ENERGY AUDIT

2019-20 & 2020-21

AUDIT REPORT

Studied for

D. S. Government Degree College for Women

Bhagya Nagar – 4th line, 11th cross road, Ongole,
Prakasam District, Andhra Pradesh. -523001, India

Analysed by

Greenvio Solutions

21 March 2022

Background reference image Janko Ferlic on pexels

Disclaimer

The Audit Team has prepared this report for the **D. S. Government Degree College for Women** located at *Bhagya Nagar – 4th line, 11th cross road, Ongole, Prakasam District, Andhra Pradesh. -523001, 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 45 lakhs+ sq. ft. of Built-up area audited till date Pan India 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.

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 **D. S. Government Degree College for Women, Prakasam District, Andhra Pradesh** for assigning this important work of Environment 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 Chairperson of the entire process **Dr. D. Kalyani,** Principal, for the valuable inputs.

We are also thankful to **College's Task force the faculty members - Green Audit Coordinators** who have collected data required **D. Anantha Lakshmi,** Vice Principal; **K. Kusuma Kumari,** IQAC Coordinator; **Dr. P. Indira,** Academic Coordinator; **Ch. Teresa Rani,** Senior Assistant.

We highly appreciate the assistance of **Dr. M. Srinivasa Reddy,** Lecturer in Chemistry; **V. Jameela,** Lecturer in Zoology; **(Special mention for the excellent coordination) K. Aruna Kumari,** Lecturer in Botany 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

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1. Introduction

1.1 About the functioning of the Institution

D.S Government Degree College for Women prides itself as an institution committed to quality education with a technology edge. It is affiliated to Nagarjuna University . The institution boasts of good infrastructure and well known academicians. In this regard, our college endeavours to harness excellence with a commitment to the ethos of 'Practical Learning' since 1984. Moreover it has been providing consistent training to its students to help them evolve as competent professionals across India. Since the world has become global, digital and herbal, success requires not only the ability to perform according to the requirements of the position, but also the ability to adjust and get along as a member of a working team. In addition, students have immensely benefitted from our innovative teaching as well as training.

1.2 Statements of the Institution

Vision - To become a center of educational excellence for empowering women in a variety of ways by realizing their capabilities so that they can take their rightful place in the society.

Mission

1) To inculcate the spirit of quality in Higher Education.
2) To trigger the skills related to Education & life.
3) To enhance physical wellbeing of the students.
4) To promote social awareness & community Services.
5) To Enlighten Women empowerment.
6) To inculcate values for betterment of women.
7) To train students for academic competition.

1.3 About the Institution

The aim of the college is **"Cultivation of positive self - image and self-confidence, developing capacity for critical thinking and decision - making among the students"** and also to continuously enhance the teaching methods in order to provide students with an opportunity for their all-round development. It also strives for excellence in academics and makes an effort to induce passion for learning along with the inspiration for decisive thinking and assessment, thereby helping them to become the best professionals in their chosen careers. **The Institution is affiliated to Acharya Nagarjuna University a state university in Namburu, Guntur district, Andhra Pradesh and it offers the following courses.**

- **Graduation** – It offers the following Undergraduate courses.
  - Faculty of Humanities – B.A. in History, Economics and Political Science
  - Faculty of Commerce – B. Com in Banking and Insurance, Computers
  - Faculty of Science & Technology – B. Sc in Aquaculture technology; Cloud computing; Botany, Zoology, Chemistry (BZC); Maths, Physics, Computer Science (MPCs); Maths, Physics, Chemistry (MPC).
- **Post-Graduation** – It offers the Post-Graduation course in Telugu.

The College works towards training young women to be competent, committed and compassionate, and lead in all walks of life. Its motto is **"Upliftment of women by education for betterment of society"** and its objectives are:

- To train the students with skills.
- To provide career guidance.
- To give I.C.T edge to the reading and learning skills.
- To inculcate Value education system.
- To promote women empowerment.
- To provide job orientations.
- To reach social responsibilities for the welfare of the society.
- To give thrust to Research.

1.4 The surrounding premises around the Institution

The Premises is situated amidst the landscape serene of **Prakasam district of Andhra Pradesh State** with immense peace and calmness in the surroundings. *The college is locate very close to the Andhra Pradesh State Irrigation Development corporation, ongole and has a huge ground adjacent to its location.*

The College is surrounded by Educational Buildings, Residential and Commercial areas on the macro front from all the sides. 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.

1.5 Assessment of the College

1.5.1 Certification

The College has received ISO 9001:2015 Certification for providing educational services in August, 2021.

1.5.2 Accreditation

NAAC - The College received a CGPA of 2.10 with a B Grade in its first cycle of Accreditation in February 2014. The College is due to enter its second cycle of NAAC soon.

1.5.3 Recognitions

The college has achieved the following recognition from **University Grant Commission (UGC) under section 2 (f) & 12 (B) of the UGC Act, 1956 by University Grants Commission, New Delhi.**

2. Institution overview

2.1 Populace analysis for Academic year 2019-20

2.1.1 Students data

The student data (shared by the College) shows there were a total of **258 Girls** students in the premises.

2.1.2 Staff data

Type	Male	Female	Total
Admin Staff	01	00	**01**
Teaching Staff	06	11	**17**
Non-Teaching Staff	05	05	**10**
Total Staff Members	**11**	**16**	**28**

Table 1: Staff data of the Institution for 2019-20

The staff data shows the premises had a total of **28** Staff Members.

2.2 Populace analysis for Academic year 2020-21

2.2.1 Students data

The student data (shared by the College) shows there were a total of **335 Girls** students in the premises.

2.2.2 Staff data

Type	Male	Female	Total
Admin Staff	00	01	**01**
Teaching Staff	04	11	**15**
Non-Teaching Staff	05	04	**09**
Total Staff Members	**09**	**16**	**25**

Table 2: Staff data of the Institution for 2020-21

The staff data shows the premises had a total of **25** Staff Members.

2.3 Total College Area & College Building Spread Area

The **total site area is 6.72 Acres** and the **total Built-up area of College is 20,400 sq. ft.** for **a total of 360 footfalls.**

2.4 College Infrastructure

2.4.1 Establishment

The College was established in 1984. 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.

2.4.4 Operation and Maintenance of the premises

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

S. No.	Section	Spaces	Time	Hours/ day	Days in a year
1	Main Institutional College	Student areas and Teaching faculty	Monday to Saturday (10:00 a.m. to 05:00 p.m.)	7	280
2	General areas	Admin areas and library, Passage, staircase, toilet	Monday to Saturday (09:00 a.m. to 05:00 p.m.)	8	300

Table 3: 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 campus
- 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

- 09 March 2022 – Discussion with the College
- 10 March 2022 – Allotment and Initiation by the College
- 10 March 2022 – Induction Meeting
- 12 March 2022 – Survey of the Student and staff submitted
- 19 March 2022 – Data submitted by College
- 21 March 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

1. **Electrical (Metered) –** Light, Fans, AC, Equipments, Pumps consume approximately 571 units per month for Rs. 5.212/- per month (average).
2. **Renewable Energy –** There are 64 nos. of solar panels with a capacity of 20 kWh located on the rooftop.

4.1.2 Secondary sources

1. **Inverter –** There are 2 Inverters in the premises.
2. **UPS –** There are 6 UPS used in the premises, whenever necessary amount is spent only towards the repairs.
3. **Batteries –** There are 24 Batteries required per month in the premises.
4. **Gas cylinders –** There is 1 gas cylinder required per month and Rs. 100/- is spent towards the same on a monthly basis as only 1 cylinder is used for 10 months.

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 **no Ultra-violet lights and 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 Andhra Pradesh Southern Power Distribution Corporation Limited. The analysis of actual electrical energy consumption is summarised below. The solar panels were installed in recently post which the cost of electricity has been reduced. The details of unit consumption meter wise is as follows.

S. No.	Month	Year	Units	Amount
1	June	2019	500	4,808
2	July	2019	603	6,736
3	August	2019	1,082	11,023
4	September	2019	992	10,050
5	October	2019	590	6,036
6	November	2019	100	945
7	December	2019	256	2,000
8	January	2020	276	2,382
9	February	2020	750	7,172
10	March	2020	121	1,010
11	April	2020	498	5,000
12	May	2020	1,560	15,963
13	June	2020	1,402	13,780
14	July	2020	1,470	14,688
15	August	2020	1,479	14,882
16	September	2020	300	998
17	October	2020	390	1,250
18	November	2020	369	1,155
19	December	2020	320	1,050
20	January	2021	531	3,600
21	February	2021	528	3,591
22	March	2021	261	2,013
23	April	2021	395	3,201
24	May	2021	504	4,998

25	June	2021	109	998
26	July	2021	301	2,955
27	August	2021	295	2,946
28	September	2021	302	2,957
29	October	2021	416	3,901
30	November	2021	500	4,991
31	December	2021	492	4,483
Total			**17,692**	**1,61,562**

Table 4: Study of the electricity consumption of the meters in premise

The summary of the above study shows the average consumption varies for each month.

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

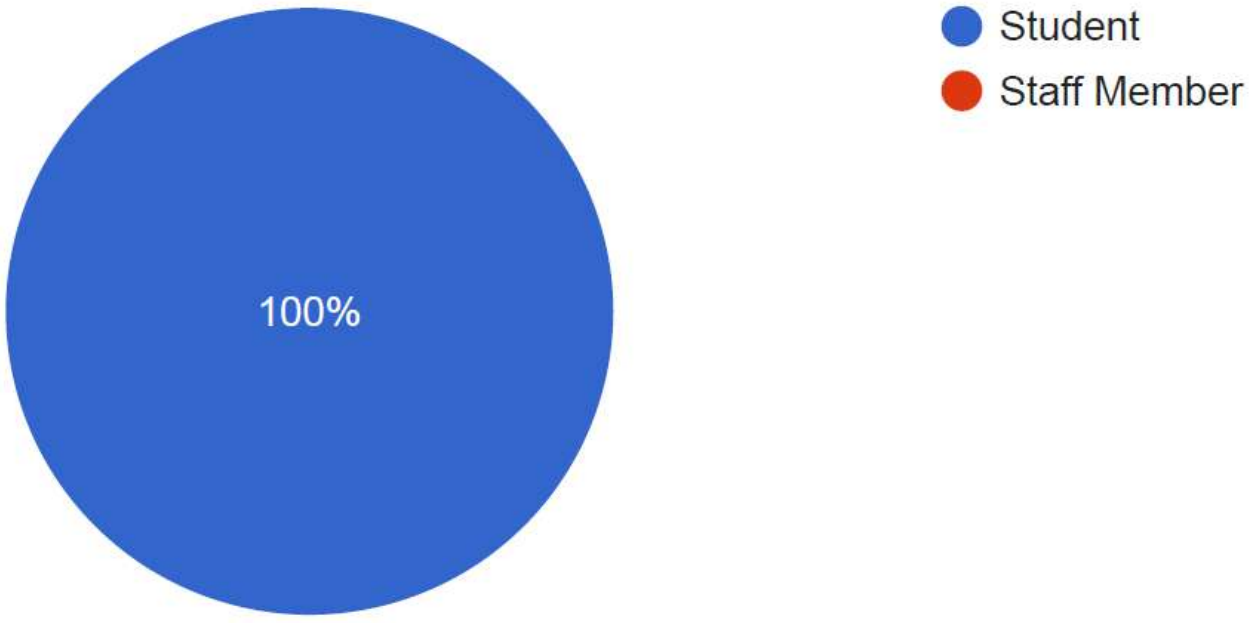

Figure 1: Participation analysis in the survey

A total of **108 responses** were received out of which 100% 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%)

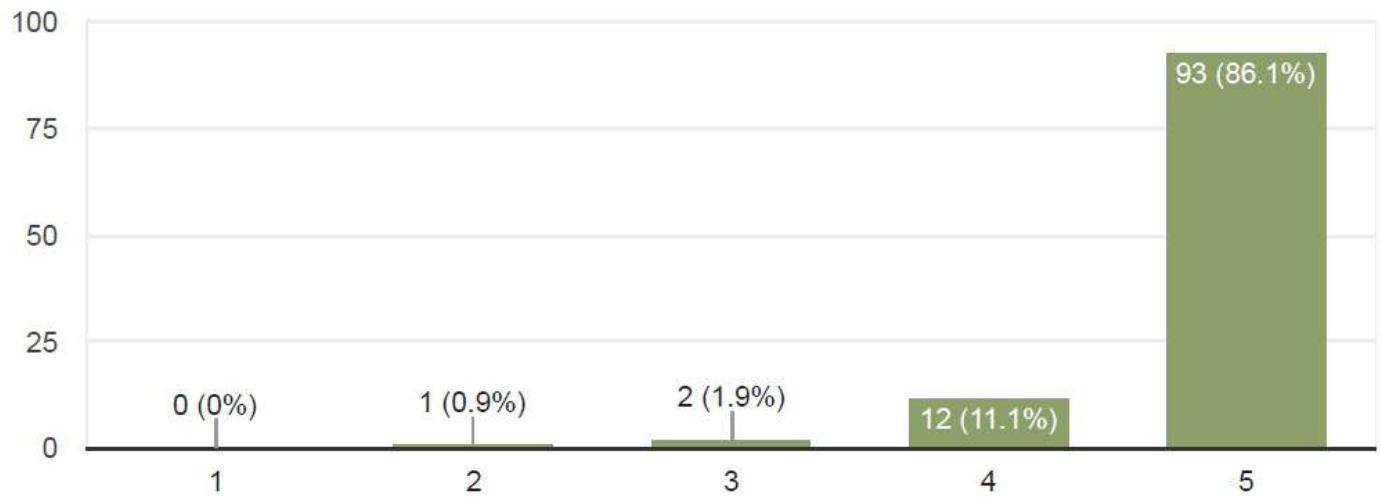

Figure 2: Energy management practices in college

The students, staff **(almost 86%) of the responses found the practices to be excellent** and **11% of the responses found practices to be good.**

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, ac, 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.

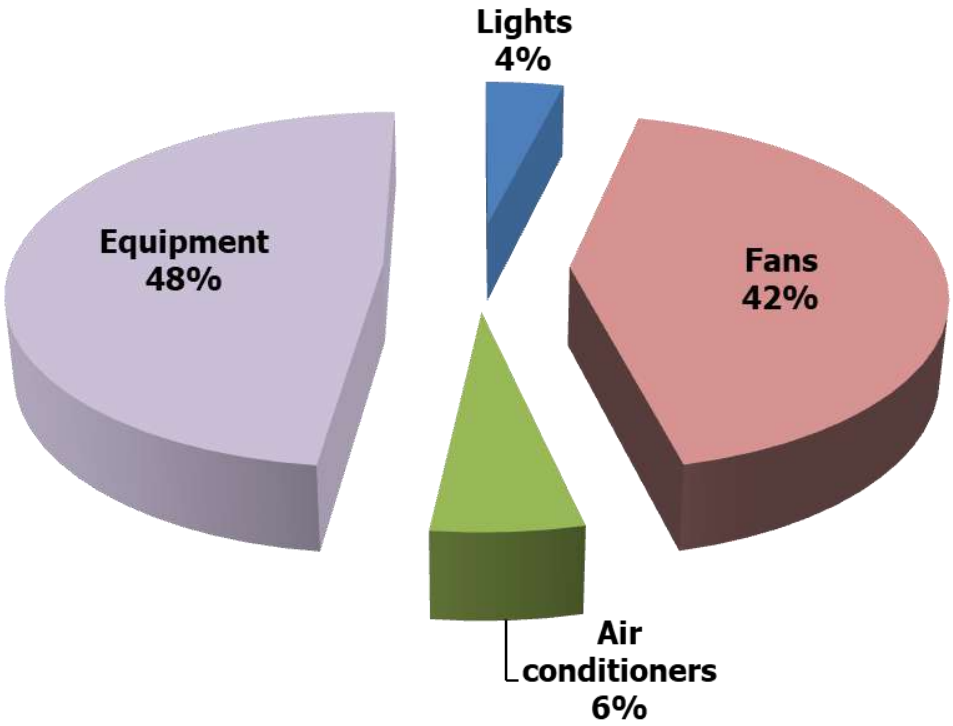

Figure 3: Summary of the calculated electrical consumption as per inventory

The above graph shows that Equipment consumes 48% followed by fans at 42% the air conditioners at 5% and the lights consume 4% of the total calculated electrical energy.

4.6 Lights

4.6.1 Types of lights

There are a total of **152 LED lights in the premises.**

4.6.2 Block-wise consumption analysis

The energy consumption of Lights is **821 kWh** of energy; the following graph shows the block wise consumption.

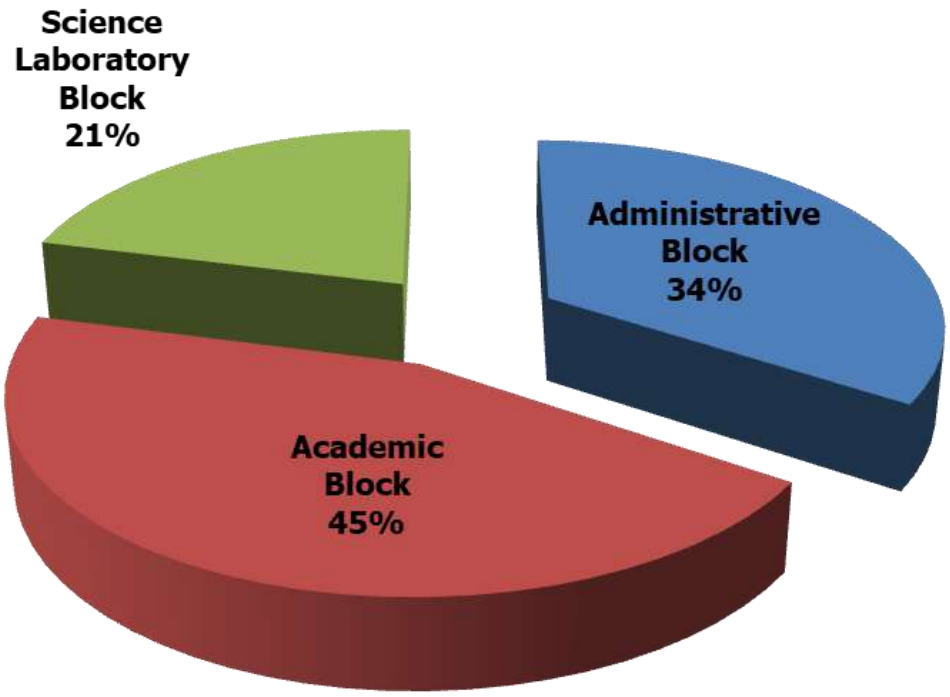

Figure 4: Energy consumed by lights block wise

The above analysis shows the lights in the **Academic block consumes 45%; Administrative block consumes 34% and Science laboratory block consumes 21% of the total power consumed by lights.**

4.6.3 Requirement of NAAC

4.6.3.1 Alternative Energy Initiative

Percentage of power requirement met by renewable energy sources – 100% of the energy produced is given back to the grid thus *70 % of the power requirement is met and utilized in the premises.*

4.6.3.2 Percentage of lighting power requirement met through LED bulbs

The premise has LED Lights contribute to 100% in terms of number and **100% of the power requirement** is met through the same. As per our study we could conclude that both of these are highest contributions among all the types of lights.

4.6.4 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

There are a total of **135 fans** in the premises. The following table shows the various types of fans in the premises.

S. No.	Type	Nos.
1	Ceiling fans	133
2	Pedestal fans	2
Total		**135**

Table 5: Summary of the types of fans in premise

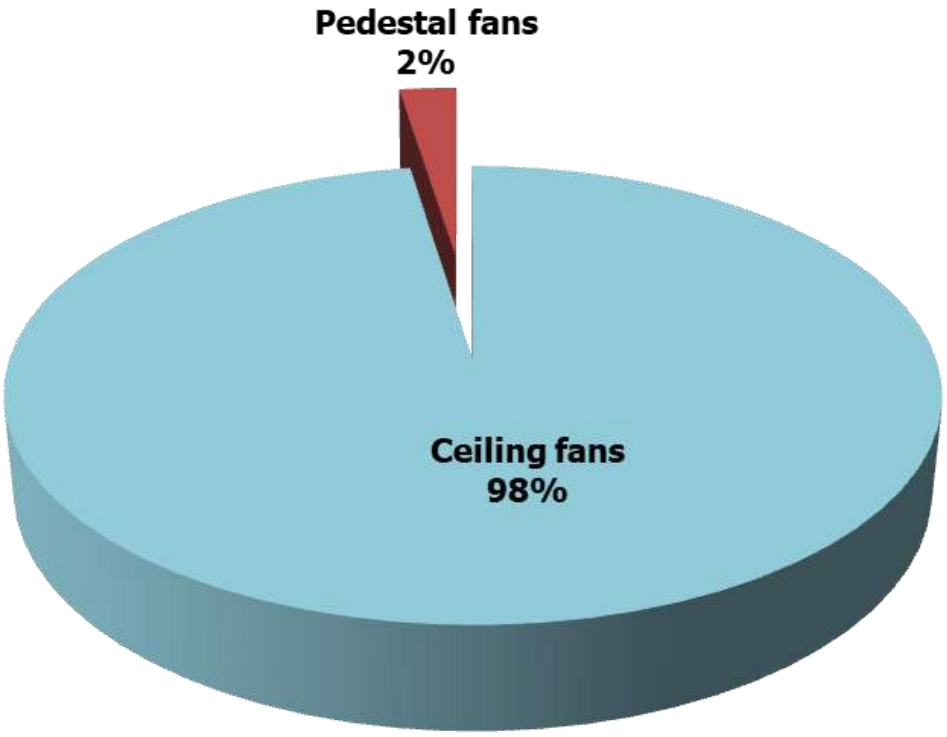

Figure 5: Energy consumed by types of fans in the premise based on the usage study

The analysis of the types of fans in premises shows **Ceiling fans consume 98%** the **Pedestal fans consume 2%**

4.7.2 Block-wise consumption analysis

The energy consumption of fans is **8,834 kWh** of energy; the following graph shows the block wise consumption.

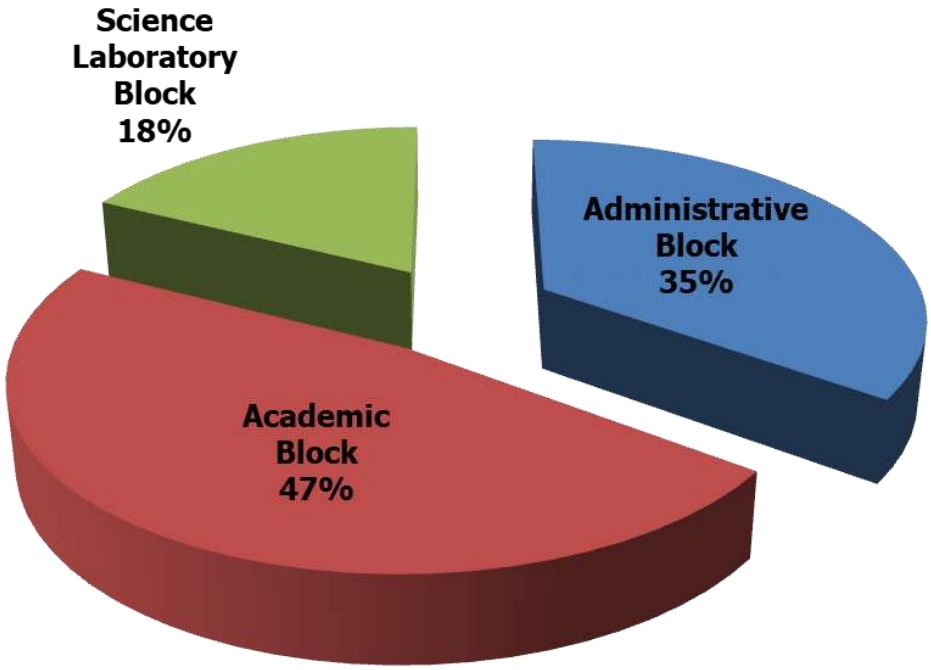

Figure 6: Energy consumed by fans block wise

The above analysis shows the fans in the **Academic block consumes 47%; Administrative block consumes 35% and Science laboratory block consumes 18% 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

There is **1 air conditioner** in the entire premises located in the **Principal office's on ground floor in the Administrative block consuming 1,156 kWh of power.**

4.8.2 Site investigation observations

Some of the points noticed are as follows:

1. Daily monitoring and check is done by the maintenance staff and admin staff in an excellent manner.
2. The Outdoor Unit is properly cleaned and maintained well.
3. The Outdoor Unit does not have any dust collection problem.

4.8.3 About the replacement of Current AC

The current air conditioners are well maintained, through there is not an immediate requirement for replacement however, whenever the college undergoes redevelopment or a new block 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 a total of **10 types of equipment totalling to 64 in number** in the premise. The various types are mentioned in the table below.

Sr. No	Equipment name	Nos
1	Scanner	1
2	Printer	4
3	Router	1
4	Projector	3
5	Digital Screen	1
6	Sodium vapour lamp	5
7	Laptops	30
8	Desktop computers	17
9	Digital Screen	1
10	Centrifuge	1
11	Motor starter	2
Total		**66**

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

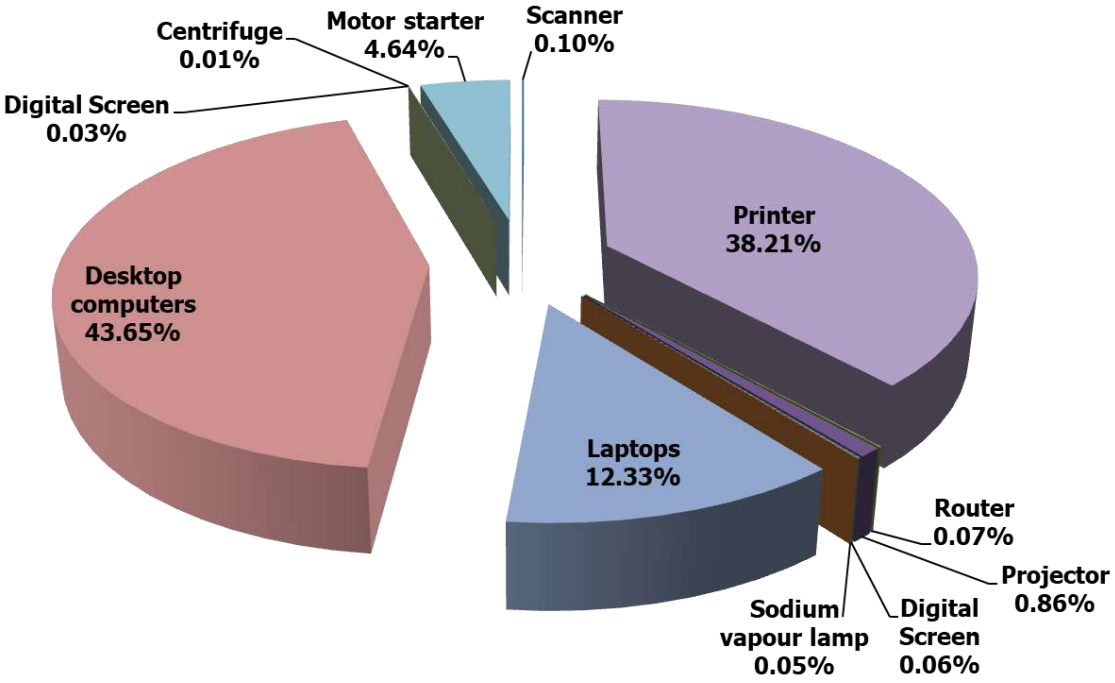

Figure 7: Summary of Energy consumed by equipment in the premises

The above summary shows that **Desktop computer consumes more energy at**

43.65% while **Printer consumes 38.21%** the **Laptops consumes 12.33%** and the **Motor starter consumes 4.64%** these are maximum consumers as compared to other equipment. UPS and Inverter (when used for electrical consumption else it is a battery backup and does not require electricity as an equipment). Similarly the equipment used in science laboratories are occasionally used hence both of these are excluded in this calculation.

4.9.2 Block-wise consumption analysis

The energy consumption of Equipment is **10,515 kWh** of energy; the following graph shows the block wise consumption.

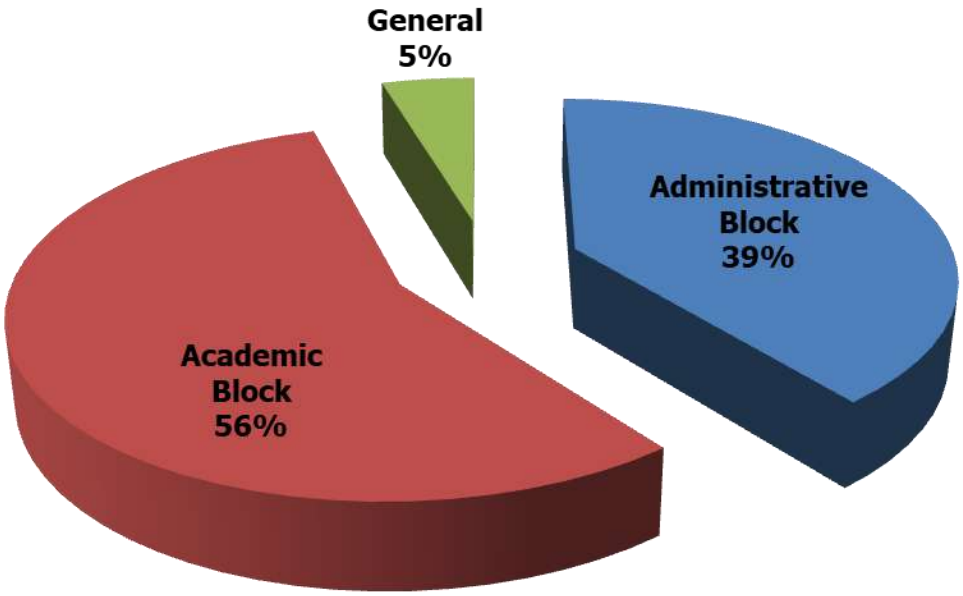

Figure 8: Energy consumed by equipment block wise

The above analysis shows the equipment in the **Academic block consumes 56%; Administrative block consumes 39% and general (Considered for the motor starter for water) consumes an approximate of 5%**

4.9.3 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.

4.10.1 Electromechanical systems – Electrical and Lighting

Section 1 – 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 60W when in use. These should be replaced with energy efficient fans consuming 32W when in use. Our detailed study states that is all the **ceiling fans in all Buildings** if replaced with star rated appliance results in a reduction of average of **47% 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 2 – 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.

4.10.2 Building management systems

The college has extreme potential to become 100% energy efficient premises. In addition to provisions in the electromechanical system some facilities can be introduced towards building management systems as well. These can be undertaken equally for educational and residential sections.

- Set the BMS time of day schedules to suit the minimum occupancy periods of the areas served and implement optimum start stop incorporating a night purge cycle, session and holiday scheduling.
- Space temperature Setback - A temperature setback is a simple strategy to help save utility cost by reducing how often your heating or cooling system operates. *(morrisseyengineering)*
- Timer control of air conditioners.


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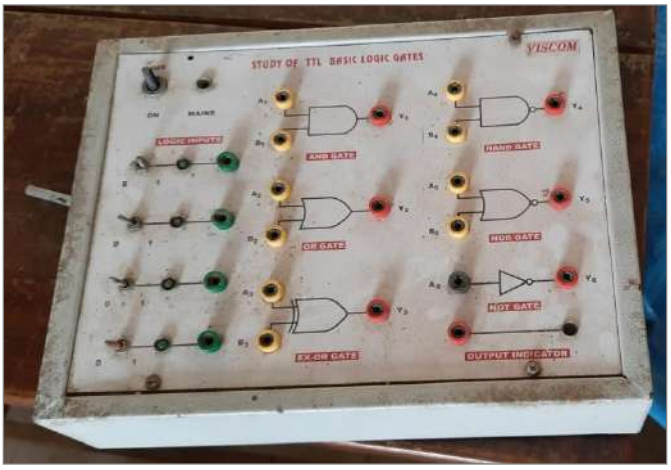
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5. Towards a Healthy & Sustainable Institution

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) **Terrace farming -** There can be provision of kitchen garden practices in a designated area of the open space this would enhance the biodiversity and be useful in training students and staff about the healthy practices and vegetables grown which would be used in Canteen. It helps in capacity building as well as the smaller steps taken have huge impacts when each student would adopt these practices in their homes or societies and grow kitchen garden, terrace garden there will be a long term benefit for the environment as a whole.

b) **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.

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

d) **Waste vio –** Stepping up a little further an initiative can be undertaken wherein College can tie up with an organisation and students can be encouraged to collect dry waste and electronic waste such as newspapers, old computers and others and hand over to organisation on a weekly or monthly basis thereby making a waste reduction approach in the community. This has benefits such as awareness, eco-friendly habits in becoming a responsible citizen.

e) **Signages –** In addition to the signages being in regular language there can be additional signages in braille language for the specially 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:

- Everyday watering to the plants
- Throwing waste materials in dust bins
- More solar panels to reduse electricity bill
- more awareness to be created among surrounding area individuals as they are iliterates
- more solar inverters should be used

However, it should be noted that the College has taken up multiple initiatives and because of Pandemic the students have not practically visited the campus 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.

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Energy Audit Certificate

is awarded for **2019-20 and 2020-21** to the Esteemed Institution

D. S. Government Degree College for Women

Bhagya Nagar – 4th line, 11th cross road, Ongole, Prakasam District

Andhra Pradesh. -523001, India

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

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