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Green, Energy and Environment Audit Report



Abasaheb Garware Institute of Management Studies, Khanbhag, Sangli

NISARGA CONSULTANTS
Basavaraj Complex,
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Green Audit Report
Gokhale Centenary College, Ankola



Green, Energy, & Environment Audit Report

**Abasaheb Garware
Institute of
Management Studies,
Khanbhag, Sangli**



By,

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CERTIFICATE ENVIRONMENT AUDIT

PRESENTED TO:

Abasaheb Garware Institute of
Management Studies
Khanbhag, Sangli

Our team of Environmental Engineers have analyzed
Environment-friendly practices followed by the
Institution.

This certificate was awarded by:

NISARGA CONSULTANTS



PRADEEP NV

Environmental Engineer

AUDIT YEAR: 2021 - 22



CERTIFICATE GREEN AUDIT

PRESENTED TO:

Abasaheb Garware Institute of
Management Studies
Khanbhag, Sangli

Our team of Environmental Engineers have analyzed
Green, Energy, and Environment practices followed by
the Institution.

This certificate was awarded by:

NISARGA CONSULTANTS



PRADEEP NV

Environmental Engineer

AUDIT YEAR: 2021 - 22



CERTIFICATE ENERGY AUDIT

PRESENTED TO:

Abasaheb Garware Institute of
Management Studies
Khanbhag, Sangli

Our team of Environmental Engineers have analyzed
Clean and Green Energy practices followed by the
Institution.

This certificate was awarded by:

NISARGA CONSULTANTS



PRADEEP NV

Environmental Engineer

AUDIT YEAR: 2021 - 22



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Acknowledgement

We express our gratitude for calling upon us for this audit, mainly the Principal and all other staff members, who were ever helpful and supported us with all the inputs needed for this audit. We thank all the teaching, non-teaching and students for helping us in conducting this audit.

Green Audit Team

Mr. Pradeep N. V., M. Tech. (Env. Engg.)
Sr. Environmental Engineer

Mr. Vijay S. Kumbar, M. Tech. (Env. Engg.)
Sr. Environmental Engineer

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Project Associate

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Audit Associate

Mr. Kartik A., B.E., M.B.A.
Audit Executive

Mr. Sadanand M., B. Sc.
Draftsman



About the Institute

Women's Education Society's Abasaheb Garware Institute of Management Studies was established in 2011 with intention to impart management education to girls students of urban and rural area of Sangli and nearby area to empower them to compete with others, further it was also initiated to produce women entrepreneurs in the society for betterment of the society and individuals as well. Approved by AICTE New Delhi & DTE Mumbai affiliated to Shivaji University, Kolhapur. The institution assures to impart quality education through the highly qualified and experienced faculty members.

Vision:

"To be the Leading Management Institute empowering women through academic excellence, to become economically independent & socially responsible."

Mission:

1. To impart & nurture management education and communication skills in the students.
2. To build intellectual capabilities based on theory and practical.
3. To create challenging environment for students in which they can enhance their knowledge and sharpen their skills.
4. To encourage faculty and students to undertake research and consultancy assignments.
5. To promote entrepreneurship in students.



Introduction to Green, Energy and Environment Audit

This audit assists in analyzing environmental practices implemented within the educational campuses, which will result in achieving sustainable goals. Green, Energy and Environment audit comprises of systematic identification, quantification, recording, reporting and analysis of elements of environmental conditions in the premises.

Need for Green, Energy and Environment Auditing

Green, energy, environment auditing is the mode in analyzing and determining whether the institutions' day to day activities are environmentally friendly and sustainable for future generations. Primarily, we are good and efficient users of resources available naturally. Subsequently, excess use of energy, water, have become habitual to everyone.

Green, energy and environment audit provides an approach to check whether

- Our processes are consuming more resources than required?
- Whether we are handling resources carefully?

Continuous monitoring of such processes regulates and gives an efficient way of natural resource utilization.

Recent issues such as drastic climatic changes and depletion of non-renewable resource are of greater concern. To combat such issues at institute/college level, it is needed to check the processes and change them into greener and cleaner one. Green audit also increases overall consciousness among the people working in the institution towards a sustainable environment.

Goals of Green, Energy and Environment Audit

Our team has conducted a green audit with specific goals, such as:

- Recognizing and documenting of green practices followed by the institute.
- Note strength and weakness in green practices presently followed.
- Analyze and suggest solution for the drawbacks identified.
- Evaluate facility of different types of waste management.



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- Increase environmental awareness throughout campus.
- Inspire staff for optimized sustainable use of available resources.

Objectives of Green, Energy and Environment Audit

- To inspect the current practices, which can impact the environment.
- To recognize and analyze significant environmental issues.
- Establish and implement Environment Management in various departments.
- Continuous evaluation for betterment of performance in this regard.

Benefits of Green, Energy, Environment Audit to Educational Institutions

There are many advantages of green audit to an Educational Institution:

- It would help to protect the environment in and around the campus.
- Empower the organization to frame a better environmental performance.
- It portrays good image of institution through its clean and green campus.



Executive Summary

A Green Campus or an Eco-friendly Campus is a place where environmentally friendly practices and education combine to promote sustainable and eco-friendly practices in the campus. It is a campus which is sustainable because of its resource utilization and minimum waste discharge into the environment. Green, Energy and Environmental Audit is an assessment of the extent to which an organization is observing practices which minimize harm to the environment. It assesses the campus performance in complying with applicable environmental laws and regulations. This audit report comprises of observations and recommendations for improvement of environmental conditions in the campus. It mainly focuses on the environmental management plan in the campus with environmental factors like quality of water, ventilation, vegetation, waste management practices, consumption of energy, harmful radiations of the campus, etc.,

For this purpose, to assess the quality of the different environmental factors, samples were analyzed at different places in the campus, viz., water quality, light intensity, air quality, noise pollution and electro-magnetic radiation. The data which was collected were assorted, scrutinized, analyzed and documented. Campus related preliminary interviews with the concerned staff were conducted. Student interaction also was carried out for this purpose. A report based on all these studies with regards to an environmental management plan at the campus with recommendations for further improvement is prepared.



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Objectives and Scope

The purpose of this audit was to note that the campus follows environmentally friendly approaches in its regular routine. The implementation of these methods is done in the campus, across all departments, administrative bodies and students and were analyzed.

Following issues were noted during our visit:

- Present conditions at the campus.
- Environmental education through systematic environmental management approach.
- Improving environmental standards.
- Benchmarking for environmental protection initiatives.
- Sustainable use of natural resource in the campus.

Based on the available data, sampling and information provided by the college staff and officials, this report has been prepared and recommendations for betterment of campus environment are provided.



Summary of Findings

The main findings of the audit show that, all the students are aware about the need for environmental protection at a general level. It was also observed that a number of best practices such as water conservation, waste management, cleanliness, waste segregation, plantation, etc., are followed in the campus. There is also NSS unit, actively involved in environment related activities.



Infrastructure and college details

- The college has sufficient infrastructure (0.81 acre) for curricular and co-curricular activities.
- Rooms - Classrooms, auditorium, department laboratories, library, department rooms, staffrooms, labs, ladies' room etc (5433 sq. m built-up area).
- Sufficient reading materials for students.
- Administrative block such as principal chamber, office room and department rooms.
- Underground and overhead water tanks.
- Computers (52) with internet facilities (100 mbps) in office, principal chamber, department rooms and library.
- Classrooms, laboratories and staff rooms in the institute are well ventilated.



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Green Cover Details



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Green Cover

Plants and trees are essential for any educational institution. Green cover makes the campus aesthetically pleasing and also helps in providing good environment for the students. Planting saplings and maintaining the same has to be done periodically.

Observations:

This campus has a green area with various plants and trees of different species. The NSS units of the college have been moving a step towards creating a greener campus with different programs and plantation activities. The campus is rich in biodiversity.



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Sl. No.	Scientific Name	Common Name
1.	Ratrani	Cestrum Nocturnum (5)
2.	Plumeria Rubra	Chafa (2)
3.	Saraca asoca	Ashok (20)
4.	Hibiscus rosa	Jaswanda (4)
5.	Portulaca grandiflora	Chinigulab (2)
6.	Kunti	Kamini (1)
7.	Spanish Cherry	Bakula (1)
8.	Night Jasmin	Parijatak (1)
9.	Firebush	Dhayati (1)



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Energy Management Details



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Energy Management:

Energy management is an important aspect in institutions. Saving of electric power is a major part to minimize the greenhouse gas emissions to the environment. This can be achieved by using 5-star electrical appliances. Renewable energy can be harvested and be used in the campus.

Observations:

The energy consumption pattern was examined by verifying electric bills for one year. The bill paid during the period ranged from Rs. 1060 per month to Rs. 11350.

Recommendations:

- Solar street lamps can be installed in the campus.



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Sl. No.	Parameters	Response
1.	Source of electricity. BESCOM/Solar panels	MSEB
2.	If Solar, Type of Solar system (On Grid/Off Grid/Hybrid)	-
3.	No. of Solar Panels	-
4.	Type of Solar Panels	-
5.	Solar Power Specifications (Area covered/Solar plant capacity/year of installation etc.)	-

Power consumption pattern

Month	Meter 1	
	Units	Amount in Rs.
Aug. 22	319	8880
July 22	363	9530
June 22	511	11350
May 22	496	10320
Apr. 22	328	6600
Mar. 22	474	9920
Feb. 22	323	8170
Jan. 22	959	9850
Dec. 21	323	9320
Nov. 21	323	8090
Oct. 21	242	7790
Sept. 21	431	1060



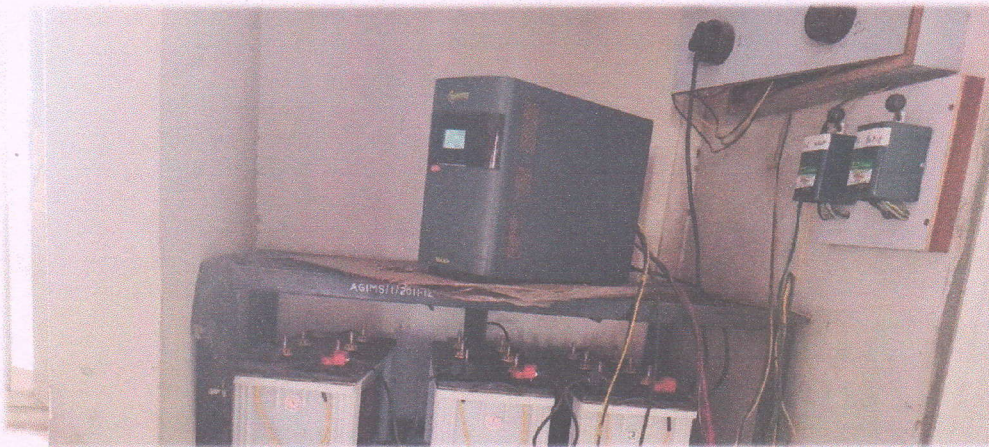
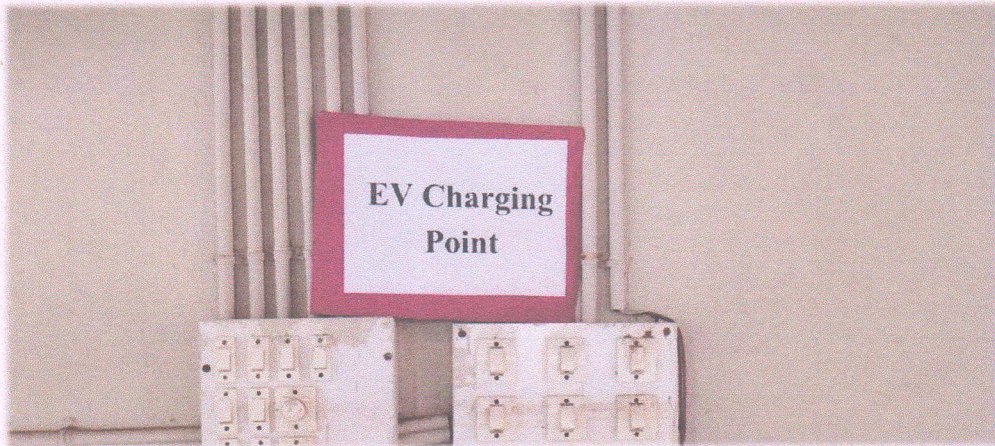
Details of Electrical and Electronic appliances

Sl. No.	Appliance	Numbers	Year of Purchase	5 star rating	
				Yes	No
1.	Computers (Desktops)	52	42 in 2010 and 10 in 2018		
2.	Laptops	0			
3.	Printers	2	2018		
4.	Copying machines	1	2017		
5.	Scanners	1	2019		
6.	Projectors	6	2014		
7.	Refrigerators	0			
8.	Hot air oven	0			
9.	Weighing Balance	0			

Staffroom/classroom/lab/office/	Tube light	LED Bulb	Fan	Projectors
MBA Classroom I	12	1	10	1
MBA Classroom II	6	0	3	1
MBA Special Classroom I	6	0	4	1
MBA Special Classroom II	3	0	2	1
MBA Special Classroom III	3	0	2	1
MBA Special Classroom IV	3	0	4	1
Director Cabin	5	1	2	
Computer LAB	12	0	10	
Office	5	0	4	
Library	10	1	7	
MBA Exam Room	1	0	1	
Tutorial Room	2	0	1	
MBA Staff Room	4	0	4	
MBA Changing Room	0	1	0	
MBA Girls Washing Room	0	2	0	
Staircase	2	11	0	
MBA Class Porch	2	1	0	
Toilet I	0	2	0	
Toilet II	0	6	0	
Floor Ground	9	15	9	



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Environment Management Details



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Water Management

Quality and Quantity of water is one of the most important parameters in a Green Campus. Water Quality and Quantity differs from place to place depending on the condition of the water source from which it is drawn. Presence of contaminants in the water can lead to health issues of the consumers. Basic monitoring of the quality of water is necessary from the health point of view of the campus occupants. Meticulous Water Management plan of the water available is also imperative for sustainable resource utilization.

Observation:

The main source of water for the campus is bore well and open well supply with sufficient water for the college throughout the year. The water from the borewell is pumped to the overhead tank situated on the top floor of the building and then supplied.



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Sl. No.	Parameter	Response	Remarks
1.	Source of water for campus	Sangli Miraj Kupwad Corporation	
2.	Borewell	One	
3.	Capacity of underground water tank	0	
4.	Number of water tanks (Overhead tank)	06	
5.	Capacity of water tank (Overhead tank)	4000	
6.	Quantity of water pumped every day	3000	
7.	Waste water sources	Toilets	
8.	Use of waste water	-	
9.	No. of drinking water filters/water coolers	one	
10.	Rain water harvest available?	yes	
11.	No. of units and amount of Rain water harvested		
12.	Any water saving techniques followed?	Sign boards are displayed instructing less use of water	
13.	Are there any signs/posters reminding peoples to turn off the water?	Yes	
14.	Drinking water testing done? (if yes, kindly attach the report)	No	



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Waste Management:

Anthropogenic activities generate waste, and it is the way these wastes are managed and disposed of, which can cause risks to the nature and to health. Waste generated causes pollution which is unpleasing and results in large amounts of litter which in turn cause environmental problems. Solid waste is generally classified into three categories: bio-degradable, non-biodegradable and hazardous waste.

Bio-degradable wastes include food wastes, canteen waste, wastes from toilets, etc.

Non-biodegradable wastes include what is usually thrown away in homes and schools such as plastic, tins and glass bottles, etc.,

Hazardous waste is waste that is likely to be a threat to health or the environment like chemicals from research labs, batteries, etc.,

Improper handling of these wastes such as dumping in pits or burning them, may cause harmful discharge of contaminants into soil and water supplies. Special attention should be given to the handling and management of such waste generated in the institutions.

Observations:

In this campus, the waste generated is managed as mentioned below:

Bio-degradable Waste:

- Institute has installed two Composting Tumblers where the Bio-degradable Waste composted with other organic waste.
- Food waste from canteen and hostel mess management:
- Institute has installed two Composting Tumblers where the Food waste from canteen composted with other waste
- Paper waste generated from class, labs and office:
- Institute has installed two Composting Tumblers where the Paper waste generated from class, labs and office composted with other waste



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Non-Bio-degradable Waste:

- Paper, plastics generated by the campus is collected by the waste collection vehicle of the Municipality.

E-Waste:

- E-Waste is stored in the campus and sent to certified recycler.

Education Posters on waste management:

- Institute has display Poster on Waste Management

Dust bins for dry, wet and E-waste:

- Yes

Disposal of sanitary pads:

- Institute has installed pad incinerator for Disposal of sanitary pads

Wastewater Management:

- Institute has a proper UGD for Wastewater Management



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Recommendations:

Based on the observations made during our site visit, following recommendations have been made by us:

- Educational posters related to water conservation, waste minimization, waste segregation can be put in the campus to create awareness.

Approx	Biodegradable	Non-biodegradable	Hazardous	Others
Office	0.5 Kg used papers	E-waste	Nil	Nil
Laboratories	Nil	Nil	Nil	Nil
Canteen	Used paper plates, cups etc.	Plastic pet bottles and package materials	Nil	Nil

Composting/vermi-composting	Yes
Recycling	NA
Reusing	Yes
Other ways	Municipality personnel dispose waste



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Air Quality

Air quality plays a major role in day-to-day life. People spend more time indoors. Indoor air quality is the air quality within and around buildings and structures. Indoor air quality is known to affect the health, comfort, and well-being of building occupants. Poor indoor air quality has been linked to sick building syndrome, reduced productivity, and impaired learning in schools and colleges.

Observations:

Particulate matter was measured in all the classrooms, staff rooms and library. It was observed that the concentrations of PM 1, PM 2.5 and PM 10 were found to be negligible at that instant.

Sl. No.	Room			
		PM 1	PM 2.5	PM 10
1	MBA Classroom I	10	15	19
2	MBA Classroom II	10	14	19
3	MBA Special Classroom I	11	15	21
4	MBA Special Classroom II	12	15	18
5	MBA Special Classroom III	10	16	18
6	MBA Special Classroom IV	9	15	19
7	Director Cabin	11	13	20
8	Computer LAB	9	14	20
9	Office	10	15	18
10	Library	10	15	19
11	MBA Exam Room	7	15	21
12	Tutorial Room	10	14	22
13	MBA Staff Room	11	15	21
14	MBA Changing Room	12	14	18
15	MBA Girls Washing Room	11	14	19
16	Staircase	8	16	19



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17	MBA Class Porch	10	18	19
18	Toilet I	9	17	20
19	Toilet II	11	16	21
20	Floor Ground	10	15	22

The readings mentioned above are measured at that instant.



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Light

The main part of the learning process is visual. The classroom is an arena for many activities, such as reading and writing, student or teacher presentations, tests, etc., hence, light plays a major role in classrooms. Well-lit classrooms are utmost essential in colleges. Working desks of the students require a minimum of light of 200 lux. Further, there may be certain zones that require specialized lighting. For example, the area in front of the board should have proper and separately switched presentation lighting.

Observations:

It was observed that all the classrooms are well lit. The light intensity was observed to be ranging from 250 lux to 350 lux.

Sl. No.	Room	Light intensity in lux
1	MBA Classroom I	260
2	MBA Classroom II	250
3	MBA Special Classroom I	280
4	MBA Special Classroom II	280
5	MBA Special Classroom III	260
6	MBA Special Classroom IV	268
7	Director Cabin	300
8	Computer LAB	310
9	Office	295
10	Library	300
11	MBA Exam Room	350
12	Tutorial Room	260
13	MBA Staff Room	350
14	MBA Changing Room	250
15	MBA Girls Washing Room	280



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16	Staircase	290
17	MBA Class Porch	300
18	Toilet I	350
19	Toilet II	350
20	Floor Ground	250



Noise

Noise is unwanted sound considered unpleasant, loud or disruptive to hearing. Unwanted sound is not preferred in any classroom. The Noise levels in the classroom should be below 35 dB in an unoccupied classroom. Higher levels of noise in the classroom may distract the students.

Observations:

Noise levels were measured in the classrooms and were found to be in the range of 30 dB to 55 dB in an unoccupied classroom. The noise levels in classrooms with students were ranging about 55 dB to 72 dB.

Sl. No.	Room	Noise in decibel	
		Minimum	Maximum
1	MBA Classroom I	35	55
2	MBA Classroom II	45	72
3	MBA Special Classroom I	50	60
4	MBA Special Classroom II	45	55
5	MBA Special Classroom III	30	40
6	MBA Special Classroom IV	45	55
7	Director Cabin	45	60
8	Computer LAB	50	65
9	Office	45	60
10	Library	45	70
11	MBA Exam Room	50	65
12	Tutorial Room	30	45
13	MBA Staff Room	35	45
14	MBA Changing Room	30	45
15	MBA Girls Washing Room	35	50
16	Staircase	30	55



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17	MBA Class Porch	40	55
18	Toilet I	40	60
19	Toilet II	45	65
20	Floor Ground	40	70



Electro Magnetic Radiations

Electromagnetic radiation (EMR) consists of waves of the electromagnetic (EM) field, propagating through space, carrying electromagnetic radiant energy. EMR is generated by electronic devices and constant exposure to EM radiations is not advisable.

Observations:

Electromagnetic radiations were measured in all the classrooms, staff rooms, and library. It was observed that the Electromagnetic radiations were zero in all these places.



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Eco-club/Green club Team

Sl. No.	Name	Designation
1.	Mr.Inamdar M. A	President of Eco-club/green club Team
2.	Mr. Patil S. R.	Staff
3.	Mrs. Patil P. P.	Staff
4.	Ms. Rajage R. A.	Staff
5.	Mr. Patil O. R	Staff
6.	Ms. Kurle Neha	Student Coordinator
7.	Ms. Kurne Jahin	Student Representative
8.	Ms. Vrushali Salunkhe	Student Representative
9.	Ms. Asgaonkar T.P	Student Representative
10.	Ms. Bedagkar R. R.	Student Representative



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List the activities conducted by Eco-club/Green club/NSS

1) Plantation activity in the campus.



2) Clean campus green campus initiative.



3) Plastic free campus initiative



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