ENERGY AUDIT

STUDY PERIOD (TWO YEARS) 2020-2021 AND 2021-2022

Sustainability study

AUDIT REPORT

Studied for

Late Digambarrao Bindu Smarak Samiti's

Digambarrao Bindu Arts, Commerce & Science College

Bhokar, Tamsa Road, Taluka Bhokar 431801,
Dist. Nanded, (MS.) India

Studied in the capacity of

An accredited & Certified Green Building Professional

Studied by

Greenvio Solutions

Valid till August 2023

Background reference image Janko Ferlic on pexels

Disclaimer

The Audit Team has prepared this report for the **Late Digambarrao Bindu Smarak Samiti's Digambarrao Bindu Arts, Commerce and Science College** located at *Bhokar, Tamsa Road, Taluka Bhokar 431801, Dist. Nanded, (MS.) India* based on input data submitted by the College 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 Hon'ble Management and College. 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.

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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 has completed audits of multiple Institutes including Technical, State University, Private University and Single Faculty Colleges for a total of more than 60 lakhs+ sq. ft. of Built-up area audited till date Pan India as an Accredited and Certified Green Building Professional-Architect; ISO Certified I.A. (IMS). 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.

Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

Sustainable Academe is our department for conducting Audits

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Acknowledgement

The Audit Assessment Team thanks the **Late Digambarrao Bindu Smarak Samiti's Digambarrao Bindu Arts, Commerce and Science College, Nanded** 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 **Dr. Madhavrao Patil Kinhalkar,** President; **Shri Apparao Taterao Deshmukh,** Vice-President; **Shaikh Muradsab Manjramkar,** Secretary; **Shri Narayanraoji Kundgulwar,** Joint Secretary; **Shri Rajeswarrao Deshmukh Deothankar,** Treasurer; **Shri Sunil Manoharrao Joshi,** Member and everyone from the Management.

Our heartfelt thanks to Chairperson of the entire process **Dr. Dr. Panjab Anandrao Chavan,** Principal, for the valuable inputs.

We are also thankful to **College's Task force the faculty members** who have collected data required **Dr. Arvind B. Chavan,** IQAC Coordinator *(Special mention for the excellent coordination)*; **Dr. Sachin V. Tawade,** Head Department of Botany; **Dr. Jaywardhan V. Balkhande,** Assistant Professor, Dept. of Zoology; **Dr. Abhijit Ashok Kandlikar,** Assistant Professor, Dept. of Environmental Science; **Dr. Bhupesh G. Nemmaniwar,** Assistant Professor and Head Dept. of Physics;

We highly appreciate the assistance of **Shri. Amol A Lungare,** Clerk and 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

Contents

1. Introduction

1.1 About the founder

The Senior Freedom Fighter and social worker Shri. Bhujangrao Patil Kinhalkar founded it. His intention was to make the area as far as possible educationally self-contained. Nanded District in Marathwada region has been declared as educationally backward. Bhokar, one of the Talukas of the district is located on the boundaries of Maharashtra & Andhra Pradesh, it is most backward part of the district. Most of the population in the area belong to tribal & backward communities like SC/ST's who do not have much access even to primary education, then higher education in such a scenario was distant matter.

Therefore, being a visionary person, he laid the objective of Digambarrao Bindu Arts, Commerce and Science college to offer a sound, secular and moral education both for boys & girls. He always emphasized on girl's education. The key to the whole character of the college, therefore, is to produce tolerant, humane & magnanimous people.

1.2 Statements of the Institution

Vision - To Provide value based quality education & generate Human Resource Equipped with contemporary advance skills.

Mission – The College has formulated the following mission to achieve its vision.

- ⇒ To make the students aware about the career opportunities available through the programs offered to them.
- ⇒ To refine the personality of the students with positive approach and purposeful skills.
- ⇒ To mould the character of students through value based education.
- ⇒ To search the students in the area who are eligible but deprived of taking higher education.
- ⇒ To create environmental and social awareness by exposing students to various activities.
- ⇒ To contribute to the development of economically backward area by helping the rural students to get quality education and to facilitate them the global stream of course.

1.3 About the Institution

Digambarrao Bindu Arts, Commerce and Science college, Bhokar Dist. Nanded is run by the parent institution late Digambarrao Bindu Smarak Samiti, Bhokar Dist. Nanded has a glorious history of its own.

Digambarrao Bindu Arts, Commerce and Science college has maintained a dress code not only for students but for employees also. It helps to improve uniformity in diversity.

Apart from the regular curricular activities since its opening it has always attempted to foster and maintain a healthy atmosphere of academic and social discipline and sound education through organizing number of co-curricular, extra-curricular and extension activities to develop students in all round way. Like the students our teaching & Non-teaching staff in their corporate life participates in number of activities to update and upgrade themselves.

From its opening to still today Digambarrao Bindu Arts, Commerce and Science college prepared number of students to meet the challenges of the millennium and acquires better career opportunities both in private, government & public sectors. The credit of it goes directly to the disciplined administration, hardworking teaching & non-teaching staff, healthy support in the form of text, reference books, journals, subject periodicals, magazines from the central library.

As a result of its continuous efforts and smooth conduct Digambarrao Bindu Arts, Commerce and Science college has been accredited and assessed in January-2004 for first cycle and Reaccredited in 2016 with B grade with CGPA 2.40 for second cycle by NAAC, Bengaluru.

The Aim of the College *"To Provide value based quality education & generates Human Resource Equipped with contemporary advance skills."*

The Objectives (Goals) of the College are as follows:

1. *To provide quality education by offering the skill base course in rural area.*
2. *To mould and shape the rural students for their all-round development according to demands of local, state and national level and to instil self confidence in them.*
3. *To inculcate patriotism and the realization of their responsibility towards their environment and society.*

The Institution offers the following courses.

- **Junior College**
  - ⇒ Arts
  - ⇒ Science
- **Senior College**
  - ⇒ Commerce
  - ⇒ Science
- **UGC Course**
  - ⇒ M. Com – BIS
  - ⇒ COC/ COP
  - ⇒ Study centre
  - ⇒ HRE
  - ⇒ M.R.P./ F.I.P./ F.D.P.
- **Distance Education courses**
  - ⇒ Undergraduate courses
  - ⇒ Post-graduate courses
  - ⇒ HRE
  - ⇒ CPCT

The College works towards training young men and women to be competent, committed and compassionate, and lead in all walks of life.

1.4 The surrounding premises around the Institution

The Premises is situated amidst the landscape serene of **Nanded district of Maharashtra** with immense peace and calmness in the surroundings. There is a frontal approach which provides quite a beautiful appreciation space while approaching the premises; this area is surrounded by huge trees which positively complement the background-foreground aspect in terms of Natural space and built-form Architecture. It also provides ample shade which enhances the micro climate of the region. The location of College is feasible to the nearby essential amenities such as Public Health Center, Fire Station, Civic body-Public administrative buildings, Recreational gardens and Police Station which are not too close but nearby.

1.5 Assessment of the College

1.5.1 Affiliations

The College has all its courses approved and affiliated to **the S.R.T.M.U. Nanded, Maharashtra state**.

1.5.2 Certification

- **AISHE –** The College has the AISHE Code since 2015-16
- **ISO –** The College is *ISO 9001:2015 Certified.*

1.5.3 Accreditation

NAAC - The following are details of the reaccreditation of the College.

Cycle	First	Second
CGPA	-	2.40
Grade	C	B
Year	2004	2016

Table 1: NAAC Accreditation details of the Institute

The College is due to enter its Third cycle of NAAC.

1.5.4 Recognitions

The College has achieved the following recognition from **University Grant Commission (UGC) under section 2 (f) and 12 (b) of the UGC Act by University Grants Commission, New Delhi.**

1.6 Achievements of the College

The College has a tremendous track record of excellence in Built form and educational services provided, below are some of the achievements of the prestigious Institute.

⇒ **Best College Award** by SRTM University, Nanded

⇒ **Jagar Janivancha Award** for Vedan an Annual magazine of College by State Government of Maharashtra.

⇒ **Best Annual Magazine Awards** by SRTM University, Nanded consecutively.

2. Institution overview

2.1 Populace analysis for Academic year 2021-2022

2.1.1 Students data

The student data (shared by the College) shows there were a total of **588 Boys and 416 Girls, thus a total of 1,004 students** in the premises.

2.1.2 Staff data

Type	Male	Female	Total
Admin Staff	01	00	**01**
Teaching Staff	30	01	**31**
Non-Teaching Staff	11	01	**12**
Total Staff Members	**42**	**02**	**44**

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

The staff data shows the premises had a total of **44** Staff Members.

2.2 Populace analysis for Academic year 2020-2021

2.2.1 Students data

The student data (shared by the College) shows there were a total of **594 Boys and 489 Girls, thus a total of 1,083 students** in the premises.

2.2.2 Staff data

Type	Male	Female	Total
Admin Staff	01	00	**01**
Teaching Staff	30	01	**31**
Non-Teaching Staff	11	01	**12**
Total Staff Members	**42**	**02**	**44**

Table 3: Staff data of the Institution for 2020-21

The staff data shows the premises had a total of **44** Staff Members.

2.3 Total College Area & College Building Spread Area

The **total site area is 9 Acres** and the **total Built-up area of College is 40,659 sq. ft.** for **a total of 1,048 footfalls.**

2.4 College Infrastructure

2.4.1 Establishment

The College was established in 1989. The college is located pretty close to nature and hence has very fresh environment which is absolutely pollution free and healthy. The Building is a Reinforced Cement Concrete (RCC) framework building. **Overall the Infrastructure of the Building is excellent in terms of the Architecture Design and Green Building Design. The Premises covers quite a few of the requirements for a Green Habitat.**

2.4.2 Spatial Organisation

The overall ambience of the College is warm and inviting. The classrooms and other spaces have ample natural ventilation in the form of clear glass windows with fresh air ventilation. The architecture of the building is quite well designed. The colour palette not just helps the building to stand out but also provides an Institutional arena. It balances with the local architecture with the natural landscapes of huge trees all around. The design emphasis on providing calmness to the built form and gradually merges with the serene landscape.

The floor to floor height is more than 10 feet. There is no provision for lifts in the premises, whereas there are amenities such as CCTV, Fire extinguishers, Library and first aid box.

2.4.3 Operation and maintenance of the premises

The interview session with the staff regarding the operation and working hours is summarized in the table. The Institution is open from Monday to Saturday. The detail wise timing for each is mentioned below.

S. No.	Section	Days	Time	Hours/ day	Days in a year
1	All Lectures and Library	Monday to Saturday Except Holidays	10.00 am to 4.20 pm	6.5	280
2	Administration	Monday to Saturday Except Holidays	10 am to 5 pm	7	300

Table 4: Schedule of the timings of the premises

3. Green Building Study Audit

3.1 About the Green Building Study Audit

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

3.2 Analysis for the Green Building Study Audit

The procedure included detailed verification for the following:

Energy Audit

- Analysis of the Lights, Fans, AC, Equipment
- Renewable energy
- Scope for reducing the current energy bills if any
- Improvement in the thermal comfort of the campus

Green Audit

- Green initiatives
- Hygiene audit
- Water Audit - Analysis of the current water consumption of campus; Scope to include Rain water harvesting and Waste water treatment in premises
- Waste Audit - Current waste produced, its segregation and usage; Strategies to be adopted for waste management and awareness

Environmental Audit

- Analysis of the current landscape + hardscape of campus
- Analysis of the flora and fauna of campus
- Strategies adopted at present to enhance vegetation
- Measures that can be adopted for ecological improvement of the premises.

3.3 Strategy adopted for Green Building Study Audit

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

3.4 Timeline of the activities for Green Building Study Audit

- 08 August 2022 – Allotment and Initiation by the College
- 08 August 2022 – Induction Meeting
- 08 August 2022 – Survey of the Student and staff submitted
- 10 August 2022 – Data submitted by College
- 13 August 2022 – Submission of the report

4. Energy Audit

4.1 Sources of Energy consumption

The premise uses following sources of energy consumption.

4.1.1 Primary sources

⇒ **Electrical (Metered) –** Light, Fans, Equipments, Pumps comprise these sources.

⇒ **Renewable energy –** There no sources of renewable energy available.

4.1.2 Secondary sources

1. **Inverter –** There are 3 Inverters installed in the premises.
2. **Battery –** There are batteries which were installed, maintenance cost of Rs. 100/- is spent towards the same on a monthly basis.
3. **Gas cylinders –** There are gas cylinders required per year and Rs. 150/- is spent towards the same on a monthly basis.

4.2 Site investigation analysis

The Site investigation observations and interviews with the Maintenance staff, Electrical department in charge are summarised below:

- The **switch-off drills are practised at present,** the maintenance staff and Lab Attendants put off switches of all equipments regularly.
- All the **computers are shut-off after use** and also put on power saving mode.
- There are **display boards encouraging staff and students to save energy are put up in the classrooms and laboratories**.
- There are **Ultra-violet lights used only in the scientific labs for experiment purpose, apart from these any other harmful lights used** in the premise.

4.3 Actual Electrical Consumption as per Bills

The admin department had shared the bills for Meter which is connected to all Buildings and is main source of energy supply. The supplier is Maharashtra State Electricity Distribution Company Limited. The details of unit consumption meter wise stated there were around 11,760 units cosumed for Rs. 84,000/-

4.4 Survey Results

An online survey was conducted to analyse the student and staff views about the Energy management practices adopted in College, following is the result received.

4.4.1 Participation

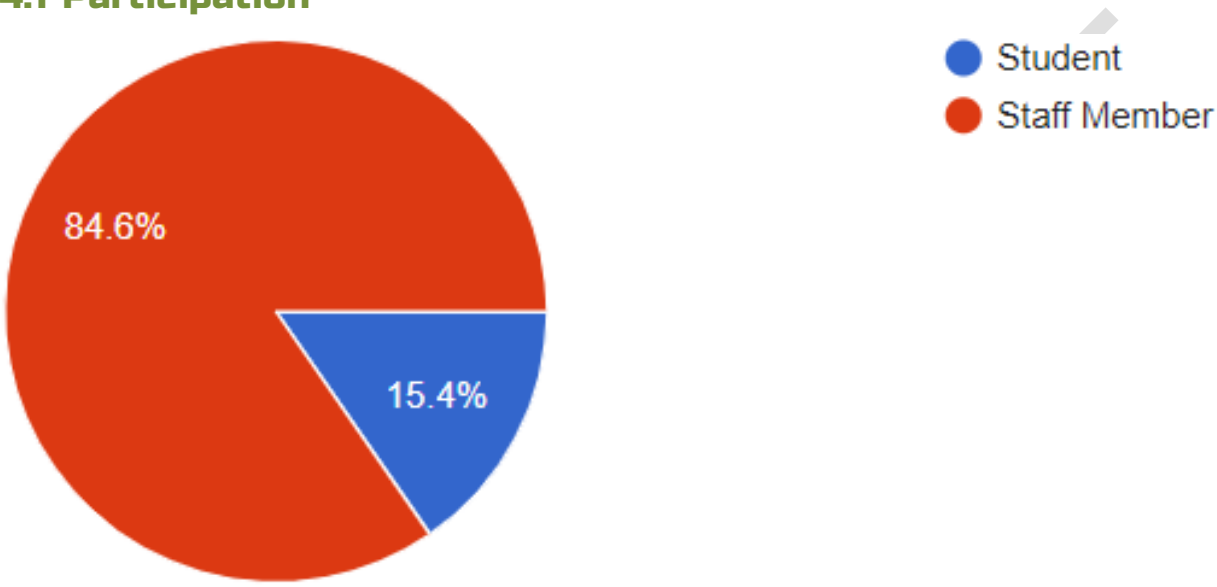

Figure 1: Participation analysis in the survey

A total of **26 responses** were received out of which 15% were students.

4.4.2 Review of the Energy management practices in the premises

Note: The Participants were asked to review the practice on a scale of 1-5 with scale components as follows:

- Scale 1 – Poor
- Scale 2 – Satisfactory
- Scale 3 – Good
- Scale 4 – Very good
- Scale 5 – Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)

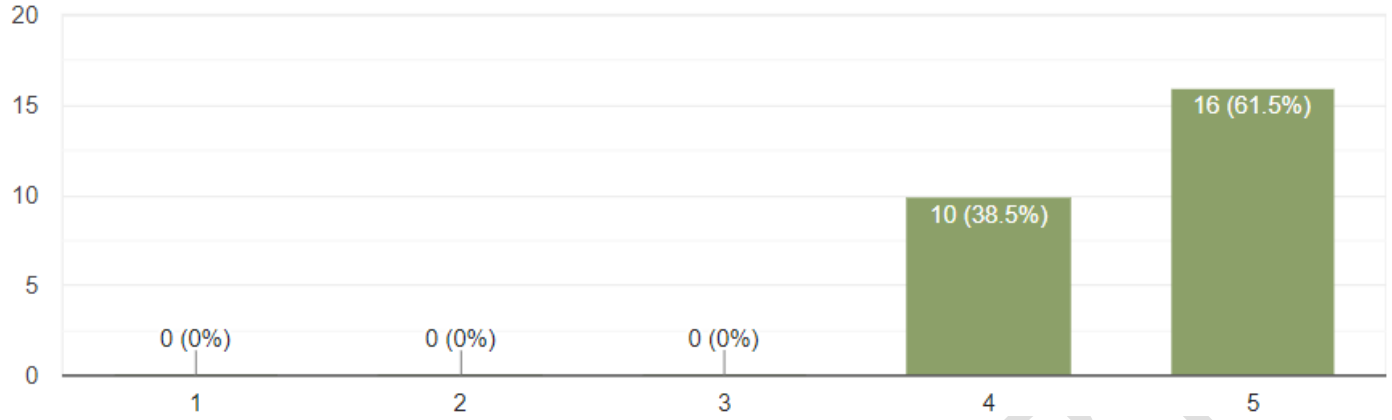

Figure 2: Energy management practices in college

The students, staff **(almost 62%) of the responses found the practices to be excellent (rating 5)** and **39% of the responses found practices to be very good (rating 4).**

4.5 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 in summarised in the following sections. Note: The following analysis is combined for entire premise taking into considerations the duration before pandemic to understand the consumption pattern as post pandemic the premise is used only for a few hours.

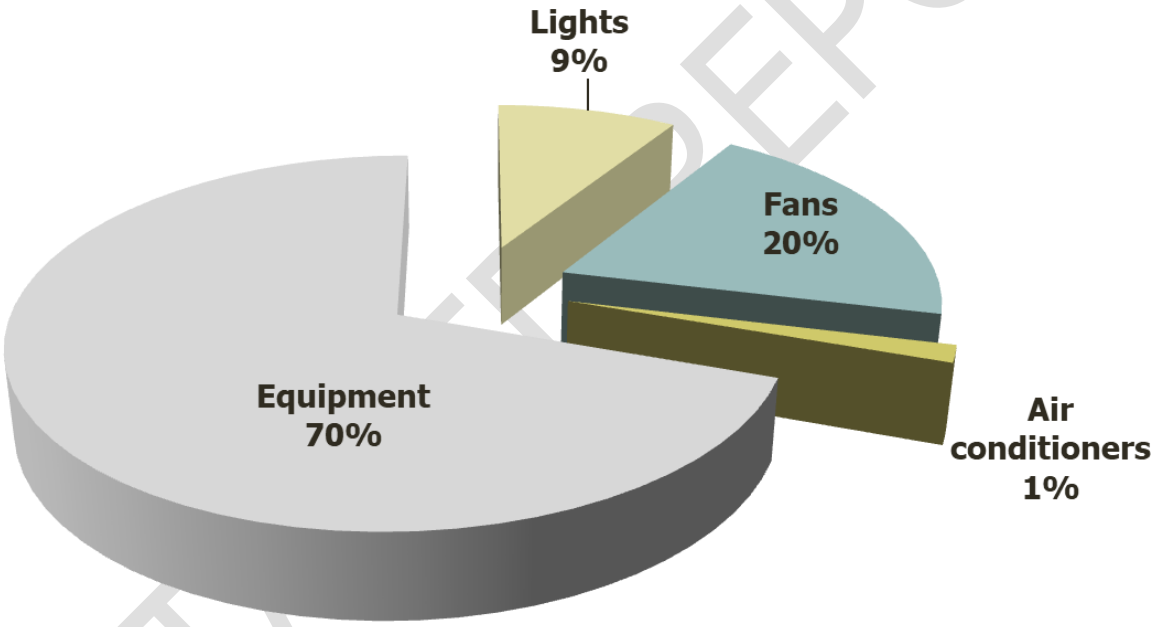

Figure 3: Summary of the calculated electrical consumption as per inventory

The above graph shows that Equipment consumes 70% followed by fans at 20% whereas the lights consume 9% and the air-conditioners consume 1% of the total calculated electrical energy.

4.6 Lights

4.6.1 Types of lights based on the numbers

There are a total of **136 lights in the premises;** the following table shows the various types of lights in the premises.

S. No.	Type	Nos.
1	LED	108
2	Non-LED	28

Table 5: Summary of the types of lights in premise

4.6.2 Types of lights based on the power consumption

The following graph shows the type of lights.

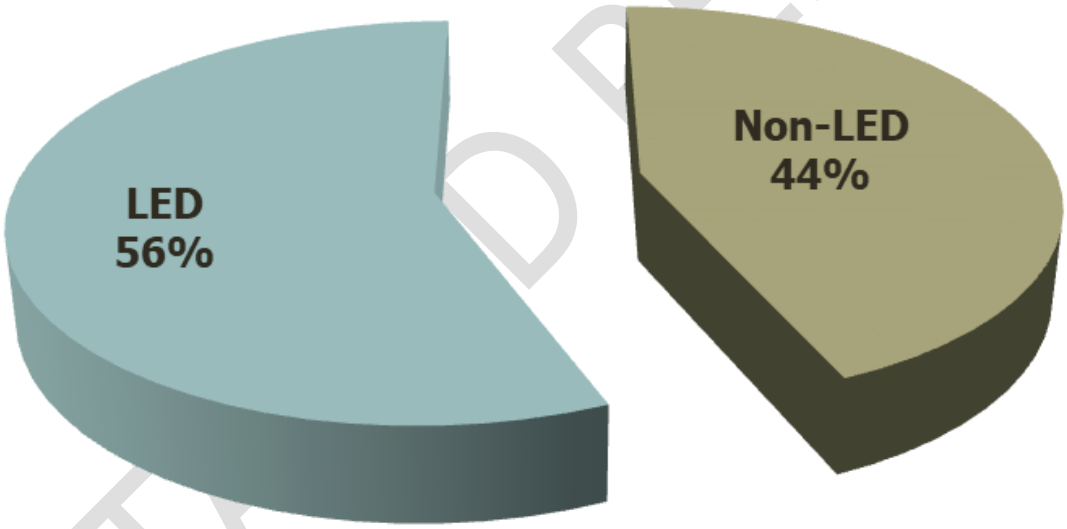

Figure 4: Energy consumed by types of lights in the premise based on the usage study

The analysis of the types of Lights in premises shows **Non-LED lights 44%** followed by **LED lights consuming 56%**

4.6.3 Floor-wise consumption analysis

The energy consumption of Lights is **2,790 kWh** of energy; the following graph shows the floor wise consumption.

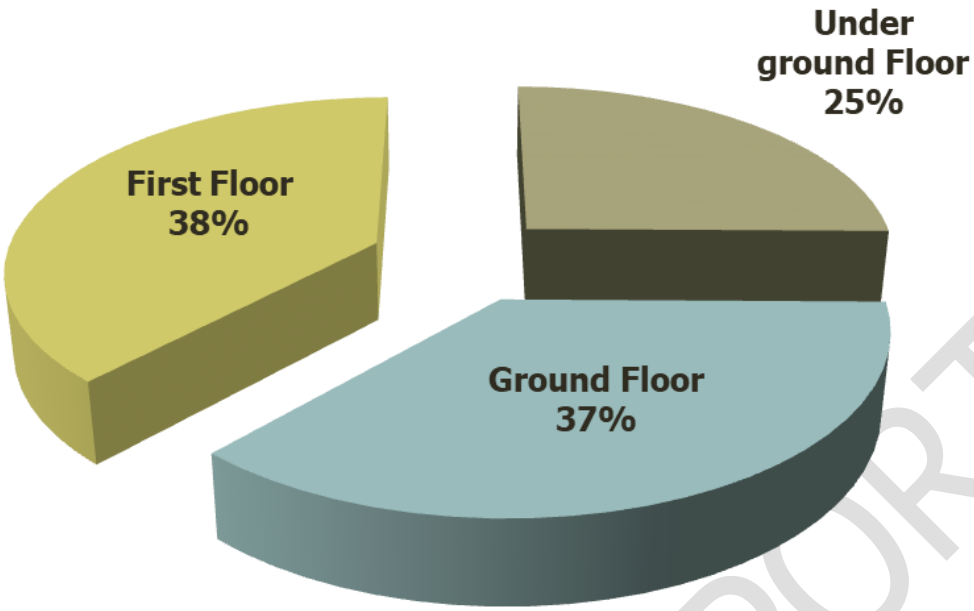

Figure 5: Energy consumed by lights floor wise

The above analysis shows the lights in the **First floor consume 38%** while the ones in the **Ground floor consume 37%** and the ones in the **Underground floor consume 25%** of the total power consumed by lights.

4.6.4 Requirement of NAAC

4.6.4.1 Alternative Energy Initiative

Percentage of power requirement met by renewable energy sources – There are no solar panels at present in the premises.

4.6.4.2 Percentage of lighting power requirement met through LED bulbs

The premise has LED Lights contribute to 79% in terms of number and **56% of the power requirement** is met through the same. As per our study we could conclude that both of these numbers should improve.

4.6.5 Site investigation observations

Some of the points noticed are as follows:

1. All lights are in working conditions
2. Daily monitoring and check is done by the maintenance staff.
3. There was no fuse defect observed.

4.7 Fans

4.7.1 Types of fans based on the numbers

There are a total of **115 ceiling fans** in the premises.

4.7.2 Floor-wise consumption analysis

The energy consumption of fans is **6,634 kWh** of energy; the following graph shows the floor wise consumption.

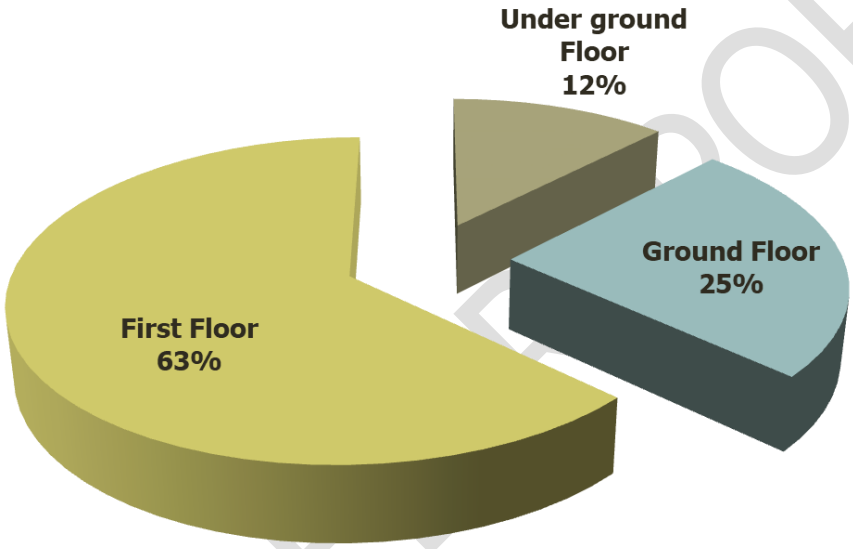

Figure 6: Energy consumed by fans floor wise

The above analysis shows the fans in the **First floor consume 63%** while the ones in the **Ground floor consume 25%** and the ones in the **Underground floor consume 12%** of the total power consumed by fans.

4.7.3 Site investigation observations

Some of the points noticed are as follows:

1. All fans are in working conditions
2. Daily monitoring and check is done by the maintenance staff and admin staff in an excellent manner.

4.8 Air conditioners

4.8.1 Types of air conditioners based on the numbers

There are **2 air conditioners** in the entire premises**.**

4.8.2 Floor-wise consumption analysis

The energy consumption of air conditioners is **510 kWh** of energy; both of these are located on the First floor.

4.8.3 Site investigation observations

Some of the points noticed are as follows:

1. Daily monitoring and check are done by the maintenance staff and admin staff skilfully.
2. The Outdoor units were not properly cleaned and maintained and had dust collection problems.

4.8.4 About the replacement of current air conditioners

The current air conditioners are well maintained, though there is not an immediate requirement for replacement however, whenever the college undergoes redevelopment or a new floor is constructed there can be provisions for replacement with energy-efficient appliances or new air conditioners that require less power consumption.

4.9 Equipment

4.9.1 Types of Equipment

There are **23 types of equipment totalling to 110** in the premises as follows:

S. No.	Name	Nos.
1	Desktop Computer	72
2	Auto Clave	1
3	Electronic Balance	1
4	Conductometer	1
5	CRO	1
6	Centrifuge	1
7	CCTV Camera	2
8	Internet Modem	1
9	Potentiometer	1
10	Heating Mantal	1
11	Magnetic Stirrer	1
12	Incubator	2
13	Hot Plate	1
14	Distillation plant	1
15	Refrigerator	2
16	Sound System	1
17	TV	1
18	Spectrometer	1
19	Zener Diode	1
20	Xerox Machine	3
21	Projector	3
22	Printer	10
23	Water motor starter	1

Table 6: Types of equipment in the premise as per the quantity

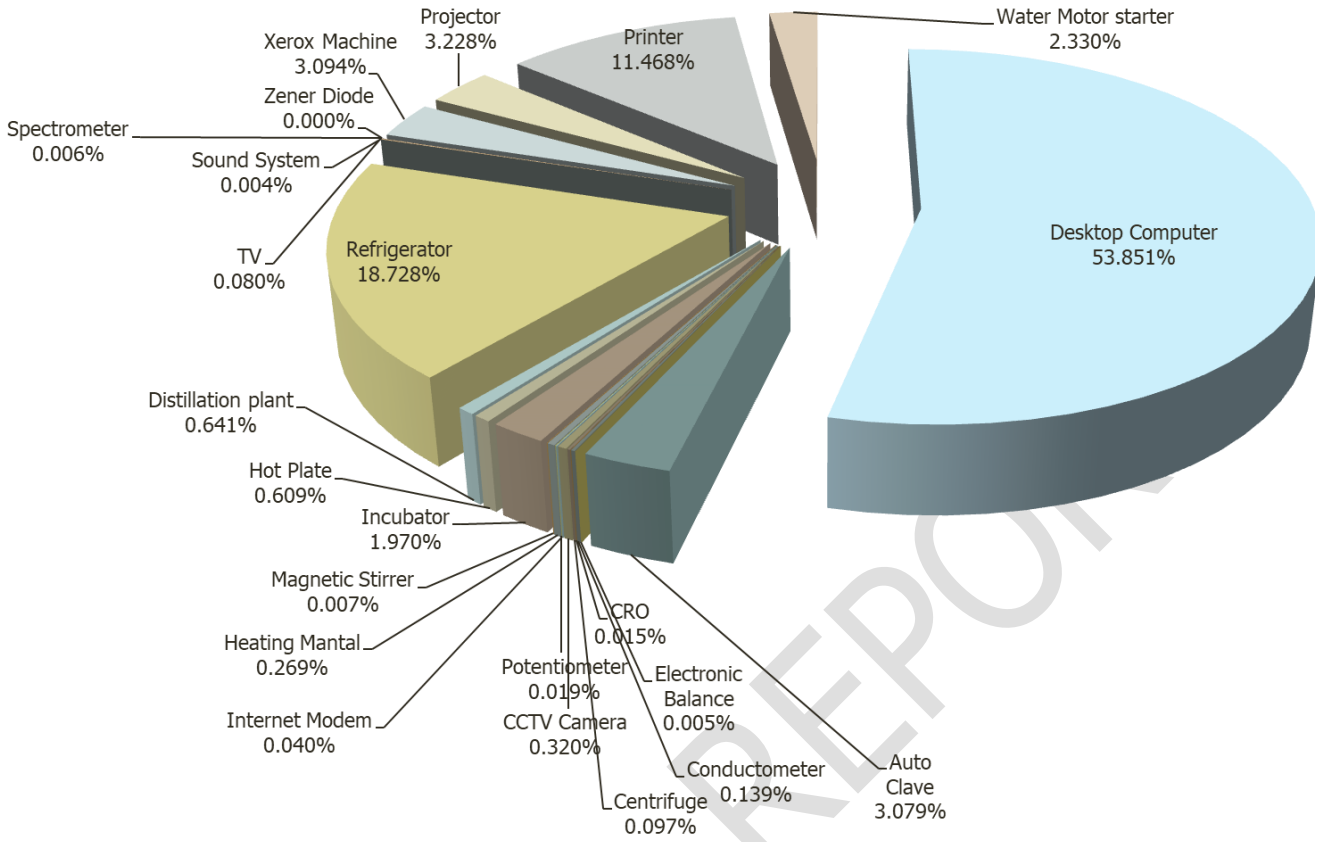

Figure 7: Summary of Energy consumed by equipment in the premises

The above summary shows that **desktop computer consumes more energy at 53.85%** while **refrigerator consumes 18.72%** and the **printer consumes 11.46%** these are maximum consumers as compared to other equipment.

Batteries and Inverter (when used for electrical consumption else it is a battery backup and does not require electricity as an equipment) are also one of the equipment but are excluded in this calculation.

4.9.2 Site investigation observations

Some of the points noticed are as follows:

1. All equipments are in working conditions and daily monitoring and check is done by the maintenance staff and admin staff in an excellent manner.
2. No defect was found in any equipment of electrical consumption.

4.10 Recommendations for a Sustainable Habitat

Over the time energy efficient appliances have been a boon not only to the energy saving parameters they adhere to but also the eco-friendly habits it helps to inculcate. The Institution such as Schools and Colleges are the best way to implement these initiatives. It creates awareness among the students at a young age. The Institutions also act as a symbol and representative of being an energy efficient premise.

Following the analysis we found are some of the suggestions which can be implemented for an energy efficient Institution. This would help in reduction of the current electrical consumption by a major percentage.

4.9.1 Electromechanical systems – Electrical and Lighting

Section 1 – Lights

Non-LED lights

The current light analysis shows that Non-LED tube lights consume anywhere between 24W, 36W and 40W when in use; similarly the CFL lights consume more than 25 to 28W when is use; these should be replaced with LED lights which consume on an average 16-20W when in use.

Our technical analysis shows that there would be a reduction of an average of **64% reduction** in energy consumption through lights specifically as a part of the electro - mechanical system if all **Non-LED lights on all floors** are replaced with an energy efficient appliance whenever the college undergoes renovation.

Section 2 – Fans

Ceiling fans

The current Fans are in proper working conditions and maintained well. The ceiling fans are in more quantity and consume at least 45W when in use. These should be replaced with energy efficient fans consuming 14W when in use. Our detailed study states that is all the **ceiling fans on all floors** if replaced with star rated appliance results in a reduction of average of **69% reduction** in energy consumption if replaced with energy efficient appliance. It will be suggested to either replace these now if college can have certain plans else the replacement can be done when fans get damaged or are not in working condition.

Section 3 – Equipment

Desktop computers to laptops

Among all equipment it suggested to replace the desktop computers with laptops as this would be energy efficient. A normal desktop computer consumes on an average 250W and it is to be connected all time when it has to be used. On the contrary a laptop consumes 40W and has a battery backup which lasts up to 4 hours.

There is **an average 84% reduction** in energy consumption if replaced with energy efficient appliance which is a laptop in all the areas of Educational and Residential areas.

This replacement is however is dependent on a variety of factors as follows.

- Some of the senior staff members may be more convenient with computers, replacement with laptop might result in a change of the working patterns and hours which may affect the productivity.
- Laptops – in case are not handled with care such as if dropped unintentionally might result in data imbalance.
- Students who are not day scholars can use laptop as per their own convenience, whereas in common areas there can a monitoring about the usage hours hence computers may be a preferable option then laptop in certain spaces.
- Similarly depending on the pandemic situation in case it might be possible due to irregular usage the device might have issues while functioning.

Thus the University should analyse the above points and then devise a strategy about the replacement, essentially when the devices get damaged or are not in working condition they can surely be replaced.

As well as once they are not in working condition the proposed strategy should be linked towards e-waste management as well.


Toll Free
1800 419 1999
powerold@mahindra.com
powerol
by Mahindra
Latitude: 19.231207
Longitude: 77.656951
Elevation: 595.57±30 m
Accuracy: 3.8 m
Azimuth: 8° (N)
Pitch: -5.6° (0.6°)
Time: 13-08-2022 17:18
Note: generators
Powered by AngleCam


Latitude: 19.220758
Longitude: 77.668466
Elevation: 529.77±18 m
Accuracy: 2100.0 m
Azimuth: 109° (E)
Pitch: -40.7° (-2.4°)
Time: 13-08-2022 17:15
Note: motor
Powered by AngleCam


Latitude: 19.214189
Longitude: 77.671825
Elevation: 529.77±18 m
Accuracy: 35.6 m
Azimuth: 95° (E)
Pitch: -160.6° (169.0°)
Time: 13-08-2022 17:13
Note: Printer
Powered by AngleCam


SHARP
Mesin Multi Fungsi Hitam Putih
Tegangan: 220-240V~ 50/60Hz
Negara Pembuat: Cina
Latitude: 19.214207
Longitude: 77.671807
Elevation: 529.83±18 m
Accuracy: 20.0 m
Azimuth: 88° (E)
Pitch: -11.1°
Time: 13-08-2022 17:10
Note: Xerox machine
Powered by AngleCam


LABLINE
Sr. No.
Volts
Size
Watts
Model
Amp.
Latitude: 19.221635
Longitude: 77.665245
Accuracy: 1800.0 m
Azimuth: 23° (NE)
Pitch: -11.5° (1.7°)
Time: 13-08-2022 17:01
Note: water bath
Powered by AngleCam


Latitude: 19.221854
Longitude: 77.668466
Elevation: 529.77±18 m
Accuracy: 1300.0 m
Azimuth: 155° (SE)
Pitch: -102.0° (97.5°)
Time: 13-08-2022 17:15
Note: motor
Powered by AngleCam


UNITED GENSETS PVT. LTD.
AURANGABAD.
powerol
by Mahindra
Latitude: 19.231201
Longitude: 77.657057
Elevation: 595.37±26 m
Accuracy: 6.6 m
Azimuth: 13° (N)
Pitch: 0.7° (-1.0°)
Time: 13-08-2022 17:17
Note: generators
Powered by AngleCam


LABLINE
Sr. No.
Volts
Size
Watts
Model
Amp.
Latitude: 19.221142
Longitude: 77.66883
Accuracy: 2100.0 m
Azimuth: 104° (E)
Pitch: -3.4° (-1.3°)
Time: 13-08-2022 16:59
Note: oven
Powered by AngleCam

5. Towards a Healthy & Sustainable Institution

5.1 Inputs by Greenvio Solutions

Based on the analysis of the study of premises in addition to the recommendations provided in each section of Ecological, Water, Waste and Energy Audit the College can adopt the following strategies towards a Healthy and Sustainable Institution practices.

a) **Cutlery in the Canteen –** The regular plastic and steel plates, spoons used in Canteen can be replaced with eco-friendly and organic leaves, paper straw, disposable plates, edible spoons and tables made out of sugarcane waste or bamboo. This will be first of its kind initiative to be adopted and practiced thus also inculcating the healthy practices in students.

b) **Additional fire safety -** Measures such as Hose reel, signages, fire-fighting tank, fire alarm and sprinkler system should be adopted.

c) **Signages –** In addition to the signages being in regular language there can be additional signages in braille language for the especially abled students.

5.2 Survey Results

An online survey was conducted to analyse the student and staff views about what changes according to you can be undertaken for Green audit improvement in College premise and activity.

Some of the suggestions by the Students and staff are listed below:

- Require Improvement in rain water harvesting. Conduct more activity based awareness programs. By planting some flower plants to be attractive that attracts the attention towards hygiene.
- To keep the classrooms dust free, maintain drinking water (normal & cool), Labs have hard smell as they have laboratory equipments so maintain some fragrance.

However, it should be noted that the College has taken up multiple initiatives and because of Pandemic the students have not practically visited the premises so many of these points are not mandatory at the moment.

6. References

1. Uniform Plumbing Code – India, 2008
2. IGBC Green Existing Buildings – Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013
3. IGBC Green Landscape Rating system, March 2013
4. BOMA Canada Waste Auditing Guide, Best Environmental Standards, BOMA BEST – Canada
5. Used only for understanding Universal design - Universal accessibility Guidelines for Pedestrian, Non-motorizes vehicle and Public Transport Infrastructure – Report guidelines by Samarthyam (National centre for Accessible Environments) – an initiative supported by Shakti Sustainable Energy Foundation.


दिगंबरराव बिंद महाविद्यालय शेकर
अभ्यास केंद्र