant: means any solid, liquid and gaseous substance present in the concentration as may be, or tend to be, injurious to Environment.

1.1.4. Relevant Environmental Laws in India: Table No-1:

1927	The Indian Forest Act
1972	The Wildlife Protection Act
1974	The Water (Prevention and Control of Pollution) Act
1977	The Water (Prevention & Control of Pollution) Cess Act
1980	The Forest (Conservation) Act
1981	The Air (Prevention and Control of Pollution) Act
1986	The Environment Protection Act
1991	The Public Liability Insurance Act
2002	The Biological Diversity Act
2010	The National Green Tribunal Act

1.1.5. Some Important Environmental Rules in India: Table No-2:

1989	Hazardous Waste (Management and Handling) Rules
1989	Manufacture, Storage and Import of Hazardous Chemical Rules
2000	Municipal Solid Waste (Management and Handling) Rules
1998	The Biomedical Waste (Management and Handling) Rules
1999	The Environment (Siting for Industrial Projects) Rules
2000	Noise Pollution (Regulation and Control) Rules
2000	Ozone Depleting Substances (Regulation and Control) Rules
2011	E-waste (Management and Handling) Rules
2011	National Green Tribunal (Practices and Procedure) Rules

2011	Plastic Waste (Management and Handling) Rules
------	-----------------------------------------------

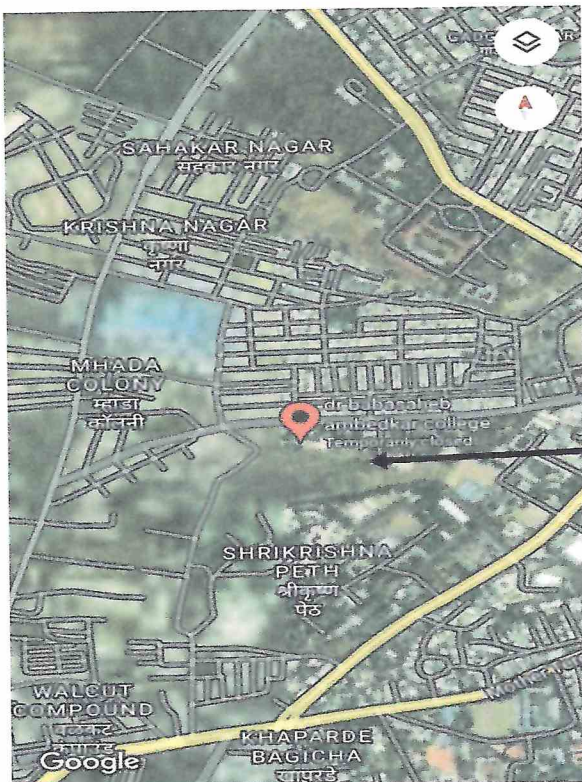
1.1.6 National Environmental Plans & Policy Documents: Table No-3:

1.	National Forest Policy, 1988
2.	National Water Policy, 2002
3.	National Environment Policy or NEP (2006)
4.	National Conservation Strategy and Policy Statement on Environment and Development, 1992
5.	Policy Statement for Abatement of Pollution (1992)
6.	National Action Plan on Climate Change
7.	Vision Statement on Environment and Human Health
8.	Technology Vision 2030 (The Energy Research Institute)
9.	Addressing Energy Security and Climate Change (MoEF and Bureau of Energy Efficiency)
10.	The Road to Copenhagen; India's Position on Climate Change Issues (MoEF)

1.2 Objectives:

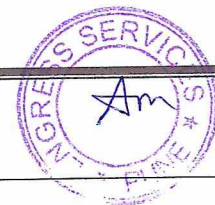
1. To study Resource Consumption & CO₂ Emission
2. To study CO₂ Emission Reduction
3. To study Indoor Air Quality Parameters
4. To study Indoor Comfort Parameters
5. To study Waste Management Practices
6. To Study Rain Water Management
7. To Study Eco Friendly Initiatives

1.3 Google Earth Image:



1.4 Table No 4: General Details of College:

No	Head	Particulars
1	Name of Institution	Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati
2	Address	Uttam Nagar, Amravati
3	Year of Establishment	1972
4	Affiliation	Sant Gadge Baba Amravati University, Amravati



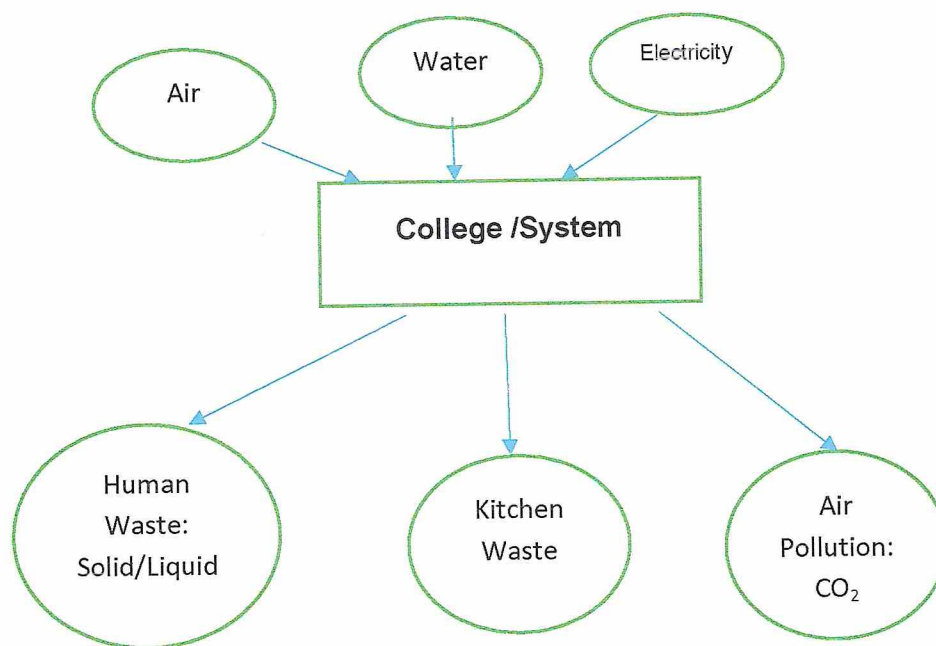
CHAPTER-II STUDY OF RESOURCE CONSUMPTION & CO₂ EMISSION

The Institute consumes following basic/derived Resources:

1. Air
2. Water
3. Electrical Energy
4. Liquefied Petroleum Gas

We try to draw a schematic diagram for the College System & Environment as under.

Chart No:1



Now we compute the Generation of CO₂ on account of consumption of Electrical Energy is as under.

The basis of Calculation for CO₂ emissions due to Electrical Energy is as under.

- 1 Unit (kWh) of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere

Table No 5: Electrical Energy Consumption & CO₂ Emission: 2021-22:

No	Month	Energy Consumed, kWh
1	Apr-21	1156
2	May-21	1156
3	Jun-21	1156
4	Jul-21	1156
5	Aug-21	1156
6	Sep-21	1156

7	Oct-21	1156
8	Nov-21	31876
9	Dec-21	2656
10	Jan-22	2656
11	Feb-22	2656
12	Mar-22	2656
13	Total	50592
14	Maximum	31876
15	Minimum	1156
16	Average	4216

Chart No 2: To study the CO₂ Emission:

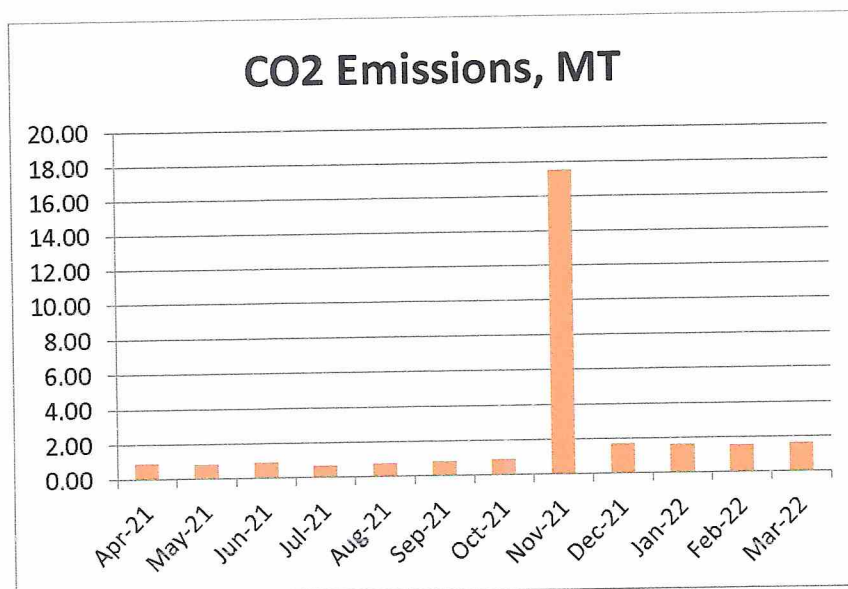
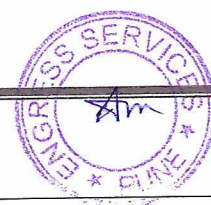


Table No 6: Variation in Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh
1	Total	50592
2	Maximum	31876
3	Minimum	1156
4	Average	4216

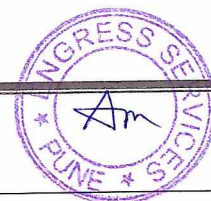


CHAPTER-III

STUDY OF CO₂ EMISSION REDUCTION

The College has yet to install Roof Top Solar PV Plant.

It is recommended to install Solar PV Plant.



CHAPTER IV

STUDY OF INDOOR AIR QUALITY

4.1 Importance of Air Quality:

Air: The common name given to the atmospheric gases used in breathing and photosynthesis.

By volume, Dry Air contains 78.09% Nitrogen, 20.95% Oxygen, 0.93% Argon, 0.039% carbon dioxide, and small amounts of other gases.

On average, a person inhales about **14,000 liters** of air every day. Therefore, poor air quality may affect the quality of life now and for future generations by affecting the health, the environment, the economy and the city's livability.

Rapid urbanization and industrialization has added other elements/compounds to the pure air and thus caused the increase in pollution. In order to prevent, control and abate air pollution, the Air (Prevention and Control of Pollution) Act was enacted in 1981.

Air quality is a measure of the suitability of air for breathing by people, plants and animals.

According to Section 2(b) of Air (Prevention and control of pollution) Act, 1981 'air pollution' has been defined as 'the presence in the atmosphere of any air pollutant.'

As per Section 2(a) of Air (Prevention and control of pollution) Act, 1981 'air pollutant' has been defined as 'any solid, liquid or gaseous substance [(including noise)] present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment

4.2 Air Quality Index:

An **Air Quality Index (AQI)** is a number used by government agencies to measure the air pollution levels and communicate it to the population. As the AQI increases, it means that a large percentage of the population will experience severe adverse health effects. The measurement of the AQI requires an air monitor and an air pollutant concentration over a specified averaging period.

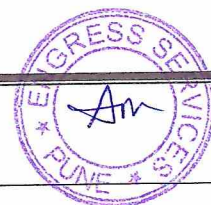
We present herewith following important Parameters.

1. AQI- Air Quality Index
2. PM 2.5- Particulate Matter of Size 2.5
3. PM 2.5- Particulate Matter of Size 2.5

Table No7: Indoor Air Quality Parameters:

No	Location	AQI	PM-2.5	PM-10
1	Research Centre	99	67	72
2	Auditorium Hall	98	66	71

3	Restaurant	95	65	69
4	NSS Office	97	66	78
5	IQAC Cell	94	67	72
6	Physical Education	93	64	69
7	Library	90	60	72
8	Class Room-B Com I	97	67	77
9	Computer Centre	92	59	64
10	Admin Office	90	60	69
11	Class Room-BA I	91	64	63
	Maximum	99	67	78
	Minimum	90	59	63



CHAPTER V STUDY OF INDOOR COMFORT CONDITION

In this Chapter, we present the various Indoor Comfort Parameters measured during the Audit.

The Parameters include:

1. Temperature
2. Humidity
3. Lux Level
4. Noise Level.

Table No 8: Study of Indoor Comfort Parameters:

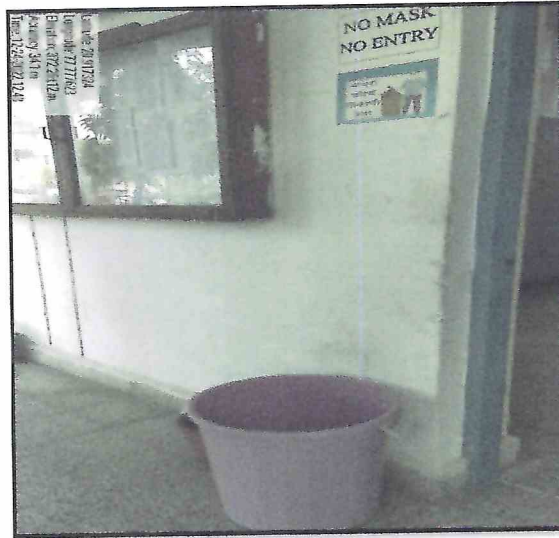
No	Location	Temperature, °C	Humidity, %	Lux Level	Noise Level, dB
1	Research Centre	32	35	150	42
2	Auditorium Hall	32.1	35.1	171	43
3	Restaurant	32.3	34.9	169	45
4	NSS Office	32.4	35	119	47
5	IQAC Cell	31.9	35.3	125	41
6	Physical Education	32	34.8	110	40
7	Library	31	35	99	45
8	Class Room-B Com I	32.1	35.6	167	47
9	Computer Centre	29	34.8	90	49
10	Admin Office	29.8	34	115	42
11	Class Room-BA I	29.7	33.9	198	40
	Maximum	32.4	35.6	198	49
	Minimum	29	33.9	90	40

CHAPTER VI STUDY OF WASTE MANAGEMENT

6.1 Segregation of Waste at Source:

The Waste is segregated at source. There are separate Bins for collection of Dry & Wet Waste.

Photograph of Waste Collection Bin:



6.2 Organic Waste Management:

It is recommended to convert the Organic Waste into Bio Compost in a Bio Composting Pit.

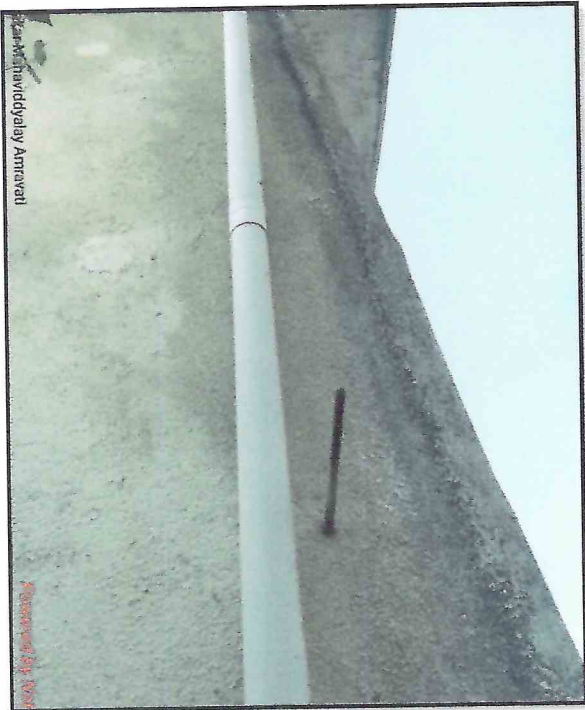
6.3 E Waste Management:

It is recommended to dispose of the E Waste through Authorized Agency.

CHAPTER VII STUDY OF RAIN WATER MANAGEMENT

The College has installed Rain Water Management project, wherein the rain water falling on the terrace is collected through pipes and is used to increase the underground water table.

Photograph of Rain Water Collecting Pipe:



CHAPTER-VIII STUDY OF ENVIRONMENT FRIENDLY INITIATIVES

8.1 Internal Tree Plantation:

The College has beautiful maintained Garden.

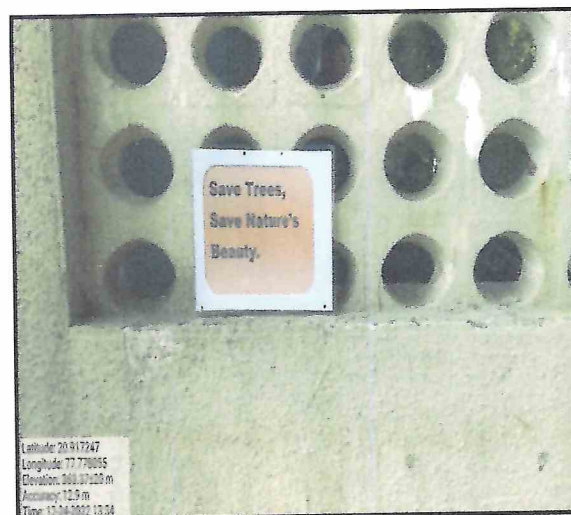
Photograph of Garden/Tree plantation in the campus:



8.2 Creation of Awareness on Importance of Saving the Trees:

The College has displayed Posters on Conservation of Natural Resources like Trees.

Photograph of Posters on Natural Resource Conservation:



ANNEXURE-I: VARIOUS AIR QUALITY, WATER QUALITY, NOISE & INDOOR COMFORT STANDARDS:

1. Category Wise Air Quality Index Values & Concentration of PM 2.5 & PM10:

No	Category	AQI Value	Concentration Range, PM 2.5	Concentration Range, PM 10
1	Good	0 to 50	0 to 30	0 to 50
2	Satisfactory	51 to 100	31 to 60	51 to 100
3	Moderately Polluted	101 to 200	61 to 90	101 to 250
4	Poor	201 to 300	91 to 120	251 to 350
5	Very Poor	301 to 400	121 to 250	351 to 430
6	Severe	401 to 500	250 +	430 +

2. Recommended Water Quality Standards:

No	Designated Best Use	Criteria
1	Drinking Water Source without conventional Treatment but after disinfection	pH between 6.5 to 8.5 Dissolved Oxygen 6 mg/l or more
2	Drinking water source after conventional treatment and disinfection	pH between 6 to 9 Dissolved Oxygen 4 mg/l or more
3	Outdoor Bathing (Organized)	pH between 6.5 to 8.5 Dissolved Oxygen 5 mg/l or more
4	Controlled Waste Disposal	pH between 6 to 8.5

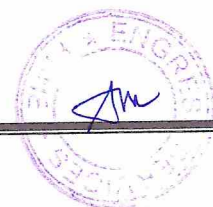
3. Recommended Noise Level Standards:

No	Location	Noise Level dB
1	Auditoriums	20-25
2	Outdoor Playground	55
3	Occupied Class Room	40-45

4	Un occupied Class Room	35
5	Apartment, Homes	35-40
6	Offices	45-50
7	Libraries	35-40
8	Restaurants	50-55

4. Thermal Comfort Conditions: For Non-conditioned Buildings:

No	Parameter	Value
1	Temperature	Less Than 33°C
2	Humidity	Less Than 70%



ENERGY AUDIT REPORT
of
DR. BABASAHEB AMBEDKAR MAHAVIDYALAYA,
Uttam Nagar, Amravati- 444606

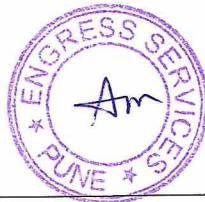


Year: 2021-22

Prepared by

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,
Near Mukhtangan English School, Parvati, Pune 411009
Phone: 09890444795, Email: engress123@gmail.com



MAHARASHTRA ENERGY DEVELOPMENT AGENCY



Maharashtra Energy Development Agency

(Government of Maharashtra Institution)

Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary,

Aundh, Pune, Maharashtra 411067

Ph No: 020-35000450

Email: eee@mahaurja.com, Web: www.mahaurja.com

ECN/2022-23/CR-43/1709

10th May, 2022

**CERTIFICATE OF REGISTRATION
FOR CLASS 'A'**

We hereby certify that, the firm having following particulars is registered with **MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)** under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

Name and Address of the firm : M/s Engress Services
Yashshree, 26, Nirmal Bag Society,
Near Mukhtangan English School,
Parvati, Pune – 411 009.

Registration Category : *Empanelled Consultant for Energy Conservation Programme for Class 'A'*

Registration Number : *MEDA/ECN/2022-23/Class A/EA-32.*

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empanelment is valid till 09th May, 2024 from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

General Manager (EC)



ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,
Near Mukhtangan English School, Parvati, Pune 411 009
Tel: 09890444795 Email: engress123@gmail.com

Ref: ES/DBAMA/21-22/02

Date: 13/6/2022

CERTIFICATE

This is to certify that we have conducted Energy Audit at Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati in the year 2021-22.

The College has adopted Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Maximum usage of Day Lighting

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Engress Services,



A Y Mehendale,
Certified Energy Auditor
EA-8192



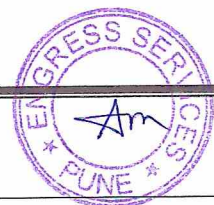
INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	5
II	Executive Summary	6
III	Abbreviations	7
1	Introduction	8
2	Study of Connected Load	9
3	Study of Present Energy Consumption	10
4	Study of Carbon Foot printing	12
5	Study of Usage of Alternate Energy	14
6	Study of Usage of LED Lighting	15

ACKNOWLEDGEMENT

We at Engress Services, Pune, express our sincere gratitude to the management of Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati for awarding us the assignment of Energy Audit of their Amravati campus for the Year: 2021-22.

We are thankful to all staff members for helping us during the field study.



EXECUTIVE SUMMARY

1. Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati consumes Energy in forms, namely Electrical Energy used for various gadgets & office equipment.

2. Present Energy Consumption & CO₂ Emissions:

No	Parameter/ Value	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Total	50592	29.71
2	Maximum	31876	17.52
3	Minimum	1156	0.68
4	Average	4216	2.48

3. The various projects already implemented for Energy Conservation:

- Usage of Energy Efficient BEE STAR Rated Equipment
- Usage of LED Lighting
- Maximum usage of Day Lighting

4. Usage of Alternate Energy:

- The College has yet to install Roof Top Solar PV Plant. Hence the percentage of Total Energy Demand met by Alternate Energy works out to be nil percent.

5. Study of Usage of LED Lighting:

- The Total Lighting Load is **2.32 kW**
- The Total LED Lighting Load is **1.76 kW**
- Percentage of LED Lighting to Total Lighting Load is **76 %**

6. Assumption:

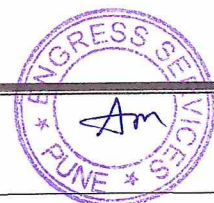
1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere

8. Reference:

- For CO₂ Emissions: www.tatapower.com

ABBREVIATIONS

SDGCT	:	Shri. Dadasaheb Charitable Trust
DBAMA	:	Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati
A C	:	Air Conditioner
MSEDCL	:	Maharashtra State Distribution Company Limited
MEDA	:	Maharashtra Energy Development Agency
MT	:	Metric Ton
kWh	:	kilo-Watt Hour
LPD	:	Liters per Day
LED	:	Light Emitting Diode
CFL	:	Compact Fluorescent Light
FTL	:	Fluorescent Tube Light
W	:	Watt



CHAPTER-I INTRODUCTION

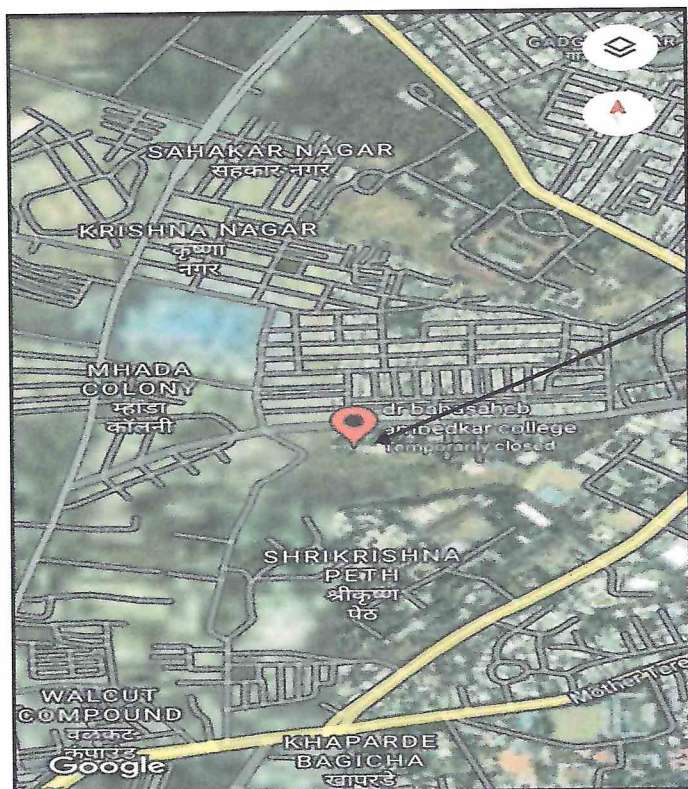
Objectives:

1. To study the connected load
2. To study the present Energy Consumption
3. To Study the present CO₂ emissions
4. To study usage of Renewable Energy
5. To study usage of LEDs

1.2 General Details of College: Table No:1

No	Head	Particulars
1	Name of Institution	Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati
2	Address	Uttam Nagar, Amravati
3	Year of Establishment	1972
4	Affiliation	Sant Gadge Baba Amravati University, Amravati

1.3 Google Earth Image:



College
Campus

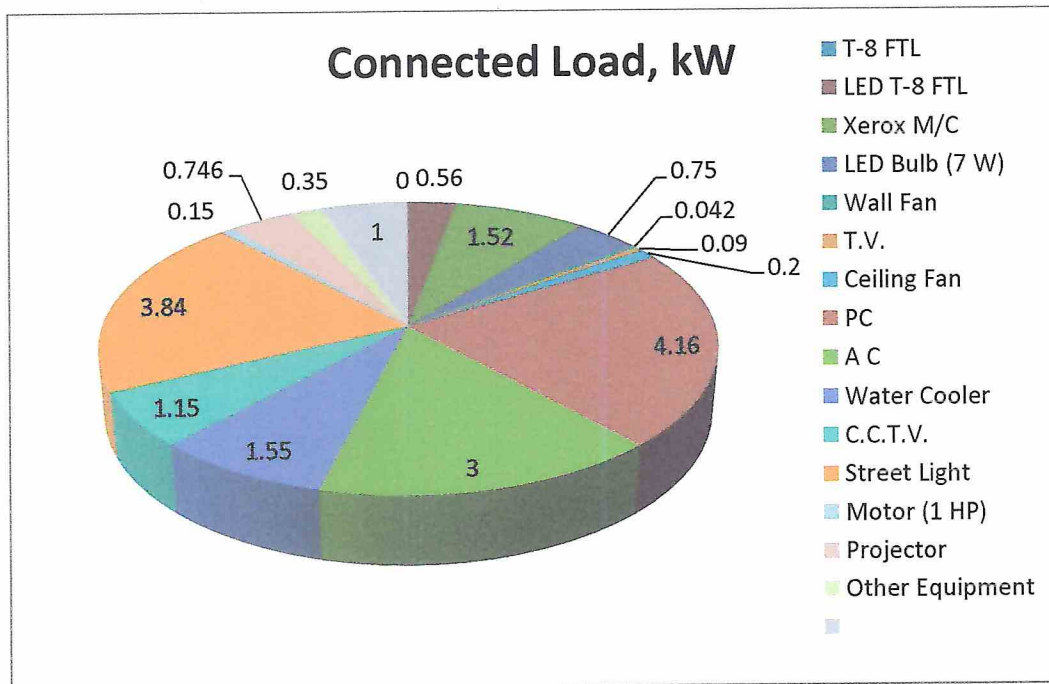
CHAPTER-II STUDY OF CONNECTED LOAD

In this chapter, we present the details of various Electrical loads as under

Table No-2: Equipment wise Connected Load:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	T-8 FTL	14	40	0.56
2	LED T-8 FTL	76	20	1.52
3	Xerox M/C	3	250	0.75
4	LED Bulb (7 W)	6	7	0.042
5	Wall Fan	2	45	0.09
6	T.V.	1	200	0.2
7	Ceiling Fan	64	65	4.16
8	PC	20	150	3
9	A C	1	1550	1.55
10	Water Cooler	2	575	1.15
11	C.C.T.V.	32	120	3.84
12	Street Light	3	50	0.15
13	Motor (1 HP)	1	746	0.746
14	Projector	1	350	0.35
15	Other Equipment	5	200	1
16	Total			19

Chart No 1: Connected Load:



CHAPTER-III STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No 3: Electrical Energy Consumption- 2021-22:

No	Month	Energy Consumed, kWh
1	Apr-21	1156
2	May-21	1156
3	Jun-21	1156
4	Jul-21	1156
5	Aug-21	1156
6	Sep-21	1156
7	Oct-21	1156
8	Nov-21	31876
9	Dec-21	2656
10	Jan-22	2656
11	Feb-22	2656
12	Mar-22	2656
13	Total	50592
14	Maximum	31876
15	Minimum	1156
16	Average	4216

Chart No 2: To study the variation of Monthly Electrical Energy Consumption:

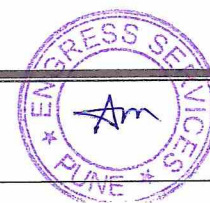
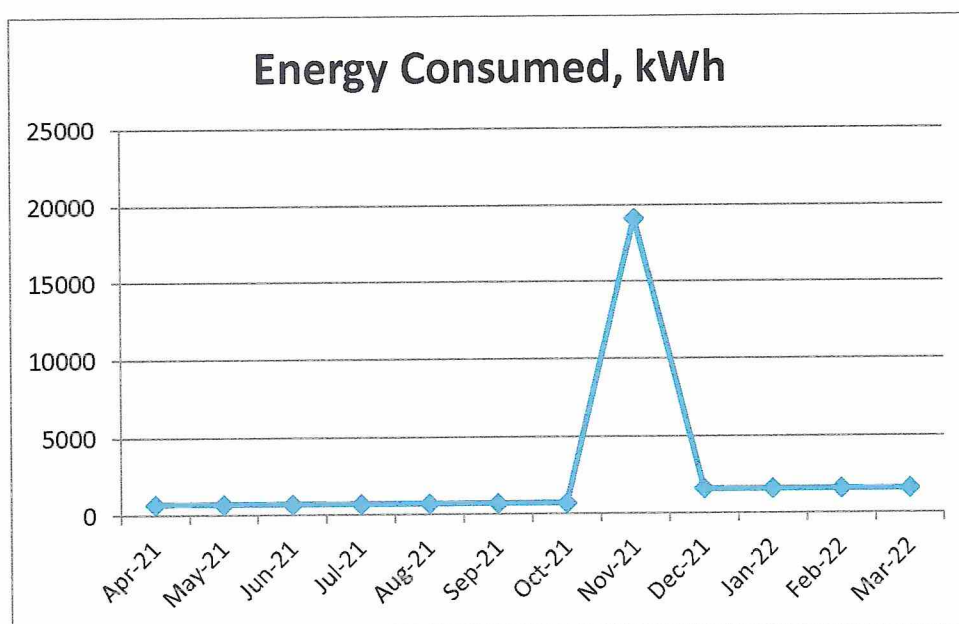


Table No 4: Variation in Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh
1	Total	50592
2	Maximum	31876
3	Minimum	1156
4	Average	4216

CHAPTER-IV

STUDY OF CARBON FOOTPRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions (CO₂ emissions), emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various form of Electrical Energy used by the College for performing its day to day activities

Basis for computation of CO₂ Emissions:

The basis of Calculation for CO₂ emissions due to Electrical Energy is as under

- 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere

Based on the above Data we compute the CO₂ emissions which are being released in to the atmosphere by the College due to its Day to Day operations

We herewith furnish the details of various forms of Energy consumption as under

Table No 5: Month wise Consumption of Electrical Energy & CO₂ Emissions:

No	Month	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Apr-21	1156	0.88
2	May-21	1156	0.83
3	Jun-21	1156	0.88
4	Jul-21	1156	0.68
5	Aug-21	1156	0.73
6	Sep-21	1156	0.83
7	Oct-21	1156	0.88
8	Nov-21	31876	17.52
9	Dec-21	2656	1.69
10	Jan-22	2656	1.64
11	Feb-22	2656	1.54
12	Mar-22	2656	1.64
13	Total	50592	29.71
14	Maximum	31876	17.52
15	Minimum	1156	0.68
16	Average	4216	2.48

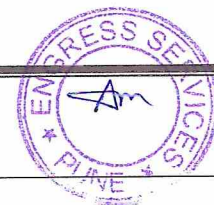


Chart No 3: Month wise CO₂ emissions:

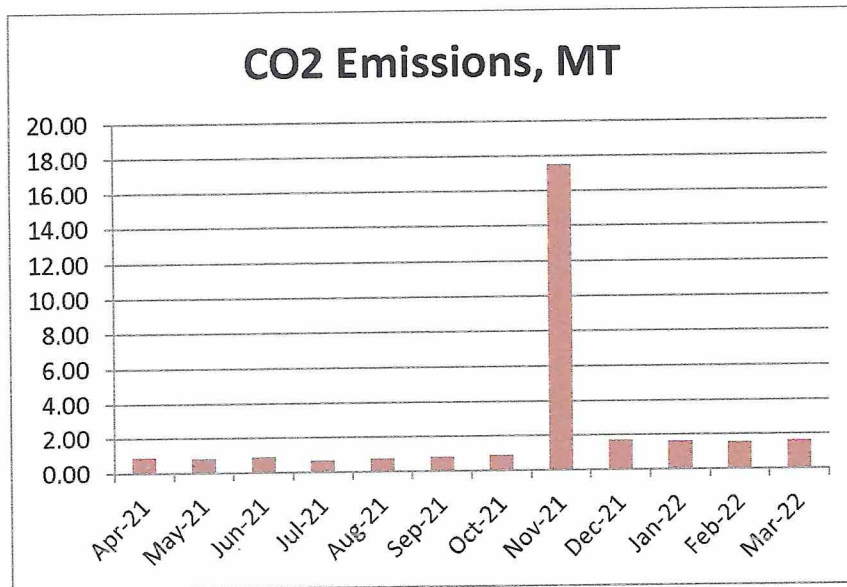
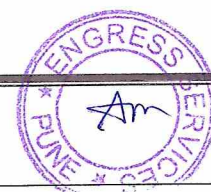


Table No 6: Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Total	50592	29.71
2	Maximum	31876	17.52
3	Minimum	1156	0.68
4	Average	4216	2.48

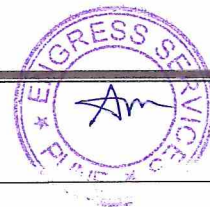


CHAPTER-V

STUDY OF USAGE OF ALTERNATE ENERGY

The College has yet to install Roof Top Solar PV Plant. The percentage of usage of Alternate Energy to Annual Energy Demand works out to be Nil.

It is recommended to install Solar PV Plant.



CHAPTER-VI STUDY OF USAGE OF LED LIGHTING

In this Chapter, we present the study of LEDs in the campus.

Table No 7: Computation of % of LED Lighting Load to Total Lighting Load:

No	Particulars	Value	Unit
1	No of T-8 FTL fittings	14	Nos
2	Load/per Fitting	40	W/Unit
3	Total Load of T-8 Fittings	0.56	kW
4	No of 20 W LED fittings	76	Nos
5	Load/per Fitting	20	W/Unit
6	Total Load of 20 W LED Fittings	1.52	kW
7	No of 07 W LED fittings	14	Nos
8	Load/per Fitting	7	W/Unit
9	Total Load of 70 W LED Fittings	0.098	kW
10	No of 50 W LED fittings	3	Nos
11	Load/per Fitting	50	W/Unit
12	Total Load of 40 W Square LED Fittings	0.15	kW
13	Total LED Lighting Load = 9+12+15+18+21	1.76	kW
14	Total Lighting Load = 3+6+9+12+15+18+21	2.32	kW
15	Total Lighting Load met by LEDs = $13 \times 100 / 14$	76	%

GREEN AUDIT REPORT
of
DR. BABASAHEB AMBEDKAR MAHAVIDYALAYA,
Uttam Nagar, Amravati - 444606



Year: 2021-22

Prepared by

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,
Near Mukhtangan English School, Parvati, Pune 411009
Phone: 09890444795, Email: engress123@gmail.com



MAHARASHTRA ENERGY DEVELOPMENT AGENCY



Maharashtra Energy Development Agency

(Government of Maharashtra Institution)

Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary,

Aundh, Pune, Maharashtra 411067

Ph No: 020-35000450

Email: eee@mahaurja.com, Web: www.mahaurja.com

ECN/2022-23/CR-43/1709

10th May, 2022

**CERTIFICATE OF REGISTRATION
FOR CLASS 'A'**

We hereby certify that, the firm having following particulars is registered with **MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)** under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

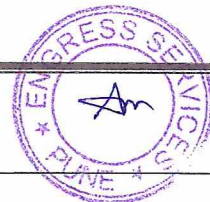
Name and Address of the firm : M/s Engress Services
Yashshree, 26, Nirmal Bag Society,
Near Muktangan English School,
Parvati, Pune – 411 009.

Registration Category : *Empanelled Consultant for Energy Conservation Programme for Class 'A'*

Registration Number : *MEDA/ECN/2022-23/Class A/EA-32.*

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **09th May, 2024** from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.


General Manager (EC)



ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,
Near Mukhtangan English School, Parvati, Pune 411 009
Tel: 09890444795 Email: engress123@gmail.com

Ref: ES/DBAMA/21-22/02

Date: 13/6/2022

CERTIFICATE

This is to certify that we have conducted Green Audit at Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati in the year 2021-22.

The College has adopted following Green Initiatives:

- Usage of Energy Efficient LED Fittings
- Maximum Usage of Day Lighting
- Usage of BEE STAR Rated Energy Efficient Equipment
- Segregation of Waste at Source
- Implementation of Rain Water Management Project
- Good Internal Roads
- Landscaped Garden & Tree Plantation in the campus
- Provision of Ramp for Divyangajan
- Creation of Awareness by Display of Posters on Conservation of Nature

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Engress Services,



A Y Mehendale,
Certified Energy Auditor
EA-8192



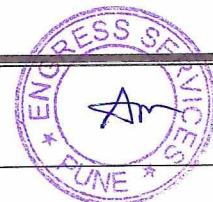
INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	5
II	Executive Summary	6
III	Abbreviations	8
1	Introduction	9
2	Study of Electrical Energy Consumption	10
3	Study of Carbon Foot printing	12
4	Study of Renewable Energy	14
5	Study of Waste Management	15
6	Study of Rain Water Management	17
7	Study of Green & Sustainable Practices	18
	Annexure	
I	Details of Trees in the campus	20

ACKNOWLEDGEMENT

We at Engress Services, Pune, express our sincere gratitude to the management of Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati for awarding us the assignment of Green Audit of their Amravati (Uttam Nagar) campus for the Year: 2021-22.

We are thankful to all staff members for helping us during the field measurements.



EXECUTIVE SUMMARY

1. Dr. Babasaheb Ambedkar Mahavidyalaya, Uttam Nagar, Amravati consumes Energy in two forms, namely LPG used for Cooking and Electrical Energy used for various gadgets & office equipment

2. Present Energy Consumption & CO₂ Emissions:

No	Parameter/ Value	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Total	50592	29.71
2	Maximum	31876	17.52
3	Minimum	1156	0.68
4	Average	4216	2.48

3. Initiatives for Energy Conservation:

- Usage of Energy Efficient LED Fittings
- Usage of BEE STAR Rated Equipment
- Maximum usage of Day Lighting

4. Usage of Renewable Energy:

The College has yet to install Roof Top Solar PV Plant. It is recommended to install Roof Top Solar PV Plant.

5. Waste Management:

5.1 Segregation of Waste at Source:

The Waste is segregated at source. There are Waste Collection Bins for Dry & Wet Waste.

5.2 Organic Waste Management:

It is recommended to convert the Organic Waste into Bio Compost in a Bio Composting Pit.

5.3 E Waste Management:

It is recommended to dispose of the E Waste through Authorized Agency.

6. Rain Water Management:

The College has installed Rain Water Management project, wherein the rain water falling on the terrace is collected through pipes and is used to increase the underground water table.

7. Green & Sustainable Initiatives:

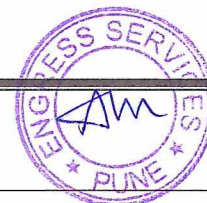
- Good Internal Road.
- Tree Plantation in the campus.
- Provision of Ramp for Divyangajan
- Creation of Awareness on Tree Conservation by Display of Posters

8. Assumption:

- 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere.

10. Reference:

- For CO₂ Emissions Calculations: www.tatapower.com



ABBREVIATIONS

SDGCT	:	Shri. Dadasaheb Charitable, Trust
DBAMA	:	Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati
A C	:	Air Conditioner
MSEDCL	:	Maharashtra State Distribution Company Limited
MEDA	:	Maharashtra Energy Development Agency
MT	:	Metric Ton
kWh	:	kilo-Watt Hour
LPD	:	Liters per Day
LED	:	Light Emitting Diode
CFL	:	Compact Fluorescent Light
FTL	:	Fluorescent Tube Light
W	:	Watt

CHAPTER-I INTRODUCTION

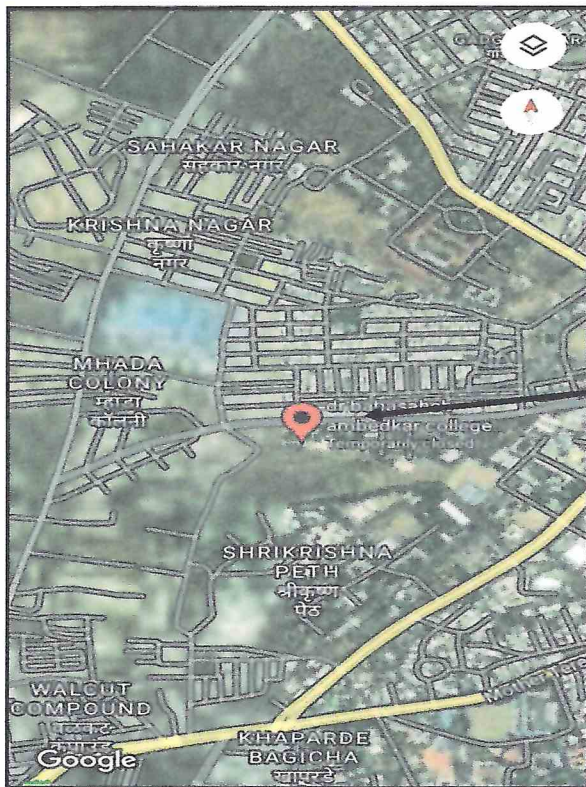
1.1 Objectives:

1. To study present Energy Consumption
2. To compute CO₂ emissions
3. To study usage of Renewable Energy
4. To study Waste Management Practices
5. To study Green & Sustainable Initiatives

1.2 General Details of College: Table No 1:

No	Head	Particulars
1	Name of Institution	Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati
2	Address	Uttam Nagar, Amravati
3	Year of Establishment	1972
4	Affiliation	Sant Gadge Baba Amravati University, Amravati

1.3 Google Earth Image:



College
Campus

CHAPTER-II STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No. 2: Electrical Energy Consumption- 2021-22:

No	Month	Energy Consumed, kWh
1	Apr-21	1156
2	May-21	1156
3	Jun-21	1156
4	Jul-21	1156
5	Aug-21	1156
6	Sep-21	1156
7	Oct-21	1156
8	Nov-21	31876
9	Dec-21	2656
10	Jan-22	2656
11	Feb-22	2656
12	Mar-22	2656
13	Total	50592
14	Maximum	31876
15	Minimum	1156
16	Average	4216

Chart No: 1: To study the variation of Monthly Energy Consumption:

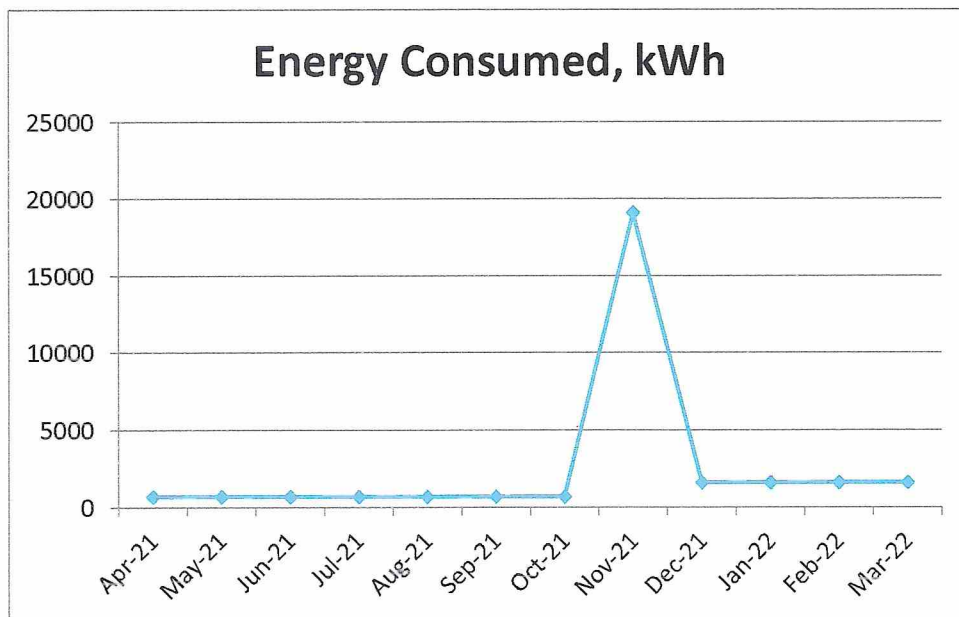


Table No 3: Variation in Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh
1	Total	50592
2	Maximum	31876
3	Minimum	1156
4	Average	4216

CHAPTER-III STUDY OF CARBON FOOTPRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions (CO₂ emissions), emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various form of Electrical Energy used by the College for performing its day to day activities

Basis for computation of CO₂ Emissions:

The basis of Calculation for CO₂ emissions due to Electrical Energy is as under

- 1 Unit (kWh) of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere

Based on the above Data we compute the CO₂ emissions which are being released in to the atmosphere by the College due to its Day to Day operations.

We herewith furnish the details of various forms of Energy consumption as under

Table No 4: Month wise Consumption of Electrical Energy & CO₂ Emissions:

No	Month	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Apr-21	1156	0.88
2	May-21	1156	0.83
3	Jun-21	1156	0.88
4	Jul-21	1156	0.68
5	Aug-21	1156	0.73
6	Sep-21	1156	0.83
7	Oct-21	1156	0.88
8	Nov-21	31876	17.52
9	Dec-21	2656	1.69
10	Jan-22	2656	1.64
11	Feb-22	2656	1.54
12	Mar-22	2656	1.64
13	Total	50592	29.71
14	Maximum	31876	17.52
15	Minimum	1156	0.68
16	Average	4216	2.48

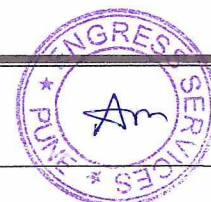


Chart No 2: Representation of Month wise CO₂ emissions:

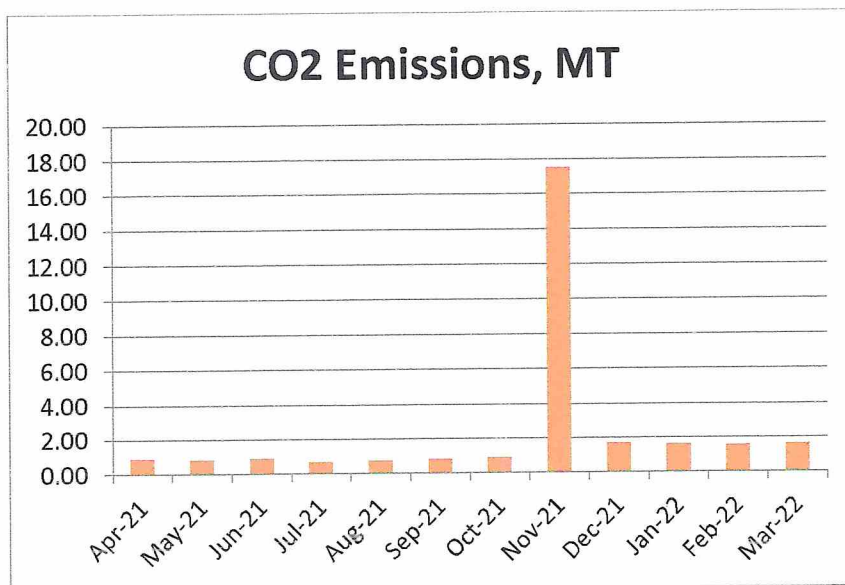
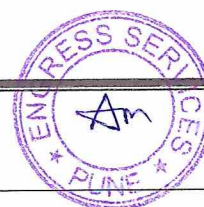


Table No 5: Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Total	50592	29.71
2	Maximum	31876	17.52
3	Minimum	1156	0.68
4	Average	4216	2.48

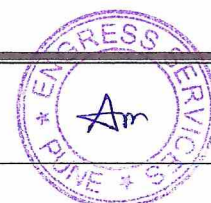


CHAPTER-IV

STUDY OF USAGE OF RENEWABLE ENERGY

The College has yet to install Roof Top Solar PV Plant.

It is recommended to install Solar PV Plant.



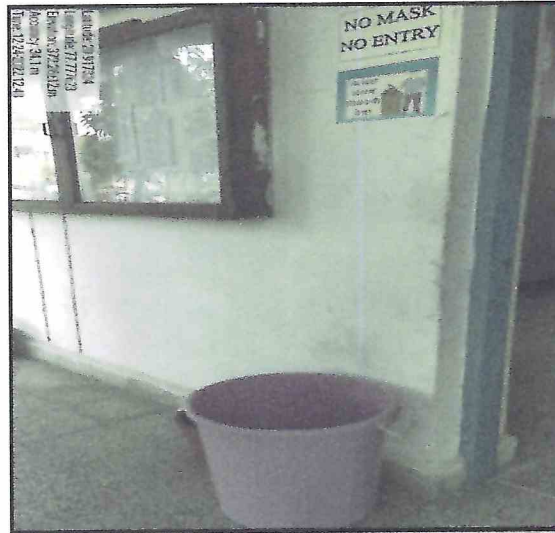
CHAPTER V

STUDY OF WASTE MANAGEMENT

5.1 Segregation of Waste at Source:

The Waste is segregated at source. There are separate Bins for collection of Dry & Wet Waste.

Photograph of Waste Collection Bin:



5.2 Organic Waste Management:

It is recommended to convert the Organic Waste into Bio Compost in a Bio Composting Pit.

5.3 E Waste Management:

It is recommended to dispose of the E Waste through Authorized Agency.

CHAPTER-VI STUDY OF RAIN WATER MANAGEMENT

The College has installed Rain Water Management project, wherein the rain water falling on the terrace is collected through pipes and is used to increase the underground water table.

Photograph of Rain Water Collecting Pipe:

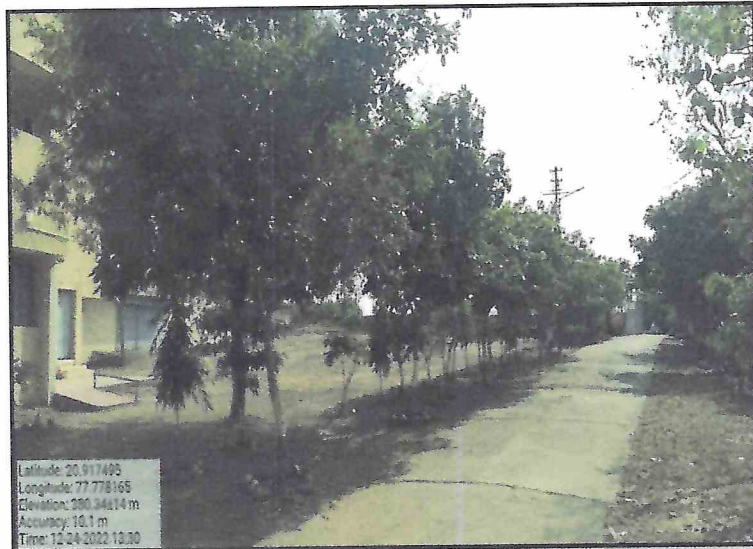


CHAPTER-VII STUDY OF GREEN PRACTICES

7.1 Pedestrian Friendly Roads:

The College has well defined pedestrian foot paths as to facilitate the easy movement of the students within the campus.

Photograph of Road within campus:



7.2 Green Landscaping with Trees and Plants:

The College has beautiful maintained Garden.

Photograph of Garden/Tree plantation in the campus:



7.3 Provision of Ramp for Divyangajan:

The College has constructed Ramp for easy movement of Divyanga students.

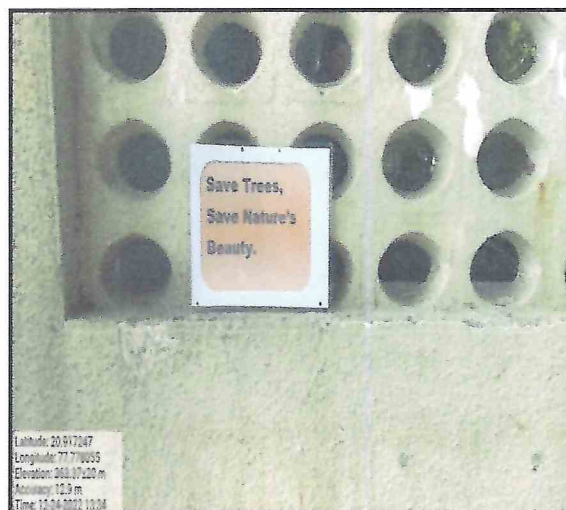
Photograph of Ramp:



7.4 Creation of Awareness on Importance of Saving the Trees:

The College has displayed Posters on Conservation of Natural Resources like Trees.

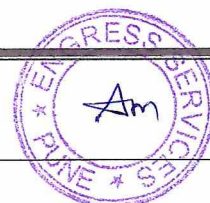
Photograph of Posters on Natural Resource Conservation:



**ANNEXURE:
DETAILS OF TREES IN THE CAMPUS**

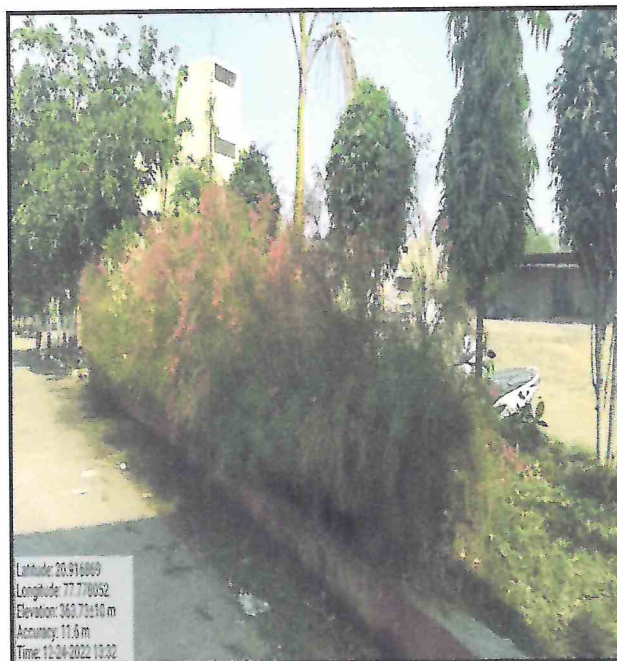
1. List of Trees:

No.	Common Name of Tree
1	Terminalia catappa
2	Tectona grandis
3	Ficus religiosa
4	Delonix regia
5	Azadirachata indica
6	Bixa Orellana
7	Dalbergia sissoo
8	Phyllanthus emblica
9	Sapindus mukorossi
10	Ficus benghalensis
11	Arecaceae
12	Ficus recemosa
13	Saraca asoca
14	Tamarindus indica
15	Cassia fistula
16	Ficus benghalensis L
17	Vachellia nilotica
18	Ziziphus mauritiana
19	Catharanthus roseus
20	Ehretia laevis
21	Mimusops elengi
22	Annona squamosa
23	Azadirachata indica
24	Bougainvillea
25	Catharanthus roseus
26	Borassus flabellifer
27	Arecaceae
28	Jasminum sambac
29	Saraca asoca
30	Lawsonia inermis
31	Mangifera indica L.



32	Thuja
33	Bougainvillea
34	Azadirachata indica

2. Photograph Ornamental Plants:



Green Campus

CERTIFICATE



Certificate No. GCC09052022DBAM
Certificate Holder Dr. Babasaheb Ambedkar Mahavidyalaya



Campus Address Mahadev Khori Road, Uttam Nagar, Dastur Nagar, Amravati, 444606
Maharashtra, India
Assessment Year AY 2020-2021

This Campus was assessed by AiM Sustainability Services, according to criteria as per chapter 7 of “National Assessment and Accreditation Council (NAAC) - Manual for Affiliated/Constituent UG & PG Colleges”, December 2021 and Chapter VII of “Guidelines for the Creation of the Internal Quality Assurance Cell (IQAC)” and Submission of Annual Quality Assurance Report (AQAR) by Accredited Institutions. We found that, “Environmental Aspects (Water, Air, Noise, Energy, Carbon Footprint, Waste, Biodiversity) and Social Aspects (Health, Safety, Accessibility to Divyangjan and Gender Justice)” fulfils the Green Campus Certification Program Requirement.



Anuradha Borekar

Dr. Anuradha Borekar
For AiM Sustainability Services
Pune; 2022-05-09

This Certificate is part of a full audit report and should be read in conjunction with it. This Certificate remains the property of AiM Sustainability and shall be returned upon request. AiM Sustainability expressly disclaims any liability or co-responsibility for any decision a person or entity would make based on this Certification. The campus management is solely responsible for compliance of NAAC requirement. AiM Sustainability Services has certified the Campus based on the claims made by institute in form of various submitted documents. Validity of given Certificate is subject to the annual surveillance. Person relying on this certificate should verify its validity by checking with aimsustain@gmail.com



Green Audit Report

**Dr. Babasaheb Ambedkar
Mahavidyalaya**

**Mahadev Khori Road, Uttam Nagar, Dastur Nagar,
Amravati, Maharashtra 444606**



(For the AY 2020-21)

Prepared by

**AiM Sustainability Services
Pune**



Date: 09/05/2022

Version: 01



Acknowledgement

Green Audit Assessment Team would like to express grateful thanks to the management of Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati, for assigning this important work of Green Audit. We appreciate the cooperation of our Team for completion of study. Our special thanks to

Sr.No	Name	Designation
1	Dr. Anjankumar L. Sahay Principal	Chairperson
2	Dr.P.S. Rao	Hon. Member
3	Dr. P. G. Rathod	Member
4	Dr. Sunil Kumar	Member
5	Prof. Shuddhodhan Kamble	Member
6	Prof. A.V. Dhote	Member
7	Prof. Anil Pachkudke	Member

Sincere thanks to all for giving us necessary inputs to carry out this very vital exercise of Green Audit. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements.

We sincerely hope and believe that the efforts made by the present Green Audit Committee will be helpful for Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati and we hope that it becomes a responsibility of all the stakeholders of this college campus to follow the proposed management plan suggested in the report to reduce our impact on our environment.



Picture 01: Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati

Green Audit Team

Dr. Anuradha Borekar: The evaluation of criteria as per chapter 7 of “National Assessment and Accreditation Council (NAAC) - Manual for Affiliated/Constituent UG & PG Colleges, December 2021 and Chapter VII of “Guidelines for the Creation of the Internal Quality Assurance Cell (IQAC) and Submission of Annual Quality Assurance Report (AQAR) by Accredited Institutions” is done by Dr. Anuradha. Dr. Anuradha also examined the “performance indicators of Green Audit & Green Audit Parameters/ Projects performed” as a Lead Auditor from AIMSS. She performed several Green Campus audit at various academic institute as per NAAC guideline. Dr. Anuradha secured the M.Phil. (Botany, Molecular Biology, Biotechnology and plant breeding), Ph.D. (Water quality assessment, Water conservation, Biodiversity and Environment).

Mr. Ajit Ghule

Technical advisor for Green Audit. He performs onsite survey. He is graduate in Social Science and having 5 years of experience in Green Audit.



Disclaimer

Green Audit Team has prepared this report for Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati based on input data submitted by the representatives of Institute. Complemented the report with the best judgment capacity of the expert team. While all reasonable 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 calculations 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.

Prepared by:

A handwritten signature in blue ink that reads 'Anuradha Borekar' with a horizontal line underneath.

Dr. Anuradha Borekar
AiM Sustainability Services

Pratima, Mohan Nagar,
Near Bitwise Tower, Pune - Bangalore
Expressway Baner, Pune 411045

aimsustain@gmail.com



Contents

Chapter Number.	Title	Page Number
1.	Introduction	8
2	Green Audit	11
3	Target Areas of Green Audit	14
4	Audit Framework and detailed findings	20
5	Audit observations	36

List of Annexure

Annexure No	Title
Annexure 1	Reference Documents / Surveys
Annexure 2	Physical Structure of College
Annexure 3	List of Electric Devices in the Institute
Annexure 4	On site Measurement
Annexure 5	Carbon Footprint Calculation
Annexure 6	List of Plants and Trees Biodiversity
Annexure 7	List of Awareness Program Undertaken by Institute
Annexure 8	Best Practices of Institute
Annexure 9	Environmental Awareness Posters/Stickers
Annexure 10	Awards and recognitions
Annexure 11	List of Interviewed Staff



Abbreviations

AHU: Air Handling Unit
BEE: Bureau of Energy Efficiency
CFL: Compact Fluorescent Lamp
COP: Coefficient of Performance
CPCB: Central Pollution Control Board
DG: Diesel Generator
ECRM: Energy Consumption Reduction Method
EF: Emission Factor
HSD: High Speed Diesel
HOD: Head of Department
HVAC: Heating, Ventilation, And Air Conditioning
ISO: International Standardisation Organisation
Km: Kilometer
kV: kilo Volt
kW: kilo Watts
Lab: Laboratory
LED: Light-Emitting Diode
MNRE: Ministry of New and Renewable Energy
MSEDCL: Maharashtra State Electricity Distribution Co. Ltd.
NSS: National Service Scheme
UGC: University Grant Commission
WHO: The World Health Organization
TR: Tons of Refrigeration



Executive Summary

In accordance with the requirement of chapter 7 of “National Assessment and Accreditation Council (NAAC) - Manual for Affiliated/Constituent UG & PG Colleges, December 2021” Risk-Based Audit conducted at Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati for Academic year 2020-21. Site Visit to perform the green audit at college was done in April 2022. The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. With this in mind, the specific objectives of the audit were to evaluate the adequacy of the management control framework of Environment Sustainability as well as the degree to which the Departments are in compliance with the applicable regulations, policies and standards. During the initial planning of the audit, an analysis was conducted in order to identify, evaluate and prioritize the risks associated with the environmental sustainability. The analysis was based upon an examination of the policies, supportive documents that govern the environmental sustainability, on data analysis, and on the results of preliminary interviews with personnel considered key in the environmental management in the campus. The criteria and methods used in the audit were based on the identified risks. The methodology used included physical inspection of the campus, review of the relevant documentation, and interviews.

Statement of Assurance

This audit has been conducted in accordance with the NAAC Green Audit requirement. In our professional judgement, sufficient and appropriate audit procedures were completed, and evidence gathered to support the accuracy of the conclusions reached and contained in this report. The conclusions are based on a comparison of the situations as they existed at the time of the audit with the established criteria. Green Audit Report is prepared for the academic session 2020-21.

Summary of Findings

The main findings of the audit show that, in general, all the departments and students are aware about the need for environmental protection at a general level. It was also observed that a number of best practices such as maintaining potted plants, rain water harvesting system, waste management (compost pit), water management, application of day light, cross ventilation, gender equity, health checkup plan, blood donation camp, vaccination camp, Divyangjan student facility, carpooling, biodiversity plantation, e-waste disposal, etc. are followed in the campus. Nevertheless, on detailed review, it was observed that, as the college is continued implementing Green Policy, several best practices are in pipeline. In addition, certain processes could benefit from further review in order to improve their efficiency, and consistency. This report explained the opportunity for improvement. Please refer chapter 5 for more details.



Chapter 01: Introduction

About the College:

Dr. Babasaheb Ambedkar College of Arts, Commerce & Science, Amravati was established in 1972 by Hon'ble Shri. Dadasaheb Gawai, member of Rajya Sabha under the aegis of Shri Dadasaheb Gawai Charitable Trust, Amravati. It is a Grant-in-aid college, affiliated to SGBAU Amravati. It was recognized by UGC in 1996 under 2(f) and 12 (B) of the UGC Act 1956. It has been serving the educational needs of people living in Amravati and its adjoining areas, especially of those who come from the weaker sections of the Society.

The Shri Dadasaheb Gawai Charitable Trust with high aim decided to establish a college in Amravati city. This college was established in 1972. The name Dr. Babasaheb Ambedkar. The college conducts B.A, B.Com, and M.Com. It has its own specious infrastructure includes building, library, ladies hostel, reading room, NRC, Conference hall, Gym and Indoor-Outdoor games facilities. It achieved good results. It always follows the motto of Hon'ble Shri. Dadasaheb Gawai, "Education Through Self Help".

Reference- <https://drbamvamt.org/about-college/>

President Desk



Mrs. Kirtitai R. Arjun
President
Shri Dadasaheb Gawai Charitable
Trust

My dear young and budding Aspirants, we wholeheartedly invite you to join our Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati which has been operating under Shri Dadasaheb Gawai Charitable Trust. It is an educational campus with a difference. We invite the young talents to join our college. Do not worry about your finances and scanty resources, we are here to support you under all circumstances. We, the Management and the staff in particular would work dedicatedly to provide not just formal education but would also work for all round development of your personality by helping you to discover your own hidden talents and potentials. We would groom you to be a very enlightened human being and responsible citizen.

Guidance is provided to educate in all spheres so that you can courageously face challenges of globalization in today's competitive world. In future you will be judged not only by your knowledge but by your wisdom i.e. the way you use your knowledge in the time of crisis. Adventure, courage, determination and creating faith in one's own self are some of the virtues we would instill in all those who choose to be a part of Shri Dadasaheb Gawai Charitable Trust's Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati.

It is a green campus with more than 100 species of plants, lush green gardens, surrounding Mini-Golf ground, Volleyball court, Indoor Stadium and big play grounds. Our full fledge United Club Sports of India caters to physical and mental well-being along with spiritual growth. This in turn provides a very natural, pleasant, lively and an inspiring learning environment for all stake holders.

"On our campus – Learning with fun is what we believe in !! We seek to nurture our students and ensure that they get the best experience of learning and enjoyment both at our campus."

Reference- <https://drbamvamt.org/president-desk>



Honorable Principal's Message



Dr. Anjankumar L. Sahay
Principal
Dr. Babasaheb Ambedkar Mahavidyalaya

It's my proud privilege to welcome you all to Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati. It is widely acknowledged that students are the backbone of the society and have great responsibility towards development of the nation as also the mankind. It essentially deals with application of technology and balances the realm of pure knowledge and its use. Keeping this in mind, Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati is providing quality education to the students especially of marginalized sections of the society. We nurture our students by providing a platform for gainful educational interaction and development so as to contribute in the national growth. Our institute also provides our pupils a healthy atmosphere to enhance their skills and knowledge base through mutual interaction and affording an opportunity to share their thoughts with the stalwarts in the field of education. The College as a strong unit is in a position to deliver the best theoretical and practical training to the students and offer the best talent to the employers. The students are given training in interview techniques and related soft skills to develop the multi-faceted personality to flourish in their career. I wish all the best to the aspiring students, parents, employers and all other stakeholders in achieving their goals...

Reference - <https://drbamvamt.org/principal-desk/>



Mission and Vision

Mission-

1. Serve the educational needs of the downtrodden students of the society and enable them to join the world educational standard
2. To emerge as a one-stop destination for all RURAL, Buddhist Community & TRIBAL students of Amravati District so as to fulfill their dreams in field of their choice and transform them into thorough professionals and a good human being.
3. conduct community education programs that encourage learning at every stage of life;
4. administer customized training programs for business and industry and extend career development support for students, faculty, and staff through career exploration,
5. counseling, job preparation, job opportunities, and academic and classified staff development;

Vision-

1. To conduct programmes and activities that will instill sense of social commitment among the students and help them to become responsible citizens of the nation.
2. Advancing new approaches to education, including academic centers of excellence
3. To initiate for industry/organization linkages/collaborations with the view to continuously train and groom the students and college staff members

Reference: <https://drbamvamt.org/mission-vision/>



Chapter 02: Green Audit

The process of assessing the environmental impact of an organization, process, project, product, etc. Green Audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. The “Green Audit” aims to analyze environmental practices within and outside the college campus, which will have an impact on the eco-friendly ambience. It was initiated with the motive of inspecting the work conducted within the Institute whose exercises can cause risk to the health of inhabitants and the environment. Green audit can be one of the initiatives for such institutes to account their “*energy conservation, water resource use as well as wastewater, E-waste, solid waste generation, biodiversity, rain water harvesting, waste recycling (solid/liquid waste management, e-waste management), carbon neutral, green practices, social aspects*”. Green Audit process can play an important role in promotion of environmental awareness and sensitization about resource use. It can create consciousness towards ecological values and ethics. Through Green Audit, one gets a direction as how to improve the condition of environment and society.

The National Assessment and Accreditation Council (NAAC), which is an autonomous body funded by the University Grants Commission of Government of India, has made ‘Environmental Consciousness’ mandatory criterion (Criterion VII) for grading educational institutes.

NAAC criteria VII Environmental Consciousness:

Universities are playing a key role in development of human resources worldwide. Higher education institutes campus run various activities with aim to percolate the knowledge along with practical dimension among the society. Likewise, different technological problems higher education institutes also try to give solution for issues related to environment. Different types of evolutionary methods are used to assess the problem concerning environment. It includes Environmental Impact Assessment (EIA), Social Impact Assessment (SIA), Carbon Footprint Mapping, Green audit etc. National Assessment and Accreditation Council (NAAC) which is a self- governing organization that declares the institutions as Grade according to the scores assigned at the time of accreditation of the institution. Green Audit has become mandatory procedure for educational institutes under Criterion VII of NAAC. The intention of green audit is to upgrade the environmental condition inside and around the institution. It is performed by considering environmental parameters like water and wastewater accounting, energy conservation, waste management, air, noise monitoring etc. for making the institution eco-friendlier. Students are the major strength of any academic institution. Practicing green actions in any educational institution will inculcate the good habit of caring natural resources in students. Many environmental activities like plantation and nurturing saplings and trees, Cleanliness drives, Bird watching camps, no vehicle day, Rainwater harvesting, etc. will make the students good citizen of the country. Through Green Audit, higher educational institutions can ensure that they contribute towards the reduction of Global warming through Carbon Footprint reduction measures.

Goals of Green audit:

Institute has conducted a green audit with specific goals as:

- Identification and documentation of green practices followed by Institute
- Identify strength and weakness in green practices
- Conduct a survey to know the ground reality about green practices
- Analyze and suggest solution for problems identified from survey
- Assess facility of different types of waste management
- Increase environmental awareness throughout campus
- Identify and assess environmental risk



- Motivates staff for optimized sustainable use of available resources
- The long-term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental issue before they become problem

Scope of Work:

The purpose of the audit is to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institute. With this in mind, the specific objectives of the audit were to evaluate the adequacy of the management control framework of Environment and Social Sustainability as well as the degree to which the Institute are in compliance with the chapter 7 of “*National Assessment and Accreditation Council (NAAC) - Manual for Affiliated/Constituent UG & PG Colleges*”. Therefore, the main objective of this green audit is to get a third-party verification on the quality of various natural / social aspect and to evaluate the opportunities of improvement, possible best practices.

Objectives:

The main objective of this green audit is to assess the environmental quality and the management strategies being implemented in the campus. The specific objectives are:

- To identify and analyze significant environmental issues.
- To monitor environmental management practices.
- To examine the current practices that can impact the environment.
- To create awareness among the various stakeholders of the Institute.
- To prepare a Green Audit Report on green practices followed by different Departments, support services and administration
- To prepare a checklist of flora and fauna diversity in and around the college campus.
- To find out various sources of organic and solid waste generation and mitigation possibilities.
- To suggest sustainable energy usage and water conservation practices.
- Continuous assessment for betterment in performance in green practices and its evaluation.



Methodology

To perform green audit, the methodology included different techniques such as physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. The study covered the following area to summaries the present status of environment and social management in the campus:

- Onsite field visits were conducted by the Green Audit Team
- Enquiries were conducted amongst different stakeholders to know about the various components in connection with water use, energy consumption and waste disposal, biodiversity, renewable energy use, carbon footprint, social aspects etc.
- The water quality analysis was done using standard protocols
- Air quality analyses of the college campus were carried out using standard protocol
- The noise levels were measured using a Sound Level Meter at selected sampling stations during the day time within the campus
- Lux measurement was done at the classroom, library, offices and laboratories
- Electricity consumption and management
- Waste management
- Biodiversity status of the campus



Chapter 03: Target Areas of Green Audit

Environmental Aspects:

1. Water

Water which is precious natural resource available with fixed quantum. The availability of water is decreasing due to increasing population of nation, as per capita availability of utilizable water is going down. Due to ever rising standard of living of people, industrialization, urbanization, demand of fresh water is increasing day by day. The unabated discharge of industrial effluent in the available water bodies is reducing the quality of these ample sources of water continuously. Hence, the national mission on water conservation was declared by the then Hon. Prime Minister Narendra Modi as 'Jal Shakti Abhiyan' and appealed to all citizens to collectively address the problem of water shortage, by conserving every drop of water and suggested for conducting water audit for all sectors of water use.

Water assessment can be defined as a qualitative and quantitative analysis of water consumption to identify means of reducing, reusing and recycling of water. Water assessment is nothing but an effective measure for minimizing losses, optimizing various uses and thus, enabling considerable conservation of water in irrigation sector, domestic, power and industrial as well. A water assessment is a technique or method which makes possible to identify ways of conserving water by determining any inefficiencies in the system of water distribution. The measurement of water losses due to different uses in the system or any utility is essential to implement water conservation measures in such an establishment. Please find below reference for permissible limit of Drinking Water as per Indian Standard Drinking Water — Specification (Second Revision) ICS13.060.20

https://cpcb.nic.in/wqm/BIS_Drinking_Water_Specification.pdf

Table 1 Organoleptic and Physical Parameters
(Foreword and Clause 4)

Sl No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to Part of IS 3025	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Colour, Hazen units, <i>Max</i>	5	15	Part 4	Extended to 15 only, if toxic substances are not suspected in absence of alternate sources
ii)	Odour	Agreeable	Agreeable	Part 5	a) Test cold and when heated b) Test at several dilutions
iii)	pH value	6.5-8.5	No relaxation	Part 11	—
iv)	Taste	Agreeable	Agreeable	Parts 7 and 8	Test to be conducted only after safety has been established
v)	Turbidity, NTU, <i>Max</i>	1	5	Part 10	—
vi)	Total dissolved solids, mg/l, <i>Max</i>	500	2 000	Part 16	—

NOTE — It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.

2. Air

Air quality in the academic institute is very important for the health of the students, faculty and staff of the institute. The air pollution sources in the college campus are wind, storm, pollen grains, natural dust, vehicularemisions, fire and laboratory fumes etc. Therefore, air quality assessment in the college campus is necessary.

Reference: https://cpcb.nic.in/uploads/National_Ambient_Air_Quality_Standards.pdf



3. Noise

Noise pollution is unwanted and unpleasant sound which can deteriorate human health and other living organisms present in the Environment. At workplace machines, traffic, vehicles create occupational noise. Employees and occupants are exposed to this harmful noise. Due to this occupant can face many health problems such as headache, hearing impairment, hypertension, heart problem, annoyance and sleep disorder. Noise Pollution Monitoring process is a part of Environmental Monitoring & Testing as noise pollution is also increasing exponentially in recent years. Noise intensity distracts the day today working in college campus. Noise intensity is measured in dB. Permission limit as CPCB and WHO guideline is as below.

Reference: <https://cpcb.nic.in/who-guidelines-for-noise-quality/>

In WHO noise quality guidelines, values are summarized with regard to specific environments and effects. Foreach environment and situation, the guideline values take into consideration the identified health effects and are set, based on the lowest levels of noise that affect health (critical health effect). Guideline values typically correspond to the lowest effect level for general populations, such as those for indoor speech intelligibility. Noise guideline values are for the onset of health effects from noise exposures.

Specific Environment	Time Base (hours)	Standard limits as per WHO guidelines	
		LAeq [dB]	LAmx, fast [dB]
School class rooms and pre-schools, indoors	During class	35	-
School, playground outdoor	During play	55	-

4. Energy

Consumption of energy helps in understanding the success towards green environment. Lesser the consumption of energy more contribution the environment is. Electricity can be used efficiently by replacing CFL bulbs and tube lights with LED lamps and fluorescent tubes wherever possible and use of LED screens in place of CRT. Star rated Air conditioners should be placed in place of old air conditioners. Efficiency of air conditioners should be increased by minimizing the leakage using through open doors and cupboards of the room. Infrastructural changes that allow maximum natural light but minimizes heat in-grace help in reducing the use of electricity. Simple practices like cleaning skylights and lamps will increase the luminosity. There should not be any idle energy consumption.

This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliances and vehicles. Energy use is clearly an important aspect of campus sustainability.

The Standards & Labeling Programme is one of the major thrust areas of BEE. A key objective of this scheme is to provide the consumer an informed choice about the energy saving and thereby the cost saving potential of the relevant marketed product. The scheme targets display of energy performance labels on high-energy end-use equipment & appliances and lays down minimum energy performance standards.

Presently, S&L program covers star rating for 26 appliances/equipment. List of the appliances covered under the ambit of Star Labeling is as given below:

Reference: <https://beeindia.gov.in/content/standards-labeling>



For Lighting systems in schools

Reference: https://www.partnershipsforschools.org.uk/documents/Design/SSLD_4_Lighting_systems.pdf

5. Carbon Footprint

Carbon footprint is the total amount of Green House Gases (GHGs) emitted in terms of carbon dioxide by a person, institute, company, state or country. Carbon footprint is typically given in tons of CO₂ equivalent per year. For calculation of carbon footprint the basic data regarding direct and indirect sources of emission of Green House Gases is needed. How we get around and commute to and from college each day has an impact on the environment through the emission of greenhouse gases into the atmosphere by the burning of fossil fuels (such as petrol). The most common greenhouse gases are carbon dioxide, water vapor, methane, nitrous oxide and ozone. Of all the greenhouse gases, carbon dioxide is the most prominent greenhouse gas, comprising 402 ppm of the Earth's atmosphere. The release of carbon dioxide gas into the Earth's atmosphere through human activities is commonly known as carbon emissions

Reference: <https://www.carbonfootprint.com/> and <https://ghgprotocol.org/standards>

Emission factor reference:

CEA: <https://cea.nic.in/cdm-co2-baseline-database/?lang=en>

DEFRA: <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2021>

6. Waste Management

This indicator addresses waste production and disposal of different wastes like paper, food, plastic, glass, dust etc. Furthermore, solid waste often includes wasted material resources that could otherwise be channeled into better service through recycling, repair and reuse. Solid waste generation and management is a burning issue. Unscientific handling of solid waste can create threats to everyone. The present Prime Minister of India Sri Narendra Modi launched 'Swachh Bharat Abhiyan' (Clean India Mission) on 2nd October 2014. In this mission, the proper use of dust/waste bins is one of the major priorities. For the implementation of this mission, collective mass effort is necessary. For proper segregation and management, proper use of waste bins is the only solution for waste management purpose in the college campuses.

E waste management reference: https://cpcb.nic.in/uploads/Projects/E-Waste/e-waste_amendment_notification_06.04.2018.pdf

<https://mpcb.gov.in/waste-management/electronic-waste>

Solid waste management reference: <https://www.mpcb.gov.in/waste-management/municipal-solid-waste>

https://www.mpcb.gov.in/sites/default/files/solid-waste/msw_rules_2016.pdf

Biomedical waste management: <https://mpcb.gov.in/waste-management/biomedical-waste>



7. Green Belt/ Biodiversity status

To conserve this biodiversity, our first need is to learn about the existing diversity of the place. Unless we know whom to conserve, we will not be able to plan proper conservation initiatives. Also, it is important to understand the biodiversity of an area so that the local people can be aware of the richness of biodiversity of the place they are living in and their responsibility to maintain that richness.

This study allows us to understand the faunal and floral diversity of the surrounding areas of the college premises and their interrelationship

Reference: <https://www.worldwildlife.org/pages/what-is-biodiversity>

Biodiversity is all the different kinds of life you'll find in one area—the variety of animals, plants, fungi, and even microorganisms like bacteria that make up our natural world. Each of these species and organisms work together in ecosystems, like an intricate web, to maintain balance and support life. Biodiversity supports everything in nature that we need to survive: food, clean water, medicine, and shelter.

8. Social Aspects

“Social Auditing is a process that enables an organization to assess and demonstrate its social benefits and limitations. It is a way of measuring the extent to which an organization lives up to the shared values and objectives it has committed itself to. Social auditing provides an assessment of the impact of an organization’s non-financial objectives through systematically and regularly monitoring its performance and the views of its stakeholders.”

A. Health and Safety

The very purpose of greening of educational campuses is to ensure that the students study and grow up in a healthy environment, giving out the best of their physical and intellectual contributions to the society. The method for assessing the physical wellbeing of the educational institution has been decided as follows:

- i. Examine the prevalence of sickness leave, if there are any.
- ii. Examine the first aid and medical facilities available for resident students and staff.
- iii. Evaluate the atmospheric quality, drainage systems and land pollution – if any within the campus; and Assess the achievements of students in sports and games, especially in inter collegiate and inter- Institute contests.

https://www.ugc.ac.in/pdfnews/4006064_Safety-of-Students-Guidelines.pdf

https://www.education.gov.in/sites/upload_files/mhrd/files/SOP_Guidelines_for_reopening_schools.pdf

https://www.ugc.ac.in/pdfnews/4613471_Guidelines.pdf

B. Accessibility to Divyangjan and Gender Justice

Right of Persons with Disabilities Act, 2016 prohibits discrimination against individuals with physical and mental disabilities. Institute shall be is against all kinds of discrimination on any grounds including disability. Institute shall intend to advance a comprehensive and inclusive teaching and learning environment in which incapacitated students and employees are not distraught or treated unfavorably. The institute must aim to design its programs, administrations, and activities accessible to the students. All the authorities of the institute shall strive in order to extend a help hand towards the differently abled so as to make sure about the Benefits of grounds programs, administrations, and activities.



- Institute shall have Inclusive Culture to avoid discrimination, exploitation and exclusion of DisableStudents and Staff from all spheres of work and education.
- Institute shall create suitable regulatory mechanism for effective delivery of services to DisableStudents and Staff of the institute
- Institute shall ensure implementation of all legislations with respect to persons with disabilities.
- To provide accessible and inclusive education at the institute.
- Institute shall ensure full participation of persons with disabilities and to provide them the equal opportunities for development.
- Institute shall provide necessary budget allocation to achieve above objectives.

Reference:

https://www.ugc.ac.in/pdfnews/1604485_person-with-disabilities-Uni.pdf
https://www.ugc.ac.in/pdfnews/7348678_Guidelines_Exam-Divyangjan-JAN-2019.pdf
<https://disabilityaffairs.gov.in/content/page/guidelines.php>
<https://disabilityaffairs.gov.in/upload/uploadfiles/files/Corrigendum-08-02-19.pdf>
https://disabilityaffairs.gov.in/upload/uploadfiles/files/Guidelines-29_08_2018.pdf
https://upload.indiacode.nic.in/showfile?actid=AC_CEN_25_54_00002_201649_1517807328299&type=notification&filename=Guidelines%20notification_04.01.2018.pdf

Gender Justice:

Reference: <https://www.un.org/sustainabledevelopment/gender-equality/>



Goal 5: Achieve gender equality and empower all women and girls

Gender equality is not only a fundamental human right, but a necessary foundation for a peaceful, prosperous and sustainable world.

There has been progress over the last decades: More girls are going to school, fewer girls are forced into early marriage, more women are serving in parliament and positions of leadership, and laws are being reformed to advance gender equality. Despite these gains, many challenges remain: discriminatory laws and social norms remain pervasive, women continue to be underrepresented at all levels of political leadership, and 1 in 5 women and girls between the ages of 15 and 49 report experiencing physical or sexual violence by an intimate partner within a 12-month period. The effects of the COVID-19 pandemic could reverse the limited progress that has been made on gender equality and women’s rights. The coronavirus outbreak exacerbates existing inequalities for women and girls across every sphere – from health and the economy, to security and social protection. Women play a disproportionate role in responding to the virus, including as frontline



healthcare workers and careers at home. Women's unpaid care work has increased significantly as a result of school closures and the increased needs of older people. Women are also harder hit by the economic impacts of COVID-19, as they disproportionately work in insecure labour markets. Nearly 60 per cent of women work in the informal economy, which puts them at greater risk of falling into poverty. The pandemic has also led to a steep increase in violence against women and girls. With lockdown measures in place, many women are trapped at home with their abusers, struggling to access services that are suffering from cuts and restrictions. Emerging data shows that, since the outbreak of the pandemic, violence against women and girls – and particularly domestic violence – has intensified.



Chapter 04: Audit Framework and detailed findings

Audit Framework and detailed findings

The following audit framework is used for conducting Green Audit in 2020-2021. The framework also lists the findings and observations for every criterion

Checklist Question	Response from college										
Organizational Level Efforts											
Do you have a campus green team?	<p>Yes, Environment Conservation and Protection Committee is available on below link https://drbamvamt.org/iqac/</p> <p>Followings are the committee members</p> <table border="1"> <tr> <td>1</td> <td>Dr. P. G. Rathod</td> </tr> <tr> <td>2</td> <td>Dr. Sunil Kumar</td> </tr> <tr> <td>3</td> <td>Prof. Shuddhodhan Kamble</td> </tr> <tr> <td>4</td> <td>Prof. A.V. Dhote</td> </tr> <tr> <td>5</td> <td>Prof. Anil Pachkudke</td> </tr> </table>	1	Dr. P. G. Rathod	2	Dr. Sunil Kumar	3	Prof. Shuddhodhan Kamble	4	Prof. A.V. Dhote	5	Prof. Anil Pachkudke
1	Dr. P. G. Rathod										
2	Dr. Sunil Kumar										
3	Prof. Shuddhodhan Kamble										
4	Prof. A.V. Dhote										
5	Prof. Anil Pachkudke										
Have you established an environmental mission/vision for your campus?	<p>Yes, audit team verified the Green Campus vision/mission of institute, environmental mission/Vision for our campus is to keep the campus pollution free and to use natural energy resources at maximum level.</p>										
Have you set environmental goals for your campus?	<p>Yes, audit team verified that institute sets Environmental Goals, which is given on below link, https://drbamvamt.org/core-value-of-institution/</p> <p>The College is acutely aware of its environmental responsibilities and embraces principle of sustainable development to ensure that any adverse environmental impact of its activities is minimized.</p> <p>The environmental goal for campus is to make the campus green and pollution free. To provide oxygen at the maximum level and to keep atmosphere of fresh air.</p>										
<p>Do you encourage sustainable behavior via?</p> <ul style="list-style-type: none"> ➤ education campaigns? ➤ Poster, placard, message, stickers ➤ contests? ➤ awards? 	<p>During discussion with Green Committee, we noted Institute encourage sustainable behavior below,</p> <ul style="list-style-type: none"> • YES, In the institute "Environmental Studies" is the compulsory subject for the second-year students, through which we impart the knowledge of sustainable behavior. • Institute took several initiatives under NSS program like plantation, cleanliness campaign. NSS team organizes the plantation program every year. • The NSS volunteers are taught to work for noble cause 										



	<p>of environment and the Nature.</p> <ul style="list-style-type: none"> • In the campus, Poster, placard, message, stickers have been displayed to make awareness for sustainable behavior. • Audit team observed the messages like “switch off light when not in use” ,Posters showing the importance of water, trees and clean environment at various location. • College organize various competition regarding Pollution, Green Campus, Cleanliness drive, etc. • Recently Institute received the second prize in the Clean Campus Competition organized by our trust, Shri Dadasaheb Gawai Charitable Trust, Amravati. <p>Please refer annexure for awards secured by Institute</p>
<p>Are sustainability concepts and environmental literacy integrated across disciplines? between the environment, society?</p>	<p>The institute is quite aware of its role towards the environmental consciousness and hence the institute follows the various green practices for the same.</p> <ul style="list-style-type: none"> • YES, a strict discipline is maintained in the campus to make awareness of the concepts sustainability and environmental literacy. • Restricted entry of automobiles: The College has its own bus facility for transportation. Students also use Public Transportation for travelling to college. Some of the student use sharing vehicles and most of the faculty use carpooling • Ban on use of Plastic: In the college Canteen Steel plates, steelglasses or crystal glasses are used instead of Plastic plates and cups. • Reuse of Plastic paint pots- In the college wasted paint buckets are colored and reused for indoor plantation. In this way institute reduced their plastic waste. • Landscaping with trees and plants- NSS team organizes the plantation program every year. A gardener is appointed to maintain the trees present in the Institute campus. Proper care istaken of the garden and old trees. • Unnecessary use of electricity- is avoided by application of day light and natural ventilation in classrooms, labs and office area. • Use of dustbin is mandatory- to collect solid waste separately. • Rain water harvesting- Farm pond constructed in college campus by NSS activity for storage of rain water during rainy season.
<p>Are staff encouraged to teach sustainability concepts,</p>	<p>Yes, Environmental sustainability is the dedicate subject in each stream of education.</p>



including the relationship	All the staff is very conscious about environment. They have formed a healthy atmosphere and relationship with the nature and also among themselves. Prof. Tantrapale and Dr. Rathod takes special care of plants, animal biodiversity and water resources.
What is the environment and social awareness programs conducted in the campus?	<p>Audit team reviewed below awareness programs via celebration of several days by institute under NSS.</p> <ul style="list-style-type: none"> • Environment Day Celebration • Cleanliness campaign in campus and adapted village. • Tree plantation program is conducted every year under NSS unit • Environmental awareness rally in adapted village during NSS camp. • International Yoga day celebration to create health awareness amongst society, students and staff. • Women's day celebration, Savitribai Phule Jayanti celebration to women's empowerment. • Celebration of cultural activities to wholistic development of students. • Construction of Bandhara in village to conserve and restore rain water.
Does it include key stakeholders?	<p>Yes, below key stakeholders are recognized by Green campus committee</p> <ul style="list-style-type: none"> • Administration • Staff • Students • Facility manager • Volunteers <p>Yes, All the stake holders are included in the environment and social awareness programs conducted in the campus. Students and teachers work together to keep the atmosphere healthy and positive in the campus. The management also pays special attention on this issue and the people from nearby area are also involved in the plantation programmes.</p>
Does it meet regularly?	Yes, frequency of meeting is once or twice in a year.
Is it empowered to recommend projects to campus leadership?	Yes committee, identify the projects and submit the feasibility report to the society management. LED installation project are one of the examples



Energy Audit																																														
Have you done an energy audit? (Personal, classroom, campus)	No																																													
Do you track your energy use and cost? (Personal, classroom, campus)	Yes, institute keep the track of monthly electricity bill, LPG cylinder, HSD consumption.																																													
Electricity bill amount for the last year	<p>Electricity bill amount for the last year Rs. 94470 /-</p> <p>Below is the electricity consumption for year 2020-2021</p> <table border="1"> <thead> <tr> <th>Sr. No</th> <th>Month</th> <th>kWh/month(2020-21)</th> </tr> </thead> <tbody> <tr><td>1</td><td>Feb.</td><td>1130</td></tr> <tr><td>2</td><td>March</td><td>1145</td></tr> <tr><td>3</td><td>April</td><td>1235</td></tr> <tr><td>4</td><td>May</td><td>1245</td></tr> <tr><td>5</td><td>June</td><td>1290</td></tr> <tr><td>6</td><td>July</td><td>1135</td></tr> <tr><td>7</td><td>August</td><td>1150</td></tr> <tr><td>8</td><td>September</td><td>1245</td></tr> <tr><td>9</td><td>October</td><td>1225</td></tr> <tr><td>10</td><td>November</td><td>1090</td></tr> <tr><td>11</td><td>December</td><td>1120</td></tr> <tr><td>12</td><td>January</td><td>1225</td></tr> <tr><td></td><td>Total</td><td>14235 (Rs. 94470)</td></tr> <tr><td></td><td>Average-</td><td>1187 (Rs. 7872)</td></tr> </tbody> </table>	Sr. No	Month	kWh/month(2020-21)	1	Feb.	1130	2	March	1145	3	April	1235	4	May	1245	5	June	1290	6	July	1135	7	August	1150	8	September	1245	9	October	1225	10	November	1090	11	December	1120	12	January	1225		Total	14235 (Rs. 94470)		Average-	1187 (Rs. 7872)
Sr. No	Month	kWh/month(2020-21)																																												
1	Feb.	1130																																												
2	March	1145																																												
3	April	1235																																												
4	May	1245																																												
5	June	1290																																												
6	July	1135																																												
7	August	1150																																												
8	September	1245																																												
9	October	1225																																												
10	November	1090																																												
11	December	1120																																												
12	January	1225																																												
	Total	14235 (Rs. 94470)																																												
	Average-	1187 (Rs. 7872)																																												
Do you offer energy conservation lessons and programs?	Yes, a course on Environmental Studies is prescribe for the second-year students in the institute.																																													
<p>Do you encourage responsible energy use via?</p> <ul style="list-style-type: none"> ➤ education campaigns? (Lights Off, Power Down, Energy Conservation Month ➤ incentives? ➤ contests? 	<p>Yes, during audit, we observed the, energy saving/ power off stickers. Display of instructions / boards / notices regarding saving electricity consumption in the campus observed.</p> <p>Please refer annexure.</p> <p>Many slogan boards have been displayed in the campus about saving energy. We always appreciate the efforts from the staff members to save the electricity.</p>																																													
Do you use natural lighting when possible	<p>Yes, audit team observed good application of day light at classroom, laboratories and office.</p> <p>The college is situated on the top and in the specious place where the natural light availability is good.</p> <p>Please refer annexure.</p>																																													
Do you use task lighting instead	Yes, Institute prefer it.																																													



of overhead area lighting?	Mostly day light is used at classroom. Energyefficient overhead lights e.g., LED are applied across all classroom and laboratories.
Have you installed lighting occupancy sensors?	No, there is no location observed, where sensors can be applied. Since day light is widely utilized. Building architect promotes day light application. There is no occupancy sensor installed in the campus.
Do you use natural ventilation/windows when possible?	Yes, all classroom, admin building, library, laboratory, washrooms, corridor are full of natural ventilation, windows. We observed the cross ventilation across windows. Yes, mostly use natural light and ventilation, so windows/ventilation are kept open in the office time.
Have you enabled the power management settings on your computers/monitors/all-in one machines?	Yes, audit team observed that all computers are kept in sleep mode, when not in use, screen savers are disabled, power off label, when not in use.
Do you purchase ENERGY STAR® certified equipment?	Yes, we have seen energy efficient light purchase e.g., LED lamps, energy efficient AC, refrigerators etc. Yes, we prefer to purchase low electricity consuming equipment, the guidelines have been given about this to the purchasing committee. Please refer annexure – Table is given.
Have you maximized the efficiency of your refrigerators/freezers by? ➤ unplugging mini refrigerators/freezers and using communal ones? ➤ setting energy-efficient temperatures for your refrigerators (36°- 40° F) and freezers (0°- 2° F)? ➤ ensuring refrigerators/freezers properly seal? ➤ keeping the refrigerator/freezer full? ➤ cleaning condenser coils on the back of the refrigerator/freezer?	Yes, we do not have labs so minimum use of such equipment and the electricity is consumed very less in this.
List ways that you use energy in your Institute. (Electricity, electric stove, kettle, microwave, LPG, firewood, Petrol, diesel and others)	Below energy sources and application observed. Electricity – Lamps, fan, Lab equipment's, pump, AC, computers, refrigerator, etc. HSD – Institute vehicle and DG set LPG – gas stove at canteen.



How many LED bulbs/Tubes has your Institute installed? Mention use (Hours used/day for how many days in a month)	Please find below installed energy efficient lighting. LED- 107
How many fans are installed in your Institute? Mention use (Hours used/day for how many days in a month)	Around 89 fans are observed in campus. (Average 5 hours per day, approx. 24 days in month)
How many air conditioners are installed in your Institute? Mention use (Hours used/day, for how many days in a month)	There is only 1 AC installed at institute. Average working hours are 5 per day 1 (5 Hour/per day)
How many computers are there in your Institute? Mention the use (Hours used/day for how many days in a month)	76 Computers (Average 4 hours per day, approx. 24 days in month)
How many photocopiers/printers are installed by your Institute? (Hours used/day for how many days in a month).	2 Machines (Average 2 hours per day, approx. 24 days in month)
How many scanners are installed by your Institute? (Hours used/day for how many days in a month).	04 Scanners (Average 2 hours per day, approx. 24 days in month)
How many inverters your Institute installed? Mentions use (Hours used/day for how many days in a month)	1 Inverter used at the time of power cut
How many electrical equipment are used in different labs of your Institute? Mention the use (Hours used/day for how many days in a month)	T.V., Computers, 2 hours per day in the lab Please refer Annexure for details of this report
No. of streetlights in your institute	5
No. of TV in your institute and hostels	1
How many boards displayed for saving energy awareness?	We have observed, "switch off, when not in use" boards at majority of electric panels.



Renewable Energy	
<p>Are any alternative energy sources/nonconventional energy sources?</p> <p>employed / installed in your Institute? (Photovoltaic cells for solar energy, windmill, energy efficient stoves, etc.,) Specify.</p>	<p>No, Institute needs to installed roof top Solar PV module to generate electricity and to become carbon neutral.</p>
<p>Have you purchased renewable energy certificates for your campus' electricity use?</p>	<p>NA</p>
Water Audit	
<p>Have you done a water audit? (Personal, classroom, campus)</p>	<p>Although there is no external water audit conducted but watersaving measures are implemented.</p> <p>Audit team measured the TDS and PH of drinking water. Pleaserefer annexure for reading.</p>
<p>Do you encourage responsible water use via?</p> <ul style="list-style-type: none"> ➤ education campaigns? (Skip the Drip) ➤ incentives? ➤ contests? ➤ awards? 	<p>Yes, institute applied several measures for water conservation, recycle and reuse.</p> <p>water is very valuable and essential need of human being. The students are instructed to not waste water. We always encourage students to save water in the campus. The slogans and signboards have been already displayed regarding this.</p>
<p>Have you installed low-flow faucets, automatic faucets, and/or faucet aerators?</p>	<p>No, Audit team observed all traditional and manually operated faucets are installed in the campus.</p> <p>Recommendation: installation low-flow faucets, automatic faucets, and/or faucet aerators is recommended.</p>
<p>Do you use collected rainwater for onsite watering needs?</p>	<p>Yes, rain water harvesting system constructed in the campus to increase the ground water level. Since the college is situated on the top and surrounded by the hills, it helps to get a good amount of water to conserve.</p>
<p>Have you optimized your irrigation system (if applicable) to?</p> <ul style="list-style-type: none"> ➤ operate at night or early morning hours to minimize evaporation? ➤ water the minimum time and frequency necessary for the applicable vegetation 	<p>Yes, the plants are watered early in the morning so the less water get evaporated.</p> <p>No, audit team is not observed any irrigation system.</p> <p>drip irrigation is recommended for watering the garden area.</p>
<p>List uses of water in your</p>	<p>Major water consumption is for washroom, drinking,</p>



Institute	cleaning and gardening.
What are the sources of water in your Institute?	Institute intake water from bore well
How many wells are there in your Institute?	NA
No. of motors used for pumping water from each well and HP of motor	2 motors (1 HP Each)
Quantity of water stored in your overhead water tank. (In liters)	Quantity of water tank- 2 2 tanks (500 liters each)
Quantity of water pumped every day. (In liters)	Average 3000 Lt. water pumped every day. Recommendation: Institute can install the water meters for domestic application
Where does waste water come from?	From canteen, and wash rooms
Where does the wastewater go?	In the garden to plants through the pipe. and To the sewage water pipeline.
What happens to the water used in your labs? Whether it gets mixed with ground water?	NA. This is Art college so no lab is required to students for the experiment.
Is there any treatment for the lab water?	NA
No. of water coolers. Amount of water used per day. (In liters)	Water cooler No.- 01, Amount of water used per day – 300 Lt. per day
No. of toilet, urinals. Amount of water used per day?	4 Toilets and 15 Urinals Average 700 Lt. per day amount of water used
Amount of water used per day for garden use.	100 liter per day water used for gardening.
Total use of water in each hostel?	NA
Is there any water used for agricultural purposes?	No
Does your Institute harvest rainwater? If yes, how many rainwater harvesting units are	YES, one rain water harvesting unit constructed in the institute.



there?													
How many of the taps are leaky? Amount of water lost per day?	No, we have observed no any tap is leaking during Audit.												
Are there signs reminding people to turn off the water? Yes / No	Yes, we have observed sign regarding water turn off												
Are there any waterless toilets?	NA												
How many water fountains are there?	NA												
How often is the garden watered?	Every day in the summer, Twice or thrice a week in winter and only if required in the rainy season.												
Are there any water saving techniques followed in your Institute? What are they?	Yes, Students and the staff are instructed to use water as much needed. The unnecessary wastage of water is strictly prohibited Rain Water Harvesting unit is installed. Please refer Annexure to know more about the techniques applied by Institute for water recycle.												
Transport													
Do you provide green transportation infrastructure such as? ➤ safe, connected, and accessible walkways and pathways? ➤ bike paths and/or lanes ➤ bike racks ➤ green vehicle priority parking? (fuel-efficient, alternative fuel, carpool)	We have observed, carpooling, bike pooling in general. Majority of students travelled by public transport – Bus. <table border="1" data-bbox="790 1276 1316 1467"> <thead> <tr> <th>Vehicles in institute</th> <th>Numbers</th> </tr> </thead> <tbody> <tr> <td>Cycles</td> <td>25</td> </tr> <tr> <td>Two-wheeler</td> <td>22</td> </tr> <tr> <td>Four-wheeler</td> <td>05</td> </tr> <tr> <td>Buses</td> <td>00</td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> No vehicle day- Yes, the most of the students come in the college by walking, once in a month everyone has to come without vehicle to mark no vehicle day. Pedestrian-friendly pathways- College has pedestrian friendly pathway and used for entry of students, staff, visitors to office and college campus. The college has tactile paths for the students as well as special ramps for Divyangjan 	Vehicles in institute	Numbers	Cycles	25	Two-wheeler	22	Four-wheeler	05	Buses	00		
Vehicles in institute	Numbers												
Cycles	25												
Two-wheeler	22												
Four-wheeler	05												
Buses	00												
Do you offer walking/biking field trips?	As part of NSS program, such initiatives are taken by institute.												
Purchase													
Have you done a purchasing	Yes, we have collected the bills of major purchase to												



<p>audit? (campus)</p>	<p>understand the environmentally friendly product.</p>
<p>Do you have a green product list for items such as?</p> <ul style="list-style-type: none"> ➤ green cleaning products? ➤ paper/paper products with minimum recycled content (at least 30% postconsumer waste) and responsibly managed and harvested trees? ➤ refillable pens/pencils? ➤ no- to low-odor (VOC) markers? ➤ no- to low-VOC paints? (Via Facilities) ➤ plates, cups, and serving ware that are reusable, contain minimum recycled content, and/or are recyclable/compostable? ➤ compostable bags for compost collection? ➤ rechargeable batteries and chargers? ➤ ENERGY STAR certified computers, monitors, printers, refrigerators, and other energy-using equipment? ➤ Water Sense labeled faucets, toilets, showerheads, and other water-using equipment? ➤ printers with duplexing (double-sided) functionality? 	<p>During review of purchase bill, we have seen below important purchase</p> <ul style="list-style-type: none"> • LED Lamps • ENERGY STAR certified computers, monitors, printers,refrigerator. • printers with duplexing (double-sided) functionality • plates, cups, and serving ware in the college and canteen are reusable • paper/paper products with minimum recycled content <p>Yes, we use reusable bottles and glasses, the papers are used from both sides to print. We offer plants to wel come the guests instead of flowers.</p>
<p>Do you track your purchasing to ensure adherence to any green product guidelines</p>	<p>Yes, during interview with admin staff, we noted that, major purchase is securitizing via green policy.</p> <p>The purchasing committee has been informed to purchase ecofriendly, and energy efficient products. The high star rating electronic goods are purchased to save electricity.</p>
<p>Do you limit the purchase of single-serve bottles and containers?</p>	<p>Yes, Single use plastic is not promoted at institute. Audit team observed the same during campus survey.</p>
<p>Indoor and Outdoor Air Quality</p>	
<p>Have you done an air quality audit? (campus)</p>	<p>We have measured the ambient air temperature and humidity. AirQuality Index are captured from web site: https://air-quality.com/place/india/amravati/ac5b2f1d?</p>



Do you have indoor plants to naturally clean the air?	Yes, Indoor Plants are placed in the campus.
Do you regularly replace air filters?	Yes, air filters are always replaced to make fresh air.
Are A/C intake vents at least 10 feet from odor or emission sources (dumpsters, chicken coops, compost piles, pick-up/drop-off locations)	ACs Indoor unit is installed at office, while outdoor units are kept outside. Yes, the AC is properly placed to get proper use of it.
Have you located printers in well-ventilated areas that minimize frequent/repeated exposure to students/staff?	Yes, all the printers have placed in well ventilated area. Audit team observed printers are located in well-ventilated areas that minimize frequent exposure to students and staff.
Do you practice regular housekeeping practices to minimize dust and allergens?	Yes, institute developed regular housekeeping practice. The peons and the sweepers clean the classes , rooms and office every day. The electronic goods also kept away from the dust.
Waste Management	
Have you done a waste audit? (Personal, classroom, campus)	Audit team took the data of Solid and liquid waste, biodegradable and non-biodegradable waste, e waste.
Do you know where your trash goes when it leaves your campus?	Housekeeping staff are appointed on monthly basis to keep the campus clean. Biodegradable waste(canteen and garden waste) is collected regularly in separate bin. Dustbins are placed at various places in the campus to collect solid wastes. Instructions/ notices/ boards are displayed at various places in the campus.
Do you track the amount of waste that leaves your campus?	Quantity of various waste is not monitored at campus level. Proper management of different kind of waste is recommended by audit team.
Do you have accessible, consistent zero waste stations set up campus-wide that include all applicable waste disposal options (landfill, compost, recycle) with containers	Audit team observed and recommend Institute needs to construct compost pit, where all garden waste will be disposed to decay and convert into compost. Same compost will be used in the garden to fertile the soil. Information regarding liquid waste management: The liquid waste of Canteen and Washroom water waste is connected with municipal drainage line.
Do you reduce cafeteria waste via? ➤ reusable trays, plates, bowls, cups/bottles, and serving ware?	Yes, at canteen reusable plates, trays, bowls, cups are utilized. In the college Canteen Steel plates, steel glasses or crystalglasses are used instead of Plastic plates and



<p>o minimizing use of products with excess packaging? (Plastic-wrapped utensils)</p> <ul style="list-style-type: none"> ➤ engaging students to properly sort waste? ➤ engaging parents to reduce packaging waste and single-serve containers? 	<p>cups. Paperbags are widely used in the college at the time of events</p>
<p>Do you reduce paper waste via?</p> <ul style="list-style-type: none"> ➤ encouraging digital reading, note-taking, and activities? ➤ setting printers and computers to default to duplex (double-sided) printing? ➤ reducing margins and white space on documents that must be printed? ➤ printing multiple pages per sheet? ➤ minimizing paper correspondence with families? ➤ opting out of unwanted mail? 	<p>Yes, during pandemic the digital notes provided by college to student and paperless exams conducted. We value every paper so we prefer less print out and go for digital communication.</p> <p>Double side printer is employed to reduce the paper consumption.</p> <p>The institute is environmentally conscious and committed to reuse paper and reduce office paper usage. Following are the creative ways the institute use to reuse papers.</p> <ul style="list-style-type: none"> ➤ Drafts are printed on the unused side of the old papers before printing final documents. ➤ Scrap papers are reused for notes and memos. ➤ Papers are shredded and reused for notes and memos ➤ Papers are printed on both the sides.
<p>Do you provide recycling collection for additional recyclable materials—like plastic bags, CFL (spiral) light bulbs, batteries, drink pouches, candy wrappers, and electronics—that cannot go in the single-stream blue bins?</p>	<p>E-Waste is separately collected and supplied to the sister branch Poly technique college in the premises for reuse</p> <p>Institute needs to establish the MOU With Third Party to Handle and Recycle the E-Waste, Which Includes Computer Peripheral, Batteries, Lamps, Circuits, Cables Etc.</p> <p>Plastic waste is Collected separately in a bin and supplied to scrap vendor to reduce and reuse.</p>
<p>Are cleaning products, grease, strippers, batteries, fluorescent lighting, science lab materials, and other potentially hazardous products disposed of properly?</p>	<p>Yes, all these products are disposed properly.</p> <p>No hazardous, chemical waste generated in the Institute.</p>
<p>How is the waste generated in the Institute managed?</p> <p>Methods</p> <ul style="list-style-type: none"> ➤ Composting ➤ Recycling ➤ Reusing ➤ Others (specify) 	<p>Solid waste generated in the institute handover to the municipal corporation.</p> <p>Liquid waste is reuse for gardening and washrooms liquid waste pipes are connected to the city drainage pipeline.</p> <p>All the plastic wastage or un used bottles and pots are reused for indoor plantation. We have also hung earthly pots in the garden to fill water to drink for the birds specially in the summer</p>



	E-waste generated send to the Polytechnique college for proper recycling.
Is there any waste wealth program practiced in the Institute?	In the institute" Plastic Awareness Programme" is conducted every year under NSS unit.
Can you achieve zero garbage in your Institute? (Reduce, Recycle, Reuse, Refuse) If yes, how?	Recommendation: We recommend the institute to strive for zerowaste to landfill. Institute needs to identify to projects and implement in coming years to reduce the waste generation and avoid landfill
Green Belt & Landscaping, including Biodiversity	
<p>Have you taken action to green your Institute yard through implementation of?</p> <ul style="list-style-type: none"> ➤ onsite composting? ➤ habitat gardens? ➤ native and drought-tolerant landscaping? ➤ livestock, fowl, bees, and other animals? ➤ tree planting and care? 	<p>Yes, Institute takes good care of every tree and plants, both the students and teachers involve in this activity. The ground is not favorable to grow the plants but still we have more than 540 trees of different species.</p> <p>List of tree planation is given in the annexure.</p>
Is there a garden in your Institute? Area?	Yes, garden is developed by institute. Gardens inside the collegepremises are found well maintained. Area -10000 Sq. Fit.
List the plants in the garden, with approx. numbers of each species.	The list is given in annexure, more than 540 trees of different species in the campus. Audit team noted that Neem, Mango, Banyan tree , trees are in the college garden.
Whether you have displayed scientific names of the trees in the campus?	Yes, scientific name of few plants is displayed within campus
<p>What are the vegetables cultivated in your vegetable garden?</p> <p>(Mention the quantity of harvest in each season)</p>	NA
How much water is used in the vegetable garden and other gardens? (Mention the source and quantity of water used)	300 Liters Per Day from Borewell
Are you using any type of recycled water in your garden?	Yes, the wastage water from drinking tap goes to the garden through a pipe.
List the name and quantity of pesticides and fertilizers used in your gardens?	Round Tub Urea



	Dap
Whether you are doing organic farming in your Institute? How?	NO
Is there any botanical garden in your campus? If yes give the details of campus flora.	NO
What is the involvement of students in the green cover maintenance?	Yes, NSS team organizes the plantation program every year. through NSS program, students were involved in tree plantation initiative
Noise Level	
<p>Do you measure ambient noise level at</p> <ul style="list-style-type: none"> • Classroom • Near main gate • Near main building • Near admin building 	<p>The college is situated on the top, so noise pollution is very low. It is also away from city traffic and transportation area.</p> <p>Yes, audit team measured the dB level at below location</p> <ul style="list-style-type: none"> • Classroom • Near main gate • Near main building • Near admin building <p>Please refer annexure for reading.</p>
Carbon Footprint	
Annual Diesel consumption by DG generators	AY 2020-2021 - 150 LITERS
Annual LPG consumption used in the institute (canteen and labs and hostel.)	AY 2020-2021 - 3 LPG Cylinders
Annual electricity consumption	AY 2020-2021 - 14235 UNITS
Scope 1 GHG Emission	Please refer annexure for results
Scope 2 GHG Emission	Please refer annexure for results
Social awareness	
Do you encourage staff and students to conduct social awareness programs?	<p>Yes, Institute and management always encourage staff and students to conduct social awareness programmes.</p> <p>organize many social awareness programmes like</p> <ul style="list-style-type: none"> • blood donation camp. • distributing goods to needy people • health checkup camp, etc. • During covid-19 period institute distributed food items to



	<p>the nearby poor families, needy people.</p> <ul style="list-style-type: none"> Institute has an active NSS Unit of 100 students through which college conducts many social awareness Programme. In the current year Free vaccination camp conducted by college <p>Please refer annexure for the details above.</p>																
Number of Divyangjan students in your institute.	Two Divyangjan students are studying in the institute.																
Special facilities provided to Divyangjan student .	<p>To ensure equality, freedom, Justice and Dignity to the differentlyabled students-</p> <ul style="list-style-type: none"> ➤ Special ramps constructed for differently abled studentsfor their conveyance in the campus ➤ Convenient seating arrangements ➤ For the exchange of Books special services are providedon behalf of Library and Brail Books are available in the college library. ➤ Special Toilets, easy access 																
Have you maintained gender equity ratio (Male/Female ratio) in your institute?	Yes, Audit team observed the satisfactory strength of girl's student at Institute																
<p>Gender equity</p> <p>No. Male and Female Staff</p> <p>No. Male and Female Student</p>	<table border="1"> <thead> <tr> <th></th> <th>Total</th> <th>Male</th> <th>Female</th> </tr> </thead> <tbody> <tr> <td>No of students</td> <td>607</td> <td>382</td> <td>225</td> </tr> <tr> <td>No of teachers</td> <td>14</td> <td>11</td> <td>03</td> </tr> <tr> <td>No of Non-teaching staffs</td> <td>06</td> <td>06</td> <td>00</td> </tr> </tbody> </table>		Total	Male	Female	No of students	607	382	225	No of teachers	14	11	03	No of Non-teaching staffs	06	06	00
	Total	Male	Female														
No of students	607	382	225														
No of teachers	14	11	03														
No of Non-teaching staffs	06	06	00														
Do you conduct and support women empowerment programs/ activities?	Yes , the women cell organizes various activities for women empowerment																
Health and safety	The department of physical education conducts health check camp and safety awareness programmes.																
Is there a health surveillance Programme / Medical checkup once in a year?	<p>Institute have conducted below health surveillance programs</p> <ul style="list-style-type: none"> Free medical checkup camp Blood donation camp <p>COVID -19 awareness campaign</p>																
Do you provide some health facilities for students and employees in your campus?	<p>Institute provides some basic medical facilities like medical room, First Aid Box, Medical Officer Visit to the institute</p> <p>During Covid- 19, vaccination and health check camp conducted in campus for students and employees.</p>																



	Sports department students are very active. They are always ready to take active part in every Programme. Institute has a big Indoor stadium and a swimming pool to make healthy sports atmosphere in the campus.
Have you conducted health awareness camps or programmes in your institute?	For students health point of view, sports department encourage students to take participate in different games at national and international level. And sport department provides good coaching and excellent facilities to the students for their physical as well as mental health. Yes, yoga classes and meditation camp also conducted in college.
What are the safety measures for staff and students in your institute?	First aid box Fire safety equipment Sanitizer machine
Health and Safety point of view, Do you fulfil below basic needs for staff and student? <ul style="list-style-type: none"> • Adequate ventilation • Easily accessible emergency exits • Sanitation in cafeterias and restrooms • Access to potable water • Exposed or unmarked electrical wiring • Emergency response plan • Fire suppression equipment and evacuation plans 	Yes, all classroom, admin building, library, laboratory, wash rooms, corridor are full of natural ventilation, windows. We observed the cross ventilation across windows. Yes, proper arrangement of sanitation is observed. Yes, good quality of potable water is available. No Not available Yes, College has Fire Hydrant System, Fire Extinguishers at every floor, and in Lab available for safety purpose.
Child Labor Have you given an employment to the underage candidates? Are there any underage candidates working in your institute?	No, audit team observed Any underage candidate is not working in the institute. They are strictly against child labour.
Do you protect your students and staff from discrimination based on origin, caste, race, religion, gender, political affiliation, and other attributes?	Yes. As per interviews of staff members, there are no incident recorded for discrimination based on origin, caste, race, religion, gender, political affiliation, and other attributes. Institute strictly follow all the equality so no discrimination is allowed. The name of the college is given after the name of the architect of the Indian Constitution DR, Babasaheb Ambedkar so here people follow his message of equality.



Chapter 05: Audit Observations

BEST Practices of Institute:

The institute is quite aware of its role towards the environmental consciousness and hence the institute follows the various green practices for the same.

1. **Restricted entry of automobiles:** Students also use Public Transportation for travelling to college. Some of the student use sharing vehicles and most of the faculty use carpooling.
2. **Use of Bicycles:** Use of bicycle by student and faculty members promoting benefits of cycling and conservation of environment by minimizing fuel pollution.
3. **Ban on use of Plastic:** In the college Canteen Steel plates, steel glasses or crystal glasses are used instead of Plastic plates and cups. To reduce the plastic waste institute reused waste plastic paint boxes for indoor plantation.
4. **Landscaping with trees and plants:** NSS team organizes the plantation program every year. A gardener is appointed to maintain the trees present in the Institute campus. Many indoor plants are arranged in campus. Proper care is taken of the garden and old trees.

5. Computing Equipment-The College Computer Lab is also used as the central computing facility. Staff and the students use it when they have to download information from the Internet, have to run software or to take prints from the computers. All departments have access to the computer facility through computer lab which is available to the faculty members and students. Students use computers for their seminar preparation

6. Games and Sports-The institution has adequate facilities for sports, games (indoor and outdoor) and cultural activities. Since beginning of the college students are very much interested in the games and sports. So, for overall development of the students college has taken many initiatives for the adequate facilities for sports, games and cultural activities.

Aiming towards environment consciousness the Institute has executed the following activities at the campus:

- Tree plantation program is conducted every year under NSS unit.
- The waste water from the basins and water cooler are transferred to the plants of the garden nearby to the building.
- Rain water harvesting project implemented to recharge the water table
- College campus with green lawns and good biodiversity of plants and trees .



- Various types of medicinal air purifying trees have been planted in the college premises
- Aiming towards Social awareness the Institute has implemented and conducted the following activities
- All easily accessible facilities provided to Divyangjan student like ramp, Brail lipi book, special washrooms and rest room.
- Institute has installed Fire Hydrant System, Fire Extinguishers at every floor available for safety purpose
- Institute has provided health facilities like, Medical Room, First Aid Box in each department.
- Health awareness programmes, camp conducted
- The NSS department Organizes Blood Donation Camps every year in the College.
- During Covid-19 NSS students conducted different activities.

Opportunity of Improvement:

- Adopt an Environment , Health and Safety policy for the Institute
- Establish a purchase policy to promote environmentally friendly materials
- Conduct more seminars and group discussions on environmental and social education
- Students and staff can be permitted to solve local environmental and social problems
- Environmental and Social advisory committee could be formed. The discussions/ information sharing among different departments can generate lot of ideas and awareness on green issues and social causes
- Maintain minutes of meetings of environment and social committees; evaluate the effectiveness of various environmental programs conducted by the institutes. Set annual targets for Green Initiatives & monitor them closely. Create 'Green Champions'
- Establish water, waste and energy management systems
- Encourage efficient water use and reporting by installing water meters at key locations. Provide information on water usage and savings to students/ staff through notices, screen savers in computer labs.
- Institute can start metering water consumption, measuring waste generation. Drinking water testing on periodic basis, recording all readings on periodic basis, so that monthly data can be establish.
- Installation low-flow faucets, automatic faucets, and/or faucet aerators is recommended.
- We recommend the institute to strive for zero waste to landfill. Institute needs to identify to projects and implement in coming years to reduce the waste generation and avoid landfill
- Institute needs to establish the MOU With Third Party to Handle and Recycle the E-Waste, Which Includes Computer Peripheral, Batteries, Lamps, Circuits, Cables Etc.
- Institute should collect different types of waste generated in the college separately and dispose in proper way to reduce, reuse and recycle that material.
- Institute needs to construct compost pit to dispose biodegradable waste like garden waste and canteen waste.
- Institute needs to install solar PV module to reduce grid electricity consumption and to become 100% carbon neutral.
- Installation of sensor-based electrification items like fans, lights, etc. can save electricity.
- Replace all tube lights by 100% energy efficient LEDs.
- Replace old ceiling fans by new energy efficient fans.
- Institute needs to make provision for use of day light for reading in Library.
- Institute should promote digital entry for every student in library to maintain data and case study about student.



- Vertical gardening can be done using indoor plants. Hydroponic garden can be an option where in small space also plants can be planted.
- Installation of 100% drip irrigation recommended to conserve water.
- Install sanitary pad vending machine in girls washroom
- Installation of incinerator for Bio Medical waste disposal
- Installation of waterless urinals can be considered to reduce water consumption
- Institute can report birds, reptiles and animal biodiversity



Reference list of Websites

- i. IEEE 519 - <http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=2227>
- ii. <http://mnre.gov.in/solar-energy/ch2.pdf>
- iii. BEE - <http://www.beeindia.in/>
- iv. ECBC - <http://beeindia.in/content.php?page=schemes/schemes.php?id=3>
- v. http://www.energymanagertraining.com/new_index.php
- vi. http://www.usalighting.com/stuff/contentmgr/files/1/92ffeb328de0f4878257999e7d46d6e4/misc/lighting_comparison_chart.pdf
- vii. <https://www.bijlibachao.com/lights/use-energy-efficient-lights.html>
- viii. <http://www.bijlibachao.com/air-conditioners/air-conditioner-selection-understand-tonnage-eercop-and-star-rating.html>
- ix. <http://www.indiawaterportal.org/sites/indiawaterportal.org/files/Roof%20Top%20Rainwater%20>
- x. https://mausam.imd.gov.in/imd_latest/contents/all_india_forecast_bulletin.php
- xi. <http://www.cea.nic.in/tpeandce.html>
- xii. <https://timesofindia.indiatimes.com/india/power-ministry-may-make-24-degree-celsius-as>



Annexure 1 : Reference Documents / Surveys

Sr. No.	Reference documents/ Survey
1.	Institute Registration details, pervious NAAC certificate
2.	Institute Awards, recognition
3.	Academic staff, designation and qualification
4.	Short note about institute including establishment details, area, subjects, faculty, staff, labs, students,campus etc. mission, vision, values, policy statement
5.	List of environmental issues identified by institute
6.	List of environmentally friendly practices, List of projects - energy conservation, rain water harvesting,waste recycling (solid/liquid waste management, e-waste management), renewable energy project, plantation etc.
7.	List of days celebration like – Environment day, energy day etc. with program details and photos
8.	institution facilitates the differently abled (Divyangjan friendliness)
9.	Social responsibility project list, CSR project for community, village, support to economically challengedstudents, Child labour, Human rights.
10.	Drinking water facility: Functionality of RO water plant
11.	Recycle of water: Utilization of RO reject water for gardening
12.	Natural resource utilization: Setup for rain water harvesting
13.	Information regarding canteen compost Management as applicable
14.	Information regarding garden waste management
15.	Information regarding liquid waste management
16.	Measures for maintaining cleanliness in campus
17.	Measures for garbage collection and disposal
18.	Plantation Measures – Biodiversity, list of species observed in the campus
19.	Measures for construction waste management (use of construction waste for filling purpose.
20.	Electricity Bills for duration of 12 months
21.	Measures for health and safety of students and staff
22.	Roll of staff, students and management to save electricity in campus
23.	Lighting survey (number of tube lights, CFL and LED)
24.	AC survey (number of AC and their star rating)
25.	Water harvesting (Photographs of the water harvesting structure)
26.	Initiatives by college for the community NSS camps, Swatch Bharat with photos
27.	Details about promotion of below programs. <ul style="list-style-type: none"> • Pedestrian-friendly pathways • Ban on the use of Plastics • Landscaping with trees and plants
28.	Outside campus plantation program implemented by Institute
29.	Gender ratio in staff and student – diversity
30.	Policy statement by Leadership w.r.t. Environment conservation.



Annexure 2: Physical Structure of College

The college is located in about 21acres of land. The built-up area of the college is 11acres.

Departments	04
Laboratories	02
Conference halls	01
Libraries	01
Auditorium	01
Canteens	01
Hostel	00



Annexure 3: List of Electric devices in the institute -Energy Audit

Room No. / name	Electrical device/ item	Quantity	Usage Time (Hr./Day)
Principal's Cabin	4 LED , 2 FANS & 1 A.C., 1 COMPUTER	8	5 Hours/Day
IQAC OFFICE	1 LED , 1 FAN 1 COMPUTER	3	5 Hours/Day
ADMINISTRATION OFFICE	7 LED, 4 FAN , 1 COOLER , 1 XEROX, 3 COMPUTERS	16	5 Hours/Day
STAFF ROOM	5 LED , 2 FANS,	7	5 Hours/Day
CANTEEN	1 GENERATOR, 1 FAN, 1 LED	3	5 Hours/Day
EXAMINATION OFFICE	3 FANS, 3 LED 1 XEROX MACHINE 1 COMPUTER	8	5 Hours/Day
LIBRARY	12 LED, 8 FANS , 1 SCANNER, 9 COMPUTERS	21	5 Hours/Day
COMMERCE DEPARTMENT	2 FAN , 4 LED 5 COMPUTERS	11	5 Hours/Day
NSS ROOM	1 FAN , 1 LED	2	5 Hours/Day
SEMINAR HALL	8 LED, 11 FAN, 1 OHP, 1 LAPTOP	21	On the Day of Programme Only
INDOOR HALL	6 FANS, 6 LED	12	Practice Time Only
SWIMMING POOL	7 LED , 1 FAN	8	At the Time of Swimming Only
RESEARCH CENTRES	4 FAN, 5 LED	9	5 Hours/Day
DIGITAL CLASS ROOM	1 FAN, 1 LED, 1 LAPTOP	3	5 Hours/Day
SECURITY ROOM	1 FAN, 1 LED	2	5 Hours/Day
CLASS ROOM 1	3 LED 3 FAN	6	5 Hours/Day
CLASS ROOM 2	3 FAN 2 LED	5	5 Hours/Day
CLASS ROOM 3	3 FAN 1 LED	4	5 Hours/Day
CLASS ROOM 4	2 FAN 2 LED	4	5 Hours/Day
CLASS ROOM 5	2 FAN 2 LED	4	5 Hours/Day
CLASS ROOM 6	2 FAN 2 LED	4	5 Hours/Day
CLASS ROOM 7	2 FAN 2 LED	4	5 Hours/Day
CLASS ROOM 8	2 FAN 2 LED	4	5 Hours/Day
CLASS ROOM 9	2 FAN 2 LED	4	5 Hours/Day
CLASS ROOM 10	2 FAN 2 LED	4	5 Hours/Day
CLASS ROOM 11	2 FAN 2 LED	4	5 Hours/Day
CLASS ROOM 12	2 FAN 2 LED	4	5 Hours/Day
CLASS ROOM 13	2 FAN 2 LED	4	5 Hours/Day
CLASS ROOM 14	2 FAN 2 LED	4	5 Hours/Day
LANGUAGE LAB	10 COMPUTERS, 2FANS , 2LED	14	5 Hours/Day
COMPUTER LAB	18 COMPUTERS, 1 OHP, 4 FANS, 6 LED	29	5 Hours/Day
MANAGEMENT ROOM	4 FAN 4 LED	8	5 HOURS/DAY
BATHROOMS	1 LED	1	5 Hours/Day



Annexure 4 : On site Measurement

Date:	23/4/2022
Ambient Temperature:	40 Degree Celsius
Relative humidity:	29% RH

Lighting Survey

Location	Lux - Spot 01	Lux - Spot 02	Lux - Spot 03	Lux - Spot 03	Comment
Class room 01	310	820	289	1200	OK, Lux levels within permissible limit. Classroom are full of daylight.
Class room 02	850	1839	850	920	
Class room 03	420	1463	610	780	
Class room 04	1120	1453	635	735	
Class room 05	270	463	245	490	

Water Quality Survey

Location	TDS (ppm)	pH	Comment
Water cooler 01	268	8.00	OK, within permissible limit.

Ambient Noise level Survey

Locations	Average reading dB Level during Day time	Comments
Near main gate	50.7	OK
Near main building	52.4	OK
Near college office	65.7	OK
Classroom	47	OK



Annexure 5: Carbon Footprint Calculation

AY 2020-2021

Scope	Annual Electricity consumption (MWh)	EF (tCO ₂ /MWh)	tCO ₂	Ref of EF
2	14.235	0.92	13.10	CEA User guide ver16 (2020)
Scope	Annual HSD consumption (ton)	EF (tCO ₂ /ton)	tCO ₂	Ref of EF
1	0.15	3.954	0.59	Defra guideline 2020 (including WTT)
Scope	Annual LPG consumption (ton)	EF (tCO ₂ /ton)	tCO ₂	
1	0.0576	3.298	0.19	Defra guideline 2020 (including WTT)



Annexure 6: List of Plants and Trees Biodiversity

Sr.No.	Local Name	Botanical Name	Total No.
1	<i>Kadu Badam</i>	<i>Terminalia catappa</i>	118
2	Sagwan	<i>Tectona grandis</i>	7
3	<i>Pimpal</i>	<i>Ficus religiosa</i>	6
4	<i>Gulmohar</i>	<i>Delonix regia</i>	55
5	<i>Kadu Nim</i>	<i>Azadirachta indica</i>	23
6	<i>Moharup</i>	<i>Bixa Orellana</i>	1
7	<i>Shisam</i>	<i>Dalbergia sissoo</i>	26
8	<i>Aanwala</i>	<i>Phyllanthus emblica</i>	3
9	<i>Ritha</i>	<i>Sapindus mukorossi</i>	4
10	<i>Wad</i>	<i>Ficus benghalensis</i>	3
11	<i>Palm</i>	<i>Arecaceae</i>	11
12	<i>Pushap Parn</i>	--	32
13	<i>Umbar</i>	<i>Ficus racemosa</i>	4
14	<i>Ashoka</i>	<i>Saraca asoca</i>	47
15	<i>Chinch</i>	<i>Tamarindus indica</i>	1
16	<i>Amaltas</i>	<i>Cassia fistula</i>	1
17	<i>Bar</i>	<i>Ficus benghalensis L.</i>	5
18	<i>Babhul</i>	<i>Vachellia nilotica</i>	5
19	<i>Bor</i>	<i>Ziziphus mauritiana</i>	4
20	<i>Cactus</i>	----	3
21	<i>Sadafuli</i>	<i>Catharanthus roseus</i>	2
22	<i>Khanduchaka</i>	<i>Ehretia laevis</i>	1
23	<i>Bakul</i>	<i>Mimusops elengi</i>	4
24	<i>Sitafal</i>	<i>Annona squamosa</i>	1
25	<i>Kadu Nim</i>	<i>Azadirachta indica</i>	1
26	<i>Bogan wel</i>	<i>Bougainvillea</i>	3
27	<i>Sadafuli</i>	<i>Catharanthus roseus</i>	10



28	<i>Tadache zad</i>	<i>Borassus flabellifer</i>	5
29	<i>Chhota Palrn</i>	<i>Arecaceae</i>	16
30	<i>Mogara</i>	<i>Jasminum sambac</i>	1
31	<i>Chhota Ashok</i>	<i>Saraca asoca</i>	10
32	<i>Khandu chaka</i>		1
33	<i>Sadabahar</i>	<i>Catharanthus roseus</i>	8
34	<i>Garden Tree</i>	--	35
35	<i>Mehandi</i>	<i>Lawsonia inermis</i>	35
36	<i>Aamba</i>	<i>Mangifera indica L</i>	3
37	<i>Vidya</i>	<i>Thuja</i>	41
38	<i>Boganwel</i>	<i>Bougainvillea</i>	10
39	<i>Mogara</i>	<i>Jasminum sambac</i>	2
40	<i>Neem</i>	<i>Azadirachta indica</i>	1
Total No.			540

Annexure 7: List of Awareness Program Undertaken by Institute

Cleanliness Campaign





Tree plantation program under NSS



Awareness rally in adapted village



Yoga day celebration



Awareness Campaign about Blood Donation



Health checkup camp



Annexure 8: Best Practices of Institute

Drinking water facility





Waste Recycling System / Rain Water Harvesting



Waste plastic pot are used for Indoor plantation





Green belt – Biodiversity of plant and trees in campus



Pssive arcitechture building- excellent use of day light and natural ventilation



Annexure 9: Environmental Awareness Posters/Stickers





Annexure 10: Awards and Recognitions





Annexure – 11: List of Interviewed Staff

Green Campus Audit	Attendance Register	
--------------------	---------------------	--

- External Audit
- Internal Audit
- Experience Exchange Meeting
- Other:

Date: 23/4/22
 Location: Dr. B.A. college

TOPICS:

-
-
-

Name	Position	Signature
Dr. Anjan Kumar Sahay	Principal	
Dr. Rajani Bhimesu Gadam	Asso Prof.	
Dr. Rajesh. M. Dashmikh.	Asso. Prof.	
DR. P. G. Rathod.	professor	
Dr. D.S. Dhakde	Asst. Professors	
Mr. Shuddhodhraj Kumbhar	IQAC - CO-ordinator	
Dr. Varsha E. Gawande	Asst. Prof.	
Asst. Prof. Dipali Padole	Asst. Prof.	
Dr. Sunil Kumar	Director of Phy. Edu.	