

स्थापना : जून २००० (शासन क्र. एनजीसी २०००/न.म.वि.(१/२०००)म.शि.-३/दि. २८ जून २०००)

College Code No. : 337

महाविद्यालय कोड क्र. ३३७

Amrut Sevabhavi Sanstha Parbhani's

Late Ku. Durga K. Banmeru Science College,
(B.Sc., B.B.A., B.C.A., M.Sc. (Comp. Science))

Loni Road, Lonar Dist. Buldhana - 443302

Ph./Fax No. : 07260 - 221315

(Affiliated to Sant Gadge Baba Amravati University, Amravati
& UGC 2 (f) & 12 (B) approved)



अमृतं तु विद्या । विज्ञानं यज्ञ तनुते ॥

www.lkdksbanmerucollege.ac.in

E-mail : pkbanmeru@yahoo.co.in; lkdkscl@rediffmail.com

अमृत सेवाभावी संस्था, परभणी द्वारा संचालित

कै.कु. दुर्गा क. बनमेरू विज्ञान महाविद्यालय,

(बी.एस्सी., बी.बी.ए., बी.सी.ए., एम.एस्सी. (कॉम्प्यू. सायन्स))

लोणी रोड, लोणार जि. बुलढाणा - ४४३३०२

दूरध्वनी / फॅक्स क्र. : ०७२६० - २२१३१५

(संत गाडगेबाबा अमरावती विद्यापीठ, अमरावती संलग्नित व

युजीसी २ (एफ) व १२(बी) मान्यता प्राप्त)

Dr. Prakash K. Banmeru

Principal

Dr. Santosh K. Banmeru

Secretary

डॉ. प्रकाश क. बनमेरू
प्राचार्य

डॉ. संतोष क. बनमेरू
सचिव

7.1.3: Quality audits on environment and energy regularly undertaken by the Institution. The institutional environment and energy initiatives are confirmed through the following

1. Green audit / Environment audit

Green Audit Certificate (2019-20)

Nutan Urja Solutions

A 703, Balaji Witefield, Near Sunni's World,

Sus Road, Sus, Pune 411 021

Phone: 83568 18381. Email: nutanurja.solutions@gmail.com

Date: 07/10/2020

CERTIFICATE

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- Installation of Bio composting pit
- Usage of Energy Efficient LED
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K G Bhatwadekar

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Certified Energy Auditor,

EA - 22428



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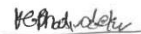
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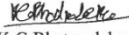
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PK Banmeru
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Late. Ku. Durga K. Banmeru Science College
LONAR, Dist. Buldhana

Report
On
Green Audit
At
Late Ku Durga K Banmeru Science College,
Lonar, Buldhana
(Year 2019-20)

Prepared by
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Acknowledgement

We at Nutan Urja Solutions, Pune, express our sincere gratitude to the management of Late Ku Durga K Banmeru Science College, Lonar, Buldhana for awarding us the assignment of Green Audit of their college premises.

We are also thankful to various Head of Departments & other Staff members for helping us during the field measurements.

We hope that the recommendations stated in this report will be useful and worthy of discussions to take things forward to help implementation of energy conservation measures and green practices. While we have made every attempt to adhere to high quality standards, in both data collection and analysis through the report, we would welcome your suggestions so as to improve upon this report further.



Executive Summary

Green Audit of Late Ku Durga K Banmeru Science College, Lonar, Buldhana is conducted by Nutan Urja Solutions, Pune. Based On the audit field study, following important points can be presented.

1. Present Energy Consumption

Late Ku Durga K Banmeru Science College, Lonar, Buldhana uses Electrical Energy as the source of Energy for various equipment in the college campus. In the following Table, we present the details of Energy Consumption.

Table no 1: Details of energy consumption

Sr no	Parameter	Energy consumed, (Units)	CO2 Emission (MT)
1	Maximum	486	0.39
2	Minimum	30	0.02
3	Average	320	0.26
4	Total	3,843	3.07

2. Various Measures Adopted for Energy Conservation

1. Usage of STAR Rated ACs at new installations
2. Usage of LED lights at some indoor locations
3. Usage of LED Lights for outdoor lighting.

3. Rain Water Harvesting

The College has installed the Rainwater harvesting project, to reduce dependency on municipal corporation water supply.

4. Waste Management

The College has already installed a Bio composting Plant, wherein, the bio-degradable waste is composted & is used as fertilizer for the garden.

The internal communication is through emails and there is hardly any generation of e-Waste in the premises.

5. Notes and Assumptions

1. Daily working hours-10 Nos



2. Annual working Days-250 Nos
3. Average Rate of Electrical Energy : Rs 11/- per kWh



Abbreviations

CFL	:	Compact Fluorescent Lamp
FTL	:	Fluorescent Tube Light
LED	:	Light Emitting Diode
V	:	Voltage
I	:	Current
kW	:	Kilo- Watt
kWh	:	kilo-Watt Hour
kVA	:	Active Power



1. Introduction

Late Ku. Durga K. Banmeru Science College, Lonar Dist. Buldana, is an academic excellence and achievement, was established in June 2000. Main objective of institute is the Students of the institute should be skillfull, knowledgebale & all-round in science so that they become multidimensional. The institute provide the basic as well as advance science courses.

1.1 Objectives

1. To study present level of Energy Consumption
2. To Study the present CO₂ emissions
3. To assess the various equipment/facilities from Energy efficiency aspect
4. To measure various Electrical parameters
5. To study Scope for usage of Renewable Energy
6. To study various measures to reduce the Energy Consumption

1.2 Audit methodology

1. Study of connected load
2. Study of various Electrical parameters
3. To prepare the Report with various Encon measures with payback analysis



2. Study of Electrical Energy Consumption

In this chapter, electricity bills are studied for the analysis of electrical energy consumption.

Table no 2.1: Summary of electricity bills

No	Month	Energy (kWh)	Bill Amount (Rs)
1	Sep-20	319	3,700
2	Aug-20	30	345
3	Jul-20	414	4,720
4	Jun-20	342	4,172
5	May-20	272.5	3,406
6	Apr-20	391	4,927
7	Mar-20	289	3,439
8	Feb-20	336.5	4,038
9	Jan-20	359.5	4,350
10	Dec-19	276	3,367
11	Nov-19	327	4,055
12	Oct-19	486	5,735
	Total	3842.5	46254

Variation in energy consumption is as follows,



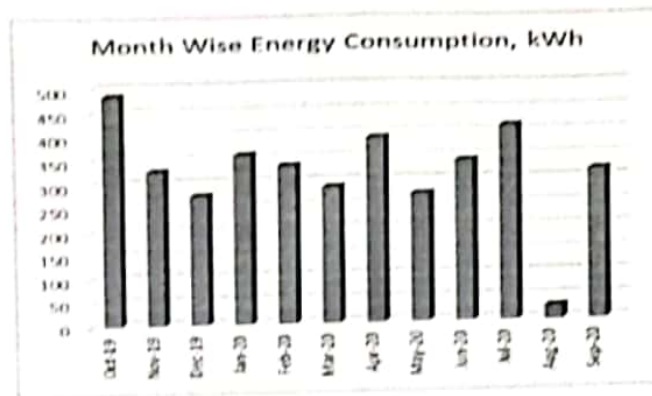


Figure 2.1: Month wise energy consumption

Monthly variation in electricity bill is as follows,

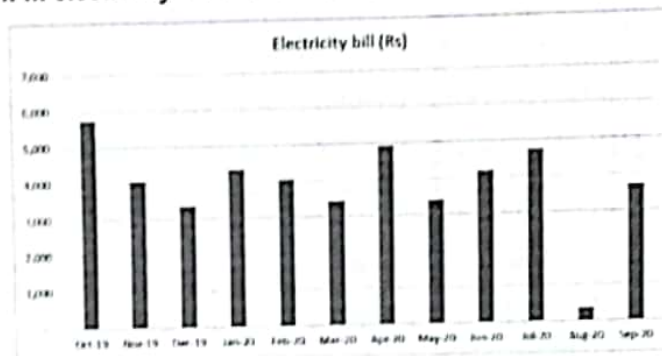


Figure 2.2: Month wise electricity bill

Key observations of electricity bill are as follows,

Table no 2.2: Key observations

Sr no	Parameter	Energy consumed, (Units)	CO2 Emission (MT)
1	Maximum	486	0.39
2	Minimum	30	0.02
3	Average	320	0.26
4	Total	3,843	3.07



3. Carbon Foot printing

1. 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

2. 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 0.8 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 3.1: Month wise Consumption of Electrical Energy & CO₂ Emissions

No	Month	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Sep-20	319	0.26
2	Aug-20	30	0.02
3	Jul-20	414	0.33
4	Jun-20	342	0.27
5	May-20	273	0.22
6	Apr-20	391	0.31
7	Mar-20	289	0.23
8	Feb-20	337	0.27
9	Jan-20	360	0.29
10	Dec-19	276	0.22
11	Nov-19	327	0.26
12	Oct-19	486	0.39
	Total	3,843	3.07

In the following Chart we present the CO₂ emissions due to usage of Electrical Energy.



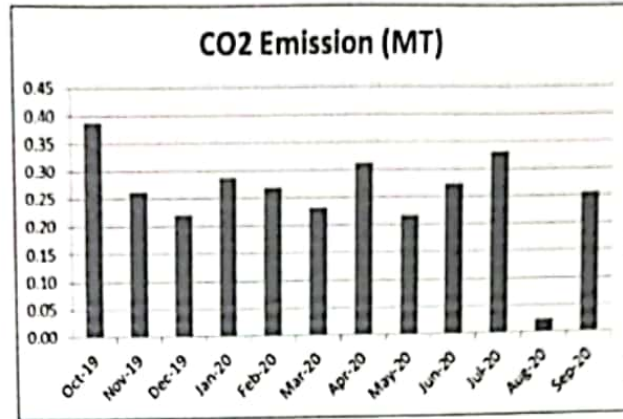


Figure 3.1: Month wise CO2 Emission



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Photograph of Rain Water Harvesting



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Photographs of Bio Composting Storage Tanks:



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**Report
On
Green Audit
At
Late Ku Durga K Banmeru Science College,
Lonar, Buldhana
(Year 2020-21)**

Prepared by
Nutan Urja Solutions
A 703, Balaji Witefield, Near Sunni's World,
Sus Road, Sus, Pune 411 021
Phone: 83568 18381. Email: nutanurja.solutions@gmail.com

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Table no 1: Details of energy consumption

Sr no	Parameter	Energy consumed, (Units)	CO2 Emission (MT)
1	Maximum	659	0.53
2	Minimum	100	0.08
3	Average	331	0.26
4	Total	3,973	3.18

2. Various Measures Adopted for Energy Conservation

1. Usage of STAR Rated ACs at new installations
2. Usage of LED lights at some indoor locations
3. Usage of LED Lights for outdoor lighting.

3. Rain Water Harvesting

The College has installed the Rainwater harvesting project, to reduce dependency on municipal corporation water supply.

4. Waste Management

The College has already installed a Bio composting Plant, wherein, the bio-degradable waste is composted & is used as fertilizer for the garden.

The internal communication is through emails and there is hardly any generation of e-Waste in the premises.

5. Notes and Assumptions

1. Daily working hours-10 Nos



2. Annual working Days-250 Nos
3. Average Rate of Electrical Energy : Rs 11/- per kWh



Abbreviations

CFL	:	Compact Fluorescent Lamp
FTL	:	Fluorescent Tube Light
LED	:	Light Emitting Diode
V	:	Voltage
I	:	Current
kW	:	Kilo- Watt
kWh	:	kilo-Watt Hour
kVA	:	Active Power



1. Introduction

Late Ku. Durga K. Banmeru Science College, Lonar Dist. Buldana, is an academic excellence and achievement, was established in June 2000. Main objective of institute is the Students of the institute should be skillfull, knowledgebale & all-round in science so that they become multidimensional. The institute provide the basic as well as advance science courses.

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1. To study present level of Energy Consumption
2. To Study the present CO₂ emissions
3. To assess the various equipment/facilities from Energy efficiency aspect
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1. Study of connected load
2. Study of various Electrical parameters
3. To prepare the Report with various Encon measures with payback analysis



2. Study of Electrical Energy Consumption

In this chapter, electricity bills are studied for the analysis of electrical energy consumption.

Table no 2.1: Summary of electricity bills

No	Month	Energy (kWh)	Bill Amount (Rs)
1	Sep-21	333	7,510
2	Aug-21	280	3,450
3	Jul-21	183	2,420
4	Jun-21	497	6,075
5	May-21	100	1,320
6	Apr-21	382	4,966
7	Mar-21	268	3,430
8	Feb-21	365	4,891
9	Jan-21	365	4,964
10	Dec-20	206	2,472
11	Nov-20	335	3,987
12	Oct-20	659	7,776
	Total	3973	53261

Variation in energy consumption is as follows,



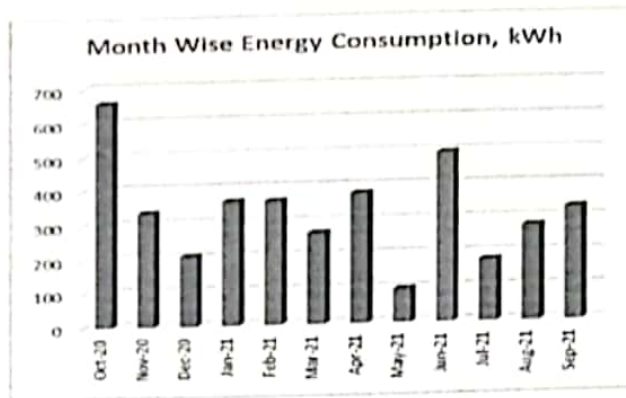


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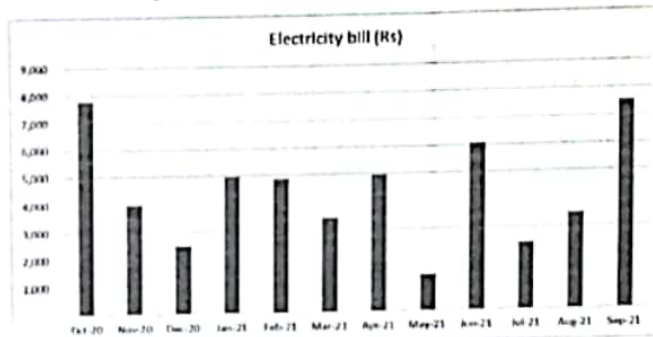


Figure 2.2: Month wise electricity bill

Key observations of electricity bill are as follows,

Table no 2.2: Key observations

Sr no	Parameter	Energy consumed, (Units)	CO2 Emission (MT)
1	Maximum	659	0.53
2	Minimum	100	0.08
3	Average	331	0.26
4	Total	3,973	3.18



3. Carbon Foot printing

1. 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

2. 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 0.8 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 3.1: Month wise Consumption of Electrical Energy & CO₂ Emissions

No	Month	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Sep-21	333	0.27
2	Aug-21	280	0.22
3	Jul-21	183	0.15
4	Jun-21	497	0.40
5	May-21	100	0.08
6	Apr-21	382	0.31
7	Mar-21	268	0.21
8	Feb-21	365	0.29
9	Jan-21	365	0.29
10	Dec-20	206	0.16
11	Nov-20	335	0.27
12	Oct-20	659	0.53
	Total	3,973	3.18

In the following Chart we present the CO₂ emissions due to usage of Electrical Energy.



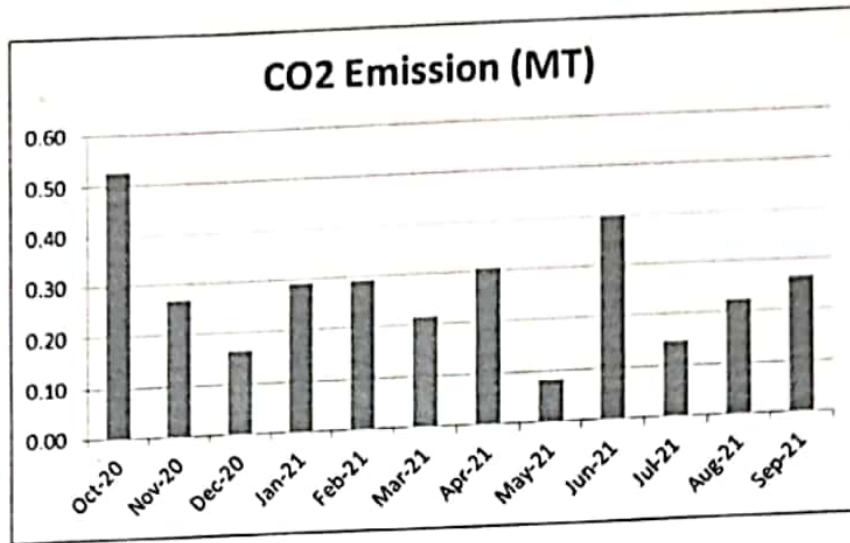


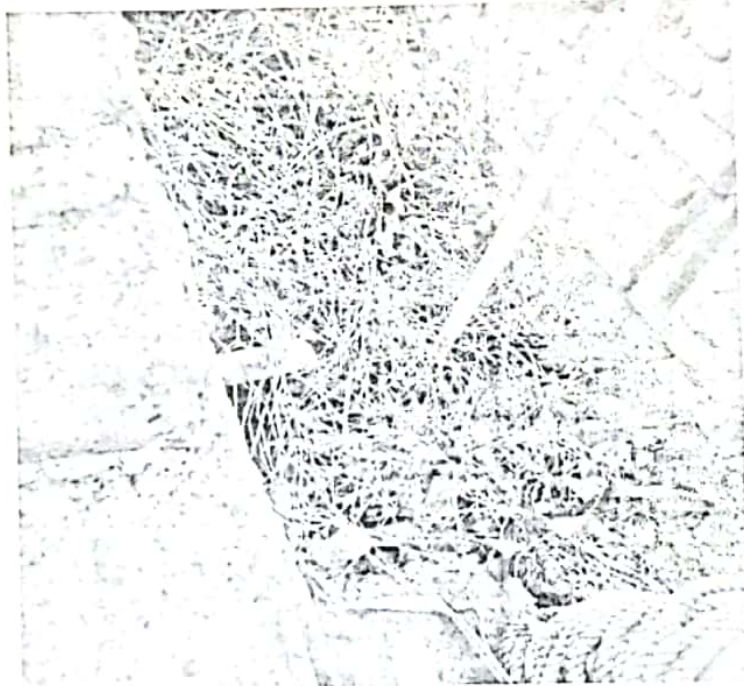
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7	Dec-21	346	4,150.00
8	Nov-21	319	3,860.00
9	Oct-21	313	3,800.00
10	Sep-21	333	7,510.00
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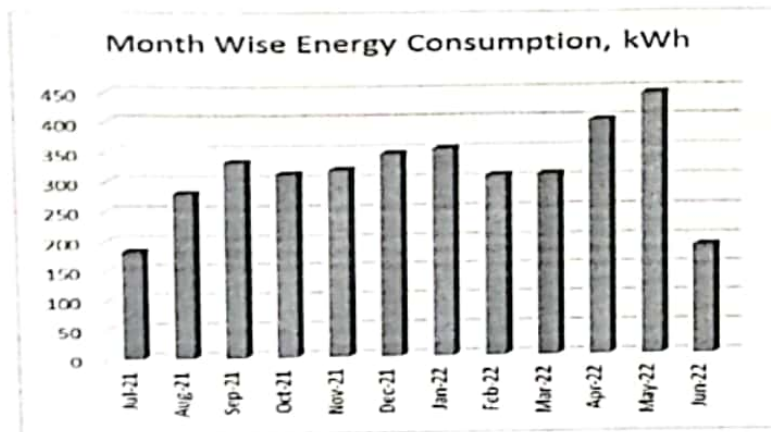


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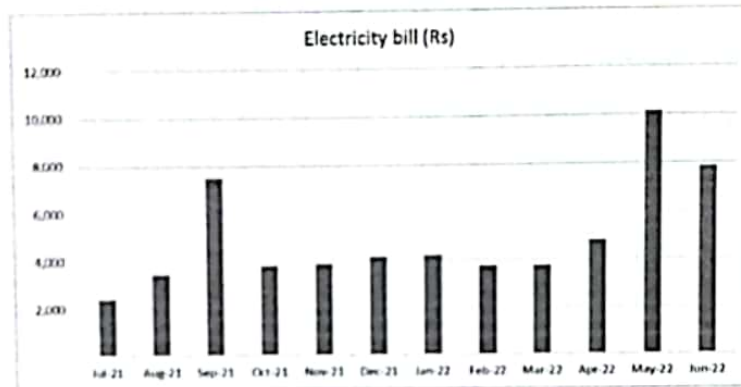


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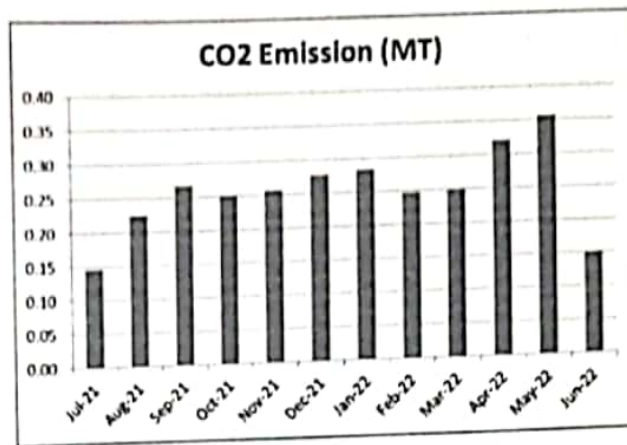


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Executive Summary

After the Field measurements & analysis, we present herewith important observations made and various measures to reduce the dependency on Natural resources & reduce the pollution.

Late Ku Durga K Banmeru Science College, Lonar, Buldhana consumes various resources for day to day operations, namely: Air, Water, Electrical Energy & LPG.

1. Various Pollution due to College Activities:

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

2. Present Level of CO₂ Emissions:

Sr no	Parameter	Energy consumed, (Units)	CO ₂ Emission (MT)
1	Maximum	486	0.39
2	Minimum	30	0.02
3	Average	320	0.26
4	Total	3,843	3.07

3. The various projects already implemented for Environmental Conservation:

- Usage of Natural Day light in corridors
- Implementation of Bio Composting pit for disposal of Bio degradable waste
- Implementation of Rain Water Harvesting

4. Recommendations:

1. Installation of Bio Gas Generator Plant instead of Bio composting Plant.
2. Installation of Sewage treatment Plant to make campus a Zero Discharge campus

5. Notes & Assumptions:

1. 1 kWh of Electrical Energy releases 0.8 Kg of CO₂ into atmosphere
2. 1 kWp Solar PV plant generates 5 kWh/day Electrical Energy for 300 days in an year.



Abbreviations

AC	:	Air conditioner
PES	:	Progressive Education Society
CFL	:	Compact Fluorescent Lamp
FTL	:	Fluorescent Tube Light
LED	:	Light Emitting Diode
kWh	:	kilo-Watt Hour
Qty	:	Quantity
W	:	Watt
kW	:	Kilo Watt
PF	:	Power Factor
M D	:	Maximum Demand
PC	:	Personal Computer
MSEDCL	:	Maharashtra State Electricity Distribution Company Ltd



1. 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 present usage of Natural resources the College is consuming
2. To Study the present pollution sources
3. To study various measures to make the campus Self sustainable in respect of Natural resources
4. To suggest the various measures to reduce the pollution: Air, Water, Noise

1.3 Audit Methodology:

1. Study of College as System
2. Study of Electrical Energy Consumption
3. Study of CO2 emissions
4. Suggestions on usage of Renewable Energy

1.4 General Details of College

No	Head	Particulars
1	Name of Institution	Late Ku. Durga K. Banmeru Science College, Lonar Dist. Buldana.
2	Address	Late Ku Durga K Banmeru Science College, Loni Road, Lonar, Buldhana-443302, Maharashtra, India.
3	Affiliation	Sant Gadge Baba Amravati University, Amravati.



2. Study of Consumption of Various Resources

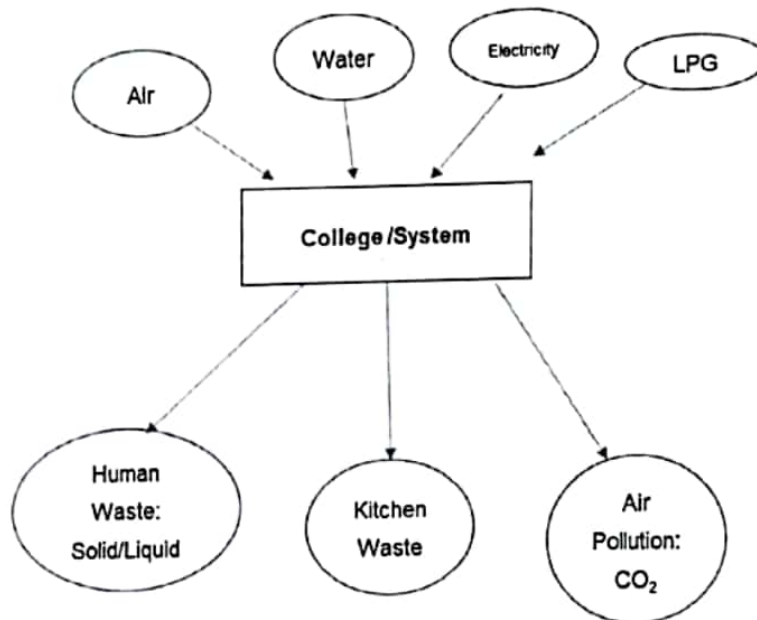
The Institute consumes following basic/derived Resources:

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

Also, college emits following pollutants to environment

1. Human Waste: Solid/ Liquid
2. Kitchen waste
3. Air pollution

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



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

The calculation of electrical energy consumption by college can be given as,

Table 2.1: Electrical Energy Consumption

No	Month	Energy (kWh)
1	Scp-20	319
2	Aug-20	30
3	Jul-20	414
4	Jun-20	342
5	May-20	272.5
6	Apr-20	391
7	Mar-20	289
8	Feb-20	336.5
9	Jan-20	359.5
10	Dec-19	276
11	Nov-19	327
12	Oct-19	486
	Total	3842.5
	Maximum	486
	Minimum	30
	Average	320

2.1 Variation of Monthly Electrical Energy Consumption

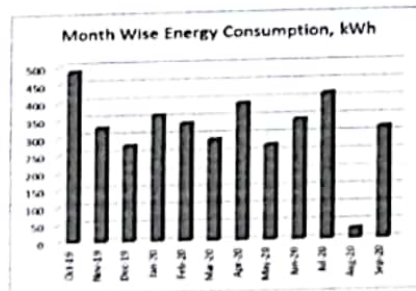


Figure 2.1 : Monthly Electrical Energy Consumption



2.2 Key Inference drawn

From the above analysis, we present following important parameters:

Table 2.2: Variation in Important Parameters

No	Parameter	Energy consumed, (Units)
1	Maximum	486
2	Minimum	30
3	Average	320
4	Total	3842



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In this Chapter, we present the various types of Pollution as under:

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- 1 unit (kWh) of Electrical Energy emits 0.8 Kg of CO₂ in the atmosphere
- 1 Kg of LPG emits 3 Kg of CO₂ in the atmosphere

In the following Table, we present the CO₂ emissions.

Table 3.1: Month wise Consumption of Electrical Energy & CO₂ Emissions:

No	Month	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Sep-20	319	3,700
2	Aug-20	30	345
3	Jul-20	414	4,720
4	Jun-20	342	4,172
5	May-20	272.5	3,406
6	Apr-20	391	4,927
7	Mar-20	289	3,439
8	Feb-20	336.5	4,038
9	Jan-20	359.5	4,350
10	Dec-19	276	3,367
11	Nov-19	327	4,055
12	Oct-19	486	5,735
	Total	3842.5	46254
	Maximum	486	5734.8
	Minimum	30	345
	Average	320	3855



In the following Chart we present the CO2 emissions due to usage of Electrical Energy.

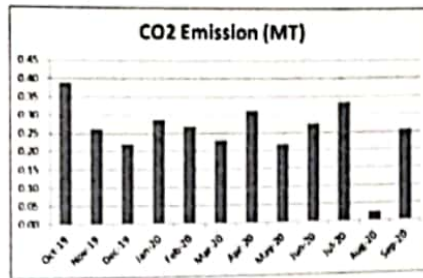


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The College has already installed a Bio composting Plant, wherein, the bio-degradable waste is composted & is used as fertilizer for the garden.

3.2.1 Photograph of Bio Composting Processing Tanks



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The internal communication is through emails and there is hardly any generation of e-Waste in the premises.



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The College has already installed Rain Water Harvesting project, wherein the rain water falling on the terrace is collected and through pipes it is fed to underground Water Storage tank. This stored water is then reused for domestic purpose.

Photograph of Rain Water Harvesting Pipe:



5. Recommendations

In order to reduce the dependency on Natural resources and also in order to reduce the various pollutions arising due to the day to day operations of the College we herewith recommend following recommendations.

- Installation of Bio Gas Generator Plant instead of Bio composting Plant.
- Installation of Sewage treatment Plant to make campus a Zero Discharge campus



Report
On
Environmental Audit
At
Late Ku Durga K Banmeru Science College,
Lonar, Buldhana
(Year 2020-21)

Prepared by
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A 703, Balaji Witefield, Near Sunni's World,
Sus Road, Sus, Pune 411 021
Phone: 83568 18381. Email: nutanurja.solutions@gmail.com



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After the Field measurements & analysis, we present herewith important observations made and various measures to reduce the dependency on Natural resources & reduce the pollution.

Late Ku Durga K Banmeru Science College, Lonar, Buldhana consumes various resources for day to day operations, namely: Air, Water, Electrical Energy & LPG.

1. Various Pollution due to College Activities:

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

2. Present Level of CO₂ Emissions:

Sr no	Parameter	Energy consumed, (Units)	CO ₂ Emission (MT)
1	Maximum	659	0.53
2	Minimum	100	0.08
3	Average	331	0.26
4	Total	3,973	3.18

3. The various projects already implemented for Environmental Conservation:

- Usage of Natural Day light in corridors
- Implementation of Bio Composting pit for disposal of Bio degradable waste
- Implementation of Rain Water Harvesting

4. Recommendations:

1. Installation of Bio Gas Generator Plant instead of Bio composting Plant.
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5. Notes & Assumptions:

1. 1 kWh of Electrical Energy releases 0.8 Kg of CO₂ into atmosphere
2. 1 kWp Solar PV plant generates 5 kWh/day Electrical Energy for 300 days in an year.



Abbreviations

AC	: Air conditioner
PES	: Progressive Education Society
CFL	: Compact Fluorescent Lamp
FTL	: Fluorescent Tube Light
LED	: Light Emitting Diode
kWh	: kilo-Watt Hour
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M D	: Maximum Demand
PC	: Personal Computer
MSEDCL	: Maharashtra State Electricity Distribution Company Ltd



1. 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 complied 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.

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1927	The Indian Forest Act
1972	The Wildlife Protection Act
1974	The Water (Prevention and Control of Pollution) Act
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2002	The Biological Diversity Act
2010	The National Green Tribunal Act

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1989	Hazardous Waste (Management and Handling) Rules
1989	Manufacture, Storage and Import of Hazardous Chemical Rules
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1.1.6 National Environmental Plans & Policy Documents: Table No-3:

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4.	National Conservation Strategy and Policy Statement on Environment and Development, 1992
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6.	National Action Plan on Climate Change
7.	Vision Statement on Environment and Human Health
8.	Technology Vision 2030 (The Energy Research Institute)
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1.2 Objectives

1. To study present usage of Natural resources the College is consuming
2. To Study the present pollution sources
3. To study various measures to make the campus Self sustainable in respect of Natural resources
4. To suggest the various measures to reduce the pollution: Air, Water, Noise

1.3 Audit Methodology:

1. Study of College as System
2. Study of Electrical Energy Consumption
3. Study of CO₂ emissions
4. Suggestions on usage of Renewable Energy

1.4 General Details of College

No	Head	Particulars
1	Name of Institution	Late Ku. Durga K. Banmeru Science College, Lonar Dist. Buldana.
2	Address	Late Ku Durga K Banmeru Science College, Loni Road, Lonar, Buldhana-443302, Maharashtra, India.
3	Affiliation	Sant Gadge Baba Amravati University, Amravati.



2. Study of Consumption of Various Resources

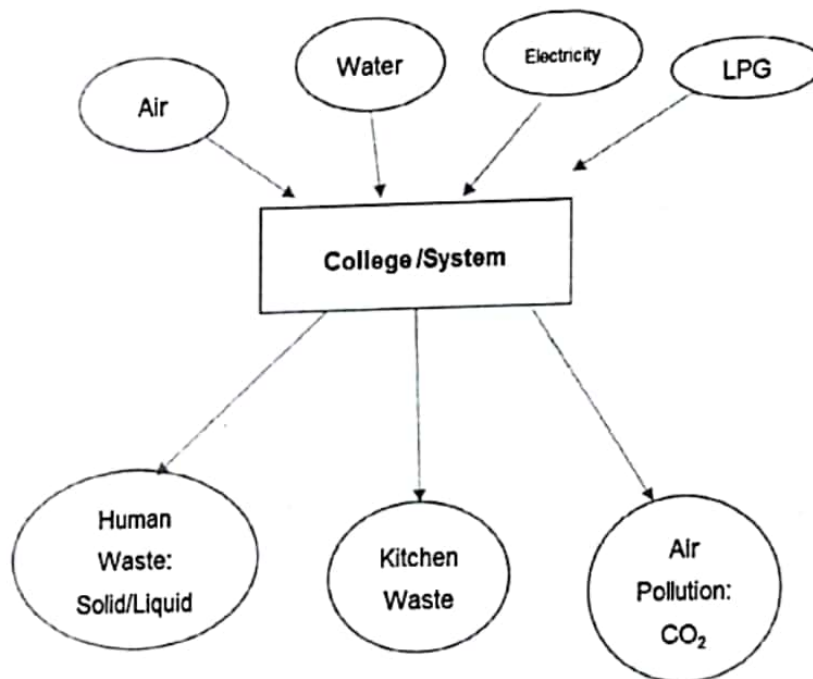
The Institute consumes following basic/derived Resources:

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

Also, college emits following pollutants to environment

1. Human Waste: Solid/ Liquid
2. Kitchen waste
3. Air pollution

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



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

The calculation of electrical energy consumption by college can be given as,

Table 2.1: Electrical Energy Consumption

No	Month	Energy (kWh)
1	Sep-21	333
2	Aug-21	280
3	Jul-21	183
4	Jun-21	497
5	May-21	100
6	Apr-21	382
7	Mar-21	268
8	Feb-21	365
9	Jan-21	365
10	Dec-20	206
11	Nov-20	335
12	Oct-20	659
	Total	3973
	Maximum	659
	Minimum	100
	Average	331

2.1 Variation of Monthly Electrical Energy Consumption

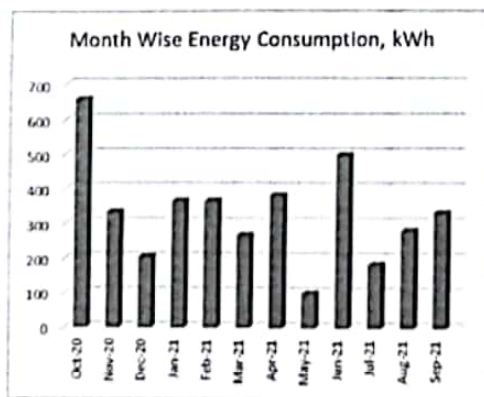


Figure 2.1 : Monthly Electrical Energy Consumption



2.2 Key Inference drawn

From the above analysis, we present following important parameters:

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1	Maximum	659
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In this Chapter, we present the various types of Pollution as under:

3.1 Air Pollution

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In the following Table, we present the CO₂ emissions.

Table 3.1: Month wise Consumption of Electrical Energy & CO₂ Emissions:

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Sep-21	333	0.27
2	Aug-21	280	0.22
3	Jul-21	183	0.15
4	Jun-21	497	0.40
5	May-21	100	0.08
6	Apr-21	382	0.31
7	Mar-21	268	0.21
8	Feb-21	365	0.29
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In the following Chart we present the CO2 emissions due to usage of Electrical Energy.

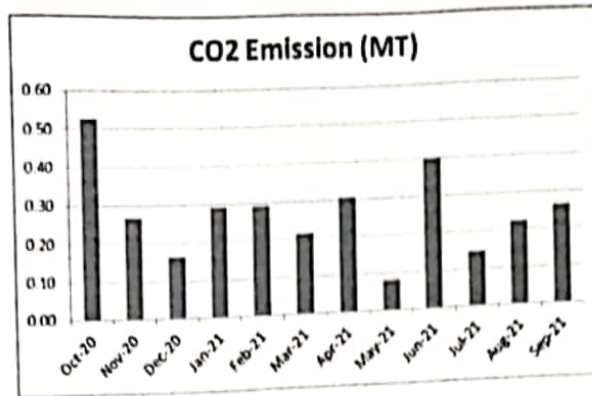


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The College has already installed a Bio composting Plant, wherein, the bio-degradable waste is composted & is used as fertilizer for the garden.

3.2.1 Photograph of Bio Composting Processing Tanks



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At present the Liquid Waste generated due to day to day operations is drained off to the municipal Corporation through a pipe.

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5. Recommendations

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Prepared by

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2. Present Level of CO₂ Emissions:

Sr no	Parameter	Energy consumed, (Units)	CO ₂ Emission (MT)
1	Maximum	445	0.36
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4	Total	3,778	3.02

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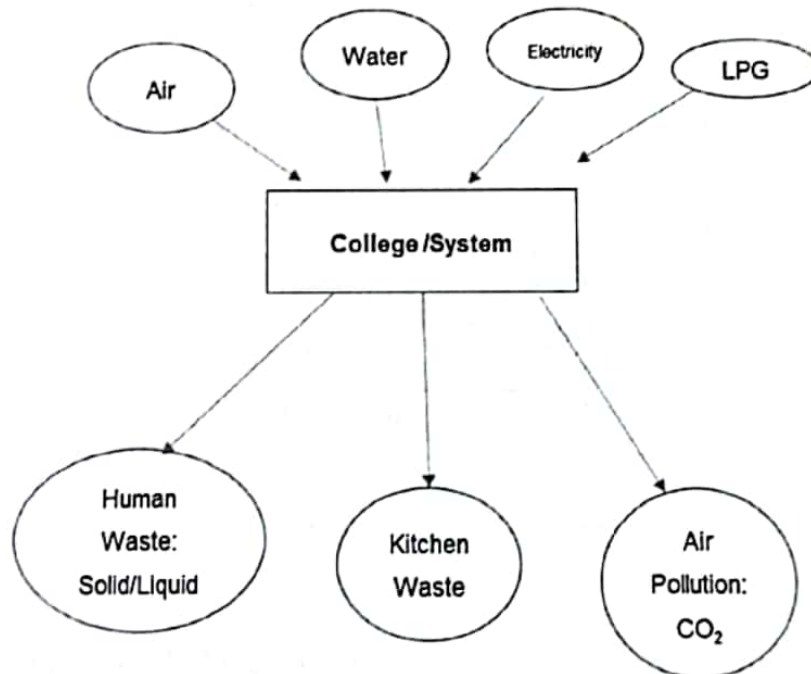
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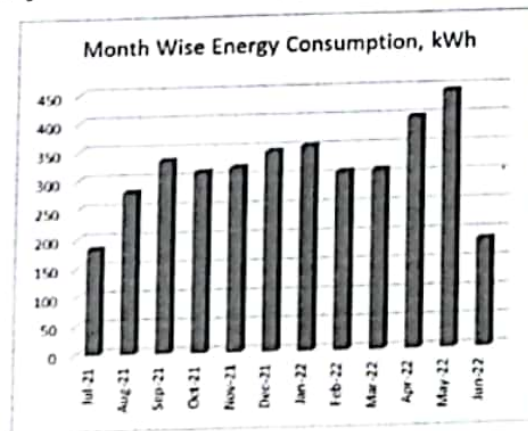


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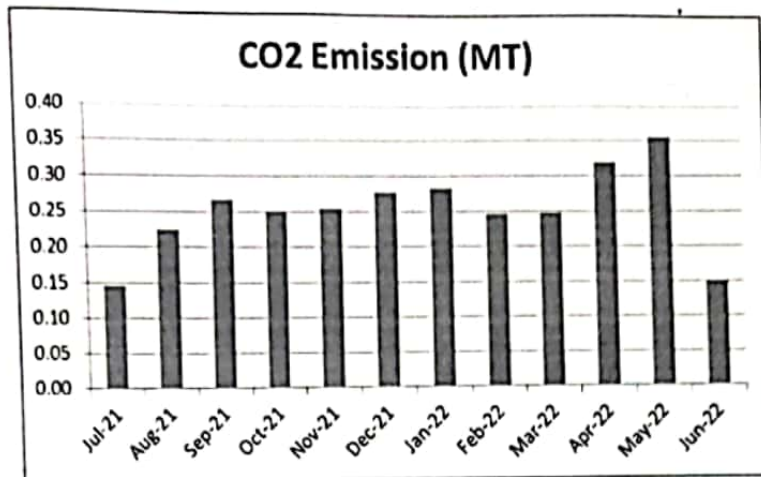


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