

GREEN AUDIT REPORT

2021-2022

KATWA COLLEGE

(Affiliated to University of Burdwan)

Katwa-713130, East Burdwan



Prepared By

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INTRODUCTION

Green Audit is a means of assessing environmental performance (Welford, 2002). It is a yardstick especially in contemporary times to review where the institution stands with regard to sustainable development of environment. It also contributes to further rectification to minimize the insult of the environment.

ACKNOWLEDGEMENT

We would like to thank our Principal, Dr. Nirmalendu Sarkar for his consent to conduct this audit. We would like to sincerely thank all the Departments, students, teaching and nonteaching staff for their kind cooperation with us during this survey. We would also like to especially thank the Laboratory Assistants who helped us in furnishing this information.

OBJECTIVES OF STUDY

The main objective of the green audit is to promote the Environment Management and Conservation in the College Campus. The purpose of the audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green Audit are:

- To introduce and create awareness among students regarding the environment and its sustainability.
- To protect the environment and minimize the threats posed to human health by analyzing the pattern and extent of resource use in the campus.
- To gather data to assess future sustainability by avoiding the problems in environment that are difficult to handle or involve high expenditure.
- To conclude a status report on environmental compliance.

METHODOLOGY

In order to perform green audit, the methodology included different tools such as preparation of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons, data analysis, measurements and recommendations. The study covered the following areas to summarize the present status of environment management in the campus:

1. Analysis of Biodiversity
2. Empirical analysis of Air quality
3. Analysis of water usage
4. Analysis of Energy consumption
5. Analysis of waste generation and disposal

All the data were assimilated and the report was prepared on the basis of the same.

REPORT

1. Analysis of biodiversity

There are approximately 170 plants in the main campus of which 56 plants(approx.) are canopy trees, 28(Approx.)are plants of average length and 86(approx.) are small plants. There are 25 medicinal plants in the college Botanical Garden. These plants contribute to the Oxygen supply. The college observes Environment Day every year by planting new saplings.

2. Empirical analysis of Air Quality

Situated in a semi urban area, the college is not exposed to much industrial pollutants or pollutants from vehicles. Following are the units that cause air pollution inside the campus:

1. Vehicles that enter the campus
2. Refrigerator
3. Air Conditioners

4. Burning of wastes like dry leaves, paper etc.
5. Water coolers
6. Submersible pumps (3)
7. Rice mills
8. Saw mills

On an average, 1 cars, 10 bikes and 4 scooters are parked around the campus per day which contributes to high carbon emission. The 65 KB power generator has high energy conversion efficiency which however does generate air pollutants. Despite this, the college is compelled to use the same in emergency power cut situations during working hours. The 5 refrigerators, 19 air conditioners and 5 working water coolers in the campus indirectly lead to carbon emissions and directly to global warming. The gas burners in the laboratories and college canteen also cause some amount of carbon emission. However LPG is used in these equipments that render the emission less harmful. Lastly the people entering the campus contribute to carbon dioxide emission.

3. Analysis of Water usage

Water is used for drinking, canteen, toilets, laboratories, lavatories, gardening, cleaning and maintenance. The college campus has several water outlets. During the survey, no loss of water was observed, neither by leakages, or by over flow of water from overhead tanks. The data collected from the concerned departments was examined and verified. On an average the total use of water in the college in normal working day is 36,000 L/day, which include 20,000 L/day for non academic purposes, 10,000 L/day for gardening and 6,000 L/day for different laboratories.

4. Analysis of Energy consumption

The college is well equipped with electric supply. The departments possess computers, printers, fans, plug points, tube lights, bulbs, etc. In addition to these the following equipments are also used:

	Name of equipment	Number	Department/s
1	Microscope (Electrical)	01	Zoology
2	Double Distillation Unit	01	Chemistry
3	Colorimeter	03	Physiology, Zoology
4	Photocopy Machine	04	Library, day & Morning Office, Remedial Coaching Centre
5	Autoclave	01	Botany
6	Exhaust Fan	13	Chemistry, Library
7	Laminar air flow	02	Botany
8	Hot plates	02	Zoology, Physiology
9	Incubator	02	Zoology
10	Stand fan	05	
11	Hot air oven	01	Chemistry
12	Centrifuge	02	Botany, Zoology
13	Water filters	08	
14	Induction cooker	02	Staff room, Bed.
15	Sound System	07	Room No. 104, 107, 110, ITC

			hall and auditorium hall
16	Bell	02	Main building, Principal's Office
17	Electric Heater	03	Physics, Zoology
18	Weighing Machine	06	Chemistry, Physics, Zoology
19	Soil separator machine	01	Geography
20	Vapour lamp	05	Physics
21	Projector	08	Chemistry, Physics, Geography, Physiology, Zoology, English
22	Hot water bath	02	Zoology
23	Vacuum bath	01	Physics
24	Kymograph	08	Physiology

Apart from this there are few other types of equipment that consume negligible power. Hence they have not been mentioned.

4. Analysis of Waste generation and disposal

Wastes cannot be avoided in any environment. Wastes can be classified as Biodegradable and Non biodegradable wastes. Biodegradable wastes include food wastes which can be easily decomposed by the bacteria in soil. But non biodegradable wastes are those which cannot be degraded by any organism and remain as such for many years. The College accumulates three types of waste mainly –

1. Solid waste
2. Liquid waste
3. E-waste

The College is very conscious about proper disposal of all kinds of wastes. The College has a vat inside the campus where the solid waste generated is deposited and it is periodically collected by Katwa Municipality.

The liquid waste primarily from the department of Chemistry goes to a soak pit set up inside the campus which is connected to the Municipality sewerage system.

The College is trying to be plastic-free and a resolution with regard to this was taken up in the Teachers' Council.

The College tries to avoid the use of plastic that contain carcinogenic plasticizers (DOB, DOP etc.) to minimize the detrimental effect of the same on the environment.

All UPS are recycled for re-use. E-wastes are gathered in a store room and sold as scrap later.

OBSERVATIONS

1. On assessment of the air quality, we found that there are many pollutants in our environment (both in micro quantities or macro quantities), from the vehicles and the generator. The burning of wastes also causes emission of poisonous gases into the atmosphere. However are many plants in the campus that purify the polluted air and supply enough oxygen.

2. There is sufficient safe drinking water in the campus for everyone. It is observed that there is no wastage of water due to leakage or overflow. But there is no rain water harvesting system in our college.
3. Energy consumption is high which is but imperative in an Institution which serves in several shifts with quite a number of departments. An autoclave, a cooler and also a few fans and tube lights are not working at the moment.
4. Some of the bio degradable wastes are burnt. All other wastes are collected by the municipality from time to time. The college has dedicated personnel for cleaning the campus as well.
5. Several trees have been cut down for new construction in our college, but no trees were planted.
6. Automatic Solar Lights are not used for night time lighting in College building.
7. Solar Panels are not there in college which is an effective alternate energy source and can add considerable impetus in terms of sustainability.
8. A closed area between main garden and office building seems to be requiring intense maintenance.

RECOMMENDATIONS

a. Air Quality

- The College should examine the air quality by using the appropriate machine instead of mere empirical analysis.
- **New construction or development work has to be done without cutting down any tree.**

- More plants especially shade trees to be planted and those trees will be moist deciduous categorized so they never get their entire leaves shaded in any season.
- **Celebrate every year 5th June as ‘Environment Day’ and plant trees on this day to make the campus more Green.**

b. Water usage

- Sample analysis of water should be done from proper authority.
- The college **must undertake measures for rain water harvesting** for minimizing use of underground water. That water can easily be used for maintenance of gardens in college campus during scarce seasons.
- Water filters cum coolers should be regularly serviced and upgraded (if required) to minimize wastage of electricity and water.
- All cleaning products should have minimal detrimental impact on the environment, i.e. biodegradable and non-toxic.
- Number of dustbins should be increased for both bio-degradable and non-bio degradable wastes.

c. Energy Consumption

- Use of **Solar panels to be introduced** to decrease electricity consumption.
- Energy conserving methods like usage of LED and CFL bulbs should be encouraged.
- Daytime Solar lights can be used for night time lighting in college building as those lights will charge from solar energy during daytime and after sunset those will lit up automatically.

d. Waste disposal

- Wastes should be sorted and separated for disposal / recycling where possible.
- Misuse of paper to be avoided as much as possible and working paperless to be encouraged where possible.
- Encouraging use of bicycles instead of motorbikes for those who come from local area of Katwa (2-4 km radius).
- Waste water from all around the campus flows into the municipal drain and those drains must be cleaned in regular interval.

e. Miscellaneous Initiatives:

- Fire extinguishers, sand bags are necessary in every department.
- Making students aware of "Green Campus" concept.
- Signage need to be pasted in different areas of the campus.
- Proper maintenance and reclamation of playgrounds, belong to college.
- Maintenance of toilets (both for staff/students)
- Asthetic plantation of exotic plants along both the sides of walking areas will enrich the asthetic value.

CONCLUSION

The college is striving to minimize pollution of the mentioned types as much as possible. The College tries to use plastic that do not contain carcinogenic plasticizers (DOB, DOP etc.) to minimize the detrimental effect of the same on the environment.

Measures however must be taken to seriously pursue for Rain water harvesting mechanism, Solar panels and more planting of medicinal plants and shade trees.