



Auditing Mother Earths Resources: A Need or a Necessity in NAAC Accreditation in Higher Educational Institutions in India

Dr. Subhash Chand¹
Dr. Deepmala²

Author's Affiliation:

¹Assistant Professor, SGS Government College, Nasirabad, Ajmer (Rajasthan), India.

²Assistant Professor, & Head, Dept. of Physics, Sophia Girls' College, Ajmer (Autonomous), Rajasthan, India.

ABSTRACT

Green audit is a mechanism for the measurement of parameters related to environmental conditions of an area. It consists of flora, fauna, air, soil, water, energy and carbon footprint audit. It helps an institution for evaluating its environmental performance index. If any parameter does not lie within the permissible limits then this audit helps to improve sustainable development practices. It is the duty of an organisation that an environmental policy should be adopted and on the basis of that policy an institution should follow an action plan. According to NAAC quality audits on environment and energy are regularly undertaken by an institution of higher learning. Action plans should be strictly followed by that institution because green audit is not only a NAAC exercise but it is a way of expressing our gratitude towards mother earth. Conservation and preservation of environment should be our first priority because survival of mankind remains in the root of ecological conditions prevailing on earth.

Keywords- Green audit, Environmental policy, Institution, NAAC, Parameters.

1. INTRODUCTION

Green audit may be defined as an environmental statement of an institution. It means it is an objective, systematic, well organised and authentic examination and evaluation of the environmental components in an institution. Green audit is the tool of management system used for protection and conservation of environment [1]. According to University Grants Commission "green and clean campus" mission is a mandatory exercise for Indian Colleges and Universities. Ever increasing population and demands of luxurious gadgets & technology have transformed the norms of life irrecoverably. The circumstances of this

rapid development call for initiatives for striking a balance between the needs of the growing human population and the necessities for protecting Mother Earth. Neglecting environment and overuse of natural resources turns the picture of sustainable development at an angle of 180 degree [2]. Evidently it is the duty of all higher educational institutions in India, where young minds and the future citizens of our country are moulded, to spread awareness about our natural environment and provide impetus to devise ways and means for better ecological solutions. Green Audit is imperative in higher educational institutions for the sustainability of life [3]. It also helps in enhancing the grade of an institution in NAAC Accreditation.

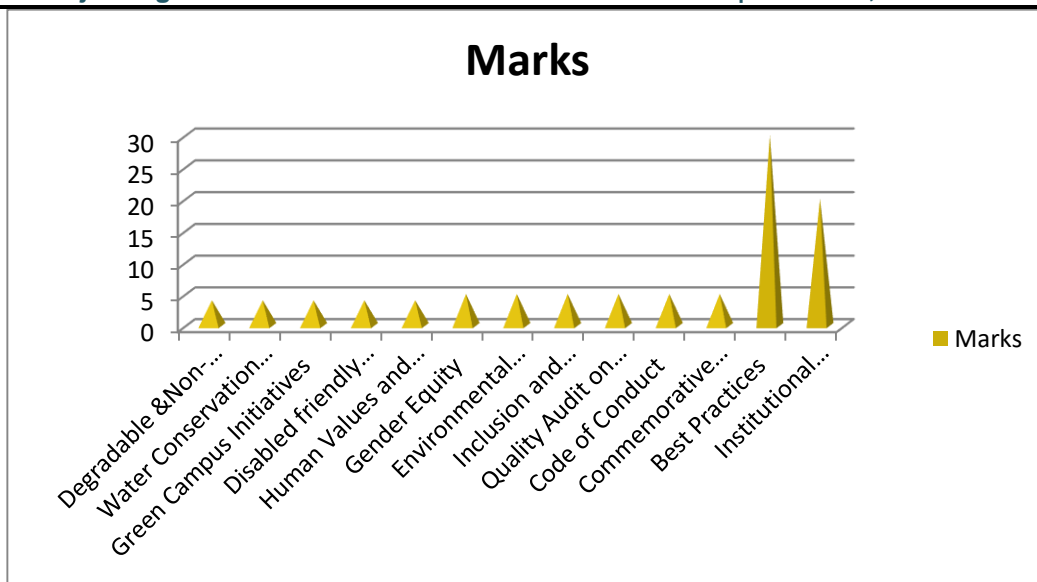
2. Aims and Objectives of Green Audit

The major aims and objectives of Green Audit are

1. To check and analyze all components of matter.
2. To keep an account of Flora and Fauna of the organisation.
3. To calculate energy consumption.
4. To pinpoint demand strength and weaknesses.
5. To check the observation with standard results.
6. To maintain an account of authentic data after auditing.
7. To promote environmental values by organising environmental awareness programmes.
8. To gauge all sources of carbon footprints and devising methods to decrease it to the lowest level possible.

Green audit is a part of VII criterion-Institutional Values and Best practices. Although in NAAC criterion marks wise its contribution is very small but it plays a larger role in the survival of mankind.

Exercise Questions	Marks
Degradable & Non-degradable waste	4
Water Conservation facilities	4
Green Campus Initiatives	4
Disabled friendly environment	4
Human Values and Professional Ethics	4
Gender Equity	5
Environmental Consciousness and Sustainability	5
Inclusion and Situatedness	5
Quality Audit on Environments	5
Code of Conduct	5
Commemorative days/Festivals	5
Best Practices	30
Institutional Distinctiveness	20
Total	100



3. METHODOLOGY

The first and foremost aim of the green audit is to self analyze the environmental conditions prevailing in the campus and to work towards maintaining a balance between human activities and environment for the benefit of mankind. Auditing can be classified in three stages

3.1 Pre-auditing Stage

- (i) Selection of the Committee
- (ii) Distribution of work by the Co-ordinator
- (iii) Determine the areas under investigation
- (iv) Preparation of Questionnaire

3.2 Auditing Stage-

It is further divided into eight parts

- (i) Energy Audit- This audit includes list of all types of sources which consumes power like Computers, Air Conditioners, Printers, Tube lights, Fans, Bulbs, LEDs and all others electrical and electronic gadgets.
- (ii) Water Audit- It involves calculation of water consumption in different human activities like drinking, cooking, gardening, cleaning, flushing etc and accounting of total water supply within the campus. A list of total number of taps, water pumps, showers etc should also be prepared. Sources of leakage if any should be properly accounted.
- (iii) Audit of Flora and Fauna- It comprises of total number of trees, medicinal plants, cactus, vegetables, fruits etc and total number of birds, animals and reptiles present in the campus.
- (iv) Air Quality Audit_- An organisation should have responsibility that its air quality parameters should be checked from time to time. It includes levels of Suspended Particulate Matter (SPM), Sulphur Dioxide, Carbon di-oxide, Carbon mono-oxide and Oxides of Nitrogen.
- (v) Soil Quality Audit - PH of soil should be tested from time to time. What type and amount of fertilizer an institution is using?

- (vi) Solid, Liquid and e-Waste Audit – It includes paper waste from different departments, labs and offices. Solid waste also includes broken glassware from Chemistry labs, food and plastic waste from hostel mess, canteen and kitchen, chemical waste and e-waste from computer lab and irreparably damaged instruments from different Labs such as Physics, Botany, Zoology, Chemistry, Geography, Home Science, Environmental Science etc.
- (vii) Carbon Footprint Audit- Carbon Footprint is defined as the total amount of CO₂ which is responsible for global warming and climate change, emitted by a person, an organisation, a state or a country. It includes mainly emission from vehicles, LPG consumption, electricity consumption, food waste etc. Best method of calculation of carbon foot print is by preparing a questionnaire for students and staff of the institute.
- (viii) Audit of Noise pollution - It includes checking of sound levels in the College at different locations and at different times of the year.

3.3 Post-auditing Stage-

After collection of data it should be matched with standard one. If any parameter is not under the safe limit then it is the duty of the organisation that some positive steps should be taken to bring down the level of that parameter under safe and permissible limits.

The higher education sector represents a domain which provides a work culture for its faculty, learning and growing environment for its students, so it is the responsibility that air quality index of institute at different location and different time should be measured and certified by an authentic agency preferably by state or central pollution control board. According to National Ambient Air Quality Standards (NAAQS) suspended Particulate matter (SPM), Sulphur dioxide and Oxides of Nitrogen are the major air pollutants to be measured. If air quality parameters are above permissible limits then Positive action should be taken to bring down pollution levels under permissible limits. Some action are

1. Planting tree species which reduce levels of air pollutants.
2. Complete ban on burning of garbage in open places.
3. Use of cycles and E-Rickshaw inside the campus.
4. Use of sensor based solar light.
5. Ban on smoking.
6. Minimum use of Air Conditioners.
7. Use of organic products and avoid products with high chemical content.

Table-STANDARD AIR QUALITY PARAMETERS FOR PERMISSIBLE LIMITS

According to National Ambient Air Quality Standards (NAAQS)

S. No	Major Air Pollutants($\mu\text{g}/\text{m}^3$)	Permissible Limits (NAAQS)
1.	Particulate Matter PM ₁₀	100
2.	Sulphur dioxide as SO ₂	80
3.	Nitrogen dioxide as NO ₂	80

*In higher education noise level should not exceed 45 decibel

*In Soil checking parameters PH of soil should lies between 6 to 7

Table -Represents Standard Water Quality Parameters for Permissible Limits according to WHO and National Drinking water Quality Standard (NDWQS)[4]

Humans and all living things survival is based on the quality of water they use. Pure drinking water is fundamental right of all human beings. Contaminated water is responsible for at least 80% of diseases [5]. In an organisation it is duty of management that PH, Turbidity, Bio-chemical oxygen demand, Nitrates, Phosphates, iron etc of water are checked from time to time as these parameters are necessary for the understanding of flora and fauna of that institute [6].

Parameters	WHO Limits	NDWQS
pH	6.5-8.5	6.5-9
Conductivity(μ S/cm)	-	1000
Turbidity	5	-
TSS(mg/L)	-	25
TDS	1000	1000
Cu	2	1
Fe	0.3	0.3
Pb	0.01	0.01
Hg	0.006	0.001
Zn	None	3
Mg	None	150

4. Suggestions and Recommendations–

In an organisation-For water conservation Rain Water Harvesting is a Milestone step.

1. For energy conservation Solar Panel must be installed on the terrace so that contribution of renewable energy source can be increased.
2. Bulbs and CFL should be replaced by LED lights.
3. Awareness Programmes like rallies, seminars should be conducted throughout the year so that students become environment conscious.
4. An institute should believe in 3R (reduce, recycle, reuse) policy. This will further reduce the carbon foot-prints.
5. Single use of plastic must be banned. More emphasis should be given on use of homemade cloth bags.
6. Students, staff and stake holders should be encouraged to use both sides of paper.

5. Conclusion

Green audit in practice is highly time consuming process and it is not only very costly but also people do not understand the long term ecological and aesthetic benefits of it as minds of the people/ organisations are trained for immediate monetary benefits. COVID-19 has made us realise that it is apt time to pay our overdues back to the mother earth so that our future generations will not blame us for ruining the environmental resources. In assessment and accreditation by NAAC its contribution is only 0.5%.Therefore most of the colleges and universities in India don't take this audit on a serious note. So the contribution of Green Audit should be increased from the present 0.5% to at least 5%.

References –

1. Patil. S., Langi.B. and Guarv.M.(2019),Green Audit in Academic Institutes, *International Journal of Multidisciplinary Educational Research*, 8(6),PP131-145.
2. Arora.P.[2017], Environmental Audit-Need of the Hour, *International Journal of Advanced Research in Engineering and Management*, 3(4),PP 25-32.
3. Pandit.M., Magar.S.B.,(2015),Green Audit a case study of Arts, Science & Commerce College,Manmad,*IOSR-JESTFT*,9(8),PP 105-108.
4. Rahmanian. N.,Ali. S.H., Homayoonfard. M.,Ali.N.J., Rehan.M.,SadeF.Y.,Nizami. A.S.(2015),Analysis of Physiochemical Parameters to Evaluate the Drinking Water Quality in the State of Perak,Malaysia, *Hindawi Publishing Corporation, Journal of Chemistry*, vol2015.PP, 1-11
5. Phadatare S.S., Gawande.S.,(2016), Review Paper on Development of Water Quality index, *International Journal of Engineering Research &Technology*,4(3),PP765-767.
6. Dey. S., Botta. S., Kallam. R.,Angadala.R. And Andugala. J.(2021), Sesonal variation in water quality parameters of Gudlavalleru Engineering College pond, *Current Research in Green and Sustainable Chemistry*,Vol4,PP 1-15.

