Criterion VII: Institutional Values & Best Practices

7.1 Institutional Values and Social Responsibilities

Session-2022-2023

Metric No.		Content / File Description	Document Link
7.1.6		Quality audits on environment and energy regularly undertaken by the institution 1. Green Audit 2. Energy Audit 3. Environment Audit 4. Beyond the campus environmental promotion activities	

SATPUDA EDUCATION SOCIETY, JALGAON JAMOD'S

Arts & Commerce College

Warwat Bakal Tq. Sangrampur Dist - Buldhana (M.S.)

NAAC Reaccredited with 'B' Grade

College Code : 327

- Principal -
Dr. Shriram Yerankar
M.A., M.Phil, Ph.D.
9423722316

- President -
Shri. Krushnarao Ingle
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CERTIFICATE

This is to certify that the documents attached as supporting documents for Criterion VII: Institutional Values and Best Practices are verified from the college record and found to be correct to the best of my knowledge.

Arts & Commerce College Warwat Bakal

Principal
Arts & Commerce College
Warvat Bakal Dist.Buldana

ARTS & COMMERCE COLLEGE,
WARWAT BAKAL DIST- BULDANA

Clean and Green Campus Policy Document

About College

The Satpuda Education Society, Jalgaon (Jamod), founded the Arts & Commerce College in 1994. In Maharashtra's Buldana district, the college is located at the base of the Satpuda mountains, which are dispersed to the north. The majority of the population in this area is employed in agriculture. In Sangrampur Tahsil, there was no senior college prior to the establishment of this college. This region's students were denied access to higher education. Satpuda Education Society founded this college with a broad objective and a clear goal in mind: to meet the higher education needs of this area.

The administration built a separate structure for the college in under five years. The society established a junior college in the faculty of science in 2003 and a senior science and commerce college in 2009 in response to the need for science education. Undergraduate students studying in the streams of arts, commerce, and science are educated by the college. The college successfully completed the first cycle of NAAC accreditation in 2016 and received a "B" grade. The coordination between teaching and non-teaching staff is excellent at our college. Our team works hard and ensures that the college's goals and objectives are met. Our young and tenacious teachers instruct and mentor the pupils who travel from the remote highland area.

The Clean and Green Campus Policy

The college's Green Campus Policy is to create a clean and green campus where ecologically responsible behaviour is encouraged through education and other means both on campus and off campus. By fostering environmental ethics among the faculty and staff, it also gives the institution a chance to take the lead in reinventing its environmental culture.

Mission

To instill environmental awareness in society and actively engage in efforts to defend the planet earth against nefarious human incursions in order to ensure a sustainable, pollution-free, and healthy future.

Objectives

• To increase awareness of the value of frequently using environmentally friendly goods and services. to inculcate the value of cleanliness in maintaining a healthy lifestyle.
• To raise public awareness of environmental issues through the organisation of events, rallies, clean-up drives, seminars, workshops, presentations, tree planting drives, wildlife photography competitions, rangoli competitions, essay competitions, bird watching programmes, excursions, study tours, guest lectures, and talks, among other activities.
• To raise awareness among students and faculty about speaking out against harmful practises that harm the environment and to encourage such practises throughout society.

Initiatives Taken to Implement the Clean and Green Campus Policy

The Institution is committed to managing its campus in accordance with its Clean and Green Campus Policy by establishing the following infrastructure and carrying out the following activities:

- **Landscaping with Trees and Plants**
- **Ban on Single-Use Plastic**
- **14 KV. Solar Plant in the College**
- **Use of LED Bulbs/Tubes and Power Efficient Equipments**
- **Rainwater Harvesting**
- **Paperless Office and Communication**
- **Solid Waste Management**
- **Water Management**
- **Display Boards to Promote Environmental Sensibility on College Campus**
- **Observance of Days to protect and Nurture Environment**
- **The Green, Environmental and Energy Audit**

Landscaping with Trees and Plants

According to the Arts & Commerce College's Warwat Bakal's Clean and Green Policy, the college works to grow several plant kinds of trees, as well as ornamental and medicinal varieties, both inside and outside the campus. The campus is kept clean, litter-free, and green by volunteers from NSS and Class 4 staff. The Department of Botany is responsible for caring for and maintaining the College Botanical Garden and the Vermicompost Unit. The college's NSS and NCC Units often organise tree-planting campaigns, which usually take place in the month of July.

Ban on Single-Use Plastic

Single-use plastics are completely prohibited in classrooms, laboratories, the canteen, and all other areas of the Arts & Commerce College, Warwat Bakal campus. In order to progressively reduce the use of plastics on campus, the college provides environmentally friendly alternatives including stainless steel, washable, and reusable tumblers at all water units and requires the canteen to serve exclusively in stainless steel or paper plates, glasses, and cups.

14 kV Solar Plant in the College

In April 2023, the institution installed a 14 kV solar energy plant on one of its buildings. Since the commissioning of these solar plants, the MSEDCL's electricity bills have significantly decreased. The MSEDCL's power grid is connected to the solar panels' energy output, and the MSEDCL has subsidised the college's electricity needs by supplying the system with the power generated by the solar panels.

Rainwater Harvesting

The college ensures rainfall conservation by collecting rainwater. More than five acres make up our facility. Rainfall in the area ranges from 90 to 110 cm on average. All the rainwater will be wasted in the neighbouring village. The institute and the governing body decided to store and gather this rainwater on campus as a result. We therefore constructed a water absorption hole that is 30 feet deep and 14 feet in diameter in the southeast corner of the campus. South East-sloping slopes are present naturally. All of the rainwater consequently streams into the pit to be collected. The extra water from the hole is emptied into the nearby river.

Paperless Office and Communication

The college has a policy to use e-communication for the majority of official and academic communications in order to reduce the consumption of paper. Digitization significantly reduces the use of paper. To save paper waste, blank papers with one side are used. What's App groups have been formed based on classes, departments, and committees, which has decreased the need for paper in announcements and circulars. Additionally, by implementing Google Classrooms, where references, notes, syllabi, question banks, and study material are shared on the e-platform, the college has eliminated the heavy use of paper. E-assignments are now being

accepted by some departments as well.

Solid waste Management

Solid waste needs to be disposed of to prevent unneeded accumulation. Waste material is sorted out for secure disposal. Waste is composted via vermicomposting and bio composting. The decomposition of dead plant matter and other trash occurs during vermicomposting. Waste that is complex is reduced to a simpler form. Composting is a sustainable practise. It transforms a vast array of wastes into beneficial agricultural nutrients. A great source of humus and plant nutrients, compost enhances the biophysical characteristics of the soil and the level of organic matter. We have taken action to manage the waste that has been gathered on college property.

Our institute employs a skilled approach to solid waste management. Garbage containers hold all of the solid garbage produced on campus. Waste from the departmental rooms and the canteen is also composted.

The college has adopted the practise of printing on both sides of the page to save paper usage; however, we mostly use electronic resources since we support paperless communication. Dustbins are available in every department, lab, and classroom for the disposal of dry waste. In key areas across the college, designated dustbins are used to segregate waste into dry and wet categories.

Vermicompost Unit

Vermicompost Unit is established in the Botanical Garden of the Department of Botany. The students of the department actively involve themselves to run this unit. The organic waste material is collected from the college campus by the students to deposit it in the special vermicompost pit. Using cow dung, Earthworms the soil mixture is made with appropriate proportions. With the help of students this mixture is installed in the tank and watered properly for 4-8 weeks.

Water Management

A different set of distribution pipes provides water for all other uses. There is plenty of water in the college's well. Pumps are used to transfer groundwater from the wells into elevated service reservoirs and storage tanks spread throughout the campus. A network of well-built pipes is used to disperse the water.

The college administration closely monitors the whole distribution system to prevent water leaks and wastage at water taps, pipelines, and other points of use. The college's administrative staff controls how frequently the water tanks are cleaned. Every college stakeholder is knowledgeable about how to use water wisely and effectively.

Apart from carrying out Cleanliness Drives, Awareness Campaigns, the College NSS volunteers also render the services for ground water recharge in the adopted villages during the NSS Special Camps.

Display Boards to Promote Environmental Sensibility on College Campus

Various boards including Quotes that promote environmental awareness and ethics including air-pollution control, plastic-free campus, conservation of energy, recycling of resources, tree plantation, Nature conservation, etc. are displayed for all the stakeholders of the college.

Observance of Days to Protect and Nurture Environment

The organization of various events like Rallies, Awareness Campaigns, Cleanliness Drives, Tree Plantation Drives, Wildlife Week, Rangoli Competitions, Essay Competitions, Excursions, Study Tours, Guest Lectures, Talks, etc. on the occasion of various days like- 'International Day for the Preservation of the Ozone Layer' (16 September), 'World Environment Day' (05 June), 'Wildlife Week' (02 to 08 October), ‘World Wetland Day’ (02 February), ‘World Sparrow Day’ (20 March), Mahatma Gandhi Jayanti (02 October), 'Army Day' (15 January) ‘Bird Week’ in first week of November, etc. ensures to create awareness among young students and public about various environment related problems and conservation of Nature and natural resources in the surrounding area and educating on how to live a Eco- friendly life.

The Green, Environmental and Energy Audit

The Green, Environmental and Energy Audit of the college is done by Nutan Urja Solutions, Pune.

Report
On
Green Audit
At
Arts & Commerce College warwat Bakal, Buldana.
(Year 2022-23)

Green Audit

Prepared by

Nutan Urja Solutions

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Contents

Acknowledgement

We at Nutan Urja Solutions, Pune, express our sincere gratitude to the management of Arts & Commerce College warwat Bakal, Buldana 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 Arts & Commerce College warwat Bakal, Buldana is conducted by Nutan Urja Solutions, Pune. Based On the audit field study, following important points can be presented.

1. Present Energy Consumption

Arts & Commerce College warwat Bakal, Buldana 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	427	0.34
2	Minimum	-	-
3	Average	162	0.13
4	Total	1,940	1.55

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. Usage of Renewable Energy

The collage has installed **12 kW** Solar PV Power Plant.

4. Rain Water Harvesting

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

5. 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 hence there is hardly any generation of e-Waste in the premises.

6. 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

The mission undertaken by Arts & Commerce College warwat Bakal, Buldana is to strive and provide Education to those poor, downtrodden and exploited communities of the area. It will accelerate the development of this region and establish confidence among the youth.

1.1 Objectives

1. To study present level of Energy Consumption
2. To Study the present CO_2 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	Jun-23	-	440
2	May-23	148	1,780
3	Apr-23	169	1,850
4	Mar-23	139	1,428
5	Feb-23	99	963
6	Jan-23	103	1,050
7	Dec-22	110	1,140
8	Nov-22	101	1,010
9	Oct-22	427	4,184
10	Sep-22	236	2,186
11	Aug-22	212	2,100
12	Jul-22	196	1,920
	Total	**1,940**	**20,051**

Variation in energy consumption is as follows,

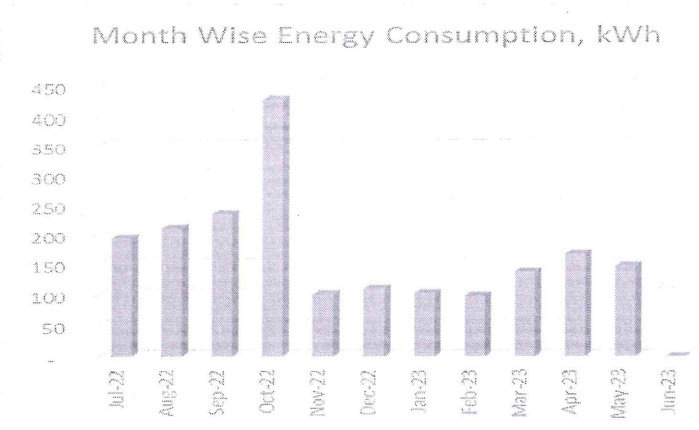


Figure 2.1: Month wise energy consumption

Monthly variation in electricity bill is as follows,

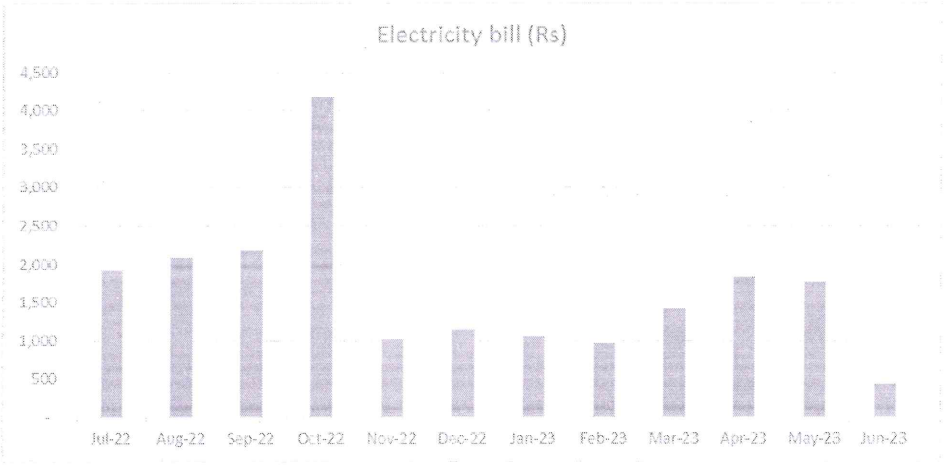


Figure 2.2: Month wise electricity bill

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	427	0.34
2	Minimum	-	-
3	Average	162	0.13
4	Total	1,940	1.55

3. Carbon Foot printing

1. A Carbon Foot print is defined as the Total Greenhouse Gas emissions (CO_2 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 CO_2 Emissions:

The basis of Calculation for CO_2 emissions due to Electrical Energy is as under

- 1 Unit (kWh) of Electrical Energy releases **0.8 Kg of CO_2** into atmosphere.

Based on the above Data we compute the CO_2 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	CO2 Emissions, MT
1	Jun-23	-	0.00
2	May-23	148	0.12
3	Apr-23	169	0.14
4	Mar-23	139	0.11
5	Feb-23	99	0.08
6	Jan-23	103	0.08
7	Dec-22	110	0.09
8	Nov-22	101	0.08
9	Oct-22	427	0.34
10	Sep-22	236	0.19
11	Aug-22	212	0.17
12	Jul-22	196	0.16
	Total	**1,940**	**1.55**

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

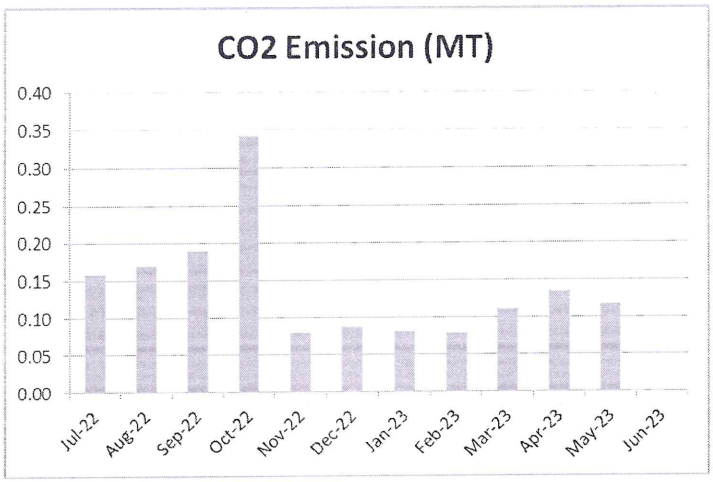


Figure 3.1: Month wise CO2 Emission

4. Study of Usage of Alternate Energy

In this Chapter, we compute the percentage of Usage of Alternate/Renewable Energy to Annual Energy Requirement of the College. The College has installed Roof Top Solar PV System. The Installed Capacity of Solar PV Plant is **10 kWp**.

Table 4.1: Computation of % Usage of Alternate Energy to Annual Energy Requirement

No	Particulars	Value	Unit
1	Annual Energy Purchased from MSEDCL	1,940	kWh/Annum
2	Energy Generated by Roof Top Solar PV System	18,000	kWh/Annum
3	Total Energy Requirement of College	19,940	kWh/Annum
4	% of Usage of Alternate Energy to Annual Energy Requirement	90	%

Photograph of Solar PV plant

5. Study of Rain Water Harvesting

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

6. Study of Waste Management

6.1 Solid 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.

Photographs of Bio Composting Storage Tanks:

6.2 e-Waste Management

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

7. Study of Green Practices

7.1 No of students who don't use own Vehicle for coming to Institute

Out of total students coming to Institute, about 60% students use own Automobile.

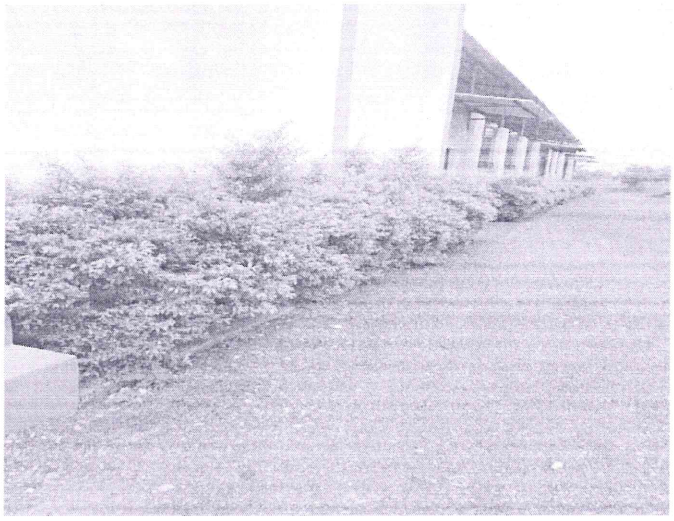
7.2 Usage of Public Transport

During the Students transport study, it was revealed that the local students who are residing near areas make use of Public Transport like Municipal Transport local buses, local sharing type auto rickshaws. Some students use bicycles.

7.3 Pedestrian Friendly Roads

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

Photograph of Road within campus



7.4 Plastic Free Campus

The Institute is an active participant in the Government of India's most prestigious project of SWATCHH BHART ABHIYAN. The Institute has displayed boards in the Campus, to make the campus plastic free. Various measures adopted for this purpose are as follows

- Installation of Separate waste bins for Dry waste & wet waste
- Usage of paper tea cups in the Institute canteen
- Display of boards in the campus for Plastic Free campus

7.5 Paperless Office

The internal communication of the Institute is through the Internet. There are hardly any day to day operations, where printing is required.

7.6 Green Landscaping with Trees and Plants

The Institute has beautiful maintained Garden.

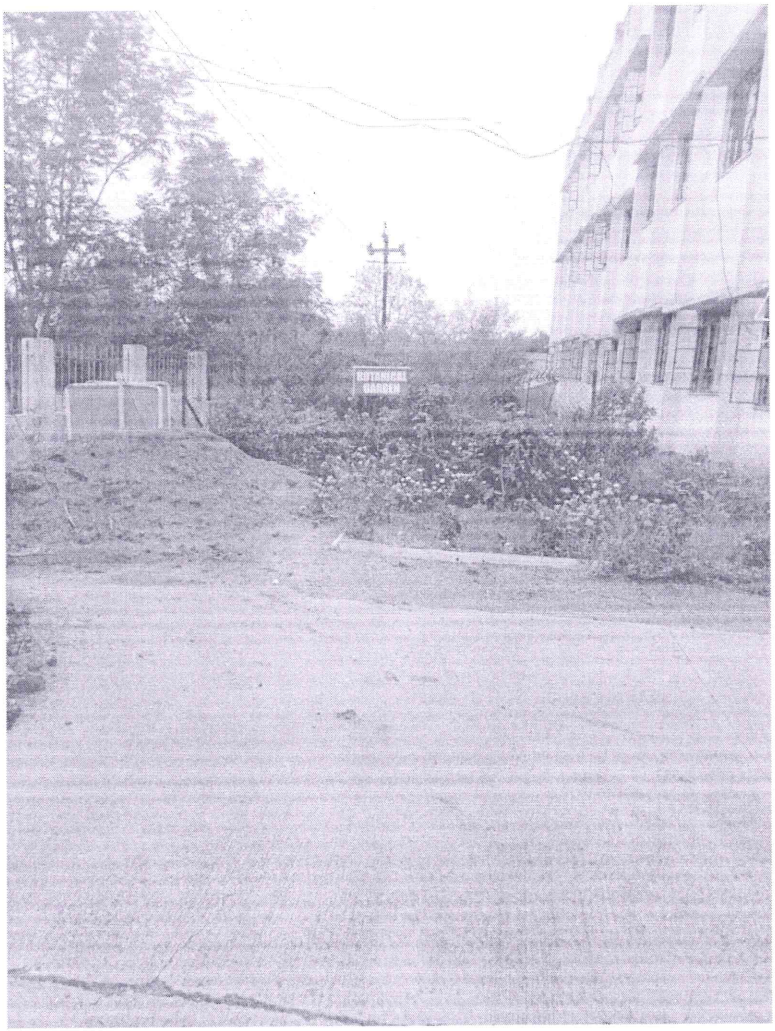


Figure 7.1: Beautiful maintained Garden of college

Nutan Urja Solutions

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Sus Road, Sus, Pune 411 021

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

Date: 21/07/2023

CERTIFICATE

This is to certify that we have conducted Green Audit at Arts & Commerce College Warwat Bakal, Buldana for the year 2022–23.

The College has already adopted **Green** practices like:

- Installation of Rain Water Harvesting system
- Installation of Bio composting pit
- Usage of Energy Efficient LED
- Usage of Energy Efficient BEE STAR Rated equipment
- College has installed 12kW Solar PV system

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

Nutan Urja Solutions,

K G Bhatwadekar,

Certified Energy Auditor,

EA - 22428

Energy Audit

Report
On
Energy Audit
At
Arts & Commerce College warwat Bakal, Buldana.
(Year 2022-23)

Prepared by

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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 through energy savings. 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

After the Field measurements & analysis, we present herewith important observations made and various measures to reduce the Energy Consumption & mitigate the CO_2 emissions. College consumes Energy in the form of Electrical Energy used for various gadgets, Office & other facilities.

1. Present Energy Consumption

In the following Table, we present the details of Energy Consumption.

Table no 2.1: Details of energy consumption

Sr no	Parameter	Energy consumed, (Units)	CO2 Emission (MT)
1	Maximum	427	0.34
2	Minimum	-	-
3	Average	162	0.13
4	Total	1,940	1.55

2. Energy Conservation Projects already installed

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

3. Key Observations

1. Usage of LED lights.
2. Usage of star rated equipment.
3. Maintained a good power factor.

5. Percentage of Usage of LED Lighting

The College has various Types of Light fittings, namely: LED & CFL. The percentage of Annual LED Lighting Usage to Annual Lighting requirement works out to be 94 %.

6. Percentage of Usage of Alternate Energy

The College has installed a Roof Top Solar PV Plant. The percentage of usage of Alternate Energy to Annual Energy Requirement is 90 %.

7. Recommendations

Table no 1: Recommendations for energy savings

No	Recommendation	Annual Saving potential, kWh/Annum	Annual Monetary Gain, Rs.	Investment Required, Rs.	Payback period, Months
1	Replacement of 29 Nos Old Ceiling Fans with STAR rating fans	377	4,147	63,046	182
	Total	**377**	**4,147**	**63,046**	**182**

8 Notes & Assumptions

1. Daily working hours-10 Nos
2. Annual working Days-300 Nos
3. Average Rate of Electrical Energy : Rs 11/- per kWh

Nutan Urja Solutions

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

The mission undertaken by Arts & Commerce College warwat Bakal, Buldana is to strive and provide Education to those poor, downtrodden and exploited communities of the area. It will accelerate the development of this region and establish confidence among the youth.

1.1 Objectives

1. To study present level of Energy Consumption
2. To Study Electrical Consumption
3. To assess the various equipment/facilities from Energy efficiency aspect
4. 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

1.3 General Details of College

Table No-1.1: Details of college

No	Head	Particulars
1	Name of Institution	Arts & Commerce College warwat Bakal, Buldana
2	Address	Arts & Commerce College warwat Bakal, Buldana ,Maharashtra 444202
3	Affiliation	Sant Gadge Baba Amravati University, Amravati.

2. Study of connected load

In this chapter, we present details of various connected electrical equipment and electrical load.

Table No-2.1: Location wise study of Electrical fittings in various buildings

No	Location	LED tube (20W)	CFL	Fans	Computers (65W)
1	IQAC	3		3	2
2	Exam room		1	1	
3	Seminar Hall	4		7	
4	Staff Room	2		3	
5	G1	1		1	
6	G2	1		1	
7	G3	1		1	
8	G4 (Principal room)	1	1	1	
9	G5 (Office)	3		3	4
10	G6	2		1	1
11	F1	1			1
12	F2	1			1
13	F3	1			1
14	F4	1			1
15	F5	2			1
16	S1	1			1
17	S4	1			1
18	S5	3			1
19	Reading room	1			1
20	Library	10		7	1
21	Chemistry lab	2			1
22	Chemistry Dept	1			1
23	Zoology lab	2			1
24	Zoology Dept.	2			1
25	Physics lab	2			1
26	Botany Dept.	2			1
27	Computer lab	2			6
28	Meeting hall	3			2
29	Rest House	1			2

30	NCC	1			1
31	Sports	1			1
32	NSS	1			1
33	Hall	5			5
	Total	**65**	**2**	**29**	**41**

Apart from above load, the school has pump. Individual fitting wise load is as under.

Table No 2.2: Equipment wise Connected Load

No	Equipment	Qty	Load, W/Unit	Load, kW
1	Ceiling Fan	29	65	1.9
2	LED-20W	65	20	1.3
3	CFL	2	24	0.0
4	Computers	41	65	2.7
5	Pump (2HP)			1.5
	Total			**7.1**

Data can be represented in terms of PIE chart as under,

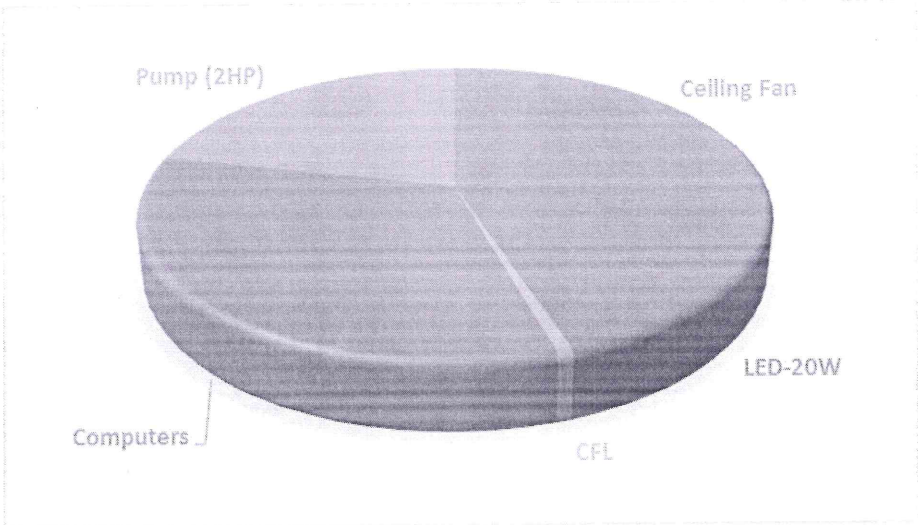

Figure 2.1: Distribution of connected load.

3. Study of Electrical Energy Consumption

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

Table no 3.1: Summary of electricity bills

No	Month	Energy (kWh)	Bill Amount (Rs)
1	Jun-23	-	440
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Variation in energy consumption is as follows,

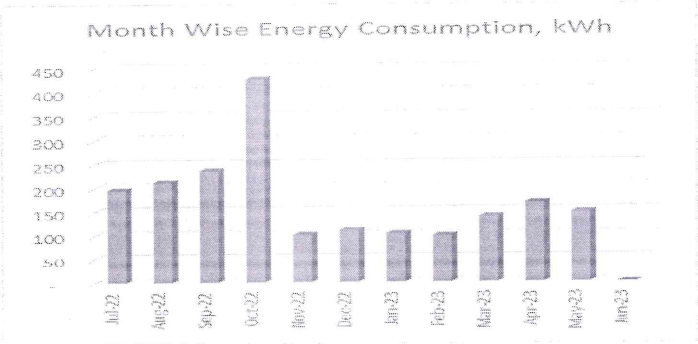


Figure 3.1: Month wise energy consumption

Monthly variation in electricity bill is as follows,

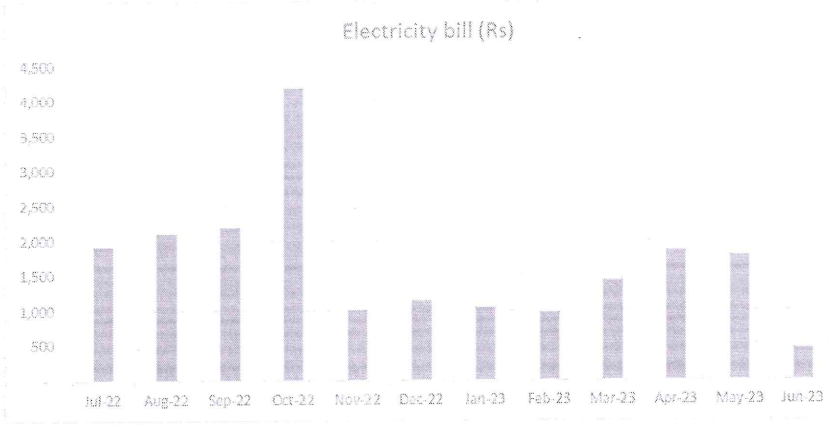


Figure 3.2: Month wise electricity bill

Key observations of electricity bill are as follows,

Table no 3.2: Key observations

Sr no	Parameter	Energy consumed, (Units)	CO2 Emission (MT)
1	Maximum	427	0.34
2	Minimum	-	-
3	Average	162	0.13
4	Total	1,940	1.55

4. Carbon Foot printing

1. A Carbon Foot print is defined as the Total Greenhouse Gas emissions (CO_2 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 CO_2 Emissions:

The basis of Calculation for CO_2 emissions due to Electrical Energy is as under

- 1 Unit (kWh) of Electrical Energy releases **0.8 Kg of CO_2** into atmosphere.

Based on the above Data we compute the CO_2 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 4.1: Month wise Consumption of Electrical Energy & CO2 Emissions

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Jun-23	-	0.00
2	May-23	148	0.12
3	Apr-23	169	0.14
4	Mar-23	139	0.11
5	Feb-23	99	0.08
6	Jan-23	103	0.08
7	Dec-22	110	0.09
8	Nov-22	101	0.08
9	Oct-22	427	0.34
10	Sep-22	236	0.19
11	Aug-22	212	0.17
12	Jul-22	196	0.16
	Total	**1,940**	**1.55**

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

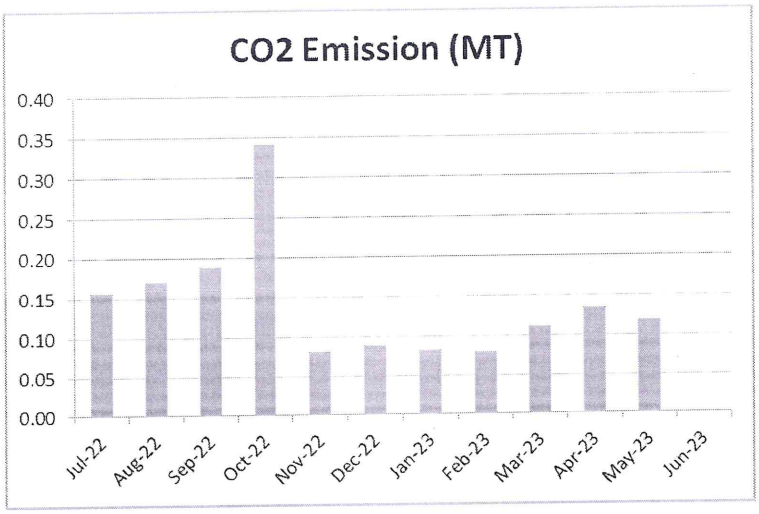


Figure 4.1: Month wise CO2 Emission

5. Study of utilities

5.1 Study of Lighting

There are 2 CFLs and 65 LEDs in indoor lightings.

5.2 Ceiling Fans

At building facility, there are about 29 Nos Old Ceiling Fans, which consumed about 65 W of Electrical Energy. It is recommended to replace these old Fans with BEE STAR Rated Ceiling Fans.

5.3 Water Pumps

There is 1 Water pump with 2HP capacity.

6. Study of usage of LED lighting

In this chapter we study the lighting system of college and compute the percentage of total load catered by LED lighting.

Table 7.1: Total lighting load

No	Particulars	Qty	Load, W/Unit	Load, kW
1	CFL	2	24	0.048
	LED lighting load			
1	LED tube	65	20	1.3
	Total LED lighting load			**1.3**
	Total Lighting load			**1.348**

It can be seen that out of total lighting load 96% load is LED lighting load.

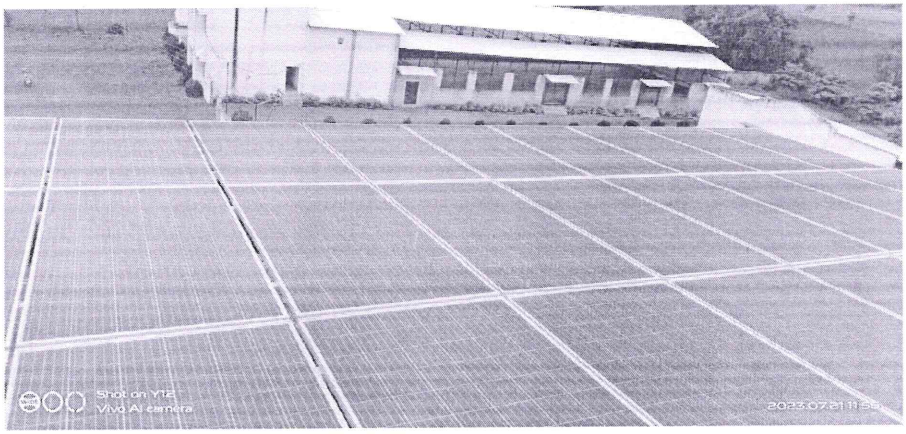
7. Study of usage of alternate energy

In this Chapter, we compute the percentage of Usage of Alternate/Renewable Energy to Annual Energy Requirement of the College. The College has installed Roof Top Solar PV System. The Installed Capacity of Solar PV Plant is **12 kWp**.

Table 7.1: Computation of % Usage of Alternate Energy to Annual Energy Requirement

No	Particulars	Value	Unit
1	Annual Energy Purchased from MSEDCL	1,940	kWh/Annum
2	Energy Generated by Roof Top Solar PV System	18,000	kWh/Annum
3	Total Energy Requirement of College	19,940	kWh/Annum
4	% of Usage of Alternate Energy to Annual Energy Requirement	90	%

Photograph of Solar PV plant



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8. Energy conservation proposals

8.1 Replacement of old fans with STAR Rated fans

During the Audit, it was observed that there are 29 no of fans. It is recommended to replace these old fans with STAR Rated fans.

In the following Table, we present the savings, investment required & payback analysis.

No	Particulars	Value	Unit
1	Present Qty of Old Ceiling Fan fittings	29	Nos
2	Energy Demand of Old Ceiling Fan fitting	65	W/Unit
3	Energy Demand of STAR Rated Fan	52	W/Unit
4	Reduction in demad	13	W/Unit
5	Average Daily Usage period	4	Hrs/Day
6	Daily saving in Energy	1.508	kWh/Day
7	Annual Working Days	250	Nos
8	Annual Energy Saving possible	377	kWh/Annum
9	Rate of Electrical Energy	11	Rs/kWh
10	Annual Monetary saving	4147	Rs/Annum
11	Cost of STAR Rated Ceiling Fan	2174	Rs/unit
12	Investment required	63046	Rs lump sum
13	Simple Payback period	182	Months

8.2 Summary of Savings

No	Recommendation	Annual Saving potential, kWh/Annum	Annual Monetary Gain, Rs.	Investment Required, Rs.	Payback period, Months
1	Replacement of 29 Nos Old Ceiling Fans with STAR rating fans	377	4,147	63,046	182
	Total	**377**	**4,147**	**63,046**	**182**

Report

On

Environmental Audit

Environmental Audit

At

Arts & Commerce College warwat Bakal, Buldana

(Year 2022-23)

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

Table of Contents

Acknowledgement

We at Nutan Urja Solutions, Pune wish to express our sincere gratitude to the management of Arts & Commerce College Warwat Bakal, Buldana for assigning the work of Environmental Audit of college campus.

We appreciate the co-operation and support extended to our team members during the entire tenure of field study.

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

We are also thankful to all other staff members who helped us during the Measurements at the field and for giving us the necessary inputs to carry out this vital exercise.

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.

Arts & Commerce College Warwat Bakal, Buldana consumes various resources for day to day operations, namely: Air, Water, Electrical Energy & LPG.

1. Various Pollution due to College Activities:

- Air pollution: Mainly CO_2 on account of Electricity & LPG Consumption
- Solid Waste: Bio degradable Kitchen Waste, Garden Waste
- Liquid Waste: Human liquid waste

2. Present Level of CO_2 Emissions:

Sr no	Parameter	Energy consumed, (Units)	CO2 Emission (MT)
1	Maximum	427	0.34
2	Minimum	-	-
3	Average	162	0.13
4	Total	1,940	1.55

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 CO_2** 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	Arts & Commerce College warwat Bakal, Buldana
2	Address	Arts & Commerce College warwat Bakal, Buldana ,Maharashtra 444202
3	Affiliation	Sant Gadge Baba Amravati University, Amravati.

2. Study of Consumption of Various Resources

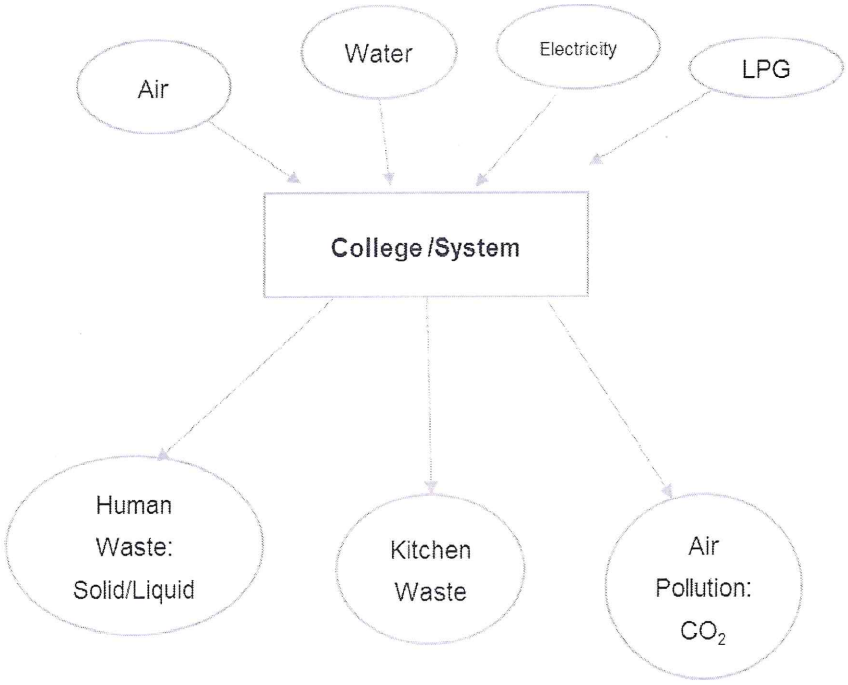
The Institute consumes following basic/derived Resources:

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	Jun-23	-
2	May-23	148
3	Apr-23	169
4	Mar-23	139
5	Feb-23	99
6	Jan-23	103
7	Dec-22	110
8	Nov-22	101
9	Oct-22	427
10	Sep-22	236
11	Aug-22	212
12	Jul-22	196
	Total	**1,940**
	Maximum	427
	Minimum	-
	Average	162

2.1 Variation of Monthly Electrical Energy Consumption

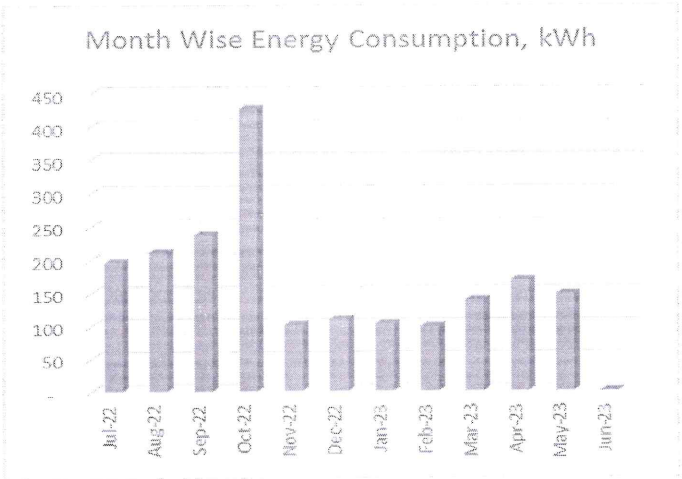


Figure 2.1 : Monthly Electrical Energy Consumption

2.2 Key Inference drawn

From the above analysis, we present following important parameters:

Table 2.2: Variation in Important Parameters

No	Parameter/ Value	Energy Consumed, kWh
1	**Maximum**	427
2	**Minimum**	-
3	**Average**	162
4	**Total**	1,940

3. Study of Environmental Pollution

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

3.1 Air Pollution

The College is using two forms of Energies, namely: Thermal in the form of LPG and Electrical Energy used for day to day operations of the College. The major pollutant on account of above Energy forms is the Carbon Di Oxide.

- 1 unit (kWh) of Electrical Energy emits 0.8 Kg of CO_2 in the atmosphere
- 1 Kg of LPG emits 3 Kg of CO_2 in the atmosphere

In the following Table, we present the CO_2 emissions.

Table 3.1: Month wise Consumption of Electrical Energy & CO_2 Emissions:

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Jun-23	-	0.00
2	May-23	148	0.12
3	Apr-23	169	0.14
4	Mar-23	139	0.11
5	Feb-23	99	0.08
6	Jan-23	103	0.08
7	Dec-22	110	0.09
8	Nov-22	101	0.08
9	Oct-22	427	0.34
10	Sep-22	236	0.19
11	Aug-22	212	0.17
12	Jul-22	196	0.16
	Total	**1,940**	**1.55**
	Maximum	427	0.34
	Minimum	-	-
	Average	162	0.13

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

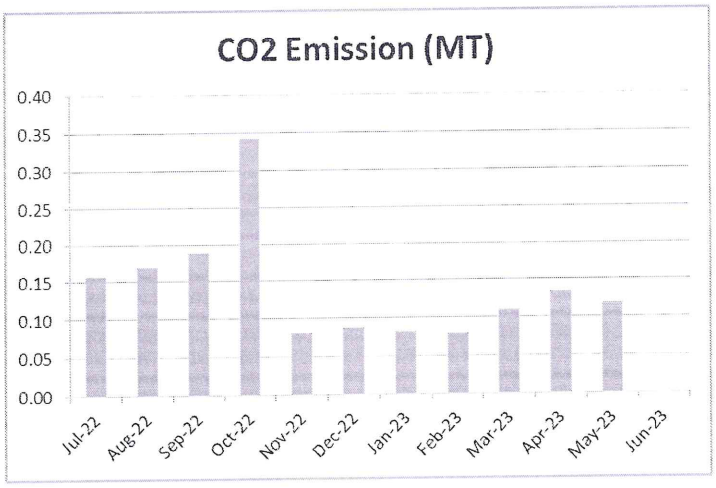
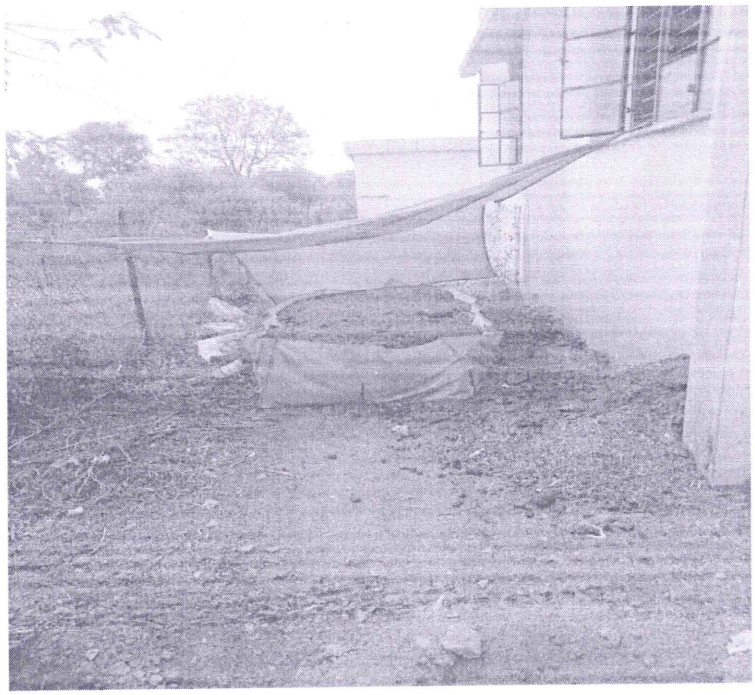


Figure 3.1: CO2 emission due to usage of electrical energy.

3.2 Study of Solid Waste Generation

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



3.3 Study of Liquid Waste Generation

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

3.4 Study of e-Waste Management:

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

4. Study of Rain Water Harvesting

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:

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

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: 21/07/2023

CERTIFICATE

This is to certify that we have conducted Environmental Audit at Arts & Commerce College Warwat Bakal, Buldana in the year 2022-23.

The College has already adopted following projects for making the campus **Energy Efficient.**

- Installation of Bio Composting Pit
- Installation of Rain Water Harvesting System

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

Nutan Urja Solutions,

K G Bhatwadekar,
Certified Energy Auditor,
EA – 22428

Puneet Sagar Abhiyan (River Bank Cleaning)

Date: 09/12/2022 **Venue: Lendi River Bank near College**
05/02/2023 **Venue: Purna River Bank at Khiroda**

Objectives:

The objectives of River Bank Cleaning under Puneet Sagar Abhiyan by NCC Cadets of Arts & Commerce College, Warwat Bakal:

1. Environmental Preservation: To contribute towards the conservation and protection of natural resources by cleaning up river banks, thereby reducing pollution and preserving the ecosystem.
2. Community Engagement: Engage NCC cadets and local community members in a collaborative effort to improve the cleanliness and aesthetics of river banks, fostering a sense of responsibility and ownership among participants.
3. Awareness Generation: Raise awareness about the importance of maintaining clean river banks and the adverse effects of pollution on water bodies, wildlife, and human health through educational initiatives and outreach programs.
4. Promotion of Civic Responsibility: Instill a sense of civic duty and responsibility among NCC cadets and community members towards maintaining a clean and sustainable environment for present and future generations.

By achieving these objectives, the River Bank Cleaning initiative under Puneet Sagar Abhiyan by NCC Cadets of Arts & Commerce College, Warwat Bakal aims to make a positive impact on both the environment and the local community.

Highlights:

As per the directions of DG NCC, the NCC unit of Arts & Commerce College, Warvat Bakal participated in the Punit Sagar Abhiyan launched by the Central Government of India. 46 cadets along with ANO went up to the river near college. The river bank was found dirty. Garbage and waste material was thrown in the river which block the water flow during rainy season. The water becomes polluted. All the garbage was removed by the cadets. 48 kg. plastic wastage was collected from the river and was handed over to Grampanchayat Garbage Collection Center.

Outcomes:

Outcomes of River Bank Cleaning under Puneet Sagar Abhiyan by NCC Cadets of Arts & Commerce College, Warwat Bakal could include:

1. Improved Environmental Quality: Through the removal of trash, debris, and pollutants from river banks, the initiative contributes to the enhancement of water quality and overall environmental health. This results in a cleaner and more sustainable ecosystem for aquatic life, plants, and surrounding communities.
2. Community Engagement and Awareness: The participation of NCC cadets and local community members in river bank cleaning activities fosters a sense of environmental responsibility and community ownership. This increased awareness about the importance of environmental conservation leads to greater participation in future clean-up efforts and a shift towards more sustainable practices.
3. Positive Impact on Biodiversity: By removing litter and pollutants from river banks, the initiative helps to create a safer and healthier habitat for native flora and fauna. Cleaner river banks can support a greater diversity of plant and animal species, promoting ecological balance and resilience within the ecosystem.
4. Social and Educational Benefits: Engaging in river bank cleaning activities provides NCC cadets with practical experience in environmental stewardship, teamwork, and leadership. These activities also serve as educational opportunities to learn about environmental issues, the importance of conservation efforts, and the impact of human activities on natural ecosystems. This hands-on learning experience can empower cadets to become advocates for environmental sustainability in their communities and beyond.

N.P.Satav
(ANO NCC)
Arts & Commerce College,

Photos: Lendi River near college 09/12/2022

Arts & Commerce College, Warvat Bakal

N.P.Satav
(ANO NCC)
Arts & Commerce College,
Warvat Bakal Dist.Buldana

Photos: Purna River at Khiroda 05/02/2023

N.P.Satav
(ANO NCC)
Arts & Commerce College,
Warvat Bakal Dist.Buldana

Arts & Commerce College * Warvat Bakal *

DPS Puneet Sagar Abhiyan Date : 09/11/2022

Name of College : ARTS & COMMERCE COLLEGE, WARVAT BAKAL

Arts & Commerce College * Warvat Bakal *

Sr. No.	Regt No.	Rank	Name of Cadet	Father's Name	Mobile No.	Signature
THIRD YEAR (C Cert)						
1	MH20SDA312568	CDT	GANESH GAWANDE	VISHNU GAWANDE	9022130296	P
2	MH20SDA312576	CDT	SWAPNIL PANHERKAR	DEVIDAS PANHERKAR	8605286043	Cdt
SECOND YEAR (B Cert)						
3	MH20SDA312563	CDT	ABHISHEK DHAGE	PRALHAD DHAGE	8010730815	P
4	MH20SDA312565	CDT	ANKUSH DATAR	SHRIRAM DATAR	7083442778	A
5	MH20SDA312574	CDT	SHIVA DANGE	VASANTA DANGE	9309133894	A
6	MH20SDA312575	CDT	SHRIKRUSHNA RAJURKAR	SURESH RAJURKAR	7499267500	A
7	MH20SDA312578	CDT	VAIBHAV GAWANDE	SANTOSH GAWANDE	8379046996	A
8	MH21SDA312586	CDT	SHUBHAM WANKHADE	KAILAS WANKHADE	7719063658	A
9	MH21SDA312587	CDT	GANESH LONKAR	VISHNU LONKAR	8412810531	A
10	MH21SDA312588	CDT	GAURAV MANKAR	RAVINDRA MANKAR	9022267319	A
11	MH21SDA312589	CDT	SHRIJITRAO DESHMUKH	VILASRAO DESHMUKH	9421464636	A
12	MH21SDA312590	CDT	GAURAV ARBAT	SHIVSHANKAR ARBAT	8263953665	A
13	MH21SDA312591	CDT	VAIBHAV UMARKAR	VASUDEO UMARKAR	7499871091	A
14	MH21SDA312592	CDT	SOPAN CHANDURKAR	SHRIKRUSHNA CHANDURKAR	9022562418	A
15	MH21SDA312593	CDT	SHILRATAN BHILANGE	GAJANAN BHILANGE	8459666289	P
16	MH21SDA312594	CDT	DNYANESHWAR RAUT	VITTHAL RAUT	9325017690	A
17	MH21SDA312595	CDT	VAIBHAV NIMKARDE	MAHADEV NIMKARDE	7499196369	A
18	MH21SDA312596	CDT	SANIKUMAR DAMODAR	RAJESH DAMODAR	7620830334	P
19	MH21SDA312597	CDT	GOPAL GOMASE	NANDKISHOR GOMASE	7385632484	P
20	MH21SDA312598	CDT	PRASAD AKOTKAR	GOVINDRAO AKOTKAR	7038916342	A
21	MH21SDA312599	CDT	SAURABH DATE	PURUSHOTTAM DATE	9607191105	A
22	MH21SDA312600	CDT	KANHAIYA SUGANDHI	KANTILAL SUGANDHI	7030411412	A
23	MH21SWA312601	CDT	SHARDA WANKHADE	BHARAT WANKHADE	8379810598	P
24	MH21SWA312602	CDT	MAYURI DHAGE	PRALHAD DHAGE	8975137591	A
25	MH21SWA312603	CDT	NANDINI TAYADE	RAJPAL TAYADE	7499342097	A
26	MH21SWA312604	CDT	POOJA WARATKAR	MANOHAR WARATKAR	9130139379	P
27	MH21SWA312605	CDT	VAISHNAVI SAPKAL	BHAGWAN SAPKAL	7666640571	P
28	MH21SWA312607	CDT	VAISHNAVI DEULKAR	PRALHAD DEULKAR	9359541621	A
29	MH21SWA312608	CDT	ROHINI DHAGE	DATTATRAY DHAGE	8788090757	A
30	MH21SWA312609	CDT	SNEHAL GAYAKI	DNYANESHWAR GAYAKI	9130904155	P

31	MH21SWA312610	CDT	SWATI BOROKAR	VITTHAL BOROKAR	8766463355	P
32	MH21SWA312611	CDT	GAYATRI BOROKAR	DNYANESHWAR BOROKAR	7666039598	P
33	MH21SWA312612	CDT	GAYATRI SATAV	GANESHRAO SATAV	7249648631	A Cult
FIRST YEAR (A Cert)						
34	MH22SDA312613	CDT	SHUBHAM PINJARKAR	DEVIDAS PINJARKAR	7822929210	P
35	MH22SDA312614	CDT	NILESH BUNDE	JANARDHAN BUNDE	8530388405	P
36	MH22SDA312615	CDT	AVINASH MORE	SHRIKRUSHNA MORE	9322694587	P
37	MH22SDA312616	CDT	GANESH RAUT	GAJANAN RAUT	7507425887	P
38	MH22SDA312617	CDT	RAJVEER SOLANKE	SONAJI SOLANKE	8600462587	P
39	MH22SDA312618	CDT	SHARAFAT ALI	RASHAD ALI	9860359335	P
40	MH22SDA312619	CDT	PRASHANT SAPKAL	MAHADEV SAPKAL	9503464289	P
41	MH22SDA312620	CDT	CHETAN KARANGALE	ASHOK KARANGALE	8605707387	P
42	MH22SDA312621	CDT	ANKIT BHONGRE	BHIMRAO BHONGRE	8010983659	P
43	MH22SDA312622	CDT	NANDKISHOR KHIRODKAR	LAXMAN KHIRODKAR	8669759708	P
44	MH22SDA312623	CDT	OM GHOGARE	SONAJI GHOGARE	8793116552	P
45	MH22SDA312624	CDT	TEJAS SONONE	SANTOSH SONONE	7219223500	P
46	MH22SDA312625	CDT	SHIVSHANKAR CHORE	RAMESHWAR CHORE	9545025385	P
47	MH22SDA312626	CDT	DIPAK RAJANKAR	VITTHAL RAJANKAR	8485021061	P
48	MH22SDA312627	CDT	GAURAV PUNDE	KAILAS PUNDE	8767486028	P
49	MH22SDA312628	CDT	ANIKET DATE	VASUDEV DATE	9028659780	P
50	MH22SDA312629	CDT	SWAPNIL WANERE	SHRIKRUSHNA WANERE	7249092534	P
51	MH22SDA312630	CDT	YOGESH PACHPOR	MADHUKAR PACHPOR	8261851672	P
52	MH22SWA312631	CDT	GEETA PATODE	DASHARATH PATODE	9766180304	P
53	MH22SWA312632	CDT	ASMITA DHUNDALE	MANIKRAO DHUNDALE	9370543248	A
54	MH22SWA312633	CDT	SHIVANI BOBaDE	DILIP BOBADE	8329541685	P
55	MH22SWA312634	CDT	SNEHA BHONGRE	ASHOK BHONGRE	9561916689	P
56	MH22SWA312635	CDT	SAKSHI TATHOD	PRALHAD TATHOD	8767673411	P
57	MH22SWA312636	CDT	POOJA BORSE	SANJAY BORSE	7498842469	P
58	MH22SWA312637	CDT	RADHIKA BAGADE	PRAKASH BAGADE	7498441281	P
59	MH22SWA312638	CDT	VAISHNAVI JAMODE	YOGESH JAMODE	9527523689	A Cult
60	MH22SWA312639	CDT	VIDYA UMARKAR	BHARAT UMARKAR	7972455668	A Cult

37 Participants

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DPS

Date : 07/02/2023

Name of College : ARTS & COMMERCE COLLEGE, WARVAT BAKAL

Sr. No.	Regt No.	Rank	Name of Cadet	Father's Name	Mobile No.	Signature
THIRD YEAR (C Cert)						
1	MH20SDA312568	CDT	GANESH GAWANDE	VISHNU GAWANDE	9022130296	
2	MH20SDA312576	CDT	SWAPNIL PANHERKAR	DEVIDAS PANHERKAR	8605286043	
SECOND YEAR (B Cert)						
3	MH20SDA312563	CDT	ABHISHEK DHAGE	PRALHAD DHAGE	8010730815	
4	MH20SDA312565	CDT	ANKUSH DATAR	SHRIRAM DATAR	7083442778	
5	MH20SDA312574	CDT	SHIVA DANGE	VASANTA DANGE	9309133894	S.V. Dange
6	MH20SDA312575	CDT	SHRIKRUSHNA RAJURKAR	SURESH RAJURKAR	7499267500	S.S. Rajurkar
7	MH20SDA312578	CDT	VAIBHAV GAWANDE	SANTOSH GAWANDE	8379046996	
8	MH21SDA312586	CDT	SHUBHAM WANKHADE	KAILAS WANKHADE	7719063658	
9	MH21SDA312587	CDT	GANESH LONKAR	VISHNU LONKAR	8412810531	
10	MH21SDA312588	CDT	GAURAV MANKAR	RAVINDRA MANKAR	9022267319	
11	MH21SDA312589	CDT	SHRIJITRAO DESHMUKH	VILASRAO DESHMUKH	9421464636	
12	MH21SDA312590	CDT	GAURAV ARBAT	SHIVSHANKAR ARBAT	8263953665	
13	MH21SDA312591	CDT	VAIBHAV UMARKAR	VASUDEO UMARKAR	7499871091	V.V. Umarkar.
14	MH21SDA312592	CDT	SOPAN CHANDURKAR	SHRIKRUSHNA CHANDURKAR	9022562418	
15	MH21SDA312593	CDT	SHILRATAN BHILANGE	GAJANAN BHILANGE	8459666289	
16	MH21SDA312594	CDT	DNYANESHWAR RAUT	VITTHAL RAUT	9325017690	
17	MH21SDA312595	CDT	VAIBHAV NIMKARDE	MAHADEV NIMKARDE	7499196369	
18	MH21SDA312596	CDT	SANIKUMAR DAMODAR	RAJESH DAMODAR	7620830334	
19	MH21SDA312597	CDT	GOPAL GOMASE	NANDKISHOR GOMASE	7385632484	
20	MH21SDA312598	CDT	PRASAD AKOTKAR	GOVINDRAO AKOTKAR	7038916342	P. G. Akotkar.
21	MH21SDA312599	CDT	SAURABH DATE	PURUSHOTTAM DATE	9607191105	
22	MH21SDA312600	CDT	KANHAIYA SUGANDHI	KANTILAL SUGANDHI	7030411412	
23	MH21SWA312601	CDT	SHARDA WANKHADE	BHARAT WANKHADE	8379810598	
24	MH21SWA312602	CDT	MAYURI DHAGE	PRALHAD DHAGE	8975137591	
25	MH21SWA312603	CDT	NANDINI TAYADE	RAJPAL TAYADE	7499342097	
26	MH21SWA312604	CDT	POOJA WARATKAR	MANOHAR WARATKAR	9130139379	
27	MH21SWA312605	CDT	VAISHNAVI SAPKAL	BHAGWAN SAPKAL	7666640571	V. B. Sapkal
28	MH21SWA312607	CDT	VAISHNAVI DEULKAR	PRALHAD DEULKAR	9359541621	V. P. Deulkar.
29	MH21SWA312608	CDT	ROHINI DHAGE	DATTATRAY DHAGE	8788090757	
30	MH21SWA312609	CDT	SNEHAL GAYAKI	DNYANESHWAR GAYAKI	9130904155	S. D. Gayaki
31	MH21SWA312610	CDT	SWATI BOROKAR	VITTHAL BOROKAR	8766463355	
32	MH21SWA312611	CDT	GAYATRI BOROKAR	DNYANESHWAR BOROKAR	7666039598	
33	MH21SWA312612	CDT	GAYATRI SATAV	GANESHRAO SATAV	7249648631	

FIRST YEAR (A Cert)

34	MH22SDA312613	CDT	SHUBHAM PINJARKAR	DEVIDAS PINJARKAR	7822929210	
35	MH22SDA312614	CDT	NILESH BUNDE	JANARDHAN BUNDE	8530388405	N Bende.
36	MH22SDA312615	CDT	AVINASH MORE	SHRIKRUSHNA MORE	9322694587	Avi. S. More
37	MH22SDA312616	CDT	GANESH RAUT	GAJANAN RAUT	7507425887	
38	MH22SDA312617	CDT	RAJVEER SOLANKE	SONAJI SOLANKE	8600462587	
39	MH22SDA312618	CDT	SHARAFAT ALI	RASHAD ALI	9860359335	S. R. Ali
40	MH22SDA312619	CDT	PRASHANT SAPKAL	MAHADEV SAPKAL	9503464289	
41	MH22SDA312620	CDT	CHETAN KARANGALE	ASHOK KARANGALE	8605707387	C. A. Karangle
42	MH22SDA312621	CDT	ANKIT BHONGRE	BHIMRAO BHONGRE	8010983659	
43	MH22SDA312622	CDT	NANDKISHOR KHIRODKAR	LAXMAN KHIRODKAR	8669759708	
44	MH22SDA312623	CDT	OM GHOGARE	SONAJI GHOGARE	8793116552	O. S. Ghogare
45	MH22SDA312624	CDT	TEJAS SONONE	SANTOSH SONONE	7219223500	
46	MH22SDA312625	CDT	SHIVSHANKAR CHORE	RAMESHWAR CHORE	9545025385	
47	MH22SDA312626	CDT	DIPAK RAJANKAR	VITTHAL RAJANKAR	8485021061	
48	MH22SDA312627	CDT	GAURAV PUNDE	KAILAS PUNDE	8767486028	G. K. Punde.
49	MH22SDA312628	CDT	ANIKET DATE	VASUDEV DATE	9028659780	
50	MH22SDA312629	CDT	SWAPNIL WANERE	SHRIKRUSHNA WANERE	7249092534	
51	MH22SDA312630	CDT	YOGESH PACHPOR	MADHUKAR PACHPOR	8261851672	
52	MH22SWA312631	CDT	GEETA PATODE	DASHARATH PATODE	9766180304	
53	MH22SWA312632	CDT	ASMITA DHUNDALE	MANIKRAO DHUNDALE	9370543248	
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