



Dr. Babasaheb Ambedkar Memorial Society, Chandrapur



Dr. Ambedkar College of Arts, Commerce & Science, Chandrapur

Affiliated to Gondwana University, Gadchiroli.

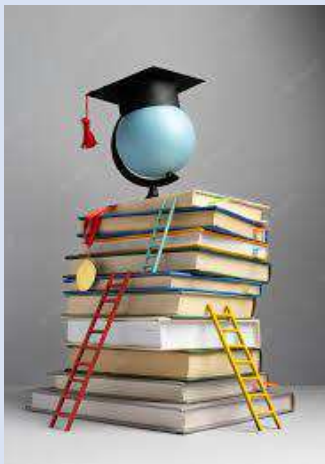
Re-accredited by NAAC 'B +' with 2.61 CGPA

ANNUAL QUALITY ASSURANCE REPORT

AQAR: 2022-2023

CRITERION – 7 INSTITUTIONAL VALUES AND BEST PRACTICES

METRIC NO: - 7.1.6



METRIC NAME: 7.1.6 The institutional environment and energy initiatives are confirmed through the following 1.Green audit 2. Energy audit 3.Environment audit 4.Clean and green campus recognitions/awards 5. Beyond the campus environmental promotional activities

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ENERGY AUDIT

2019-21

AUDIT REPORT

Studied for

Dr. Babasaheb Ambedkar Memorial Society's

Dr. Ambedkar College of

Arts, Commerce and Science

Civil Lines, Chandrapur – 442 401

Analysed by



21 December 2021

Disclaimer

Green Audit Team has prepared this report for the **Dr. Babasaheb Ambedkar Memorial Society's Dr. Ambedkar College of Arts, Commerce and Science, Civil Lines, Chandrapur – 442 401** 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 on-site 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 along with Ar. Nahida Shaikh as an Accredited Green Building Professional.

Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

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Acknowledgement

Green Audit Assessment Team thanks the **Dr. Babasaheb Ambedkar Memorial Society's Dr. Ambedkar College of Arts, Commerce and Science, Civil Lines, Chandrapur – 442 401** 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 **Hon'ble Arun Ghotekar, President; Hon'ble Ashok Ghotekar, Vice President; Hon'ble Waman Modak, Secretary** and everyone from the Management.

Our heartfelt thanks to Chairperson of the entire process **Dr. Rajesh Dahegaonkar, Principal** for his valuable inputs.

We are also thankful to College's Task force the faculty members who have collected data required for green audit **Dr. Amrut Lanje, Associate Professor; Dr. P. H. Munjankar, Associate Professor** and **Dr. Nitin D. Ghugare; Assistant Professor**.

The kind gesture for the inventory and data collection of the **Admin Staff** is quite commendable.

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

Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

Contents

Disclaimer	1
Acknowledgement.....	2
Contents	3
1. Introduction	4
2. Institution overview	10
3. Green Building Study Audit.....	13
4. Energy Audit.....	14
5. Towards a Healthy & Sustainable Institution	28
6. References	30

DETAILED REPORT

1. Introduction

1.1 About the Dr. Babasaheb Ambedkar Memorial Society, Chandrapur

It was formed on 21 June 1970 by Late Bar. Rajbhau Khobragade. The Society has implemented the goal of educating the students in the best way possible by uplifting the academic status of the students through quality education and adopting the local village for overall community development. Meticulous joint efforts of the students and staff have made the institution one of the most sustainable premises in the locality.

1.2 Vision of the College

To kindle the spirit of learning among the youth, to uplift the lives of downtrodden, Minority communities, eradicate their poverty and make them lead a sustainable life, to consistently pursue excellence preserving the tradition of high reputation while meeting the challenges of globalised world.

1.3 Institution and the surrounding premises

The Premises is situated amidst the landscape serene of **Chandrapur district of Maharashtra State** with immense peace and calmness in the surroundings. The college is surrounded by open landscape on North and West side, whereas there are residential areas on the East and South side. There is a broad and open to sky frontal approach which provides quite a beautiful appreciation space while approaching the premise. 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.

Dr. Ambedkar College of Arts, Commerce and Science was established on 21st June 1970 and is run by Dr. Babasaheb Ambedkar Memorial Society, Chandrapur. The college was accorded a Buddhist religious Minority Status in 2012. It is situated in the heart of Chandrapur, known as the city of "Black gold". The founder member of this college, Late Barrister Rajabhau Khobragade was the Vice- President of Rajya Sabha in 1960. The primary aim of establishing this college is to eradicate illiteracy among

Bhahunjan Samaj. The college mainly caters to SC/ST/NT and other backward category students from rural and tribal areas. The college has a vast campus with facilities like boys hostel, girls hostel, spacious playground, gym, sports facility, canteen, auditorium, library, laboratories, Dr. Ambedkar study centre, NCC, NSS, Career Guidance Cell and Women's Cell. The college has Arts, Commerce and Science faculties and PG courses in English, Marathi, Economics, Political Science, History, Sociology, Geography and Commerce. It also successfully runs PG courses in Electronics, Botany, Zoology, Maths and Chemistry. The Junior Wing of the college has Arts, Commerce and Science. It also runs higher secondary certificate vocational courses. The college functions efficiently under the guidance of the present Principal Dr. Rajesh Dahegaonkar. The college has efficient and scholarly teaching staff. The teaching and the non-teaching staff work for the betterment of the students.

The college which started with just 420 students has now over 4500 students studying in various courses. The dream of founder members seems to have been fulfilled.

- **Bachelors Programme**
 - Arts (B.A.)
 - Commerce (B. Com)
 - Science (B. Sc)
- **Master Programme**
 - Arts (M.A. in the following programmes)
 - Economics
 - English
 - Geography
 - History
 - Marathi
 - Political Science
 - Sociology
 - Commerce (M. Com)
 - Science (M. Sc)
 - Botany
 - Chemistry
 - Electronics
 - Mathematics
 - Zoology
- **Ph.D Programme**

The College aspires at training young women and men to be competent, committed and compassionate and lead in all walks of life. It has the following aim and objectives.

- To preserve human values of equality, freedom, fraternity, amity, compassion and tolerance among students.
- To provide opportunities to promising students from Minority communities who have been denied progress and prestige by religious, social system for many years.
- To create opportunities of education for the poor students of rural areas.
- To develop the overall personality of students alongwith their educational, physical, mental and intellectual development.
- To inculcate the spirit of service, sense of sacrifice and social commitment among students.
- To exhort the students regularly to give utmost importance to moral principal in their personal and social life.
- To educate the students in order to make them realize the significance of parliamentary democracy, secularism, socialism and supremacy of Indian constitution and the rule of law.
- To enable the students to accept the change in every walk of life and face the challenges that come along with it.
- To develop analytical, intellectual and logical thinking among students.
- To awaken the students to believe it is not caste, religion, sect, language, region or creed but nationalism which is the supreme loyalty of all.

1.4 Assessment of the College

Affiliations - The Institute is affiliated to Gondwana University, Gadchiroli.

Recognitions - University Grant Commission (UGC) by 2(f) 12(b)

Certification – The Institute has received the following Certifications

- ISO 9001:2015

- NIRF
- AISHE

Accreditation

The following are details of the reaccreditation of the Institute.

Cycle	First	Second
CGPA	63	2.76
Grade	C+	B++
Year	2004	2017

Table 1: NAAC Accreditation details of the Institute

The college is due to enter its Third cycle of NAAC soon.

1.5 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.

S.No.	Faculty name	Award	Year
1.	Dr. Rajesh R. Dahegaonkar (Principal)	Adarsha Shikshak award	2003
		Chatrapati Shiwaji Maharaj award	2003
		Best Educationist Award by International Institute of Education and Management	2018
2.	Dr. V. Y. Gedam (Professor)	State Level Shikshak Ratna award by Samta Sahitya Academy, Pune Shikshak Ratna award	2015
		State Level Best Programme Officer Award as per notification by Government of Maharashtra.	2016
		University Level Best NSS Programme Officer Award during the session 2015-2016 by Gondwana University, Gadchiroli	2016
		Shikshak Ratna award	2015
		Best N.S.S. officer award by Gondwana University, Gadchiroli	2016
		Global Teacher Role Model Award by Manushybal Vikas Lokseva Academy	2019
		Gondwana University Covid Worrier Award by Youth and Sports ministry, Govt. of India	2021
3.	Dr. A. S. Lanje (Asso. Professor)	F.I.P. award by U.G.C.	2007
		Bharat Vidya Rattan Award by Indian Solidarity Council, New Delhi	2018

		Young scientist award	2008
		Best paper award for poster presentation	2009
		I2OR National Elite Teacher Award 2021 On 5 September, 2021, by , instituted by the International Institute of organized Research (I2OR) which is a registered MSME with the Ministry of Micro, Small and Medium Enterprises, Government of India	2021
		International Scientist Award on Engineering, Science and Medicine Best Researcher Award By VDGGOOD Professional Association India September- 2021	2021
		Best Paper Award on best oral Presentation for the paper "Dielectric Measurements of Tin Oxide (SnO ₂) nanoparticles at low Temperature" A. S. Lanje , R. B. Pode, S. J. Sharma, R. S. Ningthoujam and R. K. Vatsa Presented at National Conference on Recent Trends in Basic and Applied Materials Organized by Institute of Science, Nagpur. On 11 & 12 th Jan 2009	2009
4.	Dr. P. M. Shende (Asso. Professor)	F.I.P. award by UGC	2007
5.	Dr. S. R. Gawali (Asst. Professor)	Distinguished Fellow Award (FVMS) given by Vishwashanti Multipurpose Society, Nagpur for exceptional Skill Devotion Dedication and Professionalism and Innovative Ideas in Science.	2014
6	Dr. N. S. Ramteke (Asst. Professor)	Mahatma Jyotiba Fule Samta Puraskar given by Samta Sahitya Academy, Yeotmal	2012
7	Shri. M. T. Sontakke (Associate Professor)	Shri Shivchatrapati Shivaji Maharaj Samta Puraskar by Samta Sahitya Academy, Yeotmal.	2012
8	Dr. M. N. Raipure (Asst. Professor)	Mahatma Jyotiba Fule Samaj Gaurav Puraskar	2011
		Nari Ratna award	2011
9	Ku. B. D. Ratnaparkhi (Asst. Professor)	Krantijyoti Savitribai Fule Samata award	2011
		Dr. Babasaheb Ambedkar Samaj Ratna award	2011
10	Shri. J. R. Chimurkar (Asst. Professor)	Mahatma Jyotiba Fule Samaj Gaurav Puraskar	2012
11	Shri. D. J. Ramteke (Asso. Professor)	Mahatma Jyotiba Fule Samaj Gaurav Puraskar	2011
		Shikshk Ratna Samata Praskar	2012
12	Ku.V. M. Dhadade (Asso.	Maniratna Shikshak Gaurav Puraskar (Best Teacher award)	2011

	Professor)		
13	Dr. B. M. Moon (Asst. Professor)	Dr. Babasaheb Ambedkar Samaj Ratna Samman	2013
		Matoshri Ramabai Tarun Sanghatna Puraskar	2012
14	Dr. D. M. Pimpalshende (Asst. Professor)	Dr. Panjabrao Deshmukh Samajbhushan Puraskar, Nagpur	2014
15	Shri V. K. Kale (Asst. Professor)	Dr. Babasaheb Ambedkar Teacher award	2009
		Mahatma Jyotiba Fule Samaj Gaurav Puraskar	2013
16	Dr. M. B. Bhagat (Asst. Professor)	Rajiv Gandhi National Research Fellowship award by UGC, Delhi	2006
		Gold medal for Ph.D. Thesis	2012
		Three Gold medal for first University merit	2004
17	Shri. S. G. Petkar (Asst. Professor)	Dr. Babasaheb Ambedkar Shikshak Puraskar	2009
18	Dr. B. M. Moon (Asst. Professor)	Dr. Babasaheb Ambedkar Samaj Ratna Samman	2013
		Matoshri Ramabai Tarun Sanghatna Puraskar	2012
19	Dr. V. P. Dakhane (Asst. Professor)	F.I.P. award	2007
		Second award for poster presentation	2008
		University Level Research Festival AVISHKAR -2019 First Award in Category "Medicine and Pharmacy by Gondwana University, Gadchiroli	2019
20	Shri S. W. Patil (Asst. Professor)	University Level Research Festival AVISHKAR -2019 First Award in Category Pure Science (Post PG Level) by Gondwana university	2019

Table 2: Details of the various Awards received by the Institution

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 are total of **1,413 Girl and 1,054 Boys** students.

2.1.2 Staff data

Type	Male	Female	Total
Admin staff	1	0	1
Teaching staff	27	8	35
Non-Teaching staff	12	2	14
Total	40	10	50

Table 3: Staff data of the Institution for 2019-20

The staff data shows the premise has a total of **50** 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 are total of **1,566 Girl and 1,197 Boys** students.

2.2.2 Staff data

Type	Male	Female	Total
Admin staff	1	0	1
Teaching staff	28	6	34
Non-Teaching staff	11	2	13
Total	40	8	48

Table 4: Staff data of the Institution for 2020-21

The staff data shows the premise has a total of **48** staff members.

2.3 Total Institute Area & College Building Spread Area

The **total site area is 5 Acres** and the **total Built-up area of College is 1,09,550 sq. ft.** for a **total of 2,811 footfalls.**

2.4 Institute Infrastructure

2.4.1 Establishment

The College is run by **Dr. Babasaheb Ambedkar Memorial Society, Chandrapur.** It was established in 1970. The Society has rich tradition of Quality education of over 50+ years. 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 Premise 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 premise, whereas there are amenities such as CCTV, Fire extinguishers, Library and first aid box. The premise houses the following areas:

- Educational Building
- Science Building
- Administrative Office
- Sports Building
- NCC Building

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	Degree College	Student areas and Teaching faculty	8:30 a.m. to 5 p.m.	8.5	210
2	General areas	Admin areas and library, Passage, staircase, toilet	8:30 a.m. to 5 p.m.	8.5	210

Table 5: 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 premise 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 campus

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

- | | |
|--------------------|-------------------------------|
| • 9 September 2021 | – Discussion with the College |
| • 30 November 2021 | – Data submitted by College |
| • 21 December 2021 | – Submission of draft Report |

4. Energy Audit

4.1 Sources of Energy consumption

The premise uses following sources of energy consumption.

4.1.1 Primary sources

Electrical (Metered) – Light, Fans, air conditioner and Equipments are major sources.

4.1.2 Secondary sources

The backup systems are used as secondary sources.

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 **inbuilt power saving mode** in every Computer is functioning.
- There are **no Ultra-violet lights and any other harmful lights used** in the premise.
- All class rooms and office are **ventilated using natural light.**

4.3 Actual Electrical Consumption as per Bills

The admin department had shared some of the bills for Meters as this is the main source of energy supply.

4.4 Calculated Electrical Consumption as per inventory

The electricity bills provide actual consumption data. The following is the calculated consumption. It is done to understand the percentage of energy usage in the premises by various applications. It is based on the inventory collected and interviews with the staff. The additional data such as wattage is taken from market research. In terms of electrical consumption, the main sources are lights, fans, ac, equipment. The inventory and data collection for sources of energy consumed in the premise is 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.

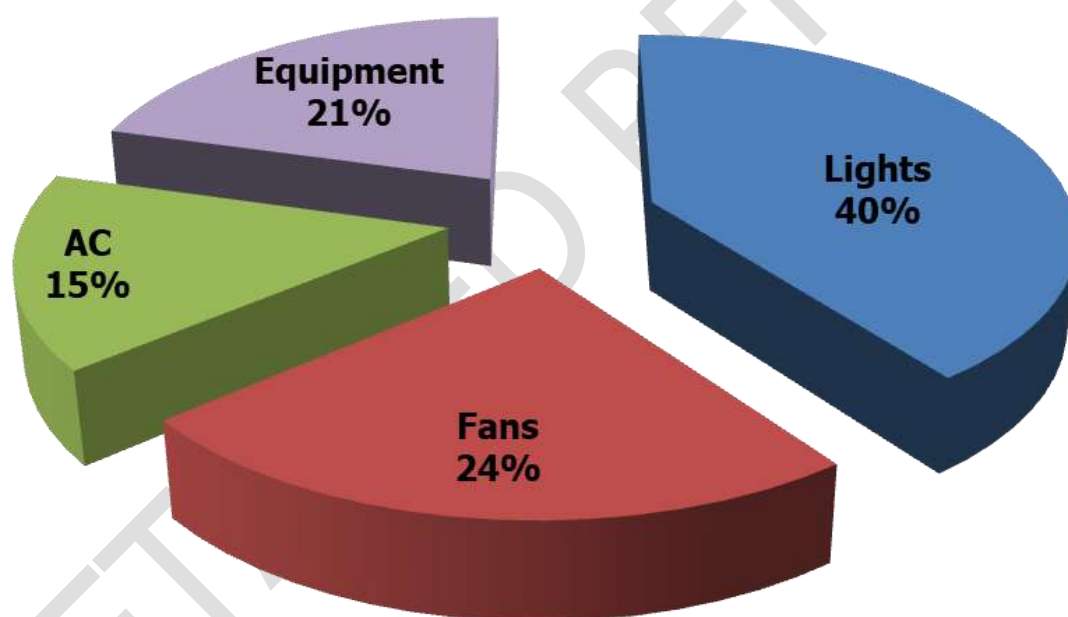


Figure 1: Summary of the Calculated Electrical Consumption as per inventory

The above graph shows that Light consumes 40% followed by Fans at 24% the Equipment at 21% and AC at 15% of the total calculated electrical energy.

4.5 Survey Results

An online survey was conducted to analyse the views about the premise, following are some of the reviews.

4.5.1 Participation

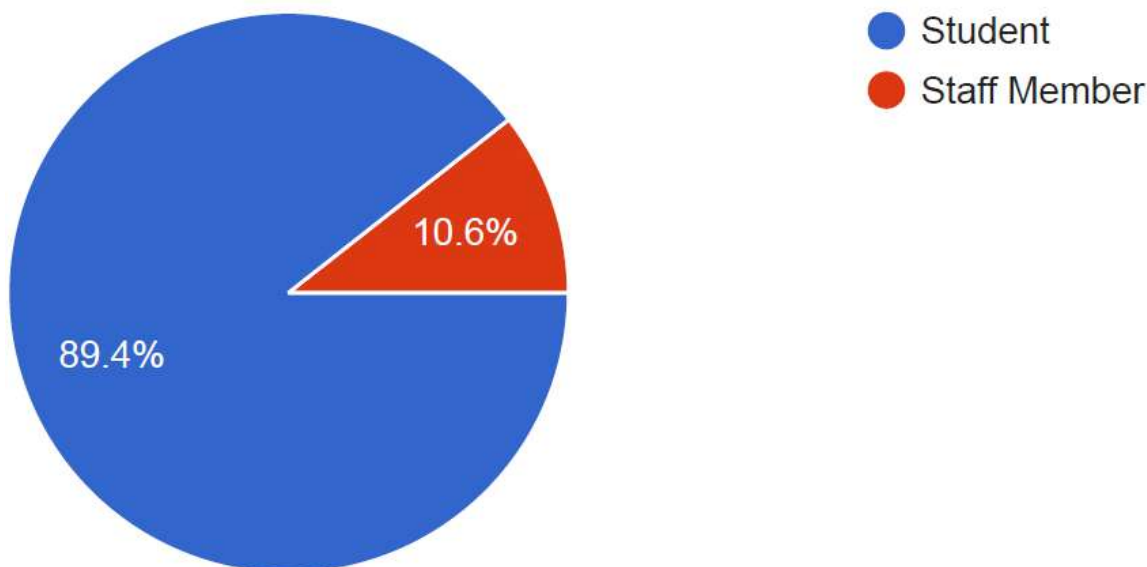


Figure 2: Participation analysis in the survey

A total of **85 responses** were received out of which 89% were students.

4.5.2 Energy management practices adopted in College

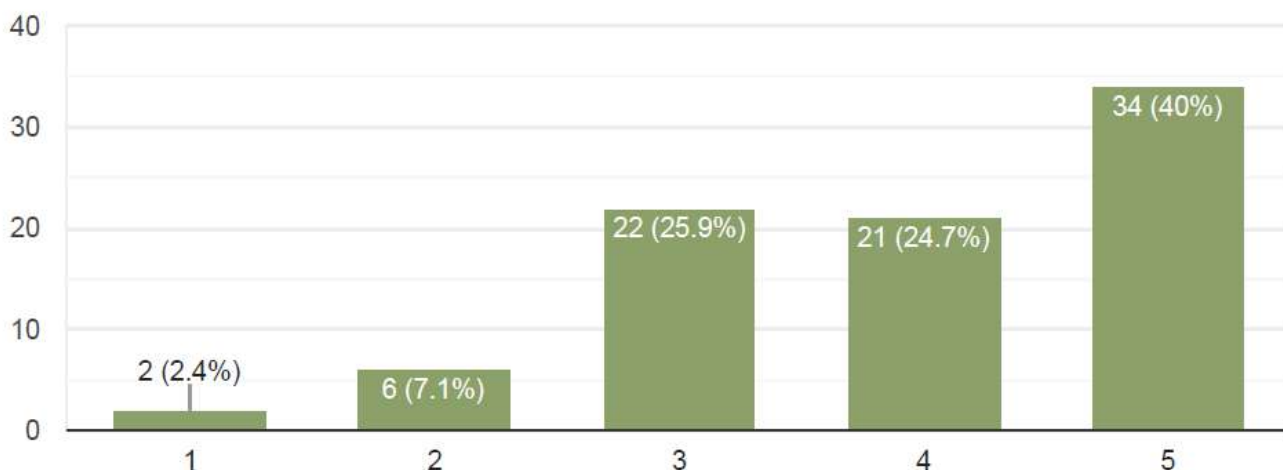


Figure 3: Energy Management practices in College

There were mixed responses received the equal also the highest was for **rating 5 (Excellent) at 40%** and **rating 3 (Good) at 26%**

4.6 Lights

4.6.1 Types of lights

There are a total of **171 lights in the premises**; the following table shows the various types of lights in the premises.

S. No.	Type	Nos.
1	LED	34
2	Mercury lamp	2
3	Non-LED	135
Total		171

Table 6: Summary of the types of Lights in premise

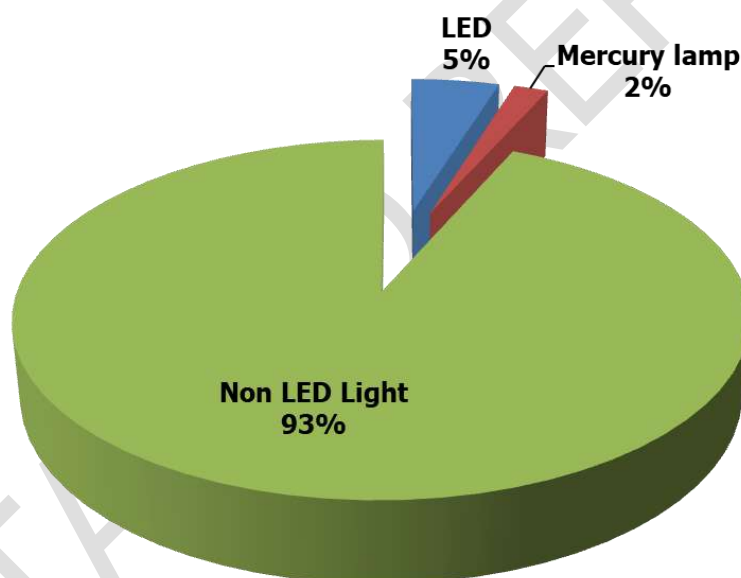


Figure 4: Types of Lights in the premise

The analysis of the types of lights in premises shows **Non-LED Lights consume 22,446 kWh at 93%** followed by **LED lights consuming 1,148 kWh at 5%** and the **Mercury lamp consumes 450 kWh at 2%**

4.6.2 Building and area wise consumption analysis

The energy consumption of Lights is **24,044 kWh** of energy; the following graph shows the floor wise consumption. This section analysis constitutes all buildings as a single entity.

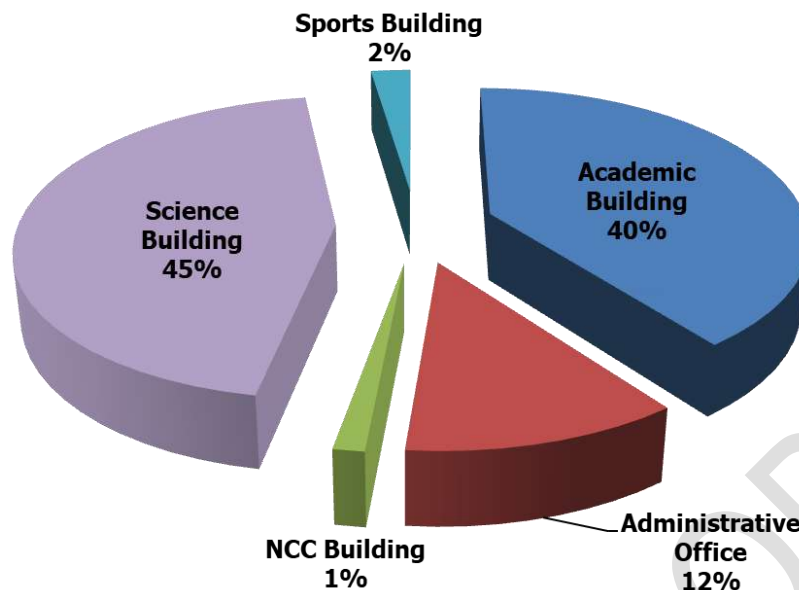


Figure 5: Energy consumed by Lights Building wise

The above analysis shows the Lights in the **Science Building consumes the highest amount of energy of 10,767 kWh at 45%** while the ones in **Academic Building consume 9,555 kWh at 40%** the ones in **Administrative Office area consume 2,831 kWh at 12%** the ones in **Sports Building consume 567 kWh at 2%** and the ones in **N.C.C. Building consume 324 kWh at 1%**

4.6.4 Requirement of NAAC

4.6.4.1 Alternative Energy Initiative

Percentage of power requirement met by renewable energy sources – There are no solar panels available in premise at present

4.6.4.2 Percentage of lighting power requirement met through LED bulbs

The premise has **20% LED Lights in terms of numbers and 4.77% of the power requirement is met through the same.**

4.6.5 Site investigation observations

Some of the points noticed are as follows:

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

4.7 Fans

4.7.1 Types of fans

There are a total of **190 fans** in the premise. The following table shows the various types of fans in the premises.

S. No.	Type	Nos.
1	Ceiling fans	173
2	Exhaust fans	10
3	Wall Mounted fans	7
Total		190

Table 7: Summary of the types of fans in premise

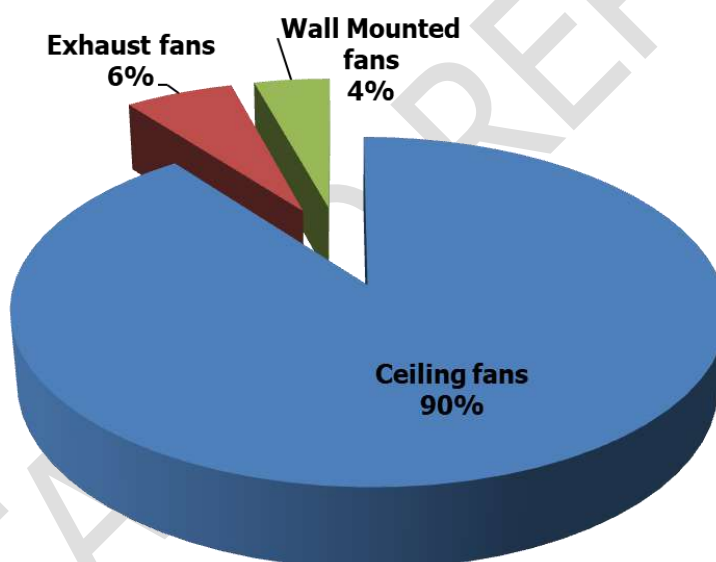


Figure 6: Types of Fans in the premise

The analysis of the types of fans in premises shows **Ceiling fans consume 12,975 kWh at 90%** the **Exhaust fans consume 875 kWh at 6%** while the **Wall mounted fans consume 613 kWh at 6%**

4.7.2 Building and area wise consumption analysis

The energy consumption of Fans is **14,463 kWh** of energy; the following graph shows the floor wise consumption. This section analysis constitutes all buildings as a single entity.

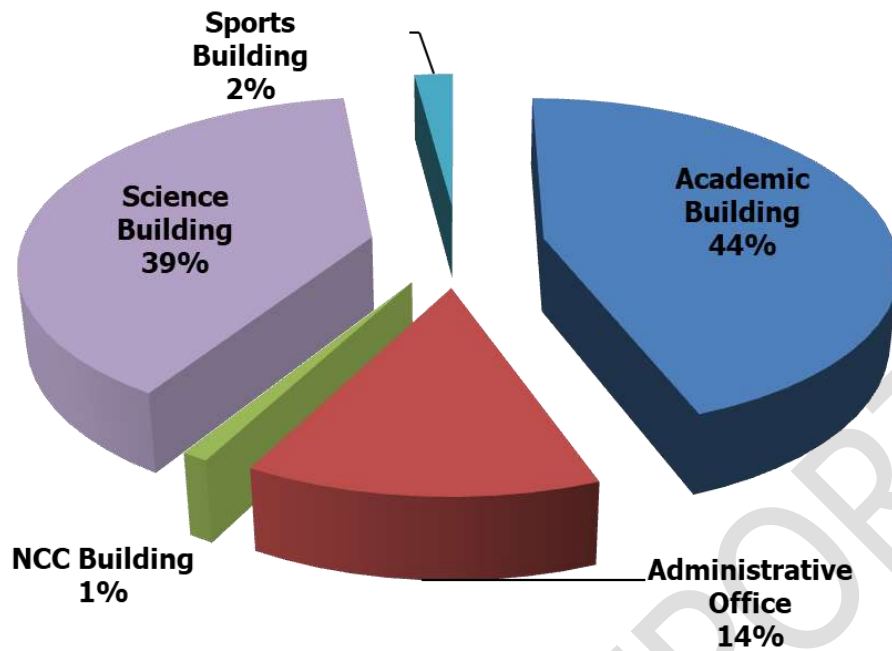


Figure 7: Energy consumed by Fans Building wise

The above analysis shows the Fans in the **Academic Building consumes the highest amount of energy of 6,413 kWh at 44%** while the ones in **Science Building consume 5,650 kWh at 39%** the ones in **Administrative Office area consume 1,950 kWh at 14%** the ones in **Sports Building consume 300 kWh at 2%** and the ones in **N.C.C. Building consume 150 kWh at 1%**

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 AC

4.8.1 Types of AC

There are **5 air-conditioners** in the entire premise. All of these are located in the Administrative Office. These consume around 9,650 kWh of power requirement.

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. These are not required to be replaced.

DETAILED REPORT

4.9 Equipment

4.9.1 Types of Equipment

There are a total of **8 types of equipment totalling to 29 in number** in the premise. The various types are mentioned in the table below.

S. No.	Name	Nos.
1	CCTV Camera	4
2	Cooler	1
3	Desktop Computer	18
4	Projector	1
5	Sound Box	1
6	Pump	1
7	RO Machine	2
8	Wifi router	1
Total		29

Table 8: Types of equipment in the premise

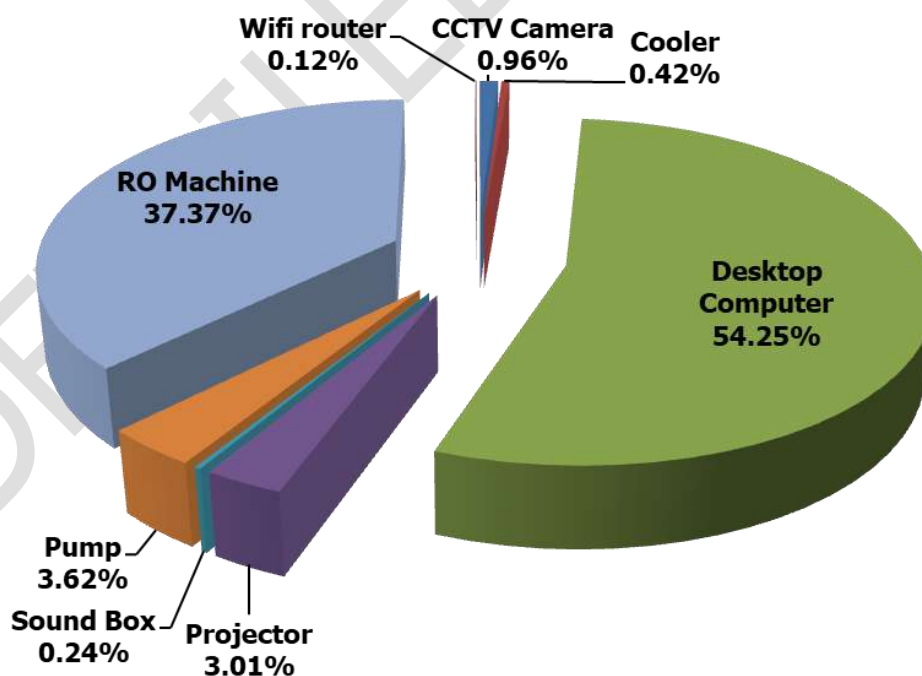


Figure 8: Summary of Energy consumed by Equipment

The above summary shows that **Desktop Computer consumes more energy at 54.25%** while **RO Machine at 37.37%** the **Pumps consume 3.62%** and the

Projector consumes 3.01% 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) are also one of the equipment but are excluded in this calculation.

4.9.2 Building and area wise consumption analysis

The energy consumption of Equipment is **12,443 kWh** of energy; the following graph shows the floor wise consumption. This section analysis constitutes all buildings as a single entity.

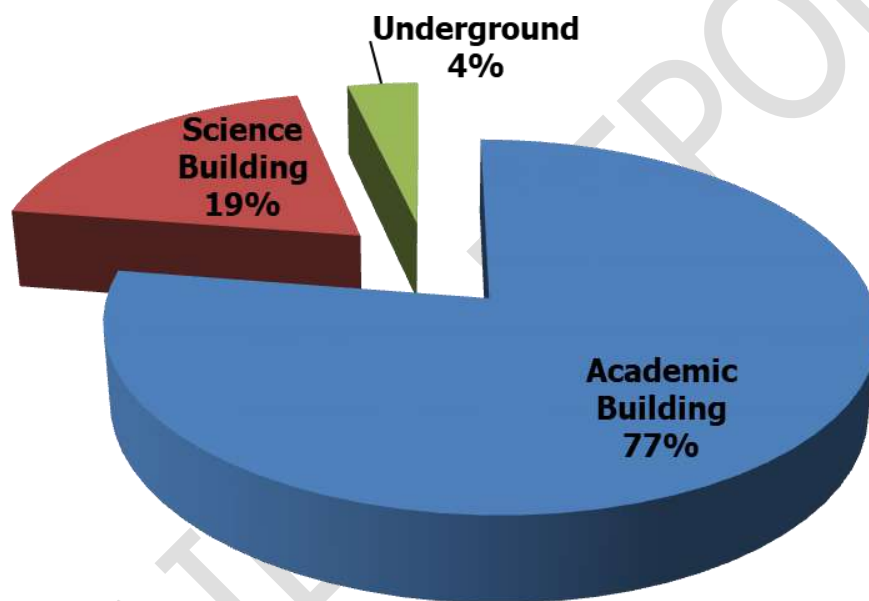


Figure 9: Energy consumed by Equipment Building wise

The above analysis shows the equipment in the **Academic Building consumes the highest amount of energy of 9,638 kWh at 77%** while the ones in **Science Building consume 2,355 kWh at 19%** and the **Underground area consumes 450 kWh at 4%**

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 Non-LED Tubelights

The current light analysis shows that Non-LED Tubelights lights consume anywhere between 24W, 36W and 40W when in use and these should be replaced with LED lights which consume on an average 16-20W when in use.

The following graph shows a comparison of the current consumption and consumption of all the **Non-LED Tubelights on all floors** if replaced with LED lights.

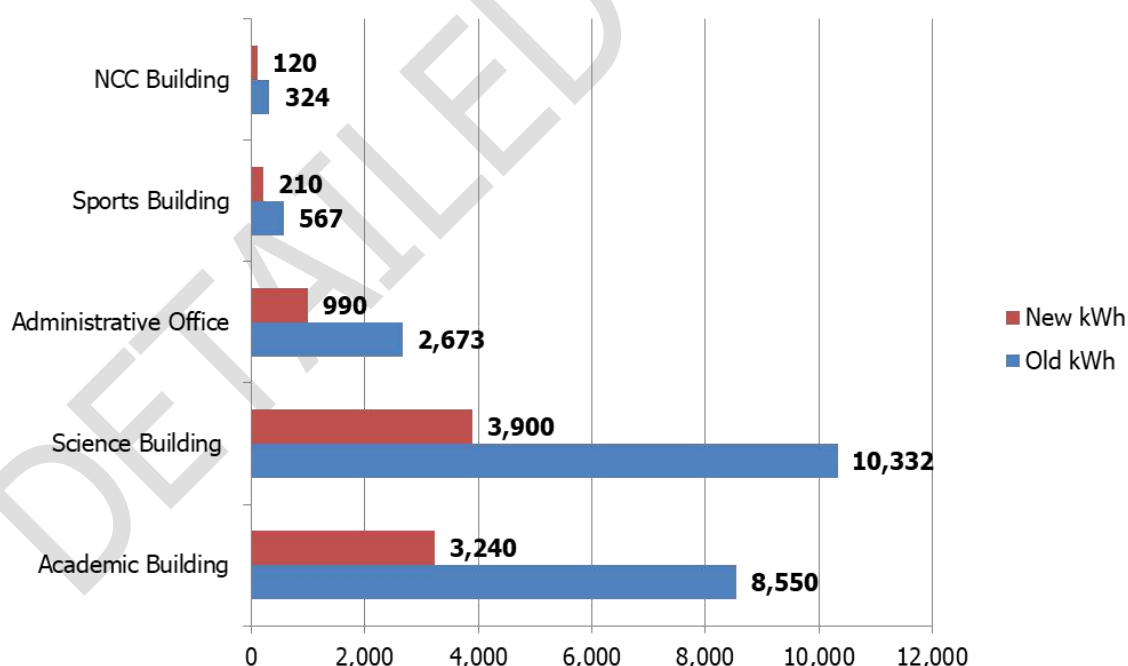


Figure 10: Analysis of current and new fans

The above analysis shows reduction of average of **63% reduction** in energy consumption if replaced with energy efficient appliance.

There are very less number of Mercury lamp that can be replaced with LED.

4.10.2 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.

The following graph shows a comparison of the current consumption and consumption of all **ceiling fans on all floors** if replaced with star rated appliance.

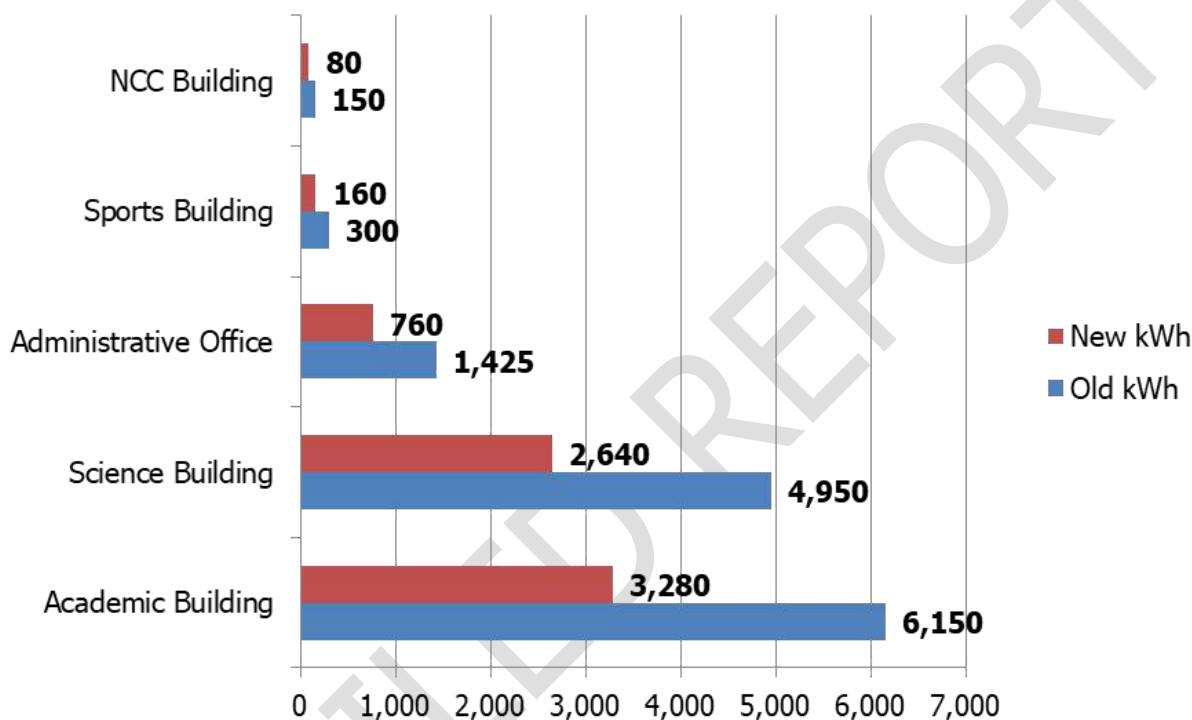


Figure 11: Analysis of current and new fans

The above analysis shows 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.

4.10.3 AC

The current Air conditioners have become old. Most of these are not star rated and are consuming more energy. These should be replaced with energy efficient and star rated air conditioners wherein 1.5 ton consumes 1495W.

The following graph shows a comparison of the current consumption and consumption of all the **air conditioners on ground floor** if replaced with star rated appliance.

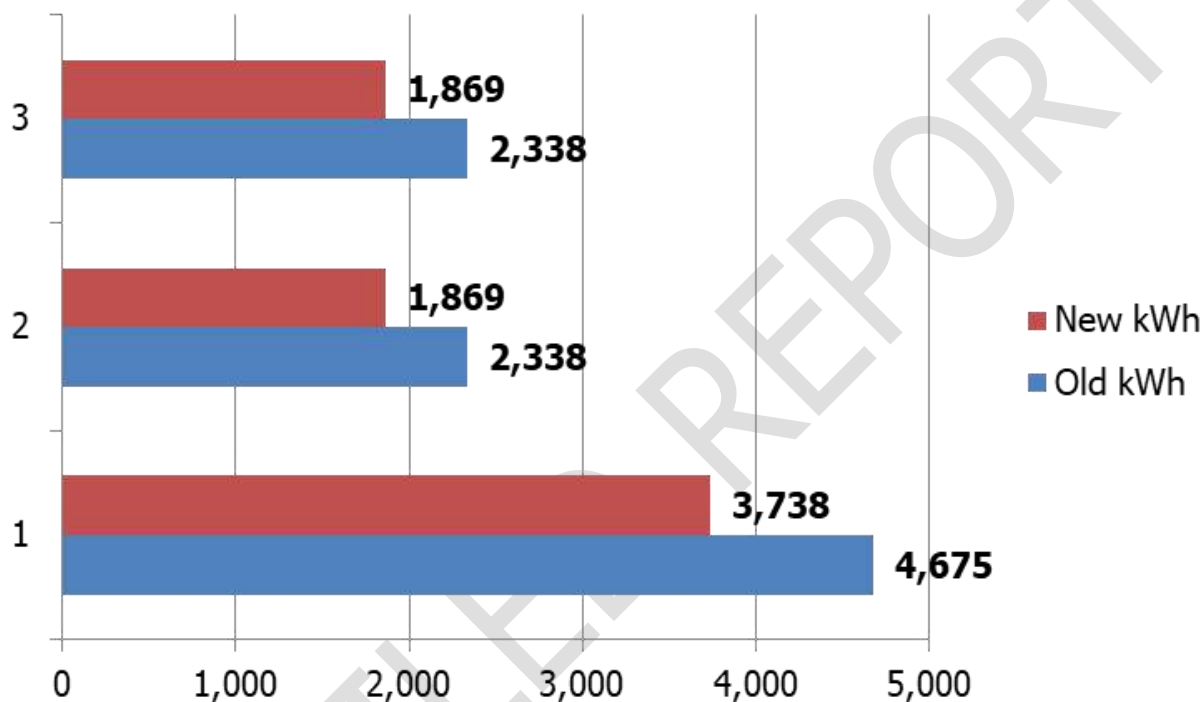


Figure 12: Analysis of current and new air conditioners

The above analysis shows reduction of average of **20% reduction** in energy consumption if replaced with energy efficient appliance, there is hardly much change in kWh consumption but it is better to be replaced.

It will be suggested to either replace these now if College can have certain plans else the replacement can be done when AC gets damaged or is not in working condition.

4.10.4 Equipment

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.

The following table shows a comparison of the current consumption and consumption of the **desktop computers** if replaced with laptops.

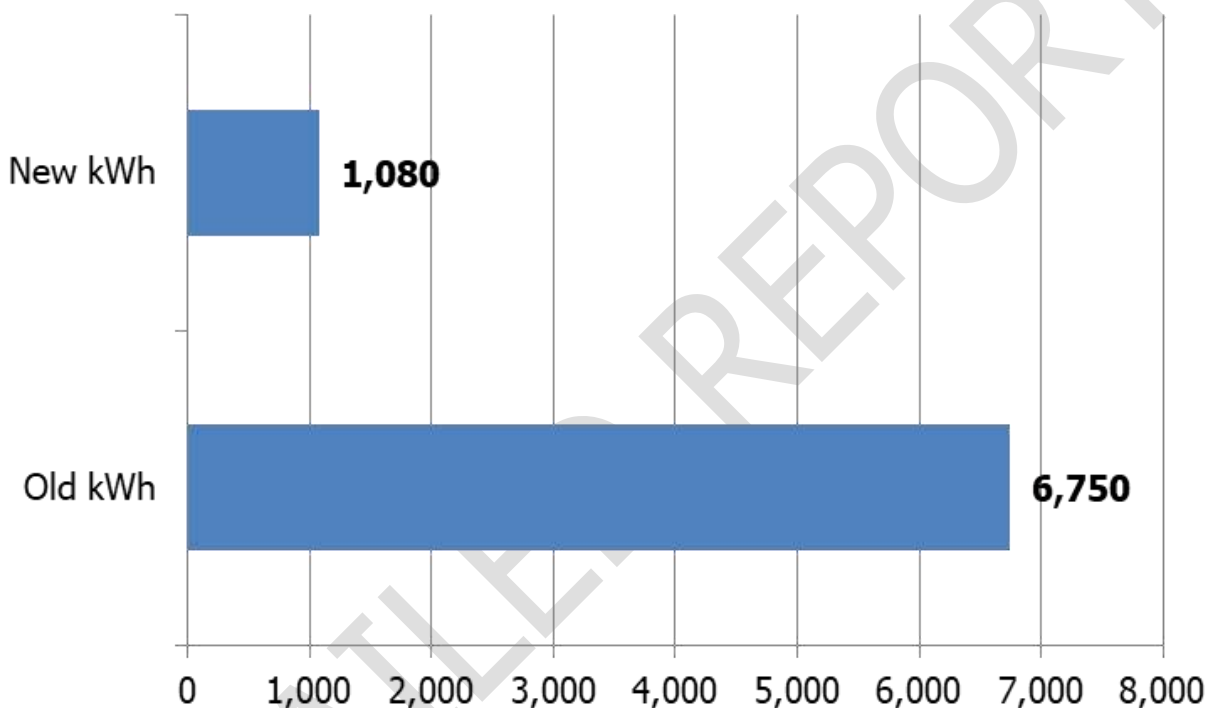


Figure 13: Analysis of current computers and new laptops

The above analysis shows reduction of average of **84% 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 the devices get damaged or are not in working condition.

5. Towards a Healthy & Sustainable Institution

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) Waste vio** – 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.
- d) 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 key responses are listed below. Whereas many responses **stated there were no changes requires because the present practices are excellent.**

- Everything is better in our college so don't change any thing.
- Nothing

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

- According to me we should plant trees.
- Water harvesting should be improved.
- Beautiful Flowering garden and botanical garden should be made available in the college premises.
- Every students and teachers should participate equally and apart from campus should take care of local surrounding.
- To focus on maintenance
- All staff member should plant one plant every year.

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. Climate data <https://en.climate-data.org/asia/india/maharashtra/chandrapur-24355/>
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.

DETAILED REPORT



ENVIRONMENT AUDIT

2019-21

AUDIT REPORT

Studied for

Dr. Babasaheb Ambedkar Memorial Society's

**Dr. Ambedkar College of
Arts, Commerce and Science**

Civil Lines, Chandrapur – 442 401

Analysed by



21 December 2021

Disclaimer

Green Audit Team has prepared this report for the **Dr. Babasaheb Ambedkar Memorial Society's Dr. Ambedkar College of Arts, Commerce and Science, Civil Lines, Chandrapur – 442 401** 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 on-site 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 along with Ar. Nahida Shaikh as an Accredited Green Building Professional.

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

Green Audit Assessment Team thanks the **Dr. Babasaheb Ambedkar Memorial Society's Dr. Ambedkar College of Arts, Commerce and Science, Civil Lines, Chandrapur – 442 401** 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 **Hon'ble Arun Ghotekar, President; Hon'ble Ashok Ghotekar, Vice President; Hon'ble Waman Modak, Secretary** and everyone from the Management.

Our heartfelt thanks to Chairperson of the entire process **Dr. Rajesh Dahegaonkar, Principal** for his valuable inputs.

We are also thankful to College's Task force the faculty members who have collected data required for green audit **Dr. Amrut Lanje, Associate Professor; Dr. P. H. Munjankar, Associate Professor** and **Dr. Nitin D. Ghugare; Assistant Professor**.

The kind gesture for the inventory and data collection of the **Admin Staff** is quite commendable.

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

Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

Contents

Disclaimer	1
Acknowledgement	2
Contents.....	3
1. Introduction.....	4
2. Institution overview	10
3. Green Building Study Audit.....	13
4. Site Study.....	14
5. Ecological (Environmental) Audit	15
6. Towards a Healthy & Sustainable Institution.....	23
7. References	25

DETAILED REPORT

1. Introduction

1.1 About the Dr. Babasaheb Ambedkar Memorial Society, Chandrapur

It was formed on 21 June 1970 by Late Bar. Rajbhau Khobragade. The Society has implemented the goal of educating the students in the best way possible by uplifting the academic status of the students through quality education and adopting the local village for overall community development. Meticulous joint efforts of the students and staff have made the institution one of the most sustainable premises in the locality.

1.2 Vision of the College

To kindle the spirit of learning among the youth, to uplift the lives of downtrodden, Minority communities, eradicate their poverty and make them lead a sustainable life, to consistently pursue excellence preserving the tradition of high reputation while meeting the challenges of globalised world.

1.3 Institution and the surrounding premises

The Premises is situated amidst the landscape serene of **Chandrapur district of Maharashtra State** with immense peace and calmness in the surroundings. The college is surrounded by open landscape on North and West side, whereas there are residential areas on the East and South side. There is a broad and open to sky frontal approach which provides quite a beautiful appreciation space while approaching the premise. 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.

Dr. Ambedkar College of Arts, Commerce and Science was established on 21st June 1970 and is run by Dr. Babasaheb Ambedkar Memorial Society, Chandrapur. The college was accorded a Buddhist religious Minority Status in 2012. It is situated in the heart of Chandrapur, known as the city of "Black gold". The founder member of this college, Late Barrister Rajabhau Khobragade was the Vice- President of Rajya Sabha in 1960. The primary aim of establishing this college is to eradicate illiteracy among Bahujan Samaj. The college mainly caters to SC/ST/NT and other backward category students from rural

and tribal areas. The college has a vast campus with facilities like boys hostel, girls hostel, spacious playground, gym, sports facility, canteen, auditorium, library, laboratories, Dr. Ambedkar study centre, NCC, NSS, Career Guidance Cell and Women's Cell. The college has Arts, Commerce and Science faculties and PG courses in English, Marathi, Economics, Political Science, History, Sociology, Geography and Commerce. It also successfully runs PG courses in Electronics, Botany, Zoology, Maths and Chemistry.

The Junior Wing of the college has Arts, Commerce and Science. It also runs higher secondary certificate vocational courses. The college functions efficiently under the guidance of the present Principal Dr. Rajesh Dahegaonkar. The college has efficient and scholarly teaching staff. The teaching and the non-teaching staff work for the betterment of the students.

The college which started with just 420 students has now over 4500 students studying in various courses. The dream of founder members seems to have been fulfilled.

- **Bachelors Programme**

- Arts (B.A.)
- Commerce (B. Com)
- Science (B. Sc)

- **Master Programme**

- Arts (M.A. in the following programmes)
 - Economics
 - English
 - Geography
 - History
 - Marathi
 - Political Science
 - Sociology
- Commerce (M. Com)
- Science (M. Sc)
 - Botany
 - Chemistry
 - Electronics
 - Mathematics
 - Zoology

- **Ph.D Programme**

The College aspires at training young women and men to be competent, committed and compassionate and lead in all walks of life. It has the following aim and objectives.

- To preserve human values of equality, freedom, fraternity, amity, compassion and tolerance among students.
- To provide opportunities to promising students from Minority communities who have been denied progress and prestige by religious, social system for many years.
- To create opportunities of education for the poor students of rural areas.
- To develop the overall personality of students alongwith their educational, physical, mental and intellectual development.
- To inculcate the spirit of service, sense of sacrifice and social commitment among students.
- To exhort the students regularly to give utmost importance to moral principal in their personal and social life.
- To educate the students in order to make them realize the significance of parliamentary democracy, secularism, socialism and supremacy of Indian constitution and the rule of law.
- To enable the students to accept the change in every walk of life and face the challenges that come along with it.
- To develop analytical, intellectual and logical thinking among students.
- To awaken the students to believe it is not caste, religion, sect, language, region or creed but nationalism which is the supreme loyalty of all.

1.4 Assessment of the College

Affiliations - The Institute is affiliated to Gondwana University, Gadchiroli.

Recognitions - University Grant Commission (UGC) by 2(f) 12(b)

Certification – The Institute has received the following Certifications

- ISO 9001:2015
- NIRF

- AISHE

Accreditation

The following are details of the reaccreditation of the Institute.

Cycle	First	Second
CGPA	63	2.76
Grade	C+	B++
Year	2004	2017

Table 1: NAAC Accreditation details of the Institute

The college is due to enter its Third cycle of NAAC soon.

1.5 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.

S.No.	Faculty name	Award	Year
1.	Dr. Rajesh R. Dahegaonkar (Principal)	Adarsha Shikshak award	2003
		Chatrapati Shiwaji Maharaj award	2003
		Best Educationist Award by International Institute of Education and Management	2018
2.	Dr. V. Y. Gedam (Professor)	State Level Shikshak Ratna award by Samta Sahitya Academy, Pune Shikshak Ratna award	2015
		State Level Best Programme Officer Award as per notification by Government of Maharashtra.	2016
		University Level Best NSS Programme Officer Award during the session 2015-2016 by Gondwana University, Gadchiroli	2016
		Shikshak Ratna award	2015
		Best N.S.S. officer award by Gondwana University, Gadchiroli	2016
		Global Teacher Role Model Award by Manushybal Vikas Lokseva Academy	2019
		Gondwana University Covid Worrier Award by Youth and Sports ministry, Govt. of India	2021
3.	Dr. A. S. Lanje (Asso. Professor)	F.I.P. award by U.G.C.	2007
		Bharat Vidya Rattan Award by Indian Solidarity Council, New Delhi	2018
		Young scientist award	2008

		Best paper award for poster presentation	2009
		I2OR National Elite Teacher Award 2021 On 5 September, 2021, by , instituted by the International Institute of organized Research (I2OR) which is a registered MSME with the Ministry of Micro, Small and Medium Enterprises, Government of India	2021
		International Scientist Award on Engineering, Science and Medicine Best Researcher Award By VDGGOOD Professional Association India September- 2021	2021
		Best Paper Award on best oral Presentation for the paper "Dielectric Measurements of Tin Oxide (SnO ₂) nanoparticles at low Temperature" A. S. Lanje , R. B. Pode, S. J. Sharma, R. S. Ningthoujam and R. K. Vatsa Presented at National Conference on Recent Trends in Basic and Applied Materials Organized by Institute of Science, Nagpur. On 11 & 12 th Jan 2009	2009
4.	Dr. P. M. Shende (Asso. Professor)	F.I.P. award by UGC	2007
5.	Dr. S. R. Gawali (Asst. Professor)	Distinguished Fellow Award (FVMS) given by Vishwashanti Multipurpose Society, Nagpur for exceptional Skill Devotion Dedication and Professionalism and Innovative Ideas in Science.	2014
6	Dr. N. S. Ramteke (Asst. Professor)	Mahatma Jyotiba Fule Samta Puraskar given by Samta Sahitya Academy, Yeotmal	2012
7	Shri. M. T. Sontakke (Associate Professor)	Shri Shivchatrapati Shivaji Maharaj Samta Puraskar by Samta Sahitya Academy, Yeotmal.	2012
8	Dr. M. N. Raipure (Asst. Professor)	Mahatma Jyotiba Fule Samaj Gaurav Puraskar	2011
		Nari Ratna award	2011
9	Ku. B. D. Ratnaparkhi (Asst. Professor)	Krantijyoti Savitribai Fule Samata award	2011
		Dr. Babasaheb Ambedkar Samaj Ratna award	2011
10	Shri. J. R. Chimurkar (Asst. Professor)	Mahatma Jyotiba Fule Samaj Gaurav Puraskar	2012
11	Shri. D. J. Ramteke (Asso. Professor)	Mahatma Jyotiba Fule Samaj Gaurav Puraskar	2011
		Shikshk Ratna Samata Praskar	2012
12	Ku.V. M. Dhadade (Asso. Professor)	Maniratna Shikshak Gaurav Puraskar (Best Teacher award)	2011

13	Dr. B. M. Moon (Asst. Professor)	Dr. Babasaheb Ambedkar Samaj Ratna Samman	2013
		Matoshri Ramabai Tarun Sanghatna Puraskar	2012
14	Dr. D. M. Pimpalshende (Asst. Professor)	Dr. Panjabrao Deshmukh Samajbhushan Puraskar, Nagpur	2014
15	Shri V. K. Kale (Asst. Professor)	Dr. Babasaheb Ambedkar Teacher award	2009
		Mahatma Jyotiba Fule Samaj Gaurav Puraskar	2013
16	Dr. M. B. Bhagat (Asst. Professor)	Rajiv Gandhi National Research Fellowship award by UGC, Delhi	2006
		Gold medal for Ph.D. Thesis	2012
		Three Gold medal for first University merit	2004
17	Shri. S. G. Petkar (Asst. Professor)	Dr. Babasaheb Ambedkar Shikshak Puraskar	2009
18	Dr. B. M. Moon (Asst. Professor)	Dr. Babasaheb Ambedkar Samaj Ratna Samman	2013
		Matoshri Ramabai Tarun Sanghatna Puraskar	2012
19	Dr. V. P. Dakhane (Asst. Professor)	F.I.P. award	2007
		Second award for poster presentation	2008
		University Level Research Festival	2019
		AVISHKAR -2019 First Award in Category "Medicine and Pharmacy by Gondwana University, Gadchiroli	
20	Shri S. W. Patil (Asst. Professor)	University Level Research Festival AVISHKAR -2019 First Award in Category Pure Science (Post PG Level) by Gondwana university	2019

Table 2: Details of the various Awards received by the Institution

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 are total of **1,413 Girl and 1,054 Boys** students.

2.1.2 Staff data

Type	Male	Female	Total
Admin staff	1	0	1
Teaching staff	27	8	35
Non-Teaching staff	12	2	14
Total	40	10	50

Table 3: Staff data of the Institution for 2019-20

The staff data shows the premise has a total of **50** 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 are total of **1,566 Girl and 1,197 Boys** students.

2.2.2 Staff data

Type	Male	Female	Total
Admin staff	1	0	1
Teaching staff	28	6	34
Non-Teaching staff	11	2	13
Total	40	8	48

Table 4: Staff data of the Institution for 2020-21

The staff data shows the premise has a total of **48** staff members.

2.3 Total Institute Area & College Building Spread Area

The **total site area is 5 Acres** and the **total Built-up area of College is 1,09,550 sq. ft.** for a **total of 2,811 footfalls.**

2.4 Institute Infrastructure

2.4.1 Establishment

The College is run by **Dr. Babasaheb Ambedkar Memorial Society, Chandrapur.** It was established in 1970. The Society has rich tradition of Quality education of over 50+ years. 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 Premise 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 premise, whereas there are amenities such as CCTV, Fire extinguishers, Library and first aid box. The premise houses the following areas:

- Educational Building
- Science Building
- Administrative Office
- Sports Building
- NCC Building

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	Degree College	Student areas and Teaching faculty	8:30 a.m. to 5 p.m.	8.5	210
2	General areas	Admin areas and library, Passage, staircase, toilet	8:30 a.m. to 5 p.m.	8.5	210

Table 5: 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 premise 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 campus

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

- | | |
|--------------------|-------------------------------|
| • 9 September 2021 | – Discussion with the College |
| • 30 November 2021 | – Data submitted by College |
| • 21 December 2021 | – Submission of draft Report |

4. Site Study

The following listed are some of the positive site elements which are beneficial to the college in terms of tangible and intangible benefits.

- **Location** - The Dr. Babasaheb Ambedkar Memorial Society's Dr. Ambedkar College of Arts, Commerce and Science, Civil Lines, Chandrapur – 442 401 and falls under the Chandrapur district, Nagpur division of the Maharashtra State.
- **Neighbourhood context** - The premise is surrounding by open spaces and Residential and Educational spaces on the immediate surroundings of the site.
- **Natural physical features** – The premise includes a rich biodiversity and huge number of plants in the adjacent open space. The site does not have major different in the land levels (contours).
- **Manmade features** – The premise is situated in a rural area amidst residential areas and open spaces with appropriate proximity to necessary amenities. There is sufficient appreciation space for entrance. The materials used for construction are RCC and the landscaping includes innumerable natural trees as well as potted plants.
- **Circulation** – There is a smooth transition of pedestrian traffic inside the premises due to the large entrance gate and the huge open space where vehicles of students and staff is parked.
- **Climate** – The climate is tropical in Chandrapur. In winter, there is much less rainfall than in summer. The Köppen-Geiger climate classification is Aw. The average temperature is 27.7 °C | 81.8 °F. The annual rainfall is 1245 mm | 49.0 inch. The driest month is December. There is 3 mm | 0.1 inch of precipitation in December. Most precipitation falls in July, with an average of 376 mm | 14.8 inch. With an average of 35.8 °C | 96.4 °F, May is the warmest month. In December, the average temperature is 22.3 °C | 72.1 °F. It is the lowest average temperature of the whole year. The precipitation varies 373 mm | 15 inch between the driest month and the wettest month. The average temperatures vary during the year by 13.5 °C | 24.3 °F. The month with the highest relative humidity is August (81.25 %) and with lowest relative humidity is May (27.93 %) The month with the highest number of rainy days is July (22.33 days) and with the lowest number of rainy days is December (0.87 days).

(Source: <https://en.climate-data.org/asia/india/maharashtra/chandrapur-24355/>)

Ecological (Environment) Audit



Background reference image Yugal Shrivastava on pexels

5. Ecological (Environmental) Audit

Environment is an essential part for human survival. We co-exist with the environment and it cannot be termed as a separate entity. The Ecological audit helps to understand the flora, fauna that exists and steps that can be taken to improve the same. To denote if there are problems related to sound in and around the surrounding. In terms of the carbon footprint it helps in keeping a tab on the eco-friendly habits incorporated by the inhabitants of the premise. Health today is the topmost priority, a general understanding of the initiatives undertaken along with sufficient hygiene practices adopted. Universal design is applicable to all built and unbuilt spaces.

As part of our study we could state that the Institution has developed eco-friendly practices and sustainable solutions which are well reflected in the rich biodiversity of the Premises. Being situated near the city the appreciation space towards the main entrance provides a welcoming approach to the College.

The college has huge open space used by all. The students use it for as a leisure place for study and college ground is used for sports activities. There are ample resting spaces as part of building design which provide a resting and warm welcoming approach in the premise.

5.1 Open Spaces

There is a beautiful balance of natural and open spaces in the premise and the open/vegetation spaces are balanced overall. The ground is used by students at present for sports and cultural gatherings. **There are provisions for natural plantations which have enhanced the beauty of the space.**

There are a few Maintenance staff allotted for the open spaces and they have done an excellence job in terms of the duty allotted. The infrastructure committee too is involved in this process. The traditional tap and pipe facility is adopted for watering and the college has taken special provisions for the same. The spaces are watered daily in summer. **The efforts to maintain the existing space are commendable.**

5.2 Flora Audit

A flora survey was carried out to identify the total numbers of plants and trees. The landscape area has a variety of plantations constituting thousands of surveyed trees in premise in the last few years as follows with detail description of each.

S. No.	Scientific Name	Type	Nos.	Grown by
1	Neem	Tree	08	Students
2	Gulmohar	Tree	12	Staff
3	Ashok (Saraca Asoca)	Tree	25	Staff & Students
4	Jujubes	Shrub	01	Students
5	Peepal	Tree	03	Staff
6	Palm (Aerica)	Shrub	27	Staff and students
7	Coleus	Herb	10	Students
8	Jatropha Species (Red)	Herb	10	Staff
9	Ixora (Pink) And Red (Ixora Coccinia)	Shrub	05	Staff and students
10	Spider Plant (Chlorophytum Comosum)	Herb	60	Staff and students
11	Royal Palm	Tree	14	Students
12	Duranta Erecta	Herb	20	Staff and students
13	Thymus Vulgars	Herb	04	students
14	Chrysanthemum Spp	Herb	10	Staff
15	Indian Jasmine (Jasminum Sambac)	Herb	20	Staff and students
16	Garden Croton (Red Border)	Herb	06	Staff and students
17	Hibiscus Spp Violet	Shrub	02	Staff
18	Thymus Vulgaris	Herb	04	Students
19	Asystasia Gangatia	Herb	01	Staff
20	Euphorbia Tithymaloyides	Herb	08	Staff
21	Penta Lanceolate (White)	Herb	01	Staff
22	Penta Lanceolate (Pink)	Herb	01	Staff
23	Hibiscus (White)	Shrub	01	Staff
24	Croton (Green)	Herb	03	Students
25	Snake Plants	Herb	04	Students
26	Aloe Vera	Herb	08	Students
27	Cordyline	Herb	03	Students
28	Thuja	Shrub	01	Students
29	Alocasia Plumbea	Herb	04	Students
30	Asystasia (Chinese Violet Plant)	Herb	02	Staff and students
31	Hygrophila Araguaion	Herb	05	Staff and students

32	Dieffenbachia Amoena	Herb	03	Staff and students
33	Amaryllis Leaf Plant	Herb	01	Staff and students
34	Polyscias Fructicosa	Herb	01	Staff
35	Acalypha Wilkensiana	Herb	01	Staff
36	Adulsa (Adathoda Zeylanica)	Shrub	01	Staff
37	Champa (Plumeria)	Shrub	01	Staff
38	Araucaria Spp	Herb	01	Staff

Table 6: Details of the Flora in the premise

At present there are more than 290 trees and plants in the premise. However, the data submitted to use is studied further in detail as follows:

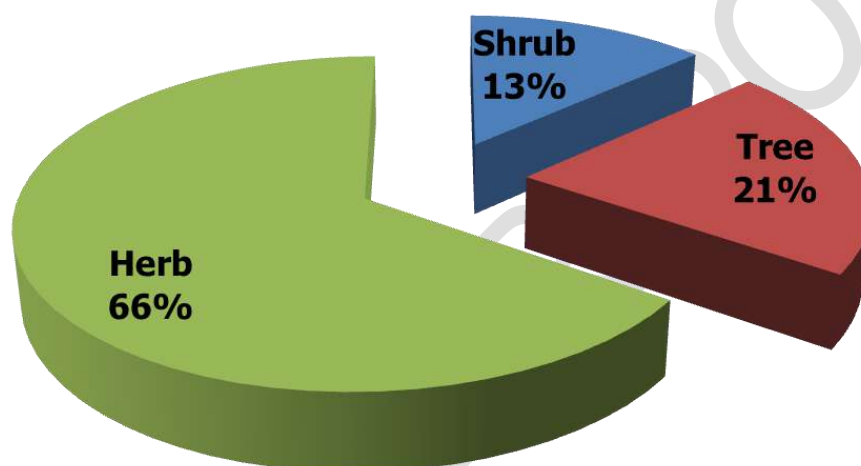


Figure 1: Study of the plantations in the premise

The above study shows among the surveyed plantations there are 66% Herbs, 21% Trees and 13% Shrubs in the premise.

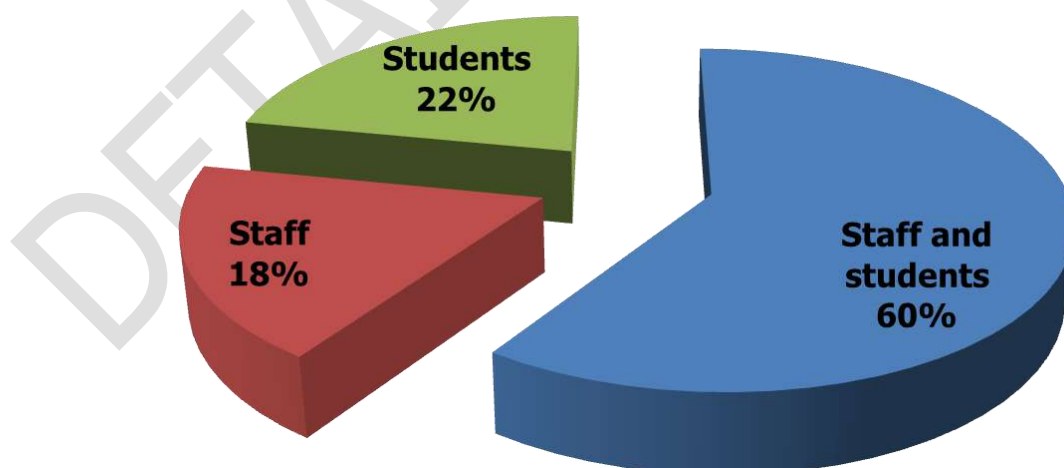


Figure 2: Study of the plantations in the premise

The above study shows 60% are jointly planted by both Staff & students; 22% by the Students & 18% by the Staff members.

5.3 Noise Audit

5.3.1 Macro level

On a macro level there are open grounds in the site. The approach road too has very minimal traffic. As the college is oriented amidst the residential areas with immense vegetation the noise levels do not affect the students and staff in their day to day functioning. The approach road too is pretty away. **Overall the noise level in terms of bad effect is low and there are positive outcomes as per our analysis on macro level.**

5.3.2 Micro level

The college has an adequate open space covered with huge trees prevailing naturally in the premise. There are bare minimum parking provisions provided in the premise which causes bare minimum noise as they are situated near the entrance which is a bit away. The college does not have generator thus there is no inconvenience or sound problem caused due to the same. There are no particular equipments which cause any noise effect. **Overall the noise levels inside the premises are low which is a good approach.**

5.4 Carbon Footprint Audit

5.4.1 Eco-friendly Commuting Practices

Based on data collection and discussion with staff the following points were noted:

- **Ease of commuting** – Owing to close proximity to public transport the access is very feasible and walk able.
- **Parent's commute** - There are 2 Parent-teacher meetings held in a year and the turn-out is around 60%

5.4.2 Heat Island Reduction

The Institution has **adopted the following practices which are yielding positive results** in terms of Urban Heat Island Effect which refers to increase in temperature of the surrounding because of ineffective strategies.

- **Exposed roof areas** – The terrace is flat roof, it is absolutely clean and well maintained. The Buildings are covered with white paint. With time the paint is

withering but the College shall take necessary steps to maintain it. The current practices are well maintained.

- **Exposed non-roof hardscape areas** - There is a pathway on all sides of the premises. These include some natural and potted plantations. However, the trees are wide and the canopy is wide spread providing ample shade to this space. Hence, there is no direct sunrays or similar effect. In addition there are provisions for grass pavers in the premise. The college an open space in the form of lush green carpet.

There are adequate measures adopted in the premises to reduce heat island effect of Building roofs and in site.

5.4.3 Outdoor Light Pollution Study

The college compound lights are not upward looking thus, these do not cause light pollution.

5.5 Universal Campus

As per World Report on Disability, 2011 there are 180 million approx. Persons with Disabilities that makes it 15% of total population of India.

There are Ramps, Handrails along staircase, low height risers in the Staircases as part of universal campus initiatives. The design of the premises is appropriate for access with passages and corridors being wide enough in size and naturally ventilated. The doubly and singly loaded corridors are safe from fire safety aspect. The college has resting places (seating areas) in the outdoor along the trees thereby making it user friendly for the specially abled students. **The college can plan to have lifts in the future depending on the situation and facilities.**

5.6 Fire Safety

When the building was constructed Fire fighting norms and permission from Chief Fire Officer was not in practice. However, the Institution has taken care for adequate fire safety measures to be adopted. Each floor has an open staircase without any barriers for fire safety measures. These staircases are free of any kind of storage or combustible

material. The windows in each classroom are at a low height with fresh air and natural light thereby adding to ample ventilation throughout the day. The college should adopt additional fire safety practices such as fire hydrant and others. The current facilities are quite well maintained. There are adequate Fire extinguishers in the premise and these are present on each floor. There can also be provision for additional fire safety signages as well.

5.7 Survey Results

An online survey was conducted to analyse the views about the premise, following are some of the reviews.

5.7.1 Participation

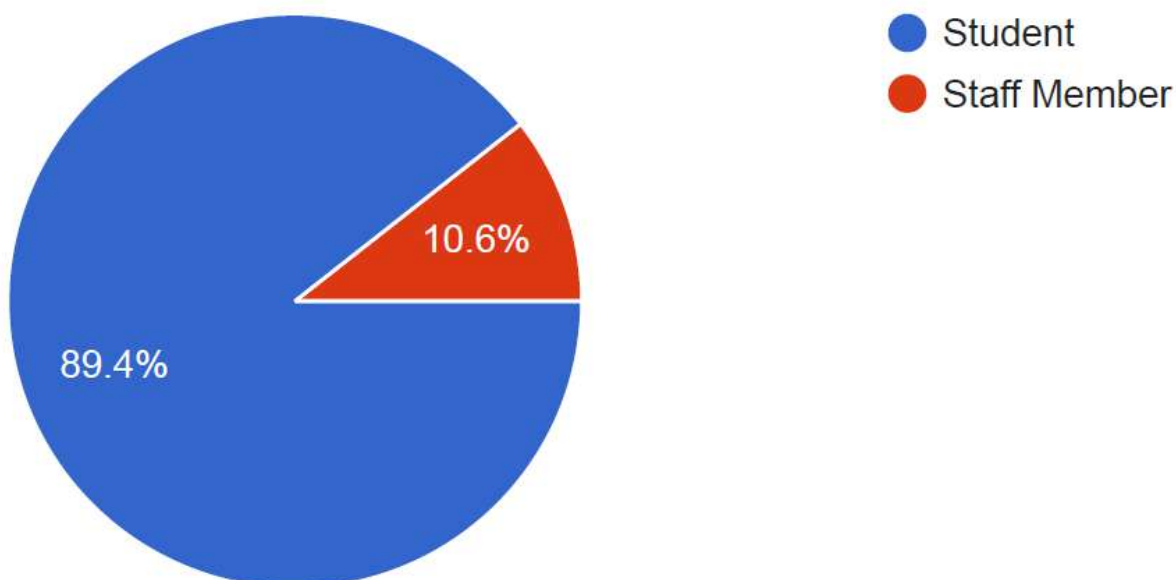


Figure 3: Participation analysis in the survey

A total of **85 responses** were received out of which 89% were students.

5.7.2 What according to you are the positive steps taken by the Institute towards Green Building/ Good maintenance?

We have listed some of the key responses below.

- Cleanliness awareness and tree plantation programs organized by the college.
- Planted number of plants in the college premises.

- Planting trees, a neat and clean classroom and keep grounds wet so that no dust can make problem.
- **In my opinion, the College has taken a very good step. They have done a lot of activities like planting trees.**

5.8 Positive site features a per our study

a) Cool rooftops

The College has the Terrace roofs painted with white cover it helps reduce the temperature of the spaces.

b) User friendly movability in premises

There are provisions of Kerb Ramp in the Building premises, also low height hand rail for ease of access.

c) Resting places

There are provisions for resting places in premises in outdoor and indoor.

d) Avoid using plastic in premise

There should be a provision for ban on the use of plastic bags or products in the Premise.

5.9 Recommendations for a Sustainable Habitat by Greenvio Solutions

Site beautification

a) Low VOC Paints and Adhesives

Whenever the College undergoes repairs or renovations there should be use of materials with low emissions so as to reduce the adverse health impacts on workmen and the students occupying the space thereafter.

b) Additional facilities for birds

There can be provision for drinking water and food facility for birds visiting in the College premise.

Universal Campus

a) Universal Toilet

There should be minimum 1 toilet for the specially abled people as per guidelines prescribed by National Building Code 2016 with size being minimum or more than 1.5m x 1.5m

Pollution Control

a) Bicycles as a gift

As an appreciation gesture may be the students toppers/ staff best performers can be awarded with a bicycle occasionally.

b) Paperless technologies

The college can go technology friendly and go paperless in the functioning of the Premise to a certain extent may be not fully.

c) OPAC system

The system is beneficial for the students.

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.

TREES AT VERIOUS POINT



RAMP IN VERIOUS POINTS



6. Towards a Healthy & Sustainable Institution

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

6.2 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.**

- Everything is better in our college so don't change any thing.
- Nothing

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

- According to me we should plant trees.
- Water harvesting should be improved.
- Beautiful Flowering garden and botanical garden should be made available in the college premises.
- Every students and teachers should participate equally and apart from campus should take care of local surrounding.
- To focus on maintenance
- All staff member should plant one plant every year.

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.

7. 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/maharashtra/chandrapur-24355/>
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.

DETAILED REPORT



GREEN AUDIT

2019-21

AUDIT REPORT

Studied for

Dr. Babasaheb Ambedkar Memorial Society's

**Dr. Ambedkar College of
Arts, Commerce and Science**

Civil Lines, Chandrapur – 442 401

Analysed by



21 December 2021

Disclaimer

Green Audit Team has prepared this report for the **Dr. Babasaheb Ambedkar Memorial Society's Dr. Ambedkar College of Arts, Commerce and Science, Civil Lines, Chandrapur – 442 401** 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 on-site 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 along with Ar. Nahida Shaikh as an Accredited Green Building Professional.

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

Green Audit Assessment Team thanks the **Dr. Babasaheb Ambedkar Memorial Society's Dr. Ambedkar College of Arts, Commerce and Science, Civil Lines, Chandrapur – 442 401** 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 **Hon'ble Arun Ghotekar, President; Hon'ble Ashok Ghotekar, Vice President; Hon'ble Waman Modak, Secretary** and everyone from the Management.

Our heartfelt thanks to Chairperson of the entire process **Dr. Rajesh Dahegaonkar, Principal** for his valuable inputs.

We are also thankful to College's Task force the faculty members who have collected data required for green audit **Dr. Amrut Lanje, Associate Professor; Dr. P. H. Munjankar, Associate Professor** and **Dr. Nitin D. Ghugare; Assistant Professor**.

The kind gesture for the inventory and data collection of the **Admin Staff** is quite commendable.

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

Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

Contents

Disclaimer	1
Acknowledgement.....	2
Contents	3
1. Introduction	4
2. Institution overview	10
3. Green Building Study Audit.....	13
4. Green Practices Audit.....	14
5. Waste Audit.....	20
6. Water Audit	24
7. Health and Hygiene Audit	27
8. Towards a Healthy & Sustainable Institution	29
9. References	31

1. Introduction

1.1 About the Dr. Babasaheb Ambedkar Memorial Society, Chandrapur

It was formed on 21 June 1970 by Late Bar. Rajbhau Khobragade. The Society has implemented the goal of educating the students in the best way possible by uplifting the academic status of the students through quality education and adopting the local village for overall community development. Meticulous joint efforts of the students and staff have made the institution one of the most sustainable premises in the locality.

1.2 Vision of the College

To kindle the spirit of learning among the youth, to uplift the lives of downtrodden, Minority communities, eradicate their poverty and make them lead a sustainable life, to consistently pursue excellence preserving the tradition of high reputation while meeting the challenges of globalised world.

1.3 Institution and the surrounding premises

The Premises is situated amidst the landscape serene of **Chandrapur district of Maharashtra State** with immense peace and calmness in the surroundings. The college is surrounded by open landscape on North and West side, whereas there are residential areas on the East and South side. There is a broad and open to sky frontal approach which provides quite a beautiful appreciation space while approaching the premise. 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.

Dr. Ambedkar College of Arts, Commerce and Science was established on 21st June 1970 and is run by Dr. Babasaheb Ambedkar Memorial Society, Chandrapur. The college was accorded a Buddhist religious Minority Status in 2012. It is situated in the heart of Chandrapur, known as the city of "Black gold". The founder member of this college, Late Barrister Rajabhau Khobragade was the Vice- President of Rajya Sabha in 1960. The primary aim of establishing this college is to eradicate illiteracy among

Bhahujan Samaj. The college mainly caters to SC/ST/NT and other backward category students from rural and tribal areas. The college has a vast campus with facilities like boys hostel, girls hostel, spacious playground, gym, sports facility, canteen, auditorium, library, laboratories, Dr. Ambedkar study centre, NCC, NSS, Career Guidance Cell and Women's Cell. The college has Arts, Commerce and Science faculties and PG courses in English, Marathi, Economics, Political Science, History, Sociology, Geography and Commerce. It also successfully runs PG courses in Electronics, Botany, Zoology, Maths and Chemistry.

The Junior Wing of the college has Arts, Commerce and Science. It also runs higher secondary certificate vocational courses. The college functions efficiently under the guidance of the present Principal Dr. Rajesh Dahegaonkar. The college has efficient and scholarly teaching staff. The teaching and the non-teaching staff work for the betterment of the students.

The college which started with just 420 students has now over 4500 students studying in various courses. The dream of founder members seems to have been fulfilled.

- **Bachelors Programme**
 - Arts (B.A.)
 - Commerce (B. Com)
 - Science (B. Sc)
- **Master Programme**
 - Arts (M.A. in the following programmes)
 - Economics
 - English
 - Geography
 - History
 - Marathi
 - Political Science
 - Sociology
 - Commerce (M. Com)
 - Science (M. Sc)
 - Botany
 - Chemistry
 - Electronics
 - Mathematics
 - Zoology
- **Ph.D Programme**

The College aspires at training young women and men to be competent, committed and compassionate and lead in all walks of life. It has the following aim and objectives.

- To preserve human values of equality, freedom, fraternity, amity, compassion and tolerance among students.
- To provide opportunities to promising students from Minority communities who have been denied progress and prestige by religious, social system for many years.
- To create opportunities of education for the poor students of rural areas.
- To develop the overall personality of students alongwith their educational, physical, mental and intellectual development.
- To inculcate the spirit of service, sense of sacrifice and social commitment among students.
- To exhort the students regularly to give utmost importance to moral principal in their personal and social life.
- To educate the students in order to make them realize the significance of parliamentary democracy, secularism, socialism and supremacy of Indian constitution and the rule of law.
- To enable the students to accept the change in every walk of life and face the challenges that come along with it.
- To develop analytical, intellectual and logical thinking among students.
- To awaken the students to believe it is not caste, religion, sect, language, region or creed but nationalism which is the supreme loyalty of all.

1.4 Assessment of the College

Affiliations - The Institute is affiliated to Gondwana University, Gadchiroli.

Recognitions - University Grant Commission (UGC) by 2(f) 12(b)

Certification – The Institute has received the following Certifications

- ISO 9001:2015

- NIRF
- AISHE

Accreditation

The following are details of the reaccreditation of the Institute.

Cycle	First	Second
CGPA	63	2.76
Grade	C+	B++
Year	2004	2017

Table 1: NAAC Accreditation details of the Institute

The college is due to enter its Third cycle of NAAC soon.

1.5 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.

S.No.	Faculty name	Award	Year
1.	Dr. Rajesh R. Dahegaonkar (Principal)	Adarsha Shikshak award	2003
		Chatrapati Shiwaji Maharaj award	2003
		Best Educationist Award by International Institute of Education and Management	2018
2.	Dr. V. Y. Gedam (Professor)	State Level Shikshak Ratna award by Samta Sahitya Academy, Pune Shikshak Ratna award	2015
		State Level Best Programme Officer Award as per notification by Government of Maharashtra.	2016
		University Level Best NSS Programme Officer Award during the session 2015-2016 by Gondwana University, Gadchiroli	2016
		Shikshak Ratna award	2015
		Best N.S.S. officer award by Gondwana University, Gadchiroli	2016
		Global Teacher Role Model Award by Manushybal Vikas Lokseva Academy	2019
		Gondwana University Covid Worrier Award by Youth and Sports ministry, Govt. of India	2021
3.	Dr. A. S. Lanje	F.I.P. award by U.G.C.	2007

	(Asso. Professor)	Bharat Vidya Rattan Award by Indian Solidarity Council, New Delhi	2018
		Young scientist award	2008
		Best paper award for poster presentation	2009
		I2OR National Elite Teacher Award 2021 On 5 September, 2021, by , instituted by the International Institute of organized Research (I2OR) which is a registered MSME with the Ministry of Micro, Small and Medium Enterprises, Government of India	2021
		International Scientist Award on Engineering, Science and Medicine Best Researcher Award By VDGGOOD Professional Association India September- 2021	2021
		Best Paper Award on best oral Presentation for the paper "Dielectric Measurements of Tin Oxide (SnO ₂) nanoparticles at low Temperature" A. S. Lanje , R. B. Pode, S. J. Sharma, R. S. Ningthoujam and R. K. Vatsa Presented at National Conference on Recent Trends in Basic and Applied Materials Organized by Institute of Science, Nagpur. On 11 & 12 th Jan 2009	2009
4.	Dr. P. M. Shende (Asso. Professor)	F.I.P. award by UGC	2007
5.	Dr. S. R. Gawali (Asst. Professor)	Distinguished Fellow Award (FVMS) given by Vishwashanti Multipurpose Society, Nagpur for exceptional Skill Devotion Dedication and Professionalism and Innovative Ideas in Science.	2014
6	Dr. N. S. Ramteke (Asst. Professor)	Mahatma Jyotiba Fule Samta Puraskar given by Samta Sahitya Academy, Yeotmal	2012
7	Shri. M. T. Sontakke (Associate Professor)	Shri Shivchatrapati Shivaji Maharaj Samta Puraskar by Samta Sahitya Academy, Yeotmal.	2012
8	Dr. M. N. Raipure (Asst. Professor)	Mahatma Jyotiba Fule Samaj Gaurav Puraskar	2011
		Nari Ratna award	2011
9	Ku. B. D. Ratnaparkhi (Asst. Professor)	Krantijyoti Savitribai Fule Samata award	2011
		Dr. Babasaheb Ambedkar Samaj Ratna award	2011
10	Shri. J. R. Chimurkar (Asst. Professor)	Mahatma Jyotiba Fule Samaj Gaurav Puraskar	2012
11	Shri. D. J. Ramteke (Asso. Professor)	Mahatma Jyotiba Fule Samaj Gaurav Puraskar	2011
		Shikshk Ratna Samata Praskar	2012

12	Ku.V. M. Dhadade (Asso. Professor)	Maniratna Shikshak Gaurav Puraskar (Best Teacher award)	2011
13	Dr. B. M. Moon (Asst. Professor)	Dr. Babasaheb Ambedkar Samaj Ratna Samman	2013
		Matoshri Ramabai Tarun Sanghatna Puraskar	2012
14	Dr. D. M. Pimpalshende (Asst. Professor)	Dr. Panjabrao Deshmukh Samajbhushan Puraskar, Nagpur	2014
15	Shri V. K. Kale (Asst. Professor)	Dr. Babasaheb Ambedkar Teacher award	2009
		Mahatma Jyotiba Fule Samaj Gaurav Puraskar	2013
16	Dr. M. B. Bhagat (Asst. Professor)	Rajiv Gandhi National Research Fellowship award by UGC, Delhi	2006
		Gold medal for Ph.D. Thesis	2012
		Three Gold medal for first University merit	2004
17	Shri. S. G. Petkar (Asst. Professor)	Dr. Babasaheb Ambedkar Shikshak Puraskar	2009
18	Dr. B. M. Moon (Asst. Professor)	Dr. Babasaheb Ambedkar Samaj Ratna Samman	2013
		Matoshri Ramabai Tarun Sanghatna Puraskar	2012
19	Dr. V. P. Dakhane (Asst. Professor)	F.I.P. award	2007
		Second award for poster presentation	2008
		University Level Research Festival	2019
		AVISHKAR -2019 First Award in Category "Medicine and Pharmacy by Gondwana University, Gadchiroli	
20	Shri S. W. Patil (Asst. Professor)	University Level Research Festival AVISHKAR -2019 First Award in Category Pure Science (Post PG Level) by Gondwana university	2019

Table 2: Details of the various Awards received by the Institution

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 are total of **1,413 Girl and 1,054 Boys** students.

2.1.2 Staff data

Type	Male	Female	Total
Admin staff	1	0	1
Teaching staff	27	8	35
Non-Teaching staff	12	2	14
Total	40	10	50

Table 3: Staff data of the Institution for 2019-20

The staff data shows the premise has a total of **50** 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 are total of **1,566 Girl and 1,197 Boys** students.

2.2.2 Staff data

Type	Male	Female	Total
Admin staff	1	0	1
Teaching staff	28	6	34
Non-Teaching staff	11	2	13
Total	40	8	48

Table 4: Staff data of the Institution for 2020-21

The staff data shows the premise has a total of **48** staff members.

2.3 Total Institute Area & College Building Spread Area

The **total site area is 5 Acres** and the **total Built-up area of College is 1,09,550 sq. ft.** for a **total of 2,811 footfalls.**

2.4 Institute Infrastructure

2.4.1 Establishment

The College is run by **Dr. Babasaheb Ambedkar Memorial Society, Chandrapur.** It was established in 1970. The Society has rich tradition of Quality education of over 50+ years. 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 Premise 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 premise, whereas there are amenities such as CCTV, Fire extinguishers, Library and first aid box. The premise houses the following areas:

- Educational Building
- Science Building
- Administrative Office
- Sports Building
- NCC Building

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	Degree College	Student areas and Teaching faculty	8:30 a.m. to 5 p.m.	8.5	210
2	General areas	Admin areas and library, Passage, staircase, toilet	8:30 a.m. to 5 p.m.	8.5	210

Table 5: 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 premise 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 campus

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

- | | |
|--------------------|-------------------------------|
| • 9 September 2021 | – Discussion with the College |
| • 30 November 2021 | – Data submitted by College |
| • 21 December 2021 | – Submission of draft 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:

- There is **availability of open space in the premise in addition to the provision of the multiple varieties of flora, Apiculture is practised in the premise.**
- **Car-pooling, cycling to college practice are observed by the staff and students.**
- There is **organic composting process carried out for decomposition of organic matter of plants and it is used as an organic fertilizer and increase ecology, this is done through Vermiculture.**
- **The ample vegetation benefit the users by providing shade.**
- The NSS Team, College authorities **jointly conduct initiatives for upgrading of the premises from environmental view.**

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 get 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

Name of the activity	Organising unit/ agency/ collaborating agency	Name of the scheme	Teacher nos.	Student nos.
World Population Day	Social Welfare Department Maharashtra Govt.	World No Tobacco Day	7	61
World Population Day	NSS	World Population Day	7	61
Plastic Free College Campus	Nss	Plastic Free College Campus	7	55
World Literacy Day	Nss	World Literacy Day	7	80
Road Safety Programme	NSS	Road Safety Programme	7	55
Swachh Bharat Sundar Bharat	Nss	Swachh Bharat Sundar Bharat	7	75

Table 6: Details of the environment related activities

Due to lockdown, more social events could not take place physically after these.

4.3.2 General activities Conducted by NSS unit

- 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

4.4 Survey Results

An online survey was conducted to analyse the views about the premise, following are some of the reviews.

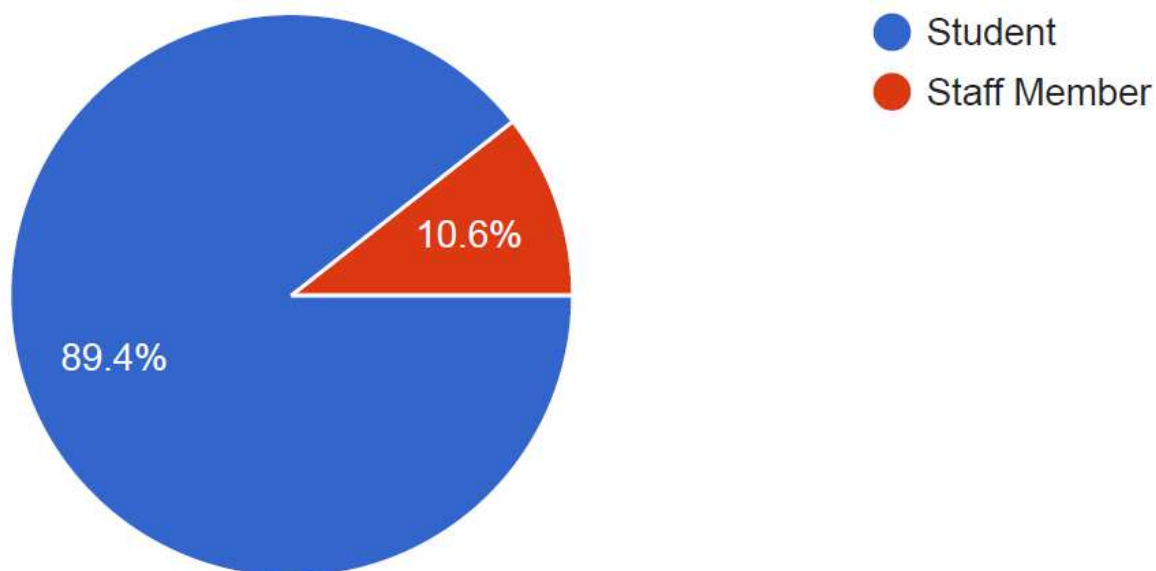


Figure 1: Participation analysis in the survey

A total of **85 responses** were received out of which 89% were students.

4.4.1 Rate the Green awareness practices in College

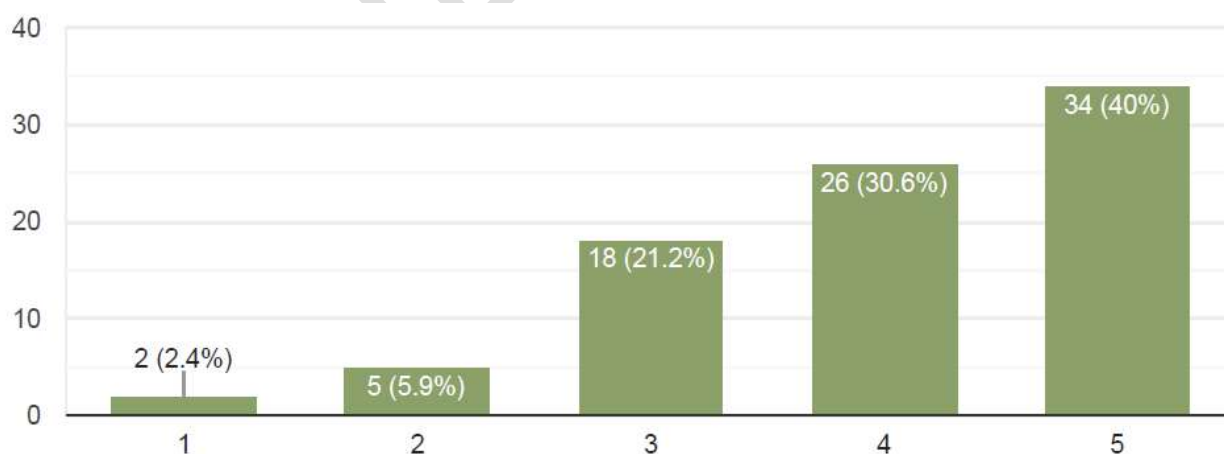


Figure 2: Green awareness practices in College

There were mixed responses received the highest was for **rating 5 (Excellent) at 40%** followed by **31% for rating 4 (Very Good)**.

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

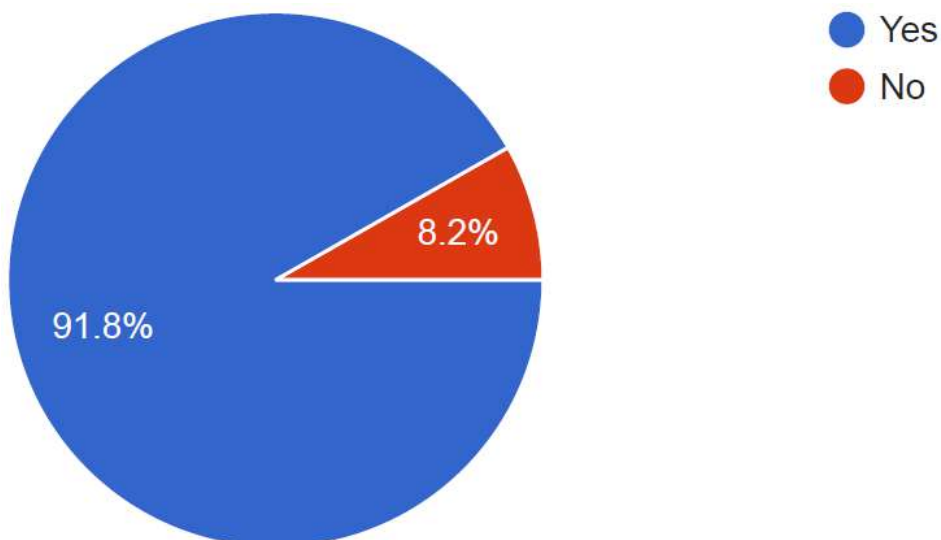


Figure 3: Green awareness practices in College

The students, staff **92%** of responses confirmed activities are conducted which is very excellent.

4.4.3 Do you participate in such events?

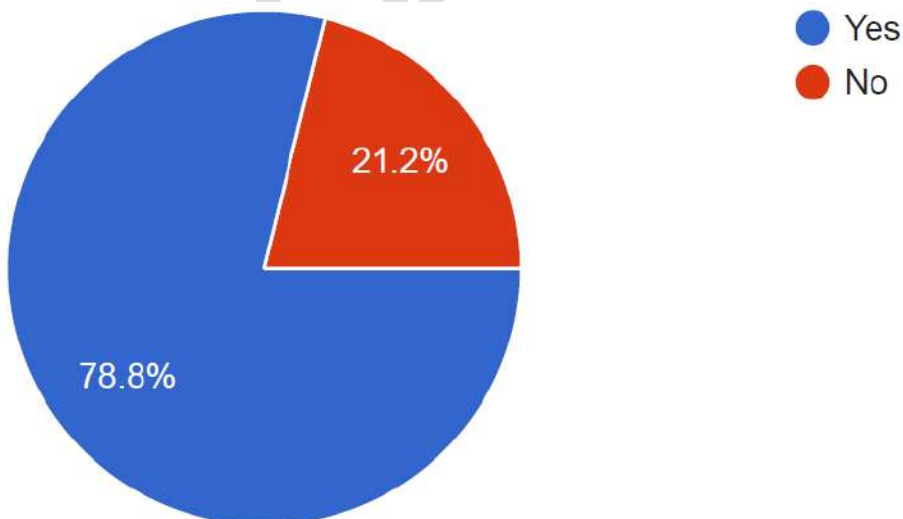


Figure 4: Green awareness practices in College

The students, staff **almost 79%** of the responses confirmed their participation, **this is an excellent response.**

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

We have listed some of the key responses below.

- We actively worked with the help of sports and NSS students in cleanliness and plantation programs.
- My experience in this type of program which taken by my college is very good and experienciabile.
- **Good**
- **Great experience**
- **Nice**
- **The program was good and the participants are very confident and very nice. The program was really so fantastic and responsible students should be appreciate it.**
- Every staff staff member & students actively participate in the program.
- **Best programs with fruitful output.**
- **Excellent**
- Such a wonderful experience!

4.5 Recommendations for a Sustainable Habitat by Greenvio Solutions

We have found that the current practices are very excellent and thus there are only minimal recommendation with respect to this section.

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

The types of waste collected in the campus are as follows. These are separated before processing and not given to the local Corporation. The details of the quantity and type of waste are as follows.

S. No.	Type of waste	Source and quantity	Current Disposal method	Can be treated/ recycled?	Methodology
1	Solid waste	Toilets–Biodegradable waste of 20kg per week	Led in the storm water drains	Yes	TREATED - Small biogas plant can be proposed in open space
2	E-waste	Computers - Non-biodegradable waste as per the annual year usage	Donated	Yes	CONTINUE - with the current practice
4	Dry waste in form of leaves	Open space & plantations, papers - Non biodegradable waste of 6kg per week	Vermi - Composting	Yes	CONTINUE - with the current practice
4	Liquid waste	Toilets, washbasins – Around 200 – 250 litres per week during general times and 50 litres at present	Led to the storm water drain	Yes	TREATED - Waste water treatment plant

Table 7: Summary of the types of waste produced in the premises

5.1.2 Bins summary

There are 43 Dustbins in the premise with volume of 7 litres (small) and 60 litres (Large) made up of plastic material. The analysis of dustbins is presented below.

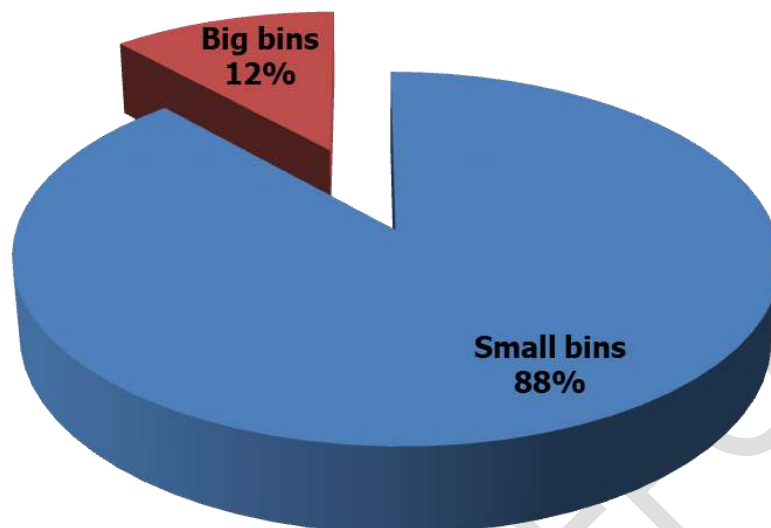


Figure 5: Analysis of dustbins in the premise

The above analysis shows **88%** are **Small bins** and **12%** are **big bins** present in the premise.

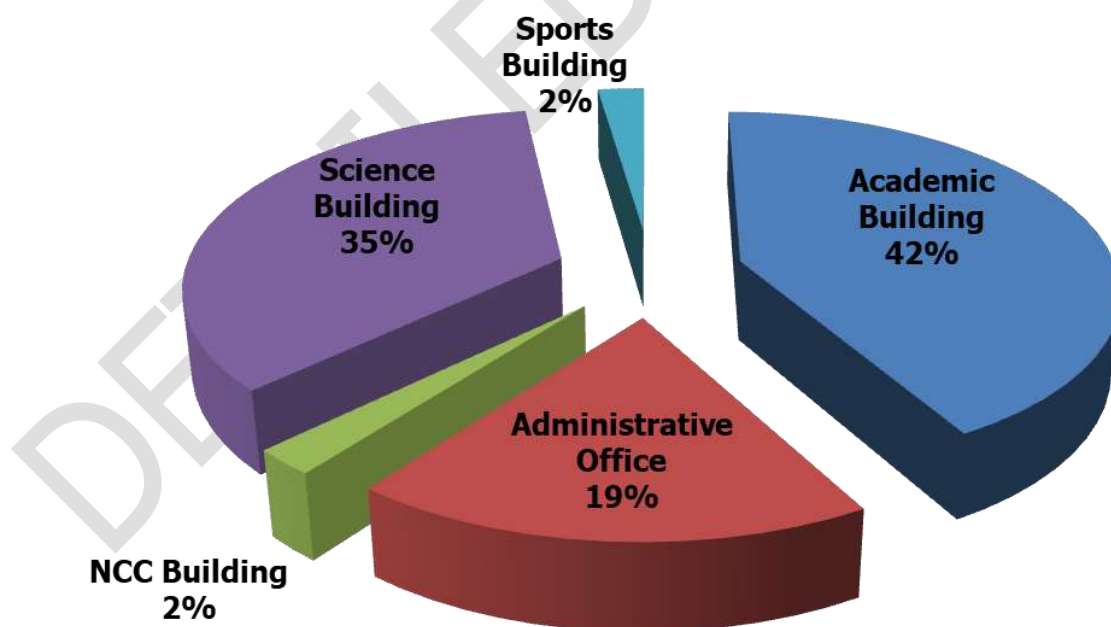


Figure 6: Analysis of dustbins in the premise

The above analysis shows **42%** bins are present in the **Academic Building**, **35%** in **Science Building**, **19%** in **Administrative Office**, **2%** (Equal numbers) in **NCC Building** and **Sports building**.

5.2 Waste handling

Quantification wise as per survey it was found that the Solid, Dry leaves collected is approximately 60 kg per week. The liquid and hazardous waste (septic tanks) is approximately 200 litres per week. The waste produced on campus is segregated. The staffs are very well trained and do an excellent job. **We observed the concern and dedication the entire Team shows towards the College management aspect. We highly appreciate these efforts and way of working.**

5.3 Waste management

The college reuses the papers. It was informed newspapers were given in bulk to Raddi and not to Municipal Corporation **thereby not adding to landfill site.** 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.** The wastes from toilets are discharged to main drains through underground covered channels (Safety Tanks) thus avoiding any incident. **There is no problem of air pollution from waste as informed.**

5.4 Survey Results

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

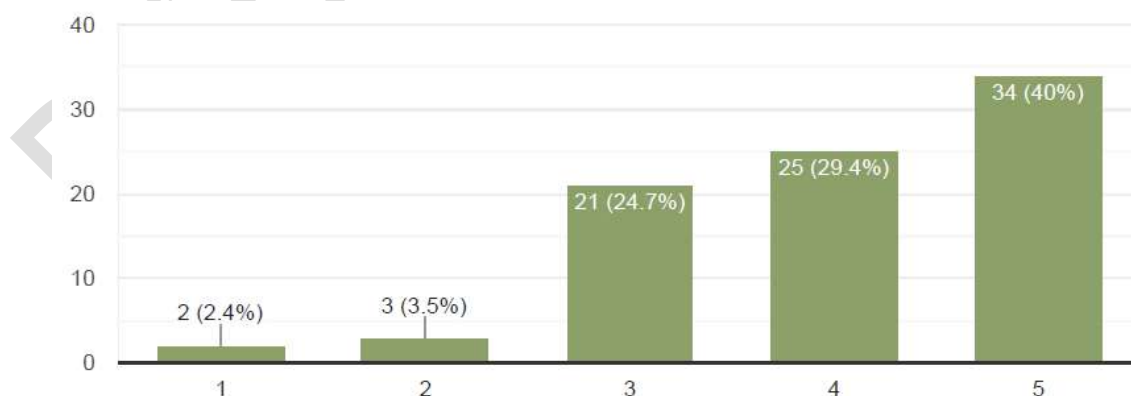


Figure 7: Waste management practices in College

There were mixed responses received the equal also the highest was for **rating 5 (Excellent) for 40% and rating 4 (Very good) at 29%**

5.5 Recommendations for a Sustainable Habitat

The following practice can be adopted for further up gradation.

a) Zero Waste

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.

b) Incinerators

The Incinerators should be installed in Girls toilets for disposal of sanitary napkins

c) 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.

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 water from the Local Municipality.

6.1.2 Sources of Secondary water supply

These sources are available in the form of well and bore wells.

6.2 Water requirement

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

- **Drinking water** – Consumption of around 1,050 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. 250 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.

6.3 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.

6.4 Survey Results

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

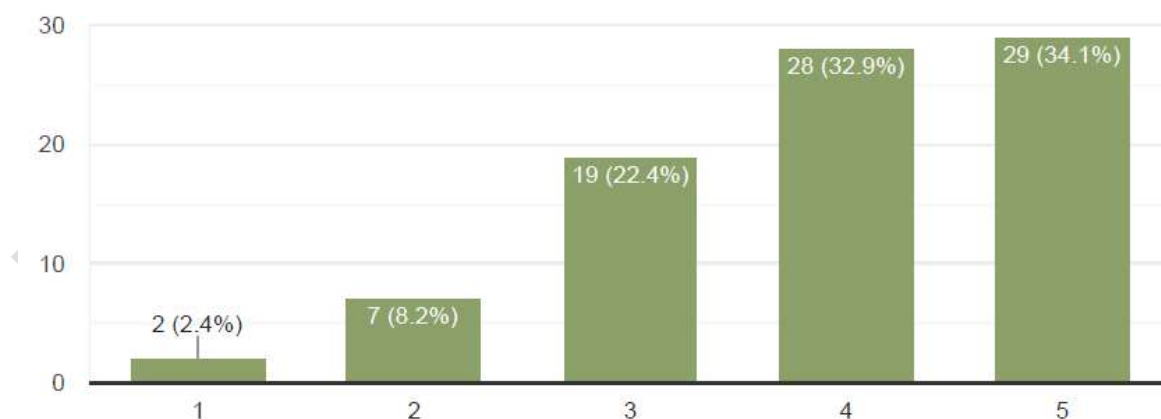


Figure 8: Water management practices in College

There were mixed responses received the highest was for **rating 5 (Excellent) at 34%** followed by **33% for rating 4 (Very Good)**.

6.5 Recommendations for a Sustainable Habitat

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

a) Universal Toilet

At least 1 toilet should be made for specially abled as per universal design norms.

b) Toilet flush system

Replace the existing single flush cisterns with dual flush, if possible to include waterless urinals or e-toilets.

c) Waste water from toilets

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

d) Waterless urinals

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

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 campus 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.**

- There staff 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.

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) Waste via** – 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.
- d) 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 key responses are listed below. Whereas many responses **stated there were no changes requires because the present practices are excellent.**

- Everything is better in our college so don't change any thing.
- Nothing

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

- According to me we should plant trees.
- Water harvesting should be improved.
- Beautiful Flowering garden and botanical garden should be made available in the college premises.
- Every students and teachers should participate equally and apart from campus should take care of local surrounding.
- To focus on maintenance
- All staff member should plant one plant every year.

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/maharashtra/chandrapur-24355/>
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.

