

GREEN AUDIT

2018-19; 2019-20 & 2020-21

AUDIT REPORT

Studied for

Karnataka Rashtriya Education Society's

**Karnatak Arts, Science
and Commerce College, Bidar**

Hyderabad Road, Bidar (Karnataka), India - 585 401

Analysed by



29 April 2022

Disclaimer

The Audit Team has prepared this report for the **Karnataka Rashtriya Education Society's Karnatak Arts, Science and Commerce College, Bidar** located at Hyderabad Road, Bidar (Karnataka), India - 585 401 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 60 lakhs+ sq. ft. of Built-up area audited till date Pan India as an Accredited and Certified Green Building Professional-Architect; ISO Certified Internal Auditor for Integrated Management System (IMS) which includes ISO 9001 Quality Management, ISO 14001 Environment Management and Occupational Health and Safety Management OHSAS 18001. 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

Palghar District, Maharashtra- 401208

sustainableacademe@gmail.com

Acknowledgement

The Audit Assessment Team thanks the **Karnataka Rashtriya Education Society's Karnatak Arts, Science and Commerce College, Bidar, Karnataka** for assigning this important work of Green Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to **Sri. Basavaraj Jabshetty**, President; **Sri. B.G. Shetkar**, Vice President; **Sri. Sidram Para**, Secretary; **Sri. Satish Patil**, Joint Secretary and everyone from the Management.

Our heartfelt thanks to Chairperson of the entire process **Dr. M. S. Chelva**, Principal, for the valuable inputs.

We are also thankful to **College's Task force the faculty members** who have collected data required **Dr. Mallikarjun Hangarge**, Vice Principal & IQAC Co-ordinator; **(Special mention for the excellent coordination)** and **Sri. A.V. Chikkamanoor**, Co-ordinator.

We highly appreciate the assistance of **Smt. Shivaleela**, Office 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.....	4
2. Institution overview	8
3. Green Building Study Audit.....	11
4. Green Practices Audit	12
5. Waste Audit	18
6. Water Audit.....	23
7. Health and Hygiene Audit.....	27
8. Towards a Healthy & Sustainable Institution.....	29
9. References	31

1. Introduction

1.1 About the Karnataka Rashtriya Education Society

It was established in 1942. It is the master mind of Shri R.V. Bidap who founded the Society under the name of "Karnatak Rashtirya Education Society Bidar", its aim is to:

- To establish, run, maintain and expand various types of educational institutions and ancillary establishments including hostels libraries.
- To organize mobile libraries, clubs or academic interest and take steps to spread adult education especially in backward classes.
- To organize and conduct cultural activities
- To create K.R.E. Society's trust vesting all immobile assets of the society in it.

1.2 Statements of the Institution

Vision - To achieve the higher level of Excellence.

Mission - To liberate the young minds from the shackles of ignorance and motivate them to face the complexities of life efficiently with a sense of Self respect and National Pride.

1.3 About the Institution

Karnatak Arts, Science and Commerce College, Bidar is one among the 26 educational institutions being run by Karnataka Rashtriya Education Society Bidar. Established in 1970, the college is one of the prime Institutions of Bidar district. It is the biggest learning hub of Bidar district located at the Northern tip of Karnataka State. Although a number of colleges have come up lately in different parts of the district, yet this institution has been drawing the students from every corner of the state due to its ability to offer a spectrum of courses that are not available in newly established colleges. It attracts the students irrespective of gender, geographical location, social and economic strata. The enrolment of students in various disciplines is exponential and exhibits a typical example of a multi-disciplinary co-educational institute. **It is the first and only College with CPE status among the affiliated colleges of Gulbarga University, Kalaburagi.**

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 affiliated to the Gulbarga University and it offers the following courses.**

- **Graduation** – It offers the following courses
 - Bachelor of Arts (Economics, Statistics, Political Science, History, Kannada, English and Hindi)
 - Bachelor of Science (Mathematics, Computer Science, Electronics, Biotechnology, Zoology, Botany, Physics, Chemistry, Statistics)
 - Bachelor of Commerce
 - Bachelor of Vocational courses (Food processing technology, Renewable energy)
 - Bachelor of Computer Application – Professional course approved by UGC, University
- **Post-Graduation** – It offers the following courses
 - Master of Arts (Kannada, English)
 - Master of Science (Zoology, Computer Science, Biotechnology, Mathematics)
 - Masters of Commerce
- **UGC Web development technology course**
- **2 Research centres are recognized by the University the programs offered are Ph. D. in Kannada and in Computer Science.**
- **Recognised by IIT Mumbai as an Academic centre to run the spoken tutorial project courses since 2014 till date.**
- **IIT Madras local chapter for running SWAYAM/ NPTL Programmes since 2015.**

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 **Bidar district of Karnataka** with immense peace and calmness in the surroundings. The college is locate very close to the National highway and has a huge open spaces adjacent to its location. 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 and approvals

The College has all its courses approved and affiliated to **Gulbarga University, a public university located in Kalaburagi, Karnataka, India**

1.5.2 Certification

- NIRF – The College is ranked participating in every year.
- AISHE – The code is C-9146
- ISO – The last certification was done in ISO 9001 for Quality Management System in 2015-16

1.5.3 Accreditation

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

Cycle	First	Second	Third
CGPA	-	3.05	3.24
Grade	B+	A	A
Year	2004	2012	2017

Table 1: NAAC Accreditation details of the Institute

The College is due to enter its Fourth cycle of NAAC soon.

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.

- **College with Potential for excellence by UGC during 2006-2020 continuously awarded for 3 phases.**
- **Award for being the 'District Green Champion' by M.G.N.R.E Govt. of India 2020-21.**

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 **918 Boys and 1,068 Girls students**, thus there were **a total of 1,986 students** in the premises.

2.1.2 Staff data

Type	Male	Female	Total
Admin Staff	3	0	3
Teaching Staff	26	66	92
Non-Teaching Staff	15	26	41
Total Staff Members	44	92	136

Table 2: Staff data of the Institution for 2019-20

The staff data shows the premises had a total of **136** 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 **933 Boys and 1,088 Girls students**, thus there were **a total of 2,021 students** in the premises.

2.2.2 Staff data

Type	Male	Female	Total
Admin Staff	3	0	3
Teaching Staff	26	66	92
Non-Teaching Staff	15	26	41
Total Staff Members	44	92	136

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

The staff data shows the premises had a total of **136** Staff Members.

2.3 Total College Area & College Building Spread Area

The **total site area is 5.1 Acres** and the **total Built-up area of College is 81,085 sq. ft.** for a **total of 2,157 footfalls.**

2.4 College Infrastructure

2.4.1 Establishment

The College was established in 1970. 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 Institution is open from Monday to Saturday. 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 (07:30 a.m. to 05:30 p.m.) Saturday (07:30 a.m. to 01:30 p.m.)	Mon-Fri - 10 Sat - 6	280
2	General areas	Admin areas and library, Passage, staircase, toilet	Monday to Friday (07:00 a.m. to 05:30 p.m.) Saturday (07:00 a.m. to 01:30 p.m.)	Mon-Fri – 10.5 Sat – 6.5	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 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

- 10 March 2022 – Allotment and Initiation by the College
- 12 March 2022 – Induction Meeting
- 15 March 2022 – Survey of the Student and staff submitted
- 24 April 2022 – Data submitted by College
- 29 April 2022 – Submission of the Report

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, NCC 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 as follows conducted jointly by NSS and NCC Team:

S. No.	Activity	Organized by	No. of Participants
1	Swachha Bharat Abhiyaan Awareness	At Kolar village	102
2	National Yoga Day 21 June 2019	Karnatak Pharmacy college Bidar	155
3	Unnat Bharta Abhiyan Project 2019	Amlapur village	124
4	Tree Plantation In 2019	At College Campus	55
5	Spit Free India Movement	Ambedkar circle	130
6	Swachhta action plan	Kolar and astur village	105
7	Swachh Bharat Summer Internship 2 nd Prize 2019	M.H.R.D.	202
8	Appreciation Latter Guk	Gulbarga university, Kalburagi	51
9	Mask distribution	Gandhi Ganj Ambedkar, Circle Bidar	124
10	Food distribution	At Kolar village	55
11	Blood Donation Camp	At college campus with district health department	65
12	Covid-19 Vaccination Drive	In Association with Zilla Panchayat, Bidar	51
13	Survey on House Holder (Five Villages) 3000 Families	Unnat Bharat Abhiyana	60

Table 5: Details of the events conducted by NSS and NCC Teams

The NSS Department conducts various activities like tree plantation, nature cleanliness, and visits to nearby flora and fauna, rural development initiatives. 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.

4.3.1 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

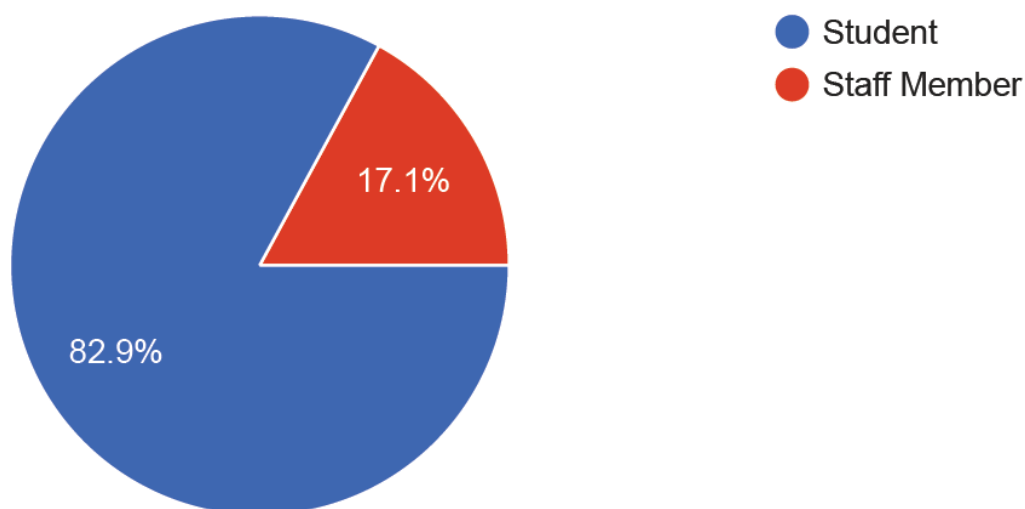


Figure 1: Participation analysis in the survey

A total of **129 responses** were received out of which 83% 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

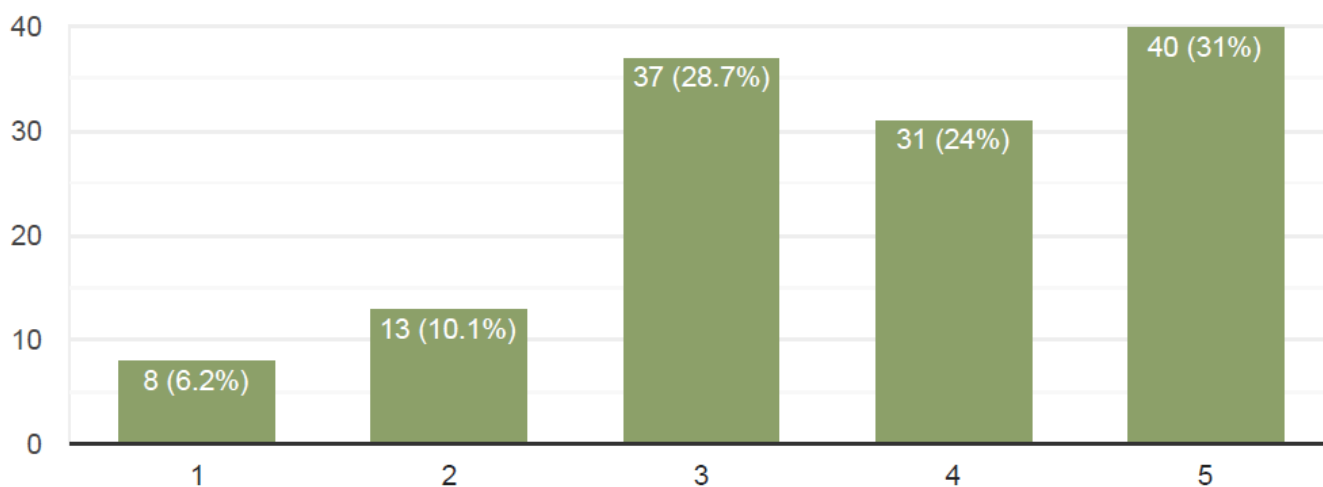


Figure 2: Green awareness practices in College

There were mixed responses received the highest was for **rating 5 (Excellent) at 31%** followed by **24% for rating 4 (Very good)**.

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

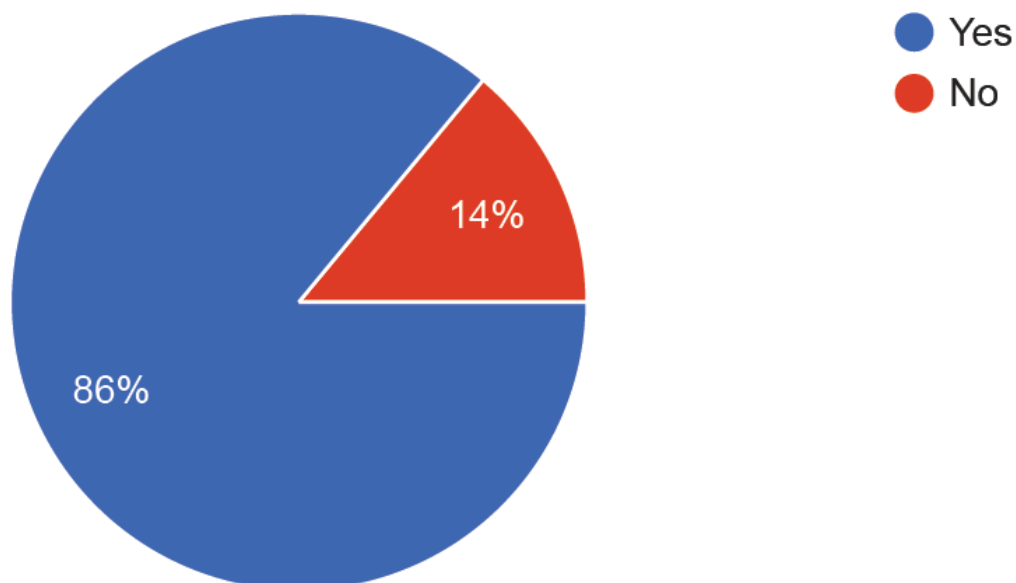


Figure 3: Confirmation of the environment awareness programs/ webinars/ plantations/ cleanliness or similar programs conducted by the College

The students, staff **86%** of responses confirmed activities are conducted which is very excellent.

4.4.4 Do you participate in such events?

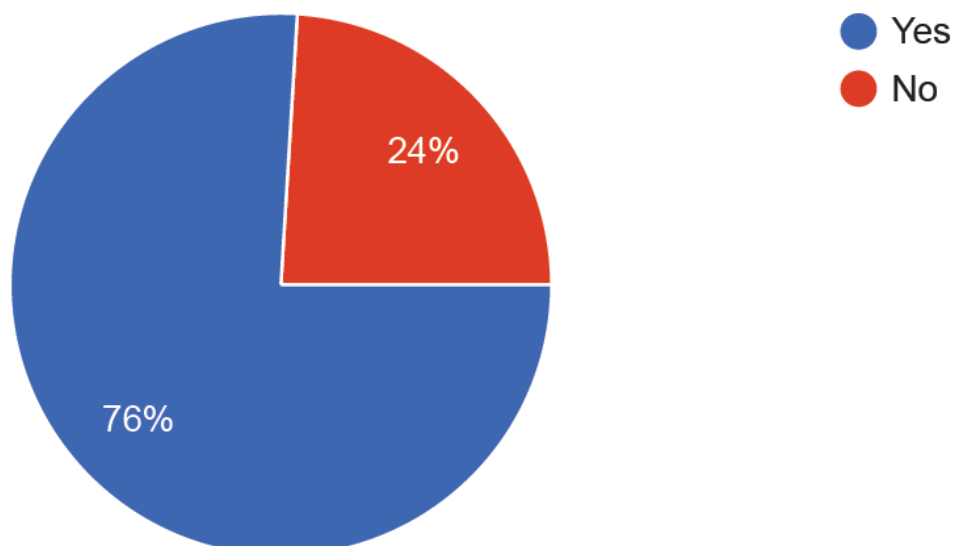


Figure 4: Participation in the environment awareness programs/ webinars/ plantations/ cleanliness or similar programs conducted by the College

The students, staff **almost 76%** 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 have learned about the environment.
- Impressive.
- It's good.
- I got motivated for planting trees and keeping surrounding clean.
- **I had experience of greenery in my surrounding which make me active and feels fresh.**
- I felt so happy. They even gave prize after participation.
- **It is excellent.**
- It was absolutely great work. We will enjoyed that our friends.
- It has helped me a lot.

4.5 Recommendations for a Sustainable Habitat by Greenvio Solutions

a) 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.

b) 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.

c) No vehicle day

Once in a while a No vehicle day can be adopted by students and staff to promote the use of eco-friendly vehicles in the premise.

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	Vermi-compost	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	Vermi-compost	Yes	CONTINUE - with the current practice

Table 6: Summary of the types of waste produced in the premises

5.1.2 Bins summary

There are 80 Dustbins in the premises with volume of 7 litres (small) and more than 30 litres (medium). The analysis of dustbins is presented below.

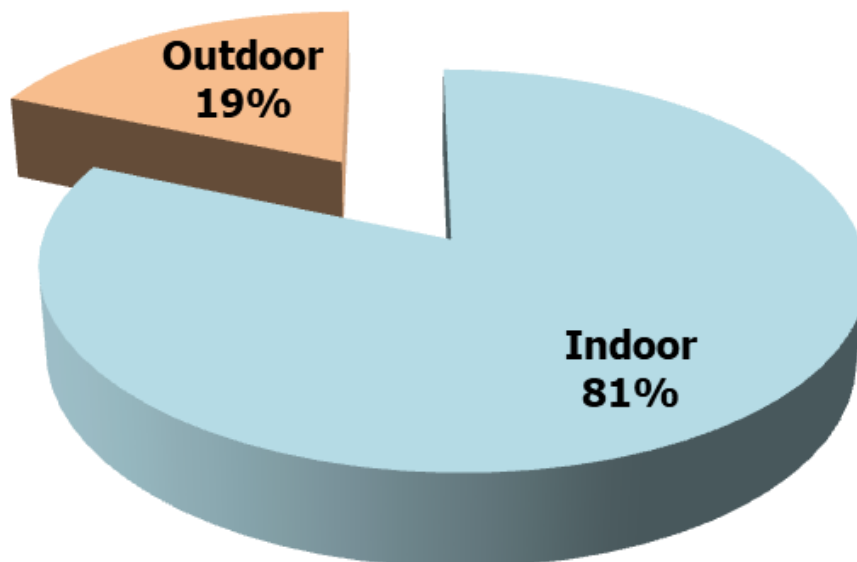


Figure 5: Analysis of dustbins location wise in the premises

The above analysis shows **81% are present in the indoors & 19% in the outdoors.**

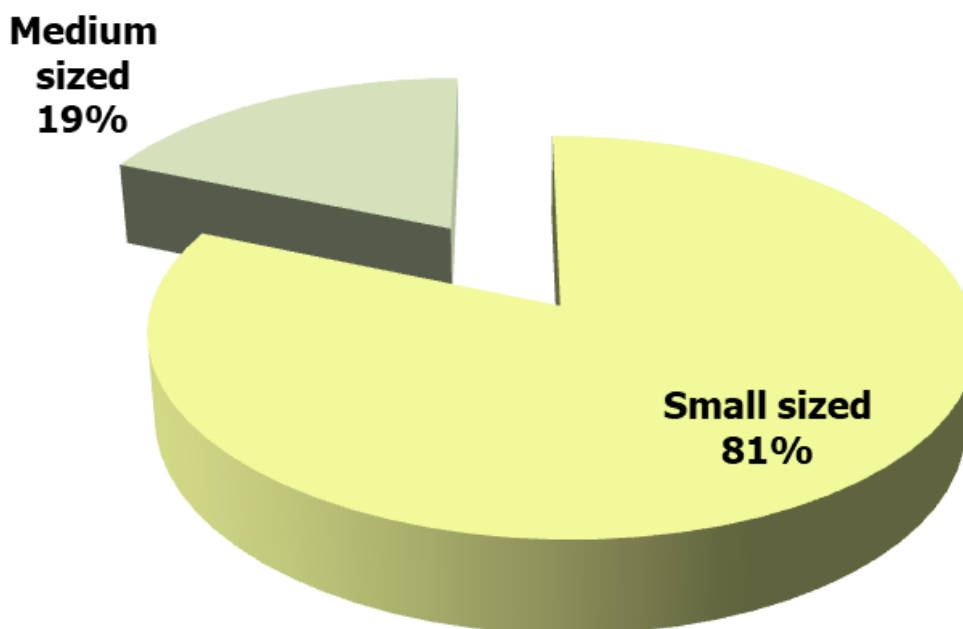


Figure 6: Analysis of dustbins size wise in the premises

Among the dustbins that are present in the indoor areas, **81% are small sized bins, and 19% are medium sized dustbins.**

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 waste is collected. The waste produced on premises is segregated. It is collected on a weekly basis. The waste is not handed over to the local municipality van. There is a dumping pit in the garden which should not be there.

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.

The information shared by the college stated - The institute has vermin-compost pit in the premises Proper maintenance of the system results in production of 1 tonnage of compost generation.

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.

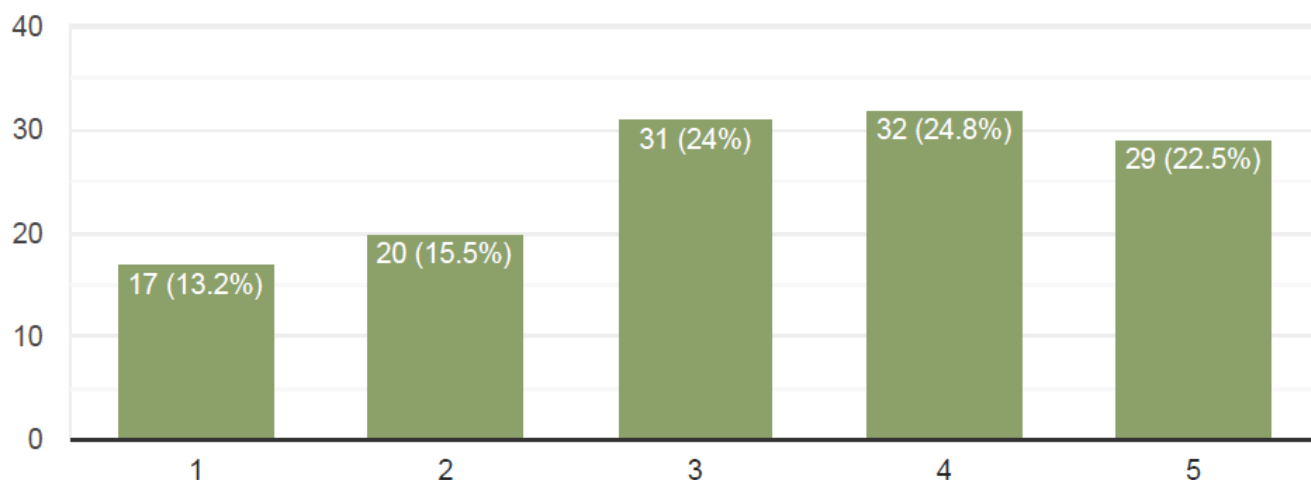


Figure 7: Waste management practices in College

There were mixed responses received the equal also the highest was for **rating 4 (Very good) for 23% and rating 5 (Excellent) at 25%**

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.

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 Municipality. The College requires water from the Local Municipality for drinking purpose. The total water consumption through the tanks on site, these are available in a quantity of 3 tanks at multiple locations. The capacity of each is as follows:

S. No.	Type	Nos.	Capacity in litres
1	Main Building	1	500
2	Main Building	1	500
3	Main Building	1	1,000
Total		3	1,500 litres

Table 7: Tanks and well in the premise

6.1.2 Sources of Secondary water supply

Bore well and wells – There is 1 Bore well 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 Aquaguard like system 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 – 9 Nos.
- Toilets – 9 Nos.
- Wash basins – 9 Nos.
- Taps (Indoors) – 9 Nos.
- Taps (Outdoors) – 2 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.

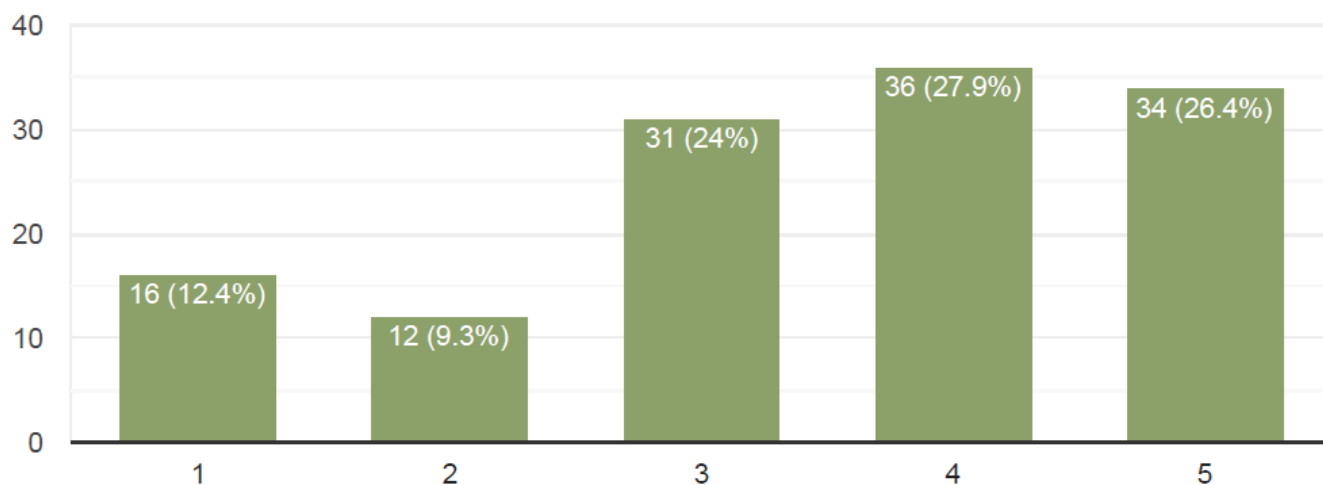


Figure 8: Water management practices in College

There were mixed responses received the highest was for **rating 4 (Very Good) at 28%** followed by **26% for rating 5 (Excellent)**.

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.

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 and Annual Maintenance Contract for pest control is done once a year by professional Pest control units
- 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 and install Sanitary vending machines and incinerators at appropriate locations.

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) 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.

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 suggestions by the Students and staff are listed below:

- **Increase the trees**
- **Try to make herbal garden.**
- **Organising webinars and bring awareness among the students about green premises.**
- **Make a green garden at college for pure air and environment**
- **I think from all the departments of college should inform the students to plant one tree once in a month.**

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. 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.

