

GREEN AUDIT

2019-20 & 2020-21

AUDIT REPORT

Studied for

Government College for Women (Autonomous)

Sambasiva Pet, Guntur. Pin- 522001,
Andhra Pradesh, India

Analysed by



19 March 2022

Disclaimer

The Audit Team has prepared this report for the **Government College for Women (Autonomous)** located at Sambasiva Pet, Guntur. Pin- 522001, Andhra Pradesh, 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.

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 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 **Government College for Women (Autonomous), Guntur, 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. V. R. Jyotsna Kumari**, 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 **Dr. A. V. Kavitha**, Vice Principal, IQAC coordinator; **Dr. K. Padmaja**, Academic Coordinator; **Dr. G. Padmini Devi**, Lecturer in Home Science; Home Science Department (**Special mention for the excellent coordination**) and P. Nirmala Kumari, Lecturer in Mathematics.

We highly appreciate the assistance of **G. Gopala Krishna**, Administrative Officer 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

Government College for Women (A), Guntur established in 1942, in 10 acres, is fully equipped with laboratories and ICT enabled classrooms. It has completed 76 years of committed service enabling the rural women students in terms of education and employability.

The staff of the institution are qualified and selected through College Service Commission and work with commitment, dedication, and research orientation. A great number of the staff of this college are Ph.D holders and are acting as Resource Persons, Content Generators, Authors and Research Supervisors.

From 2011 to 2017, seven MRPs were completed and six more projects are going on. The teachers are highly committed, follow student-centered methods and most of them are honoured as the best teachers by the State Government and other agencies.

The institution is conscious of the eco system and from time to time enough focus is laid on campus cleanliness and beautification through measures like avoiding plastic on the campus. Green cover is maintained and rain - water harvesting is taken up to preserve the water tables during summer.

The staff and the students along with the NSS and NCC units of the college adopt villages and spread the green consciousness among villages that surround the institution. The staff and the students of the college campaigned against Open Defecation System in the surrounding villages as part of the Swatch Bharat programme.

The college is an autonomous institution, a District Resource Centre, it has a separate Placement Cell (Jawahar Knowledge Centre), which trains the students in Communication Skills and Soft Skills, the institution has MOUs with employing agencies. Fibergrid, a digital networking platform is sanctioned to this college to connect it digitally to other government colleges to provide extended academic support to other institutions using the expertise of the staff of this institution.

The core strengths of the college lie in the **transparent administrative measures, good teaching-learning and evaluative practices, professional ethics, graduation outcomes and outreach activities.**

1.2 Statements of the Institution

Vision - To empower women students of first generation families from marginalised sections with 21st century skills to grow as global citizens with values for a holistic personality.

Mission

- 1) Imparting knowledge, skills and values through need based and flexible curriculum through student - centered teaching methods
- 2) Facilitating research temper, critical and creative thinking skills among teachers and learners through digital resources
- 3) Providing an objective and participatory atmosphere and facilities for developing self-confidence, self-esteem, employability, entrepreneur skills and overall development
- 4) Integrating a serving spirit, integrity, accountability, dedication and commitment among the teaching and non-teaching staff and the students through transparent and participative administration.
- 5) Creating an eco-friendly ambience through green practices, and offering value based education through community help and extension activities.

1.3 About the Institution

The aim of the college is 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 an Autonomous Organization and it offers the following courses.**

- **Graduation** – It offers the following Undergraduate courses.
 - Faculty of Humanities - H.E.P. (History, Economics, Political Science), H.ST.Soc.(History, Spl. Telugu, Sociology), E.P.CE.(Economics, Political Science, Communicative English), H.SE.TTM.(History, Spl .English, Tourism & Travel Management), E.P.Psy.(Economics, Political Science, Psychology), H.P.FE(History, Political Science, Financial Economics)

- Faculty of Commerce - B.Com.(General), B.Com.(Computer Applications) , B.Com. B.F.I.(Banking, Financial Services, Insurance and Exim trade), B.Com. (Accounting and Taxation)
- Faculty of Science & Technology - M.P.C.(Maths, Physics, Chemistry), M.P.Cs.(Maths, Physics, Computer Science), M.St.Cs.(Maths, Statistics, Computer Science), M.P.E(Maths, Physics, Electronics), M.E.Cs.(Maths, Electronics, Computer Science), M.Cs.Mm.(Maths, Computer Science, Multimedia), M.Cs.Cc.(Maths, Computer Science, Cloud Computing), CS.St.DS(Computer Science, Statistics, Data Science), Chemistry (Honours), B.Z.C.(Botany, Zoology, Chemistry), Mb.B.C.(Micro-Biology, Botany, Chemistry) , Mb.Z.C.(Micro-Biology, Zoology, Chemistry), B.Bc.C.(Botany, Bio-Chemistry, Chemistry), Z.Bc.C.(Zoology, Bio-Chemistry, Chemistry), B.Bt.C.(Botany, Bio-Technology, Chemistry), Bt.Bc.C.(Bio-Technology, Bio-Chemistry, Chemistry), HS.(Home Science (Clinical Nutrition and Dietetics)), B.Z.C.(Botany, Zoology, Chemistry), C.Z.At.(Chemistry, Zoology, Aquaculture Technology), Bc.Mb.Ft.(Bio-Chemistry, Micro-Biology, Food Technology)
- UGC Vocational Degree Programmes (B. Voc) - B.Voc. Multimedia and Animation, B.Voc. Software Development
- **Post-Graduation** – It offers the following Post Graduation courses.
 - Faculty of Humanities - Masters of Arts (M.A.) in Telugu, Economics and English
 - Faculty of Science & Technology – Masters of Science (M. Sc) in Chemistry and Zoology

The College works towards training young 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 **Guntur district of Andhra Pradesh State** with immense peace and calmness in the surroundings. The College is surrounded by Educational Buildings on the North side, 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 institute has received the following Certifications

- ISO – The College has received ISO 9001:2015 Certification for providing educational services in August, 2021.
- NIRF – The College applies every year for the National Institutional Ranking Framework (NIRF).
- AISHE – The College’s code is C-32670

1.5.2 Accreditation

NAAC – The College has completed 3 cycles of NAAC and it received a CGPA of 2.92 with a B++ Grade in its third cycle of Accreditation. The College is due to enter its fourth cycle of NAAC soon.

1.5.3 Recognitions

The college has achieved the following recognitions:

- University Grant Commission (UGC) under section 2 (f) & 12 (B) of the UGC Act, 1956 by University Grants Commission, New Delhi.
- The college has been granted the **Autonomous status by UGC**

1.6 Achievements of the College

The College has a tremendous track record of excellence in Built form and educational services provided and it recognized as the “**College with Potential for Excellence (CPE)**” by UGC for a period of five years in 2016

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 **2,097 Girls** students in the premises.

2.1.2 Staff data

Type	Male	Female	Total
Admin Staff	07	02	09
Teaching Staff	23	60	83
Non-Teaching Staff	17	21	38
Total Staff Members	47	83	130

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

The staff data shows the premises had a total of **130** 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 **2,414 Girls** students in the premises.

2.2.2 Staff data

Type	Male	Female	Total
Admin Staff	7	2	9
Teaching Staff	27	64	91
Non-Teaching Staff	13	21	33
Total Staff Members	47	87	133

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

The staff data shows the premises had a total of **133** Staff Members.

2.3 Total College Area & College Building Spread Area

The **total site area is 10.8 Acres** and the **total Built-up area of College is 54,467 sq. ft.** for a **total of 2,547 footfalls.**

2.4 College Infrastructure

2.4.1 Establishment

The College was established in 1942. 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

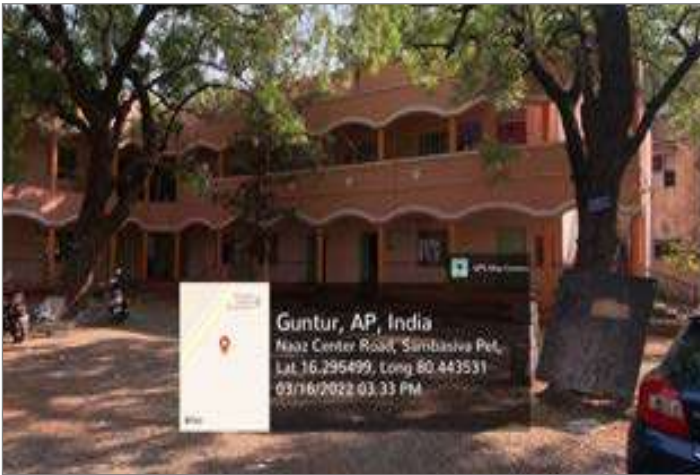
The interview session with the staff regarding the operation and working hours is summarized in the table. The Institutions are open Monday to Saturday for full day. Sunday is an off for all. Below mentioned in the table are the average working hours. The detail wise timing for each is mentioned below.

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

Table 3: Schedule of the timings of the premises

On-site investigation and physical verification

The Beautiful and Eminent Institution Building and 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

- 08 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
- 15 March 2022 – Data submitted by College
- 19 March 2022 – Submission of the Report

Green practices

Background reference image Free photos on pixabay

4. Green Practices Audit

The increasing global warming and climate change have made us realise that apart from the enormous strategies the individual small efforts need to be taken by individuals and Educational Institutes as the younger generations are the future of the world and once they are taught about these practices only then can we assume a better future.

4.1 Green practices

We observed the following points during the Site investigation and data verification of the premises; these are common for all the Buildings in the premises.

- **Architecturally planned and designed landscaped garden spaces; Waste management; Wide walkways; Sports facilities & inclusion of Green Zone**
- There is **availability of open space in the premise in addition to the provision of the multiple varieties of flora.**
- **Car-pooling, cycling to college practice are observed by the staff and students.**
- There is **vermicomposting process carried out for decomposition of organic matter of plants and it is used as an organic fertilizer and increase ecology.**
- The NSS Team, College authorities **jointly conduct initiatives for upgrading of the premises from environmental view.**
- Fresh environment is maintained and upgraded by the presence plants. **These vegetation benefit the users by providing shade.**
- **Lectures/workshops conducted on green practices and green infrastructure.**
- **Signages on the plants mentioning scientific names** - The practice of having the names of each plant and tree provides awareness among the staff and students.

4.2 Community Development

The various community development programs conducted include Tree Plantation, Life Learning, Employability Skill program introduced for the youth, Blood Donation Camp, Food Kit Distribution Program to the neighbourhood community, Relief fund programs.

A lot of efforts are involved right from planning to execution. The main motive behind these is social welfare. This kind of a tough process is highly admirable. We respect and congratulate the Institute for the same.

4.3 Eco-friendly initiatives undertaken

The Institution has undertaken the following initiatives through **excellent efforts** towards save environment measures before pandemic. The NSS Department conducts various activities like tree plantation, nature cleanliness, visits to nearby flora and fauna, rural development initiatives.

4.3.1 Environment initiatives undertaken by the College

S. No.	Name of the activity	Date
1	National Pollution control day	2.12.2021
2	The Future we Choose-Climate Change	20.11.2021
2	Awareness programme on importance of water and methods to analyse its purity	22.3.21
3	World Earth day	22.4.2021
4	Ozone Day	16.9.2021
5	World Animal Day	4.10.2020
6	Guest lecture on Biodiversity	14.4.2021
7	Energy conservation week	14.12.2020 to 20.12.2020
8	Tree Plantation	21.12.2020
9	Transgenic plants exhibition	20.12.21
10	National Pollution control day	2.12.2021

Table 4: Details of the environment related activities

It is very much evident that the College takes full efforts to spread awareness and provide outreach for sections of events such as Gender Equality, Health, Eco-efficiency, National significance. However, due to lockdown more social events could not take place.

4.3.2 General activities Conducted by NSS and NCC unit

There are National Service Scheme units in the College. The N.S.S Programme Officers of the College have been working as a team with dedication for the following activities.

- Cleaning campaign in the society.
- Afforestation through tree plantation.
- Creating awareness of such issues as social problems, education and cleanliness.
- Awareness Rallies about environment, cleanliness
- Organization of health camps, Street plays.
- Fund raising for the Armed forces.

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

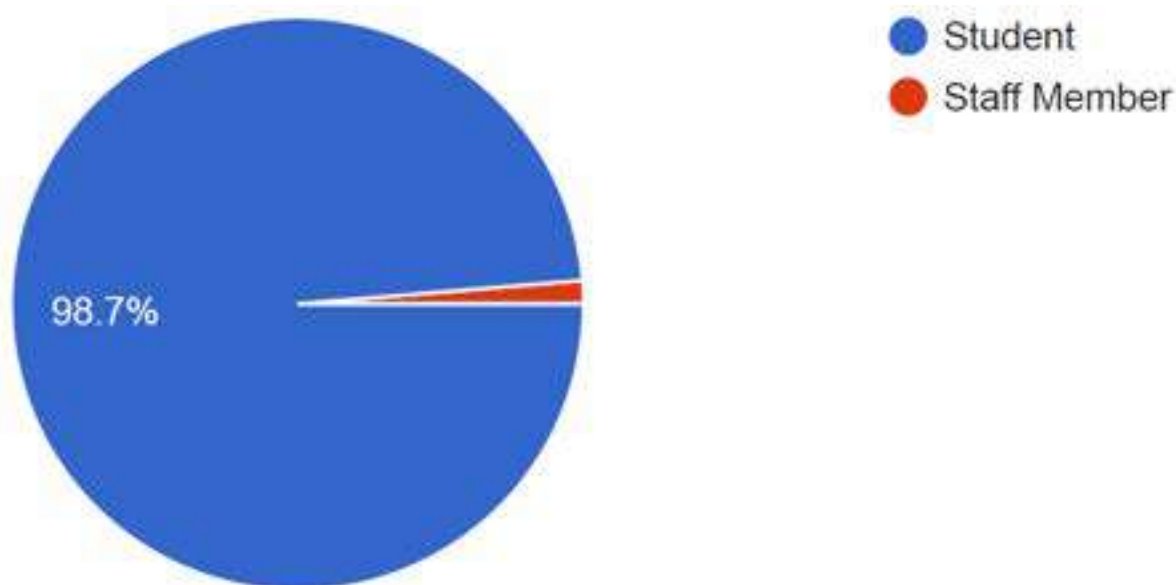


Figure 1: Participation analysis in the survey

A total of **153 responses** were received out of which 99% were students.

Note about the review-rating survey

The Participants were asked to review (Though an online mode) 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%)

4.4.2 Rate the Green awareness practices in College

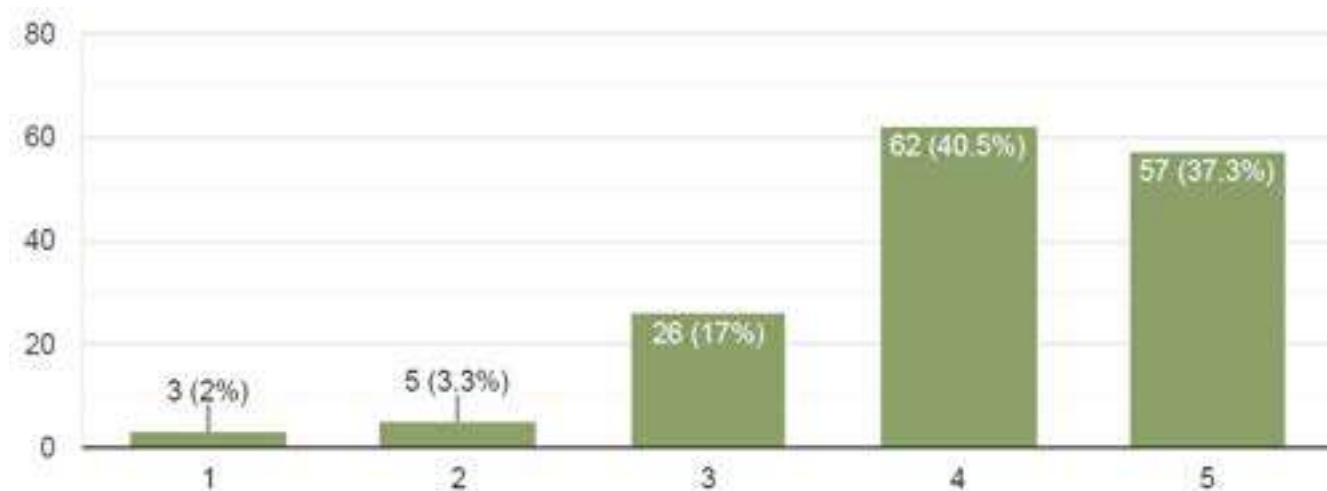


Figure 2: Green awareness practices in College

There were mixed responses received the highest was for **rating 4 (Very good) at 41%** followed by **37% for rating 5 (Excellent)**.

4.4.3 Does your College conduct environment awareness programs/ webinars/ plantations/ cleanliness or similar programs?

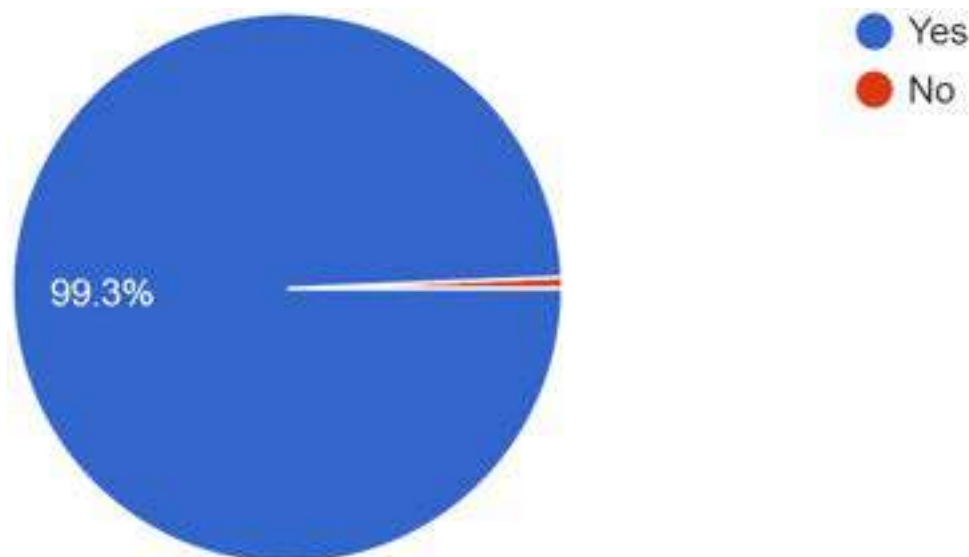


Figure 3: Confirmation of the environment awareness programs/ webinars/ plantations/ cleanliness or similar programs conducted by the College

The students, staff **99%** of responses confirmed activities are conducted which is very excellent.

4.4.4 Do you participate in such events?

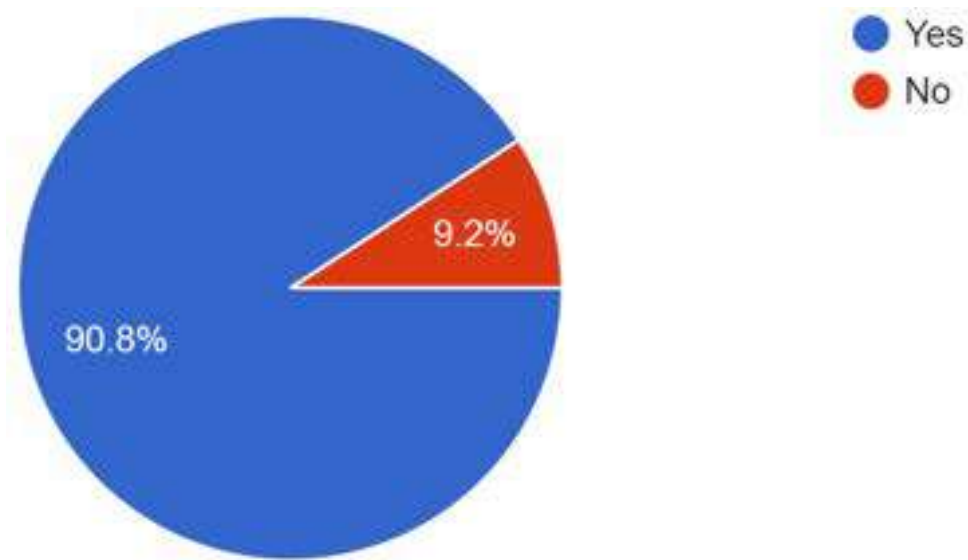


Figure 4: Participation in the environment awareness programs/ webinars/ plantations/ cleanliness or similar programs conducted by the College

The students, staff **almost 91%** of the responses confirmed their participation, **this is excellent and the college should continue its efforts.**

4.4.5 If yes, what has been your experience about the program?

We have listed some of the key responses below.

- We cleared so much of waste in our college
- Very good
- **Nice, good experience**
- **Tree plantation done by NSS**
- It is very useful to us
- We cleared all the garbage in our college and we are maintaining the neatness at everywhere.
- Excellent
- It's very useful and gives some knowledge about that
- Our college is well known for all of these activities. I love my college atmosphere with green gardens, it's super

4.5 Recommendations for a Sustainable Habitat by Greenvio Solutions

a) Plant as a gift

As a kind gesture the guests visiting the premise can be asked to plant a small plant in the premise itself and they can be even given plants/ bouquet from the flowers of the plants in the premise as a gift.

b) Environmental awareness

There can be various artworks on compound wall giving message of saving environment through the joint efforts of the students and staff thereby making the student socially and environmentally responsible citizen.

c) Tree adoption scheme

The college can adopt One Faculty – One tree adoption scheme which is one of its kind practice, this can be very beneficial especially during the summer season.

d) Signages on the plants mentioning scientific names

The practice of having the names of each plant and tree will provide awareness among the staff and students.

Waste Audit

Background reference image Polina Tankilevitch on pexels

5. Waste Audit

Waste is an inevitable part of our lives. Over the years as the awareness about waste management techniques has given a rise to rethink how the waste can be avoided from being sent to the landfills. The audit provides an approximation of the types of waste generated, location of waste collections, disposal techniques used, waste segregation methodologies adopted, waste management strategies that are and implemented in addition to the newer ways the can be adopted aiming to make the premise clean and sustainable. Here sustainable refers to a broader aspect to analyse whether the current techniques are having positive or negative effect on the stakeholders of the premises.

5.1 Waste produced

5.1.1 Types and disposal of waste in Premises

The types of waste collected in the premises are as follows, these are separated before processing.

S. No.	Type of waste	Source and quantity	Current Disposal method	Can be treated/ recycled?	Methodology
1	Solid waste	Toilets–Biodegradable waste of 15-20 kg per week	Led in the storm water drains	Yes	TREATED - Small biogas plant can be proposed in open space
2	Paper waste	Newspaper and other paper	Sold to vendor	Yes	CONTINUE - with the current practice
3	E-waste	Computers - Non-biodegradable waste as per the annual year usage	Given to vendor	Yes	CONTINUE - with the current practice
4	Dry waste in form of leaves	Open space & plantations, papers - Non biodegradable waste of 8-10 kg per week	Vermicomposting	Yes	CONTINUE - with the current practice
5	Liquid waste	Toilets, washbasins – Around 100 – 120 litres per week during general times and 50 litres at present	Led to the storm water drain and garden	Yes	TREATED - Waste water treatment plant a well as continue with current practice of reuse in garden
6	Organic regular waste	Dust, dirt usually dry waste from Canteen and all sources – approx. 3 to 5 kg	Vermicomposting	Yes	CONTINUE - with the current practice

Table 5: Summary of the types of waste produced in the premises

5.1.2 Bins summary

There are 95 Dustbins in the premises with volume of 7 litres (small), medium (15 litres) and 60 litres (Big) and more than 60 litres (large). The analysis of dustbins is presented below.

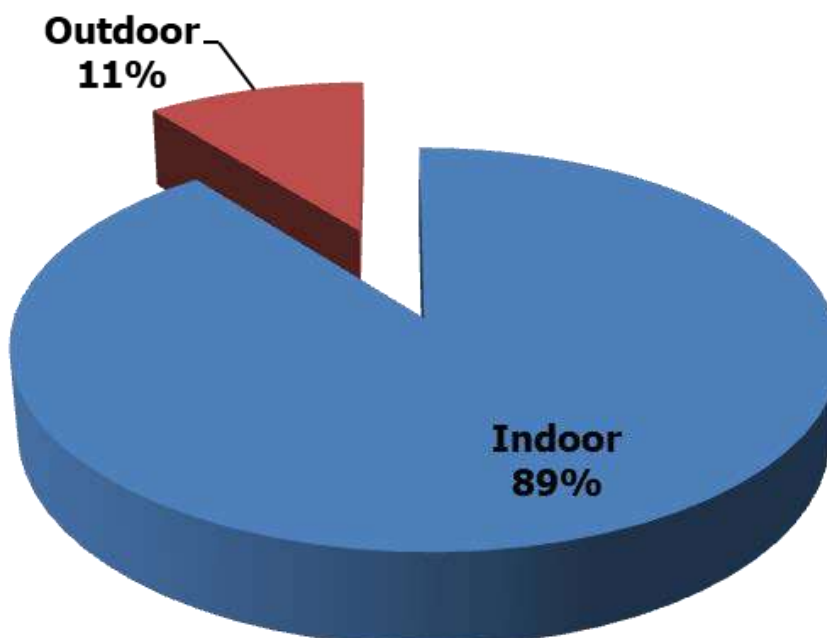


Figure 5: Analysis of dustbins location wise in the premises

The above analysis shows **89% are present in the indoors & 11% in the outdoors.**

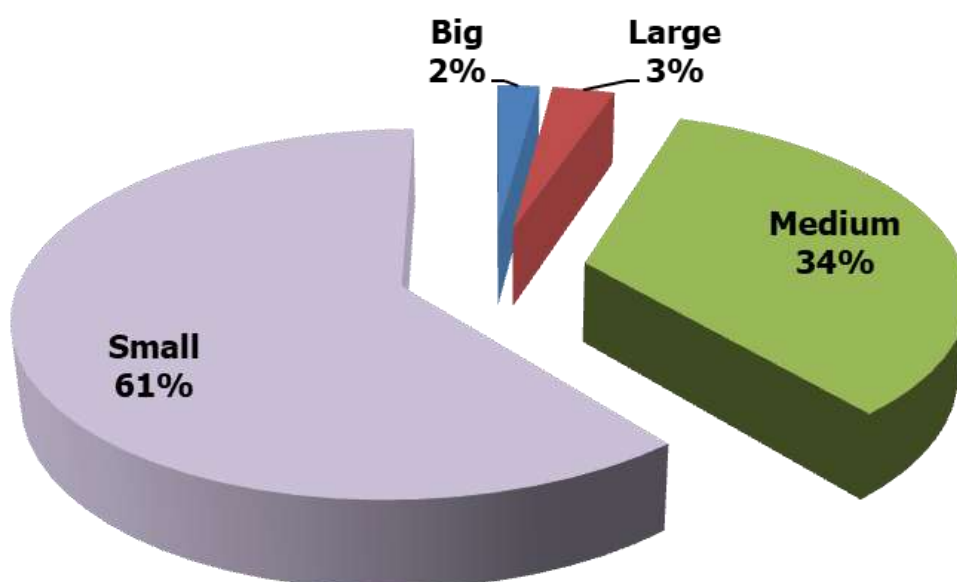


Figure 6: Analysis of dustbins size wise in the premises

The above analysis shows **61% are small sized bins, 34% are medium sized, 3% are large sized and 2% are big sized.**

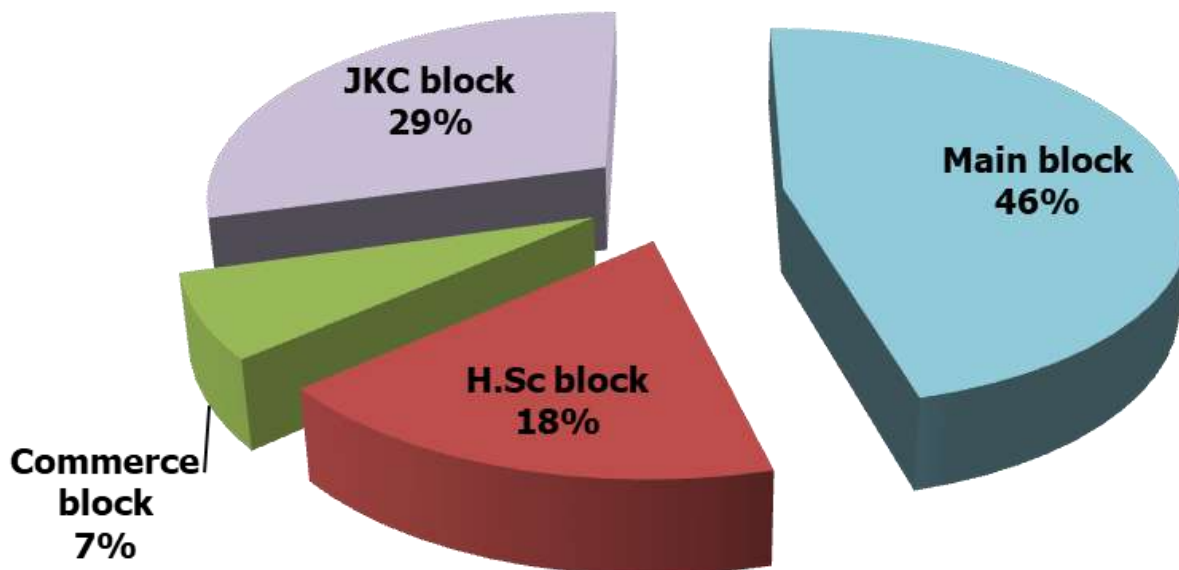


Figure 7: Analysis of dustbins location (Indoors) wise in the premises

The above analysis shows **46% bins are present inside the Main bloc, 29% in the JKC Block, 18% in the H.Sc block and 7% in the commerce block.**

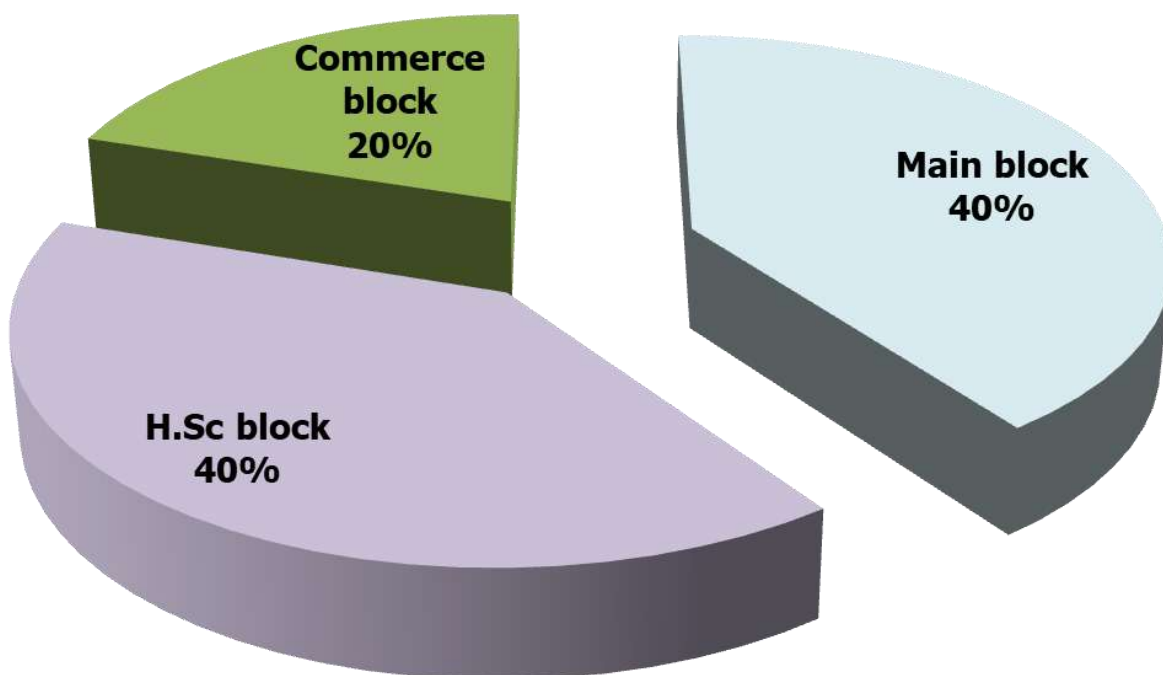


Figure 8: Analysis of dustbins floor wise in the premises

The above analysis shows **40% each are present outside the Main and H.Sc block; 20% are present outside the commerce block.**

5.2 Waste handling

Quantification wise as per Interview and survey it was found the following type of waste is Solid, Liquid, Hazardous Waste, Dry leaves, E-Waste, Canteen waste, Unused Equipment and Others (Sanitary Napkins) waste is collected. The waste produced on premises is segregated. It is collected on a weekly basis. The waste is handed over to the local municipality van.

5.3 Waste management

The College reuses the papers. Ample measures are taken to maintain hygiene. No smell problem or health related issues due to the waste are there. There are adequate numbers of bins present in all parts of building. The waste does not pollute the ground or surface water. There is no problem of air pollution from waste as informed. The wastes from toilets are discharged to main drains through underground covered channels (Safety Tanks) thus avoiding any incident. There is provision for Sanitary Napkin Disposal Machine in the premises for proper & hygienic disposal of sanitary napkins.

The information shared by the college stated that there is Vermicomposting process carried out in the premises. The zoology department of college is maintaining vermicomposting unit and it is utilized for the botanical garden. Further, Vermicompost is sold on price to the lecturers.

5.4 Survey Results

Note about the review-rating survey

The Participants were asked to review (Though an online mode) 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%)

Rating for the views regarding the Waste management practices adopted in College, following is the result received.

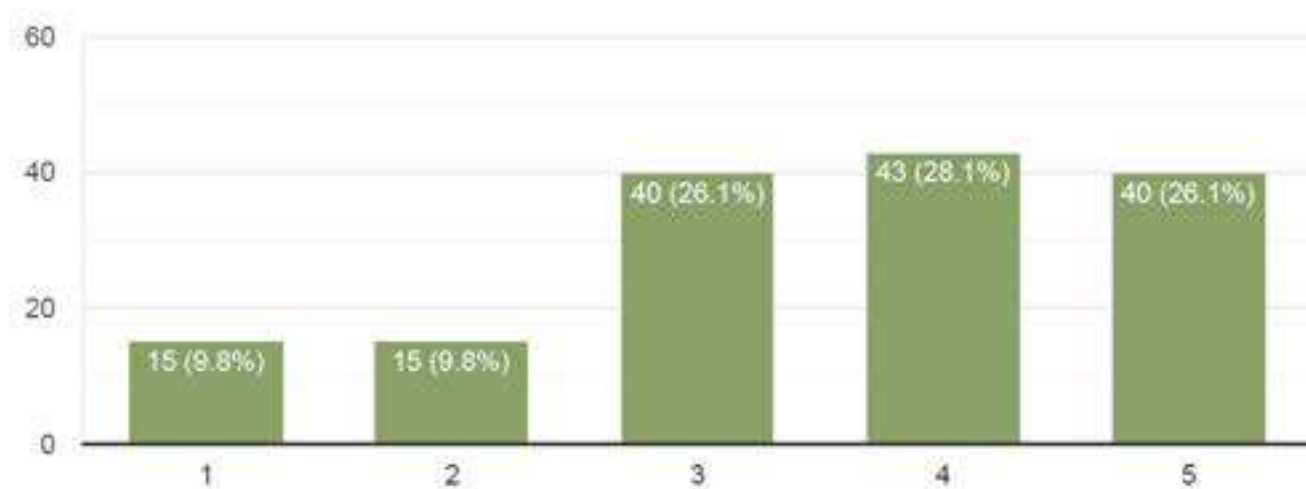


Figure 9: Waste management practices in College

There were mixed responses received the equal also the highest was for **rating 4 (Very good) for 28%** and **rating 5 (Excellent) at 26%**

5.5 Recommendations for a Sustainable Habitat

The following practice can be adopted for further up gradation.

a) Zero Waste practice adoption

The College can undertake a zero organic waste protocol. The following practices can be adopted as part of the same.

- The food waste generated by the students and staffs are taken by them to their own home, so that, minimum waste is generated inside the premises.
- The organic waste generated in the canteen is used as feed for a biogas plant and the biogas is used as fuel in College canteen.
- Vegetable waste and other leaf litters can be used to fed in the vermi-compost pit and the resulting vermin-cast is used as manure in the garden.
- The chemicals from the laboratories be disposed in a sealed tank along with water, so that the chemicals undergo neutralization with the water.

As part of the above there will be a requirement for a Biogas plant, vermin-compost pit, awareness signages, sealed tank for waste water from chemical laboratory.

b) Twin Dual Litter Dustbin Bins

There should be more number of dual litter dustbins at various locations in areas such as Canteen, open spaces. This would inculcate the awareness of waste segregation among students.

c) Signages

Message about avoiding wastage should be placed at appropriate locations.

d) Dustbins at every 100m

There should be dustbin at every 50-100 in the open spaces

On-site investigation and physical verification
Waste management practices and the clean premises



Water Audit



Background reference image Vlad Chetan on pexels

6. Water Audit

Water is one of the basic needs. Pure drinking water is a resource which needs to be preserved efficiently. Water audit helps to identify the sources of water consumption, the water requirement by the campus met by these sources. The points and effective usage of without any wastage. Understanding the techniques which are best suited to the site to increase water conservation in terms of awareness and practice.

6.1 Water availability and consumption

6.1.1 Sources of Primary water supply

The main source of water is through Bore well. The College requires water from the Local Municipality. The total water consumption through the tanks on site, these are available in a quantity of 8 tanks at multiple locations. The capacity of each is as follows:

S. No.	Type	Nos.	Capacity in litres
1	Home science	1	20,000
2	Home science	1	20,000
3	Chemistry	1	20,000
4	Chemistry	1	20,000
5	Commerce	1	20,000
6	Commerce	1	20,000
7	JKC	1	20,000
8	Botany	1	5,000
Total		8	1,45,000 litres

Table 6: Tanks and well in the premise

6.1.2 Sources of Secondary water supply

Bore well and wells – There is 1 Bore well and 2 wells available on the site which are used as underground water facility with daily water being pumped for using submersible pumps. On a daily basis water is pumped from per well for usage depending on the need.

Rain water harvesting – The colleges have rain water harvesting facility at all corners of building. The total rain water percolates to the ground and not in any tanks. In the College premise normal water storage tanks and pump set are available.

6.2 Water requirement

The main areas of water requirement and type of usage is as follows

- **Drinking water** – Consumption of around 1,000 litres of water through RO water plant available in the premise, the taps and water cooler.
- **Toilet blocks**– General usage by occupants in toilets, urinals, bathrooms, wash basins using approx. 500 litres of water daily
- **Cleaning of the premises** – The entire Institution is very well maintained with respect to hygiene and cleaning is one of the major uses of water requirement. The toilet areas are cleaned twice on a daily basis.
- **Garden and surrounding open space** – Cleaning, watering the plants requires approximately more than good amount of water, keeping in mind the scale of the open spaces there is supply system connected directly and the plants, trees are hardly watered regularly. Though, they are watered on alternate days in winter season and about 2-3 times a day in summer season on a regular climate day it is watered 3 days a week and in rainy season it is dependent on the monsoon showers. The regular tap and a pipe system is practiced at present.

6.3 Areas of water usage

Based on the inventory done and data shared by the staff it was found that the premise has the following facilities:

- Urinals – 24 Nos.
- Toilets – 37 Nos.
- Wash basins – 78 Nos.
- Taps (Indoors) – 101 Nos.
- Taps (Outdoors) – 14 Nos.

As per the data shared by the College and on site observation, it was noted that there is no water wastage of water in the form of Cleanliness of toilets.

6.4 Site investigation about water management.

The College has an excellent management system which is very appreciable. We have observed the following points.

- There is **no water leakage in the entire premise**; the pipes are well maintained with adequate hygiene.
- **The premise has an efficient water management in terms of operations and maintenance.**
- The toilets are kept very tidy and are cleaned every day.
- The **waste water does not mix with ground water and gets directed to storm water drains.**
- **The College has natural rainwater harvesting system which is very useful.**
- There are sufficient number of taps in the premise.

6.5 Survey Results

Note about the review-rating survey

The Participants were asked to review (Though an online mode) 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%)

Rating for the views regarding the Water management practices adopted in College, following is the result received.

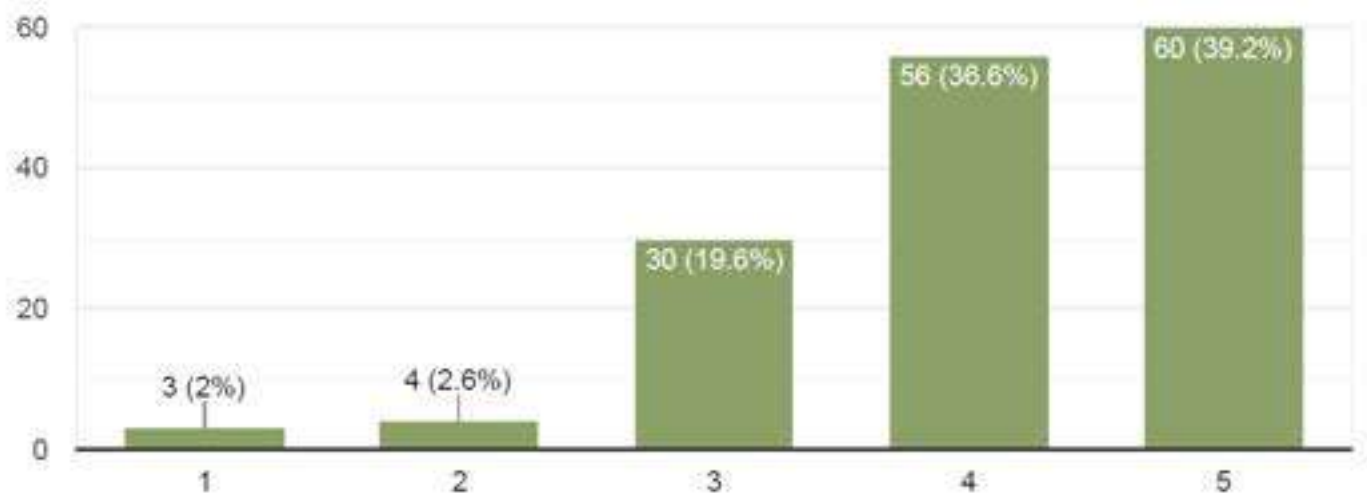


Figure 10: Water management practices in College

There were mixed responses received the highest was for **rating 5 (Excellent) at 40%** followed by **37% for rating 4 (Very Good)**.

6.6 Recommendations for a Sustainable Habitat

Below mentioned are few suggestions for better water management practices in the premise.

a) Waste water from toilets

This should be collected and a waste water treatment plant can be installed in the open space wherein this water can be treated and reused for gardening and toilet flushing.

b) Signages

Message about avoiding water wastage should be placed at appropriate locations.

c) Waterless urinals

There can be provision of waterless urinals as a Green Building initiative in the premise, either the existing ones can be replaced with such a facility or new toilets can be constructed in this manner.

On-site investigation and physical verification
Facilities related to water consumption and usage in the premises



Health & Hygiene Audit



Background reference image Curology on unsplash

7. Health and Hygiene Audit

The hygiene is a part and parcel of our daily life. It is extremely essential to keep the surroundings clean in the same manner as we would want our houses to be. Educational Institutes have a bigger role to play in order to affect the young minds in the positive manner through better hygienic practices.

7.1 Facilities available

The Institution has the following facilities as part of the premise.

- Washroom facility in each of the Building.
- Hand wash facility
- Drinking water facility in the form of Water coolers and taps
- Ample number of dustbins in the premise

7.2 Smoke Exposure

As per the Site visit the following analysis **has a positive impact on premises.**

- The College has No Smoking on its compound wall as part of the awareness.
- Canteen uses Gas cylinders for cooking, there is no utilisation of fire wood. Thus **there is no smoke from burning of fire wood and any health issues related to the same.**
- The **garbage in premise is not burnt** and there is not air pollution because of it.
- The Institution is a tobacco and smoke free campus which helps in adapting to a Healthy Institution
- There is parking provision inside the campus there is slight issue of dust owing to the same but it is **balanced with the good vegetation in the premise.**

7.3 Hygiene

As per the Site visit the following analysis **has a positive impact on premises.**

- For overall hygiene of the students and staff there are facilities such as Washroom facility on ground floor, hand wash. The hygiene of toilet areas is well

maintained. **The entire premises is cleaned twice on a daily basis. It is very appreciating that there are only few Maintenance staff who strive their best to take care of the entire premise in the most excellent way possible.**

- The staffs keep a regular check about the operation and maintenance of the equipments each floor.
- Water management initiative with appropriate hygiene is undertaken. The areas of water tanks in site on ground floor are clean and no mosquito breeding spots are there.
- There are pest controls program practiced with appropriate sanitation facilities done by local municipality on seasonal basis to avoid seasonal diseases.
- The food premises and equipments are cleaned as per schedule with special care taken to avoid any water stagnation. The food waste and other refuse are removed periodically from food handling areas to avoid accumulation.
- As part of Tree Plantation programme the initiative of **Swachh Bharat Abhiyan of Govt. of India** is undertaken during various occasions.
- There are appropriate storage areas which are well maintained.

7.4 On-site investigation

During the physical verification of the site, the following points were noted.

- All the facilities are cleaned on a daily basis.
- The Maintenance staffs are allotted the responsibility of the washroom hygiene and they do a very commendable and excellent job to maintain hygiene of the premise.

7.5 Recommendations for a sustainable habitat

As per site verification for this audit the efforts of the College are highly appreciable as they are very well maintained. However, the college should practice pest control programs with appropriate sanitation facilities through an appropriate agency.

8. Towards a Healthy & Sustainable Institution

8.1 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) Kitchen garden** - 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. 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) Signages** – In addition to the signages being in regular language there can be additional signages in braille language for the specially abled students.
- 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.

8.2 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 key responses are listed below. Whereas many responses **stated there were no changes requires because the present practices are excellent.**

- College is present very beautiful
- No changes, it was going wonderfully

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

- The college should sweep every day....or at least one time per two days
- More dustbins and also cleaning the corridors along with classes
- They should have to promote frequently about green awareness programs

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.

9. 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. Climate data <https://en.climate-data.org/asia/india/andhra-pradesh/guntur-4945/>
6. 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.

