

Date: 01 February 2024

Ref no: LA/17/02/123

Letter of Appreciation

For

Recognition of efforts towards a Healthy & Sustainable premises

Awarded to

A. D. College of Education

Gut No. 23/25, Sulibhanjan, Khultabad, Chhatrapati Sambhajnagar,

Pin code – 431101, Maharashtra, India

With reference to the above cited subject we appreciate the efforts of the Institute's in **implementing the activity of printing and putting up awareness posters related to Waste, Water, Save Environment, Plastic awareness.** The Institute's has printed these and put them at appropriate locations in the premise.

We hope the Institute's continues similar efforts in the future as well. We have attached some of the photographic evidences in this letter.

Best regards,

Ar. Nahida Shaikh
Ar. Nahida Shaikh

Project Head and Green Building Consultant

Sustainable Academe

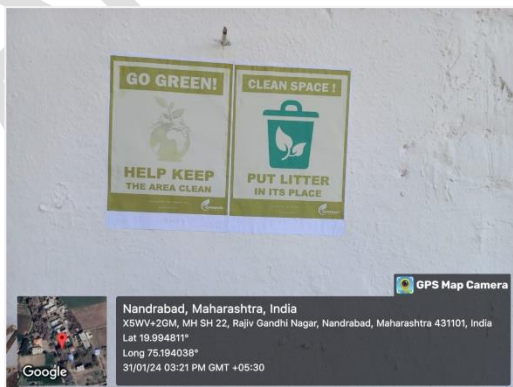
Sustainability Department of Greenvio Solutions, Naigaon

An environment Design and Consultancy developing Healthy and Sustainable Environment

sustainableacademe@gmail.com | greenviosolutions@gmail.com



Note: These photographic evidences were shared by the Institute's post the suggestion given to the Institute.



Energy Audit Certificate (As per Green Building Parameters)

The study is conducted as per Indian and International Green Building Standards initiated in the capacity of an Accredited & Certified Green Building Professional

It is awarded for **2021-2022 and 2022-2023** to the Esteemed Institution

(Analysed for 2 years and extended validity for 1 year, thus total 3 years)

A. D. College of Education

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(Site visit held on 30 January 2024)

As part of the Institution's initiatives for a Healthy & Sustainable Institute the audit was conducted.
We appreciate the immense efforts taken by Staff and students towards the Energy Management and Conservation.

Issued on **31 January 2024** and valid till **31 December 2024**


Ar. Nahida Abdulla Shaikh

"Elite 100 Green Architects of India" Econaur, 2022

Certified G.B.P. (Registration. No. 22/718)

Project Head and Green Building Professional-Consultant

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ENERGY AUDIT

STUDY PERIOD (TWO YEARS) 2021 - 2022 & 2022 - 2023

Sustainability study
AUDIT REPORT

Studied for
A. D. College of Education

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The details have been consolidated and thoroughly studied as per the various guidelines for Green Buildings available in National and International Standards; the report has been generated based on comparative analysis of the existing facilities and the prerequisites formulated by various standards. The inputs derived are a result of the inspection and research. These will further enhance and develop a Healthy and Sustainable Institution.

These can be implemented phase wise or as a whole depending on the decision taken by the internal team. The warranty or undertaking, expressed or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

The audit is a thorough study based on the inspection and investigation of data collected over a period of time and should not be used for any legal action. This is the property of Greenvio Solutions and should not be copied or regenerated in any form.

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Ar. Nahida Abdulla

Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

Sustainable Academe is our department for conducting audits

Palghar District, Maharashtra- 401208

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Acknowledgement

The Audit Assessment Team thanks the **A.D.College of Education, Maharashtra** for assigning this important work of Energy Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to **everyone from the Management.**

Our heartfelt thanks to the Chairperson of the entire process **Dr. Joshi Shobhana Vishwanath**, Principal for the valuable inputs.

We are also thankful to **College's Task force the faculty members** who have collected data required **Dr. Akolkar R. S.** (Asst.Professor); **Mr. Talekar Shrimant U.** (Clerk) and **Mr. Dandale Anil C.** (Asst. Professor).

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Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

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Evidence documents for Site visit of external audit team

Audit team headed by external expert - Ar. Nahida Abdulla
 Accredited & Certified Green Building Professional, ISO IA (IMS)
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Audits covered: Green audit Energy audit Environment audit

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Observations (Positive aspects)	Suggestions (Improvement aspects)
Green Audit	
- Ground water recharging through borewell in site (Common facility)	- Documentation, reflectance, washroom facilities, waste management initiatives need to be undertaken
Energy Audit	
- Availability of lights, fans in campus.	- Solar fans, parking, use of wind mills should be explored - LED lights nos. should be increased
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- Pollution free campus -	- Campus beautification; documentation of reflectance should be undertaken

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 Designation: Asst. prof and vice Principal
 For the said Institute:

Signature & round seal
 Name: Mrs. F. A. Shaikh
 Designation: Project Coordinator
 For The Greenvio Solutions



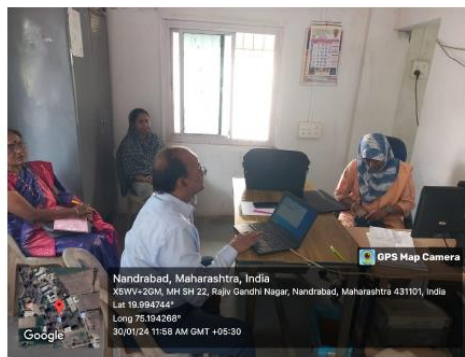
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Meeting with the core team



Investigation of the systems

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Designation: Asst. principal and vice principal
For the said Institute

Signature & round seal
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Staff data

S. No.	Type	Male	Female	Total
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3. Research

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It is a systematic study of the aspects which make the Institution sustainable and healthy premises for its inhabitants.

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The procedure included detailed verification as follows:

- ➔ Investigation
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- ➔ Inferences

3.3 Strategy adopted for Green Building Study Audit

The strategies included data collection from the admin department, actual inventory, investigation to check the operation and maintenance, analysis of the data collection, and preparation of the Report.

4. Investigation



Plate 1: Induction and exit meeting with the team

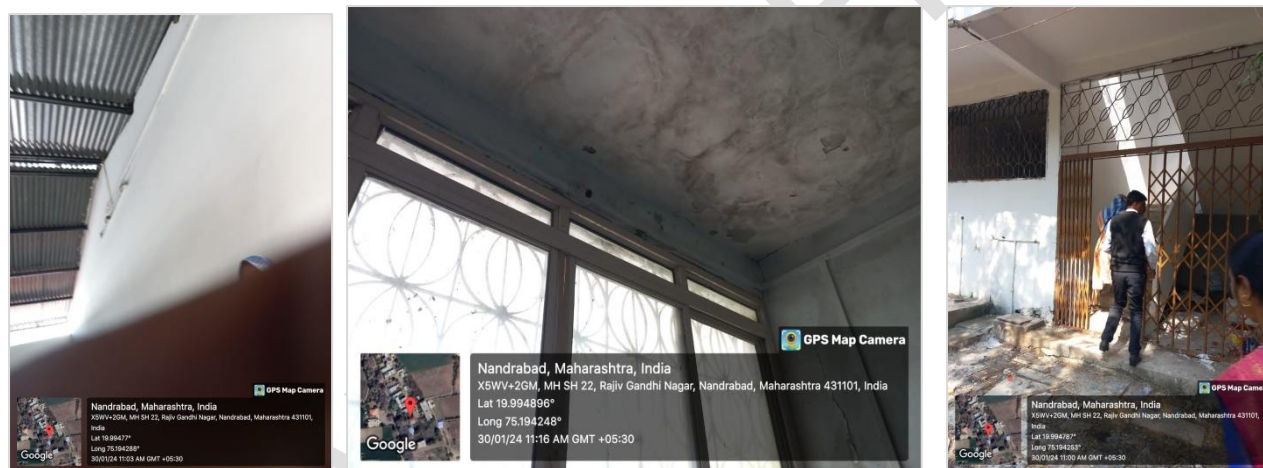


Plate 2: Investigation of the facilities



Plate 3: Investigation of the outdoor areas

5. Documentation

5.1 Primary sources of energy consumption

The premise uses following sources of energy consumption.

- ➔ **Electrical (Metered)** – Light, Fans, Equipments, Pumps comprise these sources.
- ➔ **Renewable energy** – There are 'NO SOURCES' to harness renewable energy.

5.2 Secondary sources of energy consumption

The premise uses following sources of energy consumption.

S. no	Particular	Nos.
1	UPS	5
2	Inverters	1
3	Batteries	3
4	Induction stove	1

Table 3: Details of the secondary sources of energy consumption

5.3 Actual electrical consumption as per bills

The department has not shared the bills.

5.4 Calculated electrical consumption as per inventory

The electricity bills provide actual consumption data. The following is the calculated consumption. It is done to understand the percentage of energy usage in the premises by various applications. It is based on the inventory collected and interviews with the staff.

The additional data such as wattage is taken from market research. In terms of electrical consumption, the main sources are lights, fans, air conditioner, and equipment. The inventory and data collection for sources of energy consumed in the premise is summarised in the following sections.

The following documentation is based on the consumption practice of the premises on a regular working day.

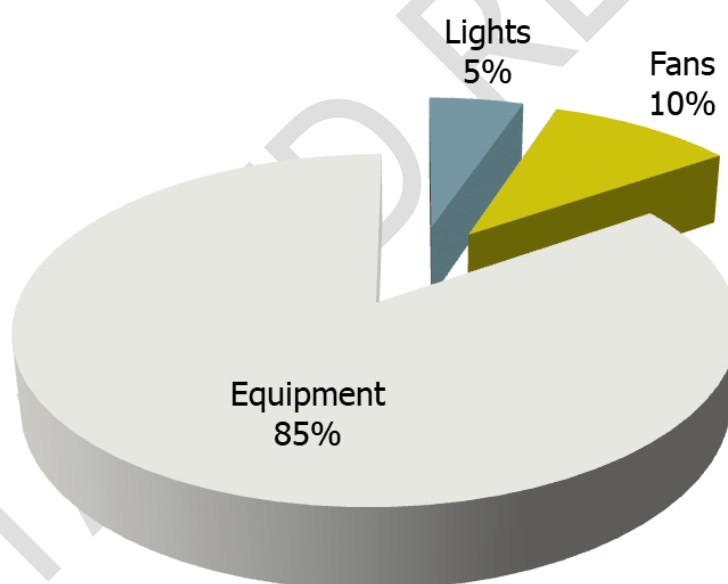


Figure 1: Summary of the calculated electrical consumption as per inventory

The above graph shows that equipment consumes 85% whereas the fans consume 10% and lights consume 5% each of the total calculated electrical energy.

5.5 Lights

5.5.1 Types of lights based on the numbers

There are **36 lights on the premises**; the following table shows the various types of lights on the premises.

S. No.	Type	Nos.
1	LED lights (<i>Energy efficient appliance</i>)	27
2	Non-LED lights (<i>Non-Energy efficient appliance</i>)	8
3	CFL lights (<i>Non-Energy efficient appliance</i>)	1

Table 4: Summary of the types of lights on-premise

5.5.2 Types of lights based on the power consumption

The energy consumption of lights is **1,142 kWh** of energy.

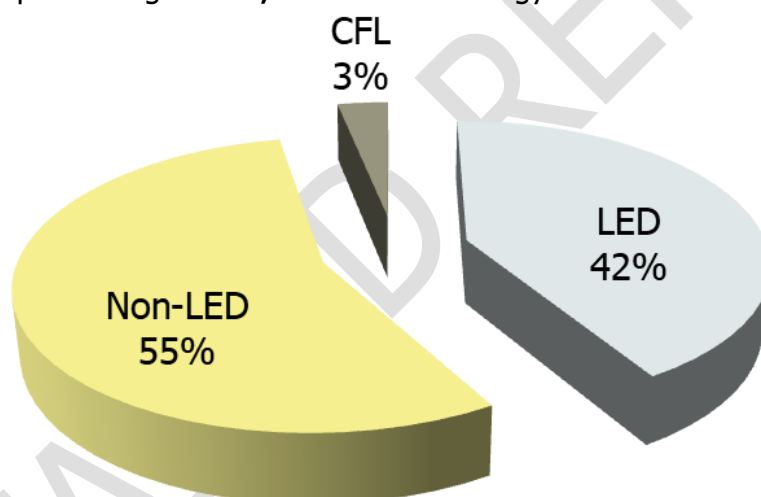


Figure 2: Energy consumed by types of lights in the premise based on the usage study

The analysis of the types of Lights on-premises shows **Non-LED lights consume 55%** whereas the **LED lights consume 42%** while the **CFL lights consume 3%** of the total power consumed by lights.

5.6 Fans

5.6.1 Types of fans based on the numbers

There are **29 ceiling fans** on the premises; there is one table fan as well but since it is not in working condition it has not been considered.

5.6.2 Types of fans based on the power consumption

The energy consumption of fans is **2,248 kWh** with the **ceiling fans consuming 100%** of total power consumed by fans.

5.7 Air conditioners

There are no air conditioners; hence there is no energy consumed by this source in premises.

5.8 Equipment

5.8.1 Types of Equipment

There are **76 nos. of equipment** in the Educational sector.

5.8.2 Types of equipment as per their energy contribution

The energy consumption of equipment is **18,623 kWh** of energy.

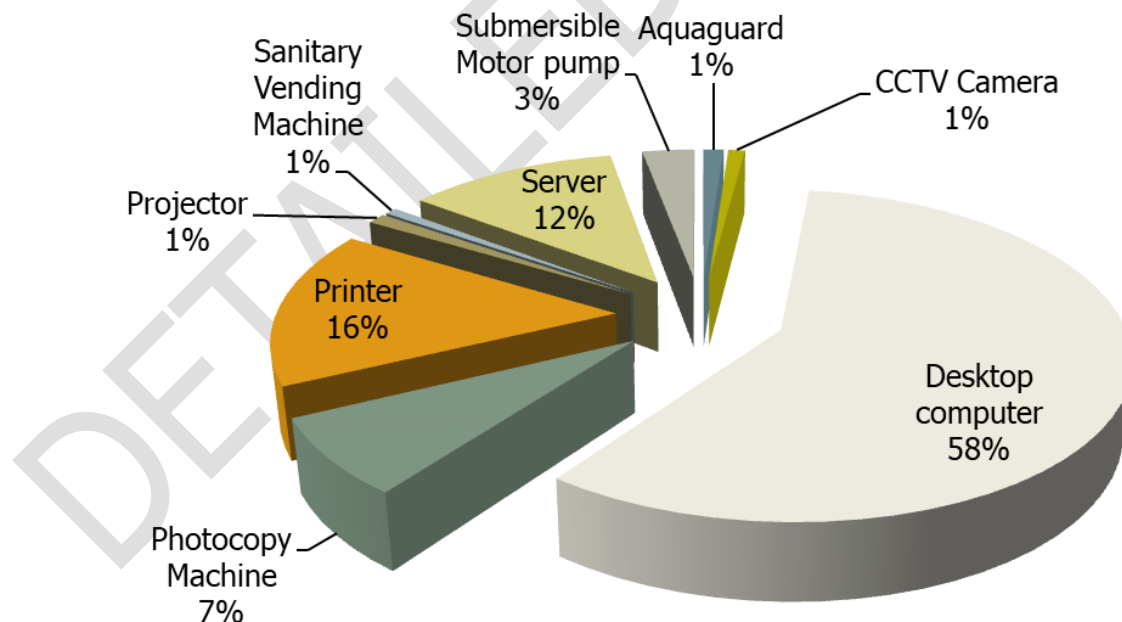


Figure 3: Energy consumed by types of equipment in the educational sector based on the usage study

The above summary shows that the **desktop computer consumes more energy at 58%** while the **printer consumes 16%** the **server consumes 12%** and the **photocopy machine consumes 7%** these are maximum consumers as compared to other equipment.

6. Suggestion

6.1 Section-wise suggestions

The following suggestions are to be considered as a ***first priority*** to be executed within the next 1.5 to 2.5 years from the date of the Report submission.

6.1.1 General aspects for slopin roofs.

- Retrofitted with solar panel to improve renewable energy consumption.
- Introduce solar bottle lamps and turbo ventilators as follows:

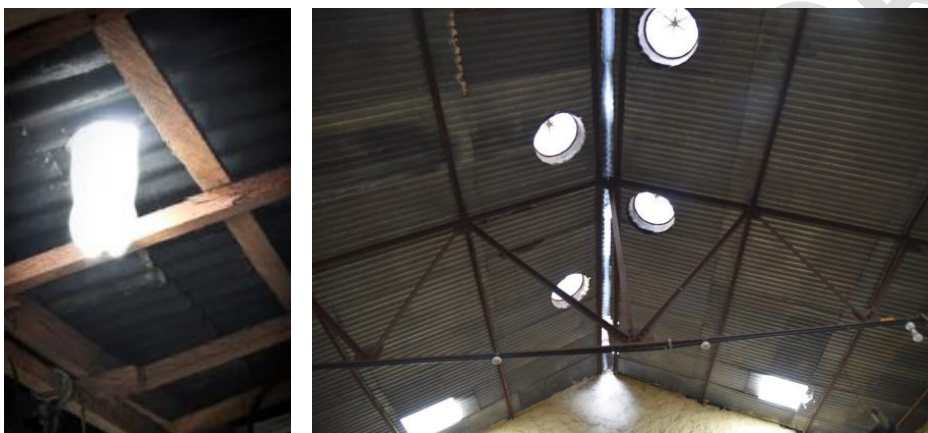


Plate 4: Demonstration of solar lamp, turbo ventilator and asbestos sheet

(Photo left side <https://www.instructables.com/How-to-build-a-SOLAR-BOTTLE-BULB/> and Photo right side ABDHC Ashti)

6.1.2 Electromechanical systems - Non-LED lights

The current light analysis shows that Non-LED lights consume anywhere between 50W to 54W and even more when in use; these should be replaced with LED lights which consume on an average 12-16W when in use. Our technical research shows that there would be a reduction of an average of **67% reduction** in energy consumption if replaced with energy efficient appliance. It will be suggested to either replace these now if the Institute can have certain plans else the replacement can be done when fans get damaged or are not in working condition.

6.2 General suggestions

The following are consolidated study related to 'entire Institute' should be considered as ***second priority*** once section wise recommendations are implemented.

Since the campus does not have any sources of alternate sources of energy, it would be highly suggestive to undertake certain measures to incorporate renewable sources of energy.

7. Compilation

The study is based on the data collected, analyzed, rechecked, and confirmed through multiple modes. For the quality study, some standards/ notes have been referred to. These are listed and noted below. However, no direct references have been used anywhere. These are used as a base to analyze and study the data collected.

Specific references for study related to energy

- ➔ <https://www.energy.gov/eere/buildings/zero-energy-buildings>
- ➔ <https://www.dsaarch.com/zero-net-positive-energy>
- ➔ U.S. Energy Information Administration
- ➔ <https://www.happysprout.com/inspiration/what-is-smart-gardening/>
- ➔ <https://housing.com/news/smart-gardening/>

ENVIRONMENT AUDIT

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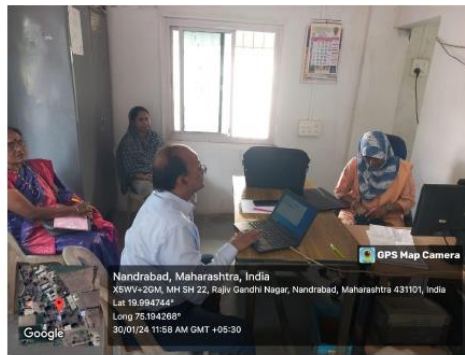
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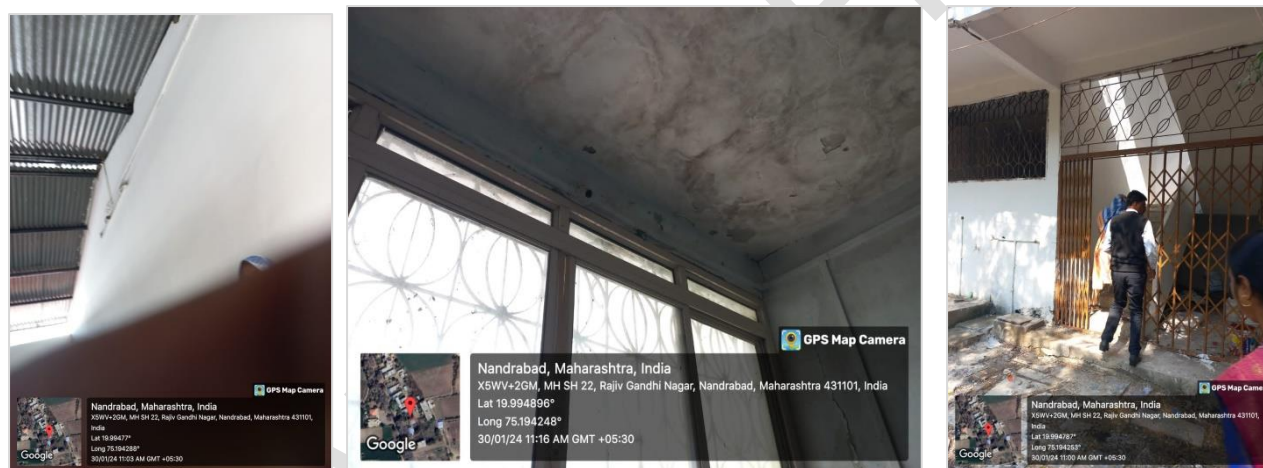


Plate 2: Investigation of the facilities



Plate 3: Investigation of the outdoor areas

5. Documentation

5.1 Natural Plantations (Green cover)



Plate 4: Natural green cover in the premises

Observation: Natural plantations in premises require an immediate ecological restoration.

Inference: *The study suggests that:*

- Each of this space could be named as a **specific type of green zone/ garden**
- **Scientific name plates and QR coding** of plantations could be undertaken, once done a display board as follows could be developed for stakeholder sensitization

1 अडुळसा	2 नागकेशर	3 रानतांबूट	4 रुई	5 सदाफुली	6	7	8 रक्तचंदन	9	10	11 मिरी	12 कवट
Justicia adhatoda	Ceylon ironwood	Hildegardia	French Cotton	Periwinkle	vacant	vacant	Red Sandal Wood	vacant	vacant	Black Pepper	Limonia Acidissima
13 गवती चहा	14 बिळीबी	15 जायफळ	16 गेळ	17 परंड	18 बिबा	19 कंकोळ	20 कांडवेल	21 करवंद	22 वाघाटी	23 गुळवेल	24 चाफा
Lemon Grass	Carrabolla	Myristica Fragens	Catunaregam Spinosa	Ricinus Communis	Semecarpus Anacardium	Pimenta	Cissus Quadrangularis	Bengal currant	Capparis Zeylanica	Giloy	Plumeria Rubra
25 कोकम	26 धोत्रा	27 सागरगोटा	28 वेखंड	29 पुत्रांग	30 गुंज	31 आलू	32 लवंग	33 कोकम	34 तमालपत्र	35	36 वेल्दोडे
Garcinia Indica	Datura Stramonium	Sagargota	Sweet Flag	Calophyllum Inophyllum	Abrus precatorius	Ginger	Syzygium Aromaticum	Garcinia Indica	Cinnamomum Tamala	vacant	Cardamom
37 कोरफड	38 अश्वगंधा	39	40 दालचिनी	41 तगर	42 चक्र फुल	43	44 शतावरी	45	46	47 नाशपती	48
Aloe vera	Winter Cherry	vacant	Cinnamomum Verum	Taberna Montena Elegans stapf.	Star Anise	vacant	Asparagus	vacant	vacant	Persea Americana	vacant
49 आवळा	50 चित्रक	51 कडीपत्ता	52 हळद	53 रातराणी	54 तुळस	55 ओडीमास	56 अमस्ता	57 तमालपत्र	58 लाजाळू	59 आवळा	60 नागलिंगम
Phyllanthus Emblica	Plumbago	Curry Leaves	Turmeric	Cestrum Nocturnum	Ocimum Tenuiflorum	Citronella Plant	Sesbania Grandiflora	Cinnamomum Tumala	Mimasa Pudica	Phyllanthus Emblica	Norantica Guianensis

Reference suggestions 1: Display board

5.2 Fire and life safety measures (Extinguishers)



Plate 5: Fire extinguishers

Observation: The fire extinguishers available require a refilling urgently.

Inference: *The study suggests that:*

- ➔ *The **fire and life safety signages (Including exit signages)** should be increased and displayed.*
- ➔ *There should be a **PASS Board** alongside every fire extinguisher and a **RACE Board** at the location of extreme populace/ footfalls.*



Reference suggestions 2: PASS Board display

5.3 Commuting practice

Observation: The stakeholders (students and staff) use buses provided by the campus majorly for commuting back and forth to the premises, furthermore the locals use walking or bicycles to and for; this highlights eco-friendly practice

Inference: *The study suggests that:*

- ⇒ *There should **be awareness sessions to switch to battery operated vehicles/ bicycles** for commuting*
- ⇒ *An '**Eco-vehicle zone**' should be demarcated in the premises with a battery charging point for sensitization purposes*
- ⇒ *A 'No vehicle zone' should be developed and displayed as follows*



Reference suggestions 3: Sample about display board

6. Compilation

The study is based on the data collected, analysed, rechecked, and confirmed through multiple modes. For the quality study, some standards/ notes have been referred to. These are listed and noted below. However, no direct references have been used anywhere. These are used as a base to analyse and study the data collected.

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- ➔ IGBC Green Landscape Rating system, March 2013
- ➔ BOMA Canada Waste Auditing Guide, Best Environmental Standards, BOMA BEST – Canada
- ➔ Used only for understanding Universal design - Universal accessibility Guidelines for Pedestrian, Non-motorized vehicle and Public Transport Infrastructure – Report guidelines by Samarthyam (National centre for Accessible Environments) – an initiative supported by Shakti Sustainable Energy Foundation.

GREEN AUDIT

STUDY PERIOD (TWO YEARS) 2021 – 2022 & 2022 - 2023

Sustainability study

AUDIT REPORT

Studied for

A. D. College of Education

Gut No. 23/25,

Sulibhanjan, Khultabad,

Chhatrapati Sambhajanagar,

Pin code – 431101, Maharashtra, India

Studied in the capacity of

Accredited and Certified

Green Building Professional



Website: <https://thegreenviosolutions.co.in/>

Email: greenviosolutions@gmail.com

Disclaimer

The Audit Team has prepared this report for the **A.D.College of Education** located at Gut No. 23/25, Sulibhanjan, Khultabad, Chhatrapati Sambhajinagar, Pin code – 431101, Maharashtra, India based on input data submitted by the Institute analysed by the team to the best of their abilities.

The details have been consolidated and thoroughly studied as per the various guidelines for Green Buildings available in National and International Standards; the report has been generated based on comparative analysis of the existing facilities and the prerequisites formulated by various standards. The inputs derived are a result of the inspection and research. These will further enhance and develop a Healthy and Sustainable Institution.

These can be implemented phase wise or as a whole depending on the decision taken by the internal team. The warranty or undertaking, expressed or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

The audit is a thorough study based on the inspection and investigation of data collected over a period of time and should not be used for any legal action. This is the property of Greenvio Solutions and should not be copied or regenerated in any form.

The Report is prepared by the Team of Greenvio Solutions under their brand and department – Sustainable Academe as Consultancy firm with the Project Head - Ar. Nahida Shaikh who is as an Accredited and Certified Green Building Professional-Architect. Green Building consultancy is her forte and she is one of the most sought after names when it comes to providing excellent quality services within the stipulated time frame.

The Study is conducted in capacity of Accredited & Certified Green Building Professional with extensive experience.

Ar. Nahida Abdulla
Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

Sustainable Academe is our department for conducting audits

Palghar District, Maharashtra- 401208

sustainableacademe@gmail.com



Acknowledgement

The Audit Assessment Team thanks the **A.D.College of Education, Maharashtra** for assigning this important work of Green Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to **everyone from the Management.**

Our heartfelt thanks to the Chairperson of the entire process **Dr. Joshi Shobhana Vishwanath**, Principal for the valuable inputs.

We are also thankful to **College's Task force the faculty members** who have collected data required **Dr. Akolkar R. S.** (Asst.Professor); **Mr. Talekar Shrimant U.** (Clerk) and **Mr. Dandale Anil C.** (Asst. Professor).

We highly appreciate the assistance of the **entire Teaching, Non-teaching and Admin staff** for their support while collecting the data.

Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

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Evidence documents for Site visit of external audit team

Audit team headed by external expert - Ar. Nahida Abdulla
 Accredited & Certified Green Building Professional, ISO IA (IMS)
 Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: A.D. College of Education Date: 30/01/2024

Document objective: Inferences of the Site visit

Observations (Positive aspects)	Suggestions (Improvement aspects)
Green Audit	
- Ground water recharging through borewell in site (Common facility)	- Documentation, reflectance, washroom facilities, waste management initiatives need to be undertaken
Energy Audit	
- Availability of lights, fans in campus	- Solar fans, parking, use of wind mills should be explored - LED lights nos. should be increased
Environment Audit	
- Pollution free campus	- Campus beautification; documentation of reflectance should be undertaken

Signature & round seal
 Name: Dr. R.S. Arulkar
 Designation: Asst. Prof. and vice Principal
 For the said Institute:

Signature & round seal
 Name: Mrs. F. A. Shaikh
 Designation: Project Coordinator
 For The Greenvio Solutions



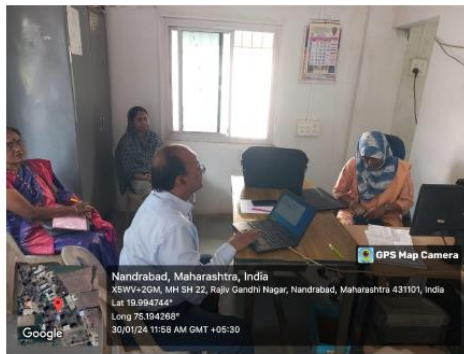
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Audits covered: [X] Green audit [X] Energy audit [X] Environment audit

Institute: A. D. College of Education Date: 30/01/2024

Document objective: Proof of the Site visit



Meeting with the core team



Investigation of the systems

Signature & round seal
Name: Dr. R. S. Kulkarni
Designation: Asst. Pr. and vice principal
For the said Institute

Signature & round seal
Name: Mrs. F. A. Shaikh
Designation: Project Coordinator
For The Greenvio Solutions

1. Introduction

1.1 About the Institution

The college is committed to its student's learning and success. Educational processes and outcomes are aimed at transformational learning that supports student's holistic development.

The information regarding learning outcomes is uploaded on the college website which is intended to help prospective students and others to evaluate the College's educational goals and the student outcomes of the education we provide. At the institutional level, learning outcomes are stated clearly.

1.2 Assessment of the Institute

1.2.1 Affiliation

The College is affiliated with the **Dr. Babasaheb Ambedkar Marathwada University**, a public university in Aurangabad, Maharashtra.

1.2.2 Certification

- ➔ **All India Survey of Higher Education** (AISHE) code is C-34267.
- ➔ National Council for Teacher Education, New Delhi

2. Overview

2.1 Summarised Populace analysis

2.1.1 Research study for 2022-2023

Students data

The data (shared by the Institute) shows there were **110 students**.

Staff data

S. No.	Type	Male	Female	Total
1	Admin staff	01	00	01
2	Teaching staff	08	05	13
3	Non-Teaching staff	03	00	03
Total Staff Members		12	05	17

Table 1: Staff data of the Institution for 2022-2023

The staff data shows the College premises had **17 Staff Members**.

2.1.2 Research study for 2021-2022

Students data

The data (shared by the Institute) shows there were **109 students**.

Staff data

S. No.	Type	Male	Female	Total
1	Admin staff	01	00	01
2	Teaching staff	08	05	13
3	Non-Teaching staff	03	00	03
Total Staff Members		12	05	17

Table 2: Staff data of the Institution for 2021-2022

The staff data shows the College premises had **17 Staff Members**.

3. Research

3.1 About the Green Building Study Audit

It is a systematic study of the aspects which make the Institution sustainable and healthy premises for its inhabitants.

3.2 Analysis of the Green Building Study Audit

The procedure included detailed verification as follows:

- ➔ Investigation
- ➔ Technical
- ➔ Observations
- ➔ Inferences

3.3 Strategy adopted for Green Building Study Audit

The strategies included data collection from the admin department, actual inventory, investigation to check the operation and maintenance, analysis of the data collection, and preparation of the Report.

4. Investigation



Plate 1: Induction and exit meeting with the team

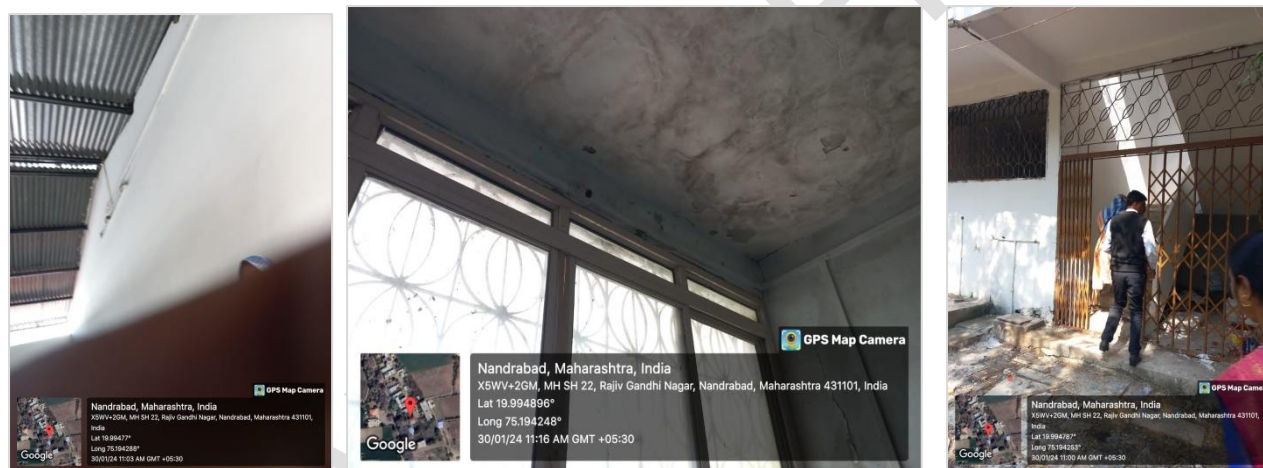


Plate 2: Investigation of the facilities



Plate 3: Investigation of the outdoor areas

5. Documentation

5.1 Water study (Tank)



Plate 4: Water tanks on the rooftop

Observation: The overhead water tanks are not maintained well.

Inference: The study suggests that there is scope for improvement for all the water tanks and similar spaces in all the blocks; the tanks should have the following information mentioned on them either through paint or a display board:

- ⇒ **Size** – Diameter/ L X B X H
- ⇒ **Capacity** – In Litres
- ⇒ **Usage** – Primary (Drinking)/ Secondary (Washing, Toilets, Washbasins and other)/ Tertiary (Water harvesting)
- ⇒ **Last maintenance and cleaning date** with Certificates if any
- ⇒ **Institute name**
- ⇒ Provide a **permanent support for every water tank**; colour code the pipe and water tank with information on **Rain water tank (Light blue), Drinking water tank (Dark blue), Sewage/ Secondary water tank (Grey), Fire water tank**

5.2 Water study (Borewell)

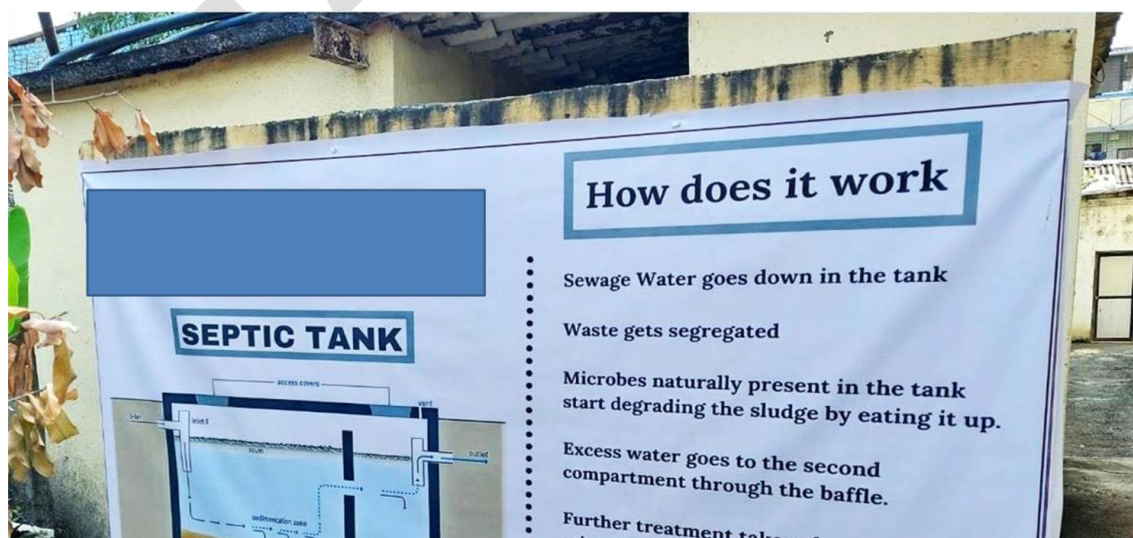


Plate 5: Water tanks on the rooftop

Observation: The bore well is available in premises, currently a small it is available for rain water harvesting; it is suggestive to connect overflow pipe of pit to well for ground water recharging.

Inference: *The study suggests that there is scope for improvement for all the **water tanks, bore well pipes, rain water pits with the following information mentioned on them either through paint or a display board:***

- ➔ *A **layout** should be displayed either near every block or as a common map near entrance informing **nos. and locations of each type of tank, capacity for every block, their usage***
- ➔ *A manual about the functioning should be displayed (Refer image below)*



Reference suggestions 1: Manual example

5.3 Dustbins and waste management

Observation: Only dustbins are available for waste management.

Inference: *The study suggests that:*

- **Single DRY WASTE dustbin** should be available inside the classroom, other spaces
- **MULTI-COLORED dustbins** for paper, glass, water in the corridor areas
- **E-WASTE and PLASTIC WASTE zone** to practice a dedicated 'collection drive' quantify and then either recycle or handover the same to certain vendors
- **A small compost bin** (check image below) can be purchased and composting can be carried out through small quantities for a start given the space constrains



Reference suggestions 2: Composting practice (Source - Trustbin)

5.4 Awareness banners

Observation: No facility is available.

Inference: *The banners as follows should be available for stakeholder sensitization in multiple places.*



Plate 6: Awareness banners

6. Compilation

The study is based on the data collected, analysed, rechecked, and confirmed through multiple modes. For the quality study, some standards/ notes have been referred to. These are listed and noted below. However, no direct references have been used anywhere. These are used as a base to analyse and study the data collected.

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