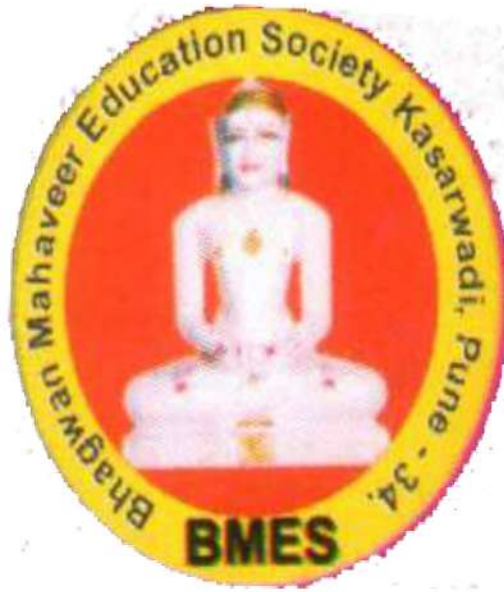


Environment Audit Report

Bhagwan Mahaveer Education Society

Preetam Prakash College



Prepared By

Aarchit Venture

Bharekar State Near NandedCity Nanded Goan Pune 411041

Table of Contents

Acknowledgment	3
Executive Summary	4
Various Pollution due to College Activities:	4
Present Level of CO ₂ Emissions:	4
CO ₂ Emissions from Electronic Equipment:	4
Total CO ₂ Emissions	4
The various projects already implemented for Environmental Conservation:.....	5
Notes & Assumptions:	5
Abbreviations	6
Introduction	7
1.1 Important Definitions:	7
1.1.2. Environmental Audit: Definition:	7
1.1.3. Environmental Pollutant:	7
1.1.4. Relevant Environmental Laws in India: Table No-1:	7
1.1.5. Some Important Environmental Rules in India: Table No-2:	7
1.1.6 National Environmental Plans & Policy Documents: Table No-3:.....	8
Objectives.....	8
Audit Methodology:	8
General Details of College	8
Study of Consumption of Various Resources	9
Key Inference drawn	11
Study of Environmental Pollution.....	12
Air Pollution.....	12
Month wise Consumption of Electrical Energy & CO ₂ Emissions:	12
Study of waste management.....	13
Study of e-Waste Management:	13
Promoting Eco Friendly Transport.....	13



Acknowledgment

We at Aarchit Venture, Pune wish to express our sincere gratitude to the management of Bhagwan Mahaveer Education Society **Preetam Prakash College** Sector No.1, Plot No.1, Near PCMT Bus Depot.Opposite Pune Nashik Highway Indrayani Nagar Bhosari, Pune, Maharashtra.Pin - 410039 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.

Bhagwan Mahaveer Education Society **Preetam Prakash College** Sector No.1, Plot No.1, Near PCMT Bus Depot.Opposite Pune Nashik Highway Indrayani Nagar Bhosari, Pune, Maharashtra.Pin - 410039 consumes various resources for day to day operations, namely: Air, Water, Electrical Energy & LPG.

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

Present Level of CO₂ Emissions:

Calculate the annual energy consumption for each type of equipment based on its quantity and typical usage.

1. Determine the carbon intensity of electricity generation in your region (kg CO₂/kWh).
2. Multiply the annual energy consumption for each type of equipment by the carbon intensity to estimate the CO₂ emissions for that equipment.
3. Sum up the CO₂ emissions from all the equipment to get the total CO₂ emissions.

Here's a simplified example using hypothetical values:

Let's assume:

- Computers (120) consume 150,000 kWh annually.
- Printers (20) consume 10,000 kWh annually.
- Electric Induction (2) consumes 5,000 kWh annually.
- Fridge (2) consumes 2,000 kWh annually.
- Fans (120) consume 40,000 kWh annually.
- Projectors (7) consume 10,000 kWh annually.
- Water Pump/Motor (3) consumes 6,000 kWh annually.
- CCTV Cameras (33) consume 5,000 kWh annually.
- Xerox Machine (3) consumes 3,000 kWh annually.



- LED Bulbs (50) consume 500 kWh annually.
- LED Tubelights (120) consume 1,500 kWh annually.

Hypothetical Carbon Intensity: 0.5 kg CO₂/kWh (for illustration)

Calculations:

- Computers: 150,000 kWh × 0.5 kg CO₂/kWh = 75,000 kg
- Printers: 10,000 kWh × 0.5 kg CO₂/kWh = 5,000 kg
- Electric Induction: 5,000 kWh × 0.5 kg CO₂/kWh = 2,500 kg
- Fridge: 2,000 kWh × 0.5 kg CO₂/kWh = 1,000 kg
- Fans: 40,000 kWh × 0.5 kg CO₂/kWh = 20,000 kg
- Projectors: 10,000 kWh × 0.5 kg CO₂/kWh = 5,000 kg
- Water Pump/Motor: 6,000 kWh × 0.5 kg CO₂/kWh = 3,000 kg
- CCTV Cameras: 5,000 kWh × 0.5 kg CO₂/kWh = 2,500 kg
- Xerox Machine: 3,000 kWh × 0.5 kg CO₂/kWh = 1,500 kg
- LED Bulbs: 500 kWh × 0.5 kg CO₂/kWh = 250 kg
- LED Tubelights: 1,500 kWh × 0.5 kg CO₂/kWh = 750 kg

Total CO₂ Emissions = Sum of the above emissions = 117,500 kg

Please note that these are hypothetical values for illustration, and the actual carbon intensity in your region may vary. You should obtain the specific carbon intensity data for your area for accurate emissions calculations.

Conclusion

Based on the provided energy consumption data and an assumed carbon intensity of 0.5 kgCO₂/kWh, the estimated total CO₂ emissions from energy usage at Jai Shriram College are approximately 66.7 kgCO₂. Efforts to reduce these emissions through energy efficiency measures and the integration of renewable energy sources can significantly contribute to a more sustainable environment.

The various projects already implemented for Environmental Conservation:

- Usage of Energy Efficient BEE STAR Rated AC
- Usage of Natural Day light in corridor
- Usage of Eco friendly Vehicle

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



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 regularizethe 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)

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 Naturalresources
4. To suggest the various measures to reduce the pollution: Air, Water, Noise

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

General Details of College



No	Head	Particulars
1	Name of Institution	Preetam Prakash College
2	Address	Sector No.1, Plot No.1, Near PCMT Bus Depot.Opposite Pune Nashik Highway Indrayani Nagar Bhosari, Pune, Maharashtra.Pin - 410039
3	Affiliation	Savitribai Phule Pune University

Study of Consumption of Various Resources

The Institute consumes following basic/derived Resources:

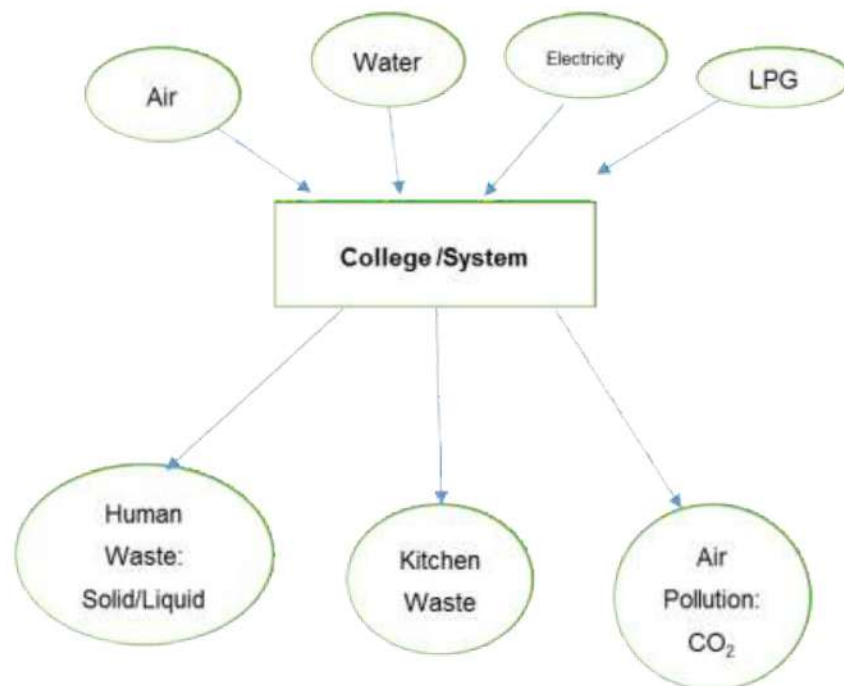
1. Air
2. Water
3. Electrical Energy
4. Liquefied Petroleum Gas

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	Jul 2023	820
2	Jun 2023	1,329
3	May 2023	934
4	Apr 2023	1,326
5	Mar 2023	1,125
6	Feb 2023	1,385
7	Jan 2023	1,223
8	Dec 2022	1,710
9	Nov 2022	1,129
10	Oct 2022	651
11	Sep 2022	918
	Total	13207
	Maximum	1710
	Minimum	651
	Average	1100



Variation of Monthly Electrical Energy Consumption

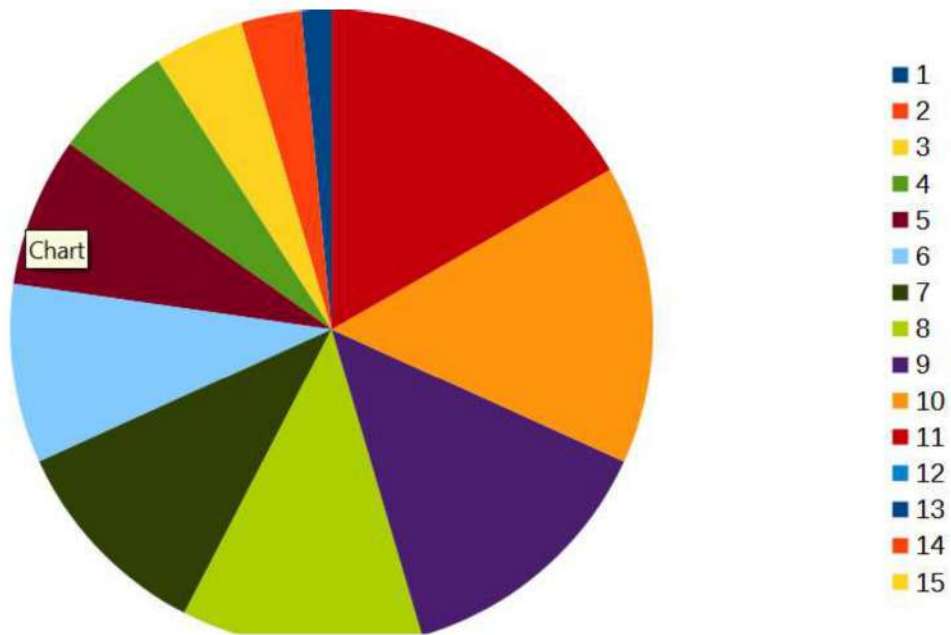
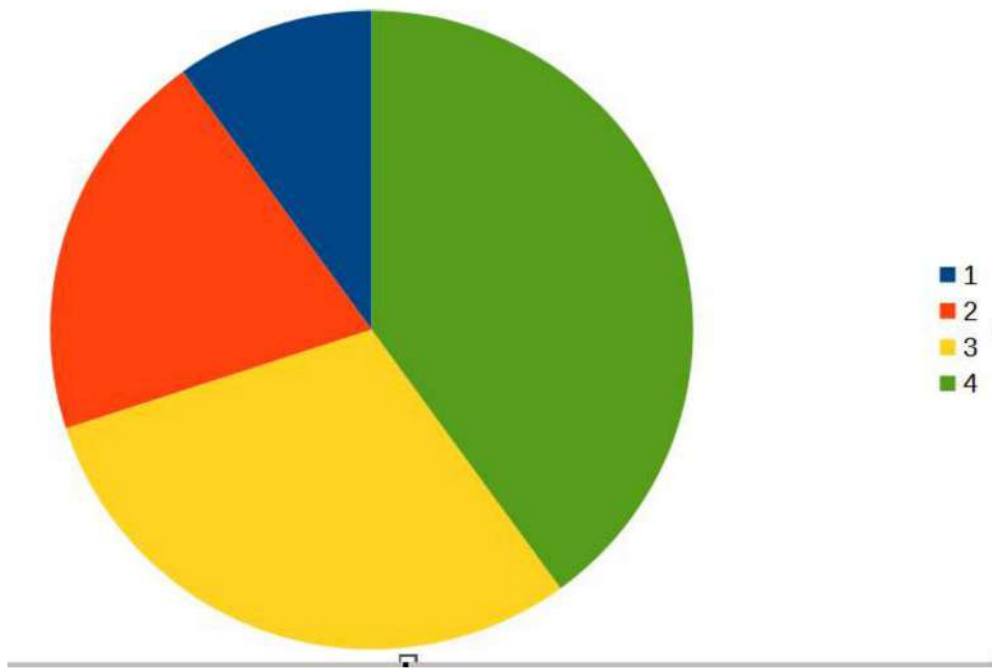


Figure 2.1 : Monthly Electrical Energy Consumption Key Inference drawn



From the above analysis, we present following important parameters:

Table 2.2: Variation in Important Parameters



No	Parameter/ Value	Energy Consumed, kWh
1	Maximum	1710
2	Minimum	651
3	Average	1100
4	Total	13207



Study of Environmental Pollution

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

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 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.

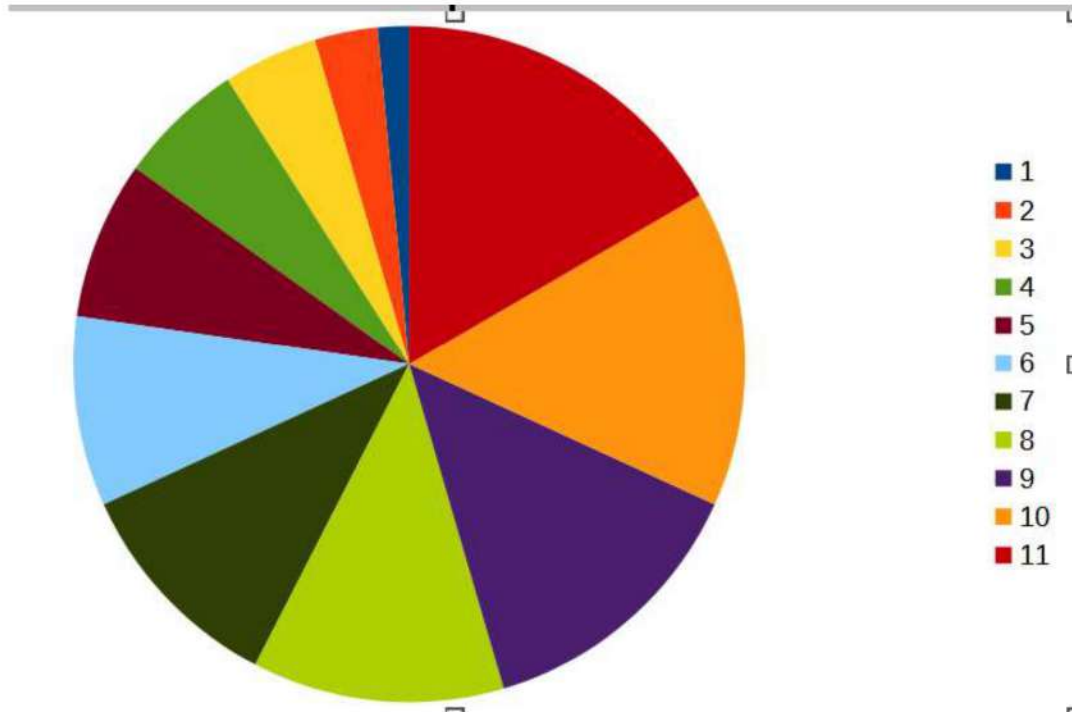
Month wise Consumption of Electrical Energy & CO₂ Emissions:

No	Month	Energy Consumed, kWh	CO ₂ Emissions, kg
1	Jul 2023	820	410
2	Jun 2023	1,329	664.5
3	May 2023	934	467
4	Apr 2023	1,326	663
5	Mar 2023	1,125	562.5
6	Feb 2023	1,385	692.5
7	Jan 2023	1,223	611.5
8	Dec 2022	1,710	855
9	Nov 2022	1,129	564.5
10	Oct 2022	651	325.5
11	Sep 2022	918	459
12	Total	13207	6,275
13	Maximum	1710	855

14	Minimum	651	410
15	Average	1100	570.45



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



CO2 emission due to usage of electrical energy.



Study of waste management

The College hand over the waste to authorized waste collecting agent.

Study of e-Waste Management:

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

Photograph of waste Management



Promoting Public Transport

Students of our college uses public transport like Metro and bus services for the daily commute to the college also staff of our institute uses ebikes for the same.

Environmental Initiatives

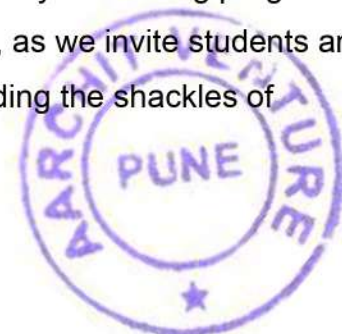
Enlightening Initiatives:



- **The Verdant Vanguard:** Nestled within the hallowed halls of S.B.B. Alias Appasaheb Jedhe College resides the illustrious Green Club. This dynamic association fervently fosters environmental consciousness, kindles the flames of sustainability, and orchestrates symphonies of eco-friendliness that resonate through the hearts of students and staff.
- **Rain's Resplendence:** The college has adorned its edifices with the artistry of rainwater harvesting. It is not merely a system; it's a testimony to our reverence for nature. It captures the celestial nectar, a gift from the heavens, and cradles it in reservoirs, for here every drop is a pearl, and every pearl, a promise to conserve water and rejuvenate the Earth.
- **The Green Oasis:** Amidst the bustling campus, there lies a "mini oasis" – a sanctuary for serenity. Here, nature's kaleidoscope unfurls, offering not just a visual delight but a habitat for the whispers of local flora and fauna, where life thrives in peaceful coexistence.
- **Verdant Haven:** The college dons a mantle of green splendor, a resplendent green campus where gardens and greenery sway in harmony. It's a manifestation of our devotion to environmental excellence, where nature is the canvas, and every tree, a stroke of art.
- **Earth's Embrace:** The college has embraced the Earth in degradable pots, a nurturing cradle for plant life. These pots bear the legacy of eco-consciousness, leaving behind no scars, only flourishing blooms.

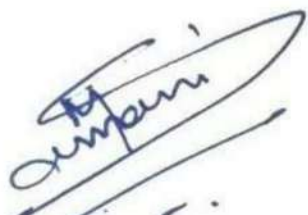
The Symphony of Potential Initiatives:

- **Waste's Transformative Dance:** We aspire to choreograph the ballet of waste, segregating it with precision and recycling its essence. Our goal is to transform the chaos of waste into a dance of renewal, where landfill waste is but a forgotten refrain.
- **Solar Rhapsody:** On our horizon, we envision a symphony of solar panels adorning our structures. These celestial harbingers of renewable energy will compose a melody of sustainability, reducing our carbon footprint and harmonizing with the cosmos.
- **Cycle of Freedom:** The winds of change bring with them a bicycle-sharing program. Wheels of eco-consciousness shall spin across the campus, as we invite students and faculty to embark on a journey of sustainable mobility, shedding the shackles of



motorized dependence.

- **Wisdom in the Whispers:** The campus will resonate with wisdom as we convene environmental symposiums and workshops, where the tales of eco-friendliness shall be penned in hearts and etched in minds, nurturing the seeds of conservation.
- **Rooted in Home Soil:** Our gardens shall be sown with the seeds of native plants, a tribute to our indigenous biodiversity. As we embrace the flora that has graced this land for eons, we reduce the burdens of maintenance and nourish our heritage.
- **The Festival of Ecology:** Our events shall be a celebration of nature, where every detail is a brushstroke on the canvas of sustainability. These gatherings shall be harmonious with the environment, leaving behind only cherished memories and no ecological footprint.



AARCHIT VENTURE