

SALIPUR AUTONOMOUS COLLEGE SALIPUR

ENVIRONMENT AUDIT REPORT



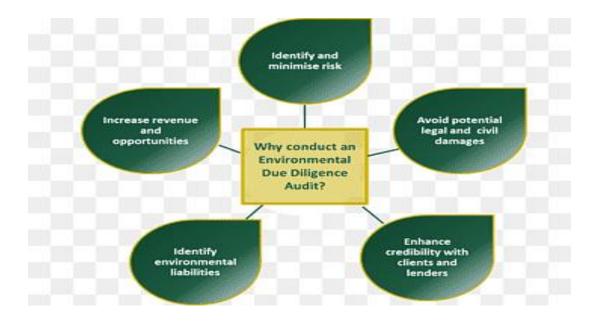
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Context and Concept

In India, the process for environmental audit was first mentioned under the Environment Protection Act, 1986 by the Ministry of Environment of forests on 13th March 1992. As per this act, every person owning an industry or performing an operation or process needs legal consent and must submit an environmental report or statement. The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory from the academic year 2019–20 onwards that all Higher Educational Institutions should submit an annual Green, Environment and Energy Audit Report. Moreover, it is part of the Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

The term 'Environmental audit' or 'Green audit' means differently to different people. Terms like 'assessment', 'survey' and 'review' are also used to describe similar activities. Furthermore, some organizations believe that an 'environmental audit' addresses only environmental matters, whereas others use the term to mean an audit of health, safety and environment-related matters. Although there is no universal definition of Green Audit, many leading companies/institutions follow the basic philosophy and approach summarized by the broad definition adopted by the International Chambers of Commerce (ICC) in its publication of Environmental Auditing (1989).



The ICC defines Environmental Auditing as:

"A management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing intending to safeguard the environment and natural resources in its operations/projects." The outcome of the audit should be established with concrete evidence that the measures are undertaken and facilities in the institution are under auditing. This audit focuses on the Green Campus, Waste Management, Water Management, Air Pollution, Energy Management & Carbon Footprint etc. being implemented by the institution. The concepts, structure, objectives, methodology, tools of analysis, objectives of the audit are discussed below.

Introduction

Nature is a very precious gift for all life forms. Disturbance in nature causes environmental Problems increasing day by day due to the development of urbanization and industrialization on earth. Unplanned utilization of resources planet facing tremendous pressure resulting temperature is increasing. Therefore, there is an urgent need to planning for the consumption of the resources sustainably to conserve natural resources for the future generation.

Sustainable development is becoming popular in the world for saving the earth. Utilizing resources judicially can save the earth's precious resources. Measurement of environmental components is the most effective step to conserve and protect natural resources.



Environmental auditing had begun in the early 1970s with the provision of civil lawsuits for non-compliance with environmental regulations. Environment auditing involves on-site visits, collection of samples, performing analyses, and report results to competent authorities. Industry, the corporate world is initiating auditing for saving natural resources. Academic institutions also can contribute to the preservation and conservation of resources within their premises. In thin "Environment Audit" report would help everyone to think about preserving resources, show a willingness to learn their importance, adopt steps to minimize resource use and set an example for others to follow the path of eco-friendly practices to achieve the goal of sustainable development. Effective implementation of environmental auditing helps in minimization of environmental risks at a low cost.

OVER VIEW OF SALIPUR AUTONOMOUS COLLEGE

Salipur Autonomous College a co-educational constituent college of Utkal University, Bhubaneswar was established in 1965. The college is located at a distance of 25 Kms from the District Headquarters panoramic sylvan chitrotpala.

A college committee was constituted in the same persons of the locality. Special mention may be made of the locality. Special mention may be made of magnificent donations made by Sri Biraja Prasad Ray, Sri Baman Charan Parida and a prominent local businessman Sri Bikalananda Kar in legions of local enthusiasts.

In the present pioneering stature a bright, and clean image of Salipur College the aspirations of the local people who have toiled, strived, sweated, sacrificed and dedicated themselves to the cause of diffusion of higher education and learning have found partial fulfillment. It is now a full-fledged degree college with an enviable record of students commendable success at various examinations from time to time. With financial assistance from the State Government and the University Grants Commission (UGC) and the ungrudging help and patronage from persons of the locality and abroad who count in various political and Social spheres, this college looks forward to reaching a crescendo of perfection and excellence. Its immaculate ways of conducting examination at various levels are commendable and serves as a role model and eye-opener for others.



This institution celebrated its silver Jubilee a week long function in September 1991 with a great glory in a grand manner. This college celebrated its maiden foundation day on 9th July 2004. Some former principals and senior teachers were felicitated on this occasion. Members of peer team of NAAC (National Assessment and Accreditation Counsel, an autonomous body of U.G.C.) Visited this college on 30th November and 1st December 2005 for accreditation This institution celebrated its silver Jubilee a week long function in September 1991 with a great glory in a grand manner. This college celebrated its maiden foundation day on 9th July 2004. Some former principals and senior teachers were felicitated on this occasion. Members of peer team of NAAC(National Assessment and Accreditation Counsel, an autonomous body of U.G.C.) Visited this college on 30th November and 1st December 2005 for accreditation. The college has been accredited with an excellent grade of B++with 82.25% for 5 years w.e.f. 2nd Feb. 2006. Score. Our college deity Lord Laxmi Narayan were installed in the newly built temple in the college permission 31st August 2006.. The college has been accredited with an excellent grade of B++with 82.25% for 5 years w.e.f. 2nd Feb. 2006. Score. Our college deity Lord Laxmi Narayan was installed in the newly built temple in the college premises on 31st August 2006.

University Grant Commission (UGC) vide its letter no. F.4-345/ 2007Dated 24.02.07 has conveyed its approval for the opening of a career-oriented course with 32 seats in Mass Communication and Video Production at its 1stDegree level of +3 with effect from the academic session 2007-08. This course was introduced as an add on course along with the conventional +3 B.A./B.Sc. Degree Courses which is just like a parallel course to the existing three years Degree Course.

UGC also vide its letter no. F635/2008 dated 20.3.08 has given approval for another career-oriented Course in Communicative English with an intake of 32 seats from the academic session 2008-09. Corporate Sector like Infosys, Zen-Pact, Vedanta, Asian Paints etc. Pay their regular visits to the college to select efficient, meritorious students for necessary training at their end to have them within their fold. Infosys is pleased to award 40 students of the college Prativa Poshak Scholarship during the session – 2009-2010. Campus grooming is being undertaken by the trained teachers through Project-Genesis Programme launched by Infosys.

Bikalananda Kar Memorial Trust Salipur awards financial help to meritorious students in each academic session at +2 and +3 levels.

The Salipur Junior College has come into the fold of e-admission under student Academic Management system (SAMS) in respect of +2 stream from the academic Session 2010-11 vide Deptt. Of Higher Educated G. O. No. 84485dated 14.12.2009 and Salipur Degree College has come into the fold of e-admission in respect of +3 stream w.e.f. The academic session 2011-12 vide Dept. of Higher Education G.O. No. 6626 dated 22.02.2011.

In order to keep up with the rising pedagogical demands, the college recently upgraded its infrastructure and other academic facilities. The college is a Wi-Fi zone with internet access to every student and the staff. Most of the rooms in the main building have been upgraded with LCD projector and other facilities. There are 05 well-equipped undergraduate labs in the college – Physics Lab, Chemistry Lab, Biology Lab, Electronics Lab and four Computer Labs. The computer labs of the college offer the very best in terms of hardware and software to the students and the faculty. Staff room, library, office and canteen have been recently renovated into fine air-conditioned spaces. The entire campus is under CCTV surveillance.

SAC has a rich and well stocked ICT enabled library. It has more than 61000 books and subscribed journals on diverse subjects. The library also has OPAC facility to make the task of locating books easier for the students and the faculty. Our library is automated and RFID technology will be introduced in the library in the near future. We also have a fully air conditioned knowledge resource centre where students and teachers can acquire sufficient knowledge through e-resources by accessing world's best databases, e-journals, e-books and reports in an easy and expeditious manner.

The college ensures that special classes – Remedial as well as Spoken English are held on continuous basis for the students who have difficulty in coping with the demands of the curriculum. The Equal Opportunity Cell of the college takes care of these classes with support from the respective faculty of the college who are accessible to the students for any type of help. Fee concession is also given to the needy students. Besides, the college has a SC/ST Cell and a liason officer to facilitate activities of these sections

VISION AND MISSION OF COLLEGE

VISION

SAC strives for meaningful transformation of learners to responsible citizens by providing them with an all-inclusive and value based education.

MISSION SAC provides a constantly caring, supportive and secure teaching and learning environment for engagement with the students and other stakeholders to achieve excellence in academics, sports, extra-curricular activities and develop analytical temper with a focus on instilling strong values to prepare them as leaders. SAC adopts environment friendly practices and formulates strategies for strengthening research and innovation in the college that expand the realm of knowledge



Audit Objectives

The broad aims/benefits of the eco-auditing system are:

- Environmental education through systematic environmental management approach
- Improving environmental standards
- Benchmarking for environmental protection initiatives
- Sustainable use of natural resource in the campus.
- Eco Friendly practices in campus for reduction in resource use.
- Curriculum enrichment through practical experience.
- Development of ownership, personal and social responsibility for the college campus and its environment
- Enhancement of college profile
- Inculcation of environmental ethic and value systems in young minds

AUDIT PARTICIPANTS

Name	Position/Department
Prof (Dr) Sangita Misra	Principal, Salipur (Autonomous) College, Salipur
Mrs Jayanteebala Parija	HOD, Botany
Mr Mangaraj Panda	Member, Eco Club and Gardening
Dr Nibedita Sahoo	Member, Eco Club
Mr Biraja Prasanna Sarangi	Reader, Botany
Mrs Mamata Das	Office Attendant

General Information of Salipur (Autonomous) College, Salipur

Basic Information

Does any Environmental Audit conduct earlier?

No, This is the first time a systematic way of monitoring their environmental eminence initiative was taken by the college for environment protection.

What is the total permanent population of the Institute?

Population	Male	Female	Total	The approximate Number of Visitors
Students	578	1156	1734	(Per day) is 20 in the college campus.
Teachers	36	47	83	
Non-Teaching Staff	34	14	48	
Sub Total	648	1217	1865	
Population	Male	Female	Total	

What is the total number of working days of your campus in a year?

There are One Hundred Eighty (180) working days in a year.

Which of the following are available in your institute?

Garden area	Available
Playground	Available
Kitchen	Available
Toilets	Available
Garbage Or Waste Store Yard	Available
Laboratory	Available
Canteen	Available
Hostel Facility	Available
Guest House	Available

Which of the following are found near your institute?

Municipal dump yard Not in the vicinity of the institute

Garbage heap No Garbage heaps

Public convenience Yes, public convenience is available Sewer line 1 km sewer line within the campus

Stagnant water No stagnant water

Open drainage No
Industry – (Mention the type) No

Bus / Railway/Metro station Nearby campus

Market / Shopping complex Yes

EXECUTIVE SUMMARY

The environment audit is a snapshot in time, in which one assesses campus performance in complying with applicable environmental laws and regulations. Though a helpful benchmark, the audit almost immediately becomes outdated unless there is some mechanism in place to continue the effort of monitoring environmental compliance. Our approach to promoting a Green Campus is to inculcate the sustainable value systems among the students so that they carry the learning's and practices them in their future endeavors. This will ensure that Sustainability and Environmental practices get embedded in all the institutions and organizations in the country.

A Green Campus is a place where environmentally friendly practices and education combine to promote sustainability in the campus which ultimately offers an institution the opportunity to take the lead in redefining its environmental culture and developing new paradigms by creating sustainable solutions to environmental, social and economic needs of the mankind.

This is the very first environment audit of the university for doing their bit towards environmental protection and environmental awareness at the local and global front. Audit criterion is environmental cognizance, waste minimization and management, biodiversity conservation, water conservation, energy conservation and environmental legislative compliance by the campus. A questionnaire is used during the audit. This audit report contains observations and recommendations for the improvement of environmental consciousness.



WASTE MANAGEMENT

Types of Waste on Campus

To create effective waste management plans, the campus first needs to know the types of waste they produce. Below, we have compiled a list of various kinds of waste commonly generated on institutional campus:

- 1. Food Waste Campus generate food waste as there are two hostels canteen and mess. College has tuck shop with tea & coffee facility so there is food waste generation.
- 2. Recyclable Paper, Cardboard, Plastic, Glass and Cans —Campus tends to produce vast quantities of these recyclables. Even in the digital age, many students, professors and staff members still prefer handwritten notes and end up with piles of unwanted paper once their courses and projects are complete. The snacks so essential to late-night studying or socializing tend to come in recyclable plastic, glass or aluminiumcontainers. And shipments of necessary items throughout the year are likely to arrive in recyclable plastic and cardboard packaging. Quantitative analysis should be carried out to reduce waste in the coming academic sessions. Have an MoU with Jaagruti Paper Recycle Services.
- 3. **E-Waste** As campus continually upgrade their computing facilities and office computers to keep up with the latest technology, the old computers have to go somewhere. So do old printers, phones, copy machines and other electronics that receive upgrades over the years.
- 4. Maintenance Waste In the maintenance department, spent on paints, solvents, adhesives and lubricants all form potentially hazardous waste. Because they are difficult to recycle, spent on incandescent light bulbs usually become landfill waste. Spent on fluorescent light bulbs, which contain small amounts of mercury, typically require special handling because of the environmental and health risks they pose.
- 5. **Furniture** Furniture waste of the campus has a couple of different sources. The campus itself may also get rid of old furniture as it modernizes its classrooms, cafeterias, computer labs and study spaces. Annually sold to a junk dealer.
- 6. Books/Magazines/Newspapers Books accounted for solid waste generation and college often generate tons of textbook waste. As courses upgrade to new editions, they may end up throwing their newly obsolete textbooks into the garbage if donation programs cannot use them. Students, too, may find it more convenient merely to throw away their books at the end of the year rather than donating or reselling them.
- 7. **Horticulture Waste** College campus has lavish greenery and grounds that results from significant horticulture waste which is managed by an in-house composting system.

ENERGY CONSERVATION

List ten ways that you use energy in your institute. (Electricity, LPG, firewood, others). Using this list, try to think of ways that you could use less energy every day.	Electricity used in classrooms, labs, library, canteen, washrooms, staff rooms, and office. LPG used in Canteen and Labs.
Are there any energy-saving methods employed in your institute? If yes, please specify. If no, suggest some	Yes, a Renewable source of energy through a solar plant (75 KW) is about to be operational.
How many CFL/LED bulbs have your instituteinstalled?	100 % of Total Conventional bulbs are replaced by LED/CFL Lights. Management is inprocess of changing tube lights to LED lights.
Do you run "switch off" drills at the institute?	Yes
Are your computers and other equipment's put on power-saving mode?	Yes, In Practice
Does your machinery (TV, AC, Computer, weighing balance, printers, etc.) run on standby modes most of the time? If yes, how many hours?	Yes, approx. 6 hours

Energy Share	kWh	Percentage
Electric Grid kWh	250835.02.00	100%
Solar PV-kWh*	0	0.00%
HSD-Eq.kWh**	0	0.00%
LPG Eq. kWh***	0	0.00%
Total -kWh	250835.02	100%

DETAILS OF SOLAR POWER PLANT

Ene	Energy Savings potential -Annual -Solar PV-Installed system			
S. No	Description	Quantity	Unit	
1	Capacity of installed system	75	kWh	
2	Annual target of generation	2,50,000	kWh	
3	Actual generation (Not operational because of building expansion)	NA	kWh	
4	Loss of Generation	2,50,000	kWh	
5	Tariff of Electricity INR	8.5	Per/unit	
6	Projected Annual savings in Energy	20,00,000	INR	

7	Investment	Nil	
	Pay Back	Instant	

Water and Wastewater Management

List uses of water in your institute	Basic use of water in campus:	
	Drinking – 83.7 KL/month	
	Gardening – 126 KL/month	
	Kitchen and Toilets - 660.6 KL/month	
	Others – 251.1 KL/month	
	Hostel – NA	
	Total 1121.2 KL/month	
How does your institute store water? Are there any water-saving techniques followed in your institute?	01 overhead water tank installed for storage of water with capacity – $50,000$ Litres. And $7x2000 = 14,000$ litres and $4x500 = 2,000$ litres. Total $66,000$ Litres in storage tanks.	
	Close supervision of the water supply system	
Write down ways that could reduce the amount of water used in your institute	 Basic ways: Close the taps after usage Maintenance and monitoring of valves in supply system to avoid overflow, leakage and spillage Water Conservation awareness for new students 	
Does your institute harvest rainwater?	Yes available	
Is there any water recycling System?	Yes by STP treatment to gardening use	

Air Quality Management

Are the Rooms in Campus are Well Ventilated?	Yes, as per National Building Code, guidelines	
Window Floor ratio of the Rooms	Very Good, ample daylight utilization	
What is the ownership of the vehicles used by your campus?	Personal-ownedvehicles	
Provide details of school-owned vehicles?	College doesn't own any vehicles like bus, car, van, etc.	
Specify the type of fuel used by your campus's vehicles	Not Applicable	
Air Quality Monitoring Program	No	
Details of DG Sets in campus	Yes, 2 DG Sets with capacities of (125 KVA.)All have	

Air Pollution Mitigation

The students are encouraged to use public transport. As per college environment policy, there is no vehicle movement allowed within the campus, except for goods and service movement periodically.

There is a designated space for parking of staff vehicles in the campus. Henceforth, air pollution due to vehicular movement is minimum. To reduce dust pollution, Paved roads and vegetation helps to a large extent. Also, Burning of waste within the campus is strictly banned.



(Medicinal Garden)

Environmental Legislative Compliance

Are you aware of any environmental Laws pertaining to different aspects of environmental management?	Yes, faculty members and the administrative team is well aware of national environmental laws.
Does your institute have any rules to protect the environment? List possible rules you could include.	Yes, innovative initiatives are being taken by campus to reduce pollution and go green.
Does Environmental Ambient Air Quality Monitoring conducted by the Institute?	No.
Does Environmental Water and Wastewater Quality monitoring conducted by the Institute?	Not Yet.
Is any warning notice, letter issued by state government bodies?	Not Any, Half Yearly Compliance report submitted to statutory bodies.
Does any Hazardous waste generated by the Institute?	Yes, e-waste, waste oil, plastic waste are managed by MOU with an approved external agency

Carbon Footprint - Emission & Absorption

Total Carbon Footprint (CO_2 emission per year, in metric tons)

E. Electricity used per year CO ₂ emission from electricity	(electricity used per year in kWh/1000) x 0.84 250835.02 WA x 0.84 =210701.42/1000x0.84 =210.07 tons
2. Transportation per year (Van)	(Number of the vehicles in our campus x
CO ₂ emission from	totalnumber of days x approximate
transportation (Bus)	distance
	travelled by the vehicle in 17ilometers x 240 /100) x 0.01
	=(0x24x8x180/100)x0.01
	=0.00 ton (There is no bus)
180 working days per year, 0.01 is the co metric tons per 100	efficient to calculate the emission in
3. Transportation per year (car)	(Number of cars entering College campus x
CO ₂ emission from	2 x approximate distance travelled by the
transportation (car)	vehicle inside the campus in 17ilometers x
	180/100) x 0.02
	=(10x.1x2x180/100)x0.02 =0.072 ton

Total CO₂ emission per year cumulative by electricity usage + bus transportation + car transportation (210.07+0+.072) = 210.42 ton

Carbon absorption by flora in the institution

There are 260 trees of different species, in the campus spread over 15.00 acres.

Carbon absorption capacity of one full-grown tree 22 kg $\rm CO_2$ Therefore Carbon absorption capacity of 260 full-grown trees 260 x 22 kg $\rm CO_2$, 5720 kg of CO2 is 5.72 tons of $\rm CO_2$.

The carbon absorption capacity of 397 semi-grown trees is 50% of that of full-grown trees. Hence the carbon absorption $397 \times 6.8 \text{ kg}$ of CO_2 2699.6 kg of CO_2 2.70 tons of CO_2

There are approximately Hedge Plants 331 of various species being raised in the gardens and grown in the areas where no buildings are built Carbon absorption of bush plants varies widely with their species. Certain bushes absorb a very high level of CO_2 whereas some others absorb a very low level of CO_2 . In the absence of a detailed scientific study, 200g of CO_2 , absorption is taken per bush (in consultation with Environmental Science specialists).

Based on this, the total carbon absorption of bushes is 331 x 200 g = 6620 g = 66.20 kg 0.07 tons of CO_2 .

The lawns on the campus have buffalo grass, Mexican grass and indigenous grass species and cover a total area of- 168577.2 sq. ft.

The carbon absorption capacity of a 1 sq. ft. area of lawn is .1 g per day Therefore, carbon absorption by lawn area 99752.4 x 0.0365 kg CO_2 = 3640.96 kg CO_2 per day, Total carbon absorption per year is 3.64 tons of CO_2

The grand total of carbon absorption capacity of the campus is approx. **12.13 tons**

College is doing its best towards carbon neutrality.

BEST PRACTICES FOR GREEN INITIATIVES

All the lower hierarchy staff is well included in environmental awareness programmes and campaigns

- Biodiversity Conservation Flora and fauna conservation programs and multiple environment awareness campaigns are organized by the College.
- ▼ Tree Plantation Drives Tree Plantation Drives are organized regularly. Guests visiting the college on the Annual Day or other events are honoured by way of their contribution towards the Drive.
- Ground Water Recharge 1 unit of Rain Water Harvesting System.
- *E-Waste Management* − Old computers and other e-waste are managed through CPCB authorized recyclers.
- Solid Waste Management Waste segregation and management is carried out by third-party vendor and waste minimization practices (like avoiding / minimizing food waste, ban on plastic crockery, etc.) are adopted.
- Water Conservation RO wastewater is used in gardening and STP plant in campus.



Recommendations

- Eco-friendly parameters should be included in the purchase of articles and goods for the campus.
- An increase in display of environment-conscious posters/paintings/slogans for spreading awareness amongst students is recommended.
- Green building guidelines should be followed for future expansion projects of the College.
- ♣ Provide sanitary waste disposal facility by following the CPCB guidelines for the management of sanitary waste As per Solid Waste Management Rules, 2016. An incinerator machines should be installed at the campus for sanitary waste disposal.
- Electrical Safety Audit is highly recommended with Thermography.
- Water balancing Audit should be conducted

Conclusion

This audit involved extensive consultation with all the campus team, interactions with key personnel on a wide range of issues related to Environmental aspects. The Salipur (Autonomous) College, Salipur, Cuttack of Utkal University has an Environmental Committee for sustainable use of resources. Overall 60% of the college campus is for landscaping. The audit has identified several observations for making the campus premise more environmental friendly. The recommendations are also mentioned with observations for the college campus team to initiate actions. The audit team opines that the overall site is maintained well from an environmental perspective. The major observations that are important to initiate urgently are electrical safety audit and water balance audit.

References

- The Environment [Protection] Act 1986 (Amended 1991) & Rules-1986 (Amended 2010)
- The Petroleum Act: 1934 The Petroleum Rules: 2002
- The Central Motor Vehicle Act: 1988 (Amended 2011) and The Central MotorVehicle
- Rules:1989 (Amended in 2005)
- Energy Conservation Act 2010.
- The Water [Prevention & Control Of Pollution] Act 1974 (Amended 1988) & the Water (Prevention & Control of Pollution) Rules – 1975
- The Air [Prevention & Control Of Pollution] Act 1981 (Amended 1987) The Air (Prevention & Control of Pollution) Rules – 1982
- The Gas Cylinders Rules 2016 (Replaces the Gas Cylinder Rules 1981
- E-waste management rules 2016
- Electrical Act 2003 (Amended 2001) / Rules 1956 (Amended 2006)
- The Hazardous Waste (Management and Handling and Trans-boundary Movement)
 Rules, 2008 (Amended 2016)
- The Noise Pollution Regulation & Control rules, 2000 (Amended 2010)
- The Batteries (Management and Handling) rules, 2001 (Amended 2010)
- Relevant Indian Standard Code practices

ANNEXURE

Initiatives photographs



MEMBERS OF ENVIONMENT AUDIT





CELEBRATION OF VANA MAHOSTAV BY NSS UNIT





PLANTATION OF TREES

THANK YOU