To
The Principal
Krishna Chandra College
Hetampur
Birbhum
West Bengal

E-mail: principalkccollege@yahoo.com

Subject: Environmental Audit Report Submission from Experts

Sir

After verification of all the aspects in the College and necessary assessment of the report on "Environmental/Green Audit" mentioning the "Energy Monitoring & Management System" submitted by your College for the period of 2022-'23, here, we are submitting the Audit Report of "Environmental/Green Audit" of your College of the period of 2022-'23 for your kind perusal in the attached sheet.

We request you to please acknowledge and oblige.

Yours,

16/12/23

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16/12/23

Dr Sibaprasad Rudra
Former Principal
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PurbaBardhaman

Principal (Former)
Vivekananda Mahavidyalaya
BURDWAN

Date: 16/12/2023

AUDIT REPORT ON ENVIRONMENTAL AUDIT/ GREEN AUDIT

CERTIFICATE

This is to certify that the Environmental Audit/Green Audit Report and Energy Monitoring & Management System followed at Krishna Chandra College, Hetampur, Birbhum based on the original data collected during the period of 2022-'23. This has been assessed and is applicable to provide quality ambience for continued Higher Education, Training and Mental health to the students for their smart future and career. Further, it is certified that the baseline data was prepared by internal College Environmental Committee team members of Krishna Chandra College, Hetampur and submitted to us. The content of the baseline data of the study and Energy Monitoring & Management System has been personally verified by the Expert Team constituted by the University of Burdwan, Burdwan for validity and reliability. The data used in the study are original in nature and have not been presented or published elsewhere. Data & Photographs used in the report are taken by the College Environmental Committee team members during preparing their Report of the concerned year 2022 - '23.

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a. In order to meet these objectives, this audit was based on report submitted by the College authority and reviewing of relevant documents as far as possible and interviews with authority, Coordinator and staff members physically.

b. Review of the Documentations

c. For the purpose of this audit the Green Policy of the institute was reviewed. Other relevant standards, Green audit framework *etc*., was also considered.

Interviews

Interviews were conducted with the Principal, IQAC Coordinator, Coordinator of College Environmental Committee and also members of the Committee.

Physical Inspection

Physical inspection was made on 16th of December 2023 and report was prepared based on the physical verification and validation and interaction with the members of the College.

9.0 Declaration

I agree with all the recommendation and observations mentioned in this report.

Date: 16/12/2023
Place: Krishna Chandra College, Hetampur

16/12/23

Principal
KRISHNA CHANDRA COLLEGE
Hetampur, Birbhum

Signed by College Principal with Seal

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FORMAT OF GREEN AUDIT: QUESTIONNAIRE

Environmental audit or **Green audit**is a general term that can reflect various types of evaluations intended to identify environmental compliance and management system implementation gaps, along with related corrective actions. In this way they perform an analogous (similar) function to financial audits. The term “Green” means eco-friendly or not damaging the environment. This can acronymically is called as “Global Readiness in Ensuring Ecological Neutrality” (GREEN). “Green Auditing”, an umbrella term, is known by another name “Environmental Auditing”.

There are generally two different types of environmental audits: compliance audits and management systems audits. Compliance audits tend to be the primary type in the US or within US-based multinationals.

The term "protocol" in environmental audit means the checklist used by environmental auditors as the guide for conducting the audit activities. Current technology supports many versions of computer-based protocols that attempt to simplify the audit process by converting regulatory requirements into questions with "yes", "no" and "not applicable" check boxes.

Green Audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. The ‘Green Audit’ aims to analyze environmental practices within and outside the college campus, which will have an impact on the eco-friendly ambience. It is based on exercises that can help to measure the risk to the health of inhabitants and the environment. Through Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Green Audit.

This includes the plants, greenery and sustainability of the campus to ensure that the buildings conform to green standards. This also helps to monitor the Environmental Policy is enacted, enforced and reviewed using various environmental awareness programmes.

The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. The methodology include: preparation and filling up of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. It works on the several facets of ‘Green Campus’ including Water Conservation, Tree Plantation, Waste Management, Paperless Work, Alternative Energy and Mapping of Biodiversity.

‘Green Audit’ aims to analyze environmental practices within and outside the college campus, which will have an impact on the eco-friendly ambience. Green audit is assigned to the criteria 7 of NAAC.

There are main three pillars i.e. zero environmental foot print, positive impact on occupant health and performance and 100% graduates demonstrating environmental literacy. The goal is to reduce CO2 emission, energy and water use, while creating an atmosphere where students can learn and be healthy. The college has to work on the several facets of ‘Green Campus’ including Water Conservation, Tree Plantation, Waste Management, Paperless Work, Alternative Energy and Mapping of Biodiversity.

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 and data analysis, measurements and recommendations. The study covered the following areas to summarize the present status of environment management in the campus:

- Water management
- Energy Conservation
- Waste management
- E-waste management
- Green area management

A water audit is an on-site survey and assessment to determine the water use and hence improving the efficiency of its use. Water is used for drinking purpose, canteen, toilets, laboratory and gardening. Loss of water must be checked, neither by any leakages, nor by over flow of water from overhead tanks.The green audit practically involves use of renewable sources, conservation of the energy, rain water harvesting program, and efforts of carbon neutrality, plantation of trees, E-waste management and hazardous waste management.

1.GENERAL INFORMATION

1.1 Year of Establishment of college:
1.2 History behind the establishment of the college:
1.3 Total campus area:
1.4 Total built up area:
1.5 Total open space area:
1.6 Total green area:
1.7 Whether the college is implementing the Green Policy for the first time: **"yes", "no" and "not applicable"** (mention date/month/year)
1.8 Whether green audit is followed annually, if so, please produce the year-wise recommendations of the auditor along with report (as Annexure): **"yes", "no" and "not applicable"**
1.9 Whether college has constituted the "College Environmental Committee", **"yes", "no" and "not applicable"** (if so, give the details of it)
1.9.1 Name of the Committee members
1.9.2 Number of meetings conducted so far:
1.9.3 Resolution of the meetings:
1.9.4 Action taken by the Committee
1.9.5 Future programmes of the Committee
1.9.6 Policy enforcement strategies
1.10 Whether college has conducted any awareness/responsibility programme among the staff members: **"yes", "no" and "not applicable"**
1.11 Whether all the departments/teachers/non-teaching members/students are aware about the need of the environmental protection and audit: **"yes", "no" and "not applicable"**
1.12 Whether college has involved the students as volunteers in greening programmes: **"yes", "no" and "not applicable"**
1.13 Whether construction/demolition/repairing are in compliances with green standard:
"yes", "no" and "not applicable"
1.14Whether college has conducted any workshop/seminar/lecture on environmental awareness programme inside and/or outside the campus: **"yes", "no" and "not applicable"**
1.15Whether the institute has department of Law/Environmental Science/3-Year degree Course/Course curriculum
"yes", "no" and "not applicable"
(if so, how does it takes part in greening programmes)
1.16 Whether college provides any community services, if so, give details (as Annexure): **"yes", "no" and "not applicable"**
1.17Whether the students are aware about the use of medicinal plants (any lecture/seminar/conference organized on it): **"yes", "no" and "not applicable"**
1.18 Comments on the following:
1.18.1 Plantation program: Y / N
1.18.2 Formation of Natural club/Eco club: Y / N
1.18.3 Management of natural resources, wildlife, conservation of species: Y / N
1.18.4 Any project sponsored by national funding agency/NGO, independent project related to environmental issues: Y / N
1.18.5 Is there any incidence of burning of plastics containing garbage within the campus for necessary reduction: Y / N
1.18.6 Celebration of 5th June, Ozone day, Earth Day etc.: Y / N

1.18.7 Number of field visits/survey records: Y / N (if Y number)
1.18.8 Campus biodiversity register
1.19 General aspects (express in statements)
1.19.1 Campus cleanliness
1.19.2 Rainwater harvesting
1.19.3 Solar street lamps
1.19.4 Carbon dioxide neutrality on the campus by developing greenery
1.19.7 Man-made nest to attract some birds to maintain ecological balance
1.19.8 Restriction in use of plastic and plastic products
1.19.9 Culture of some ducks, swans etc., for scenic beauty in pond or any water body resources (if available)
1.19.10 Green monitoring by green committee/volunteers/team
1.19.11 Training on vermicomposting
1.19.12 Celebration of 'No vehicle Day' on a particular day
1.19.13 Dams inside the campus to meet the demand for water
1.19.14 Installation of fire safety instruments in all the buildings/departments
1.19.15 Toilets/separate toilets for differently abled students
1.20 Over all noise level

Sl no.	Inside campus area	Outside campus	Class room	Lawn	Office	Laboratory	Canteen

1.21 Is there any device (preferably HVS: High Volume Sampler) for measuring ambient air quality in the campus (if so, pl mention the data month wise): **"yes", "no" and "not applicable"**

2. WATER MANAGEMENT

2.1 Whether college has an efficient and hygiene water storage mechanism to minimize the loss of water during storage
"yes", "no" and "not applicable"
2.2 Whether college is using water filter with RO, Aqua Guard and/or large water filter with cooler at the strategic locations in the college. If so, are they under AMC: **"yes", "no" and "not applicable"**
2.3 Whether college has its own mechanism in repairing of water leakage: **"yes", "no" and "not applicable"**
2.4 Is there any rainwater harvesting unit in college: **"yes", "no" and "not applicable"**
(if so, what are the uses of this water:)

a)
b)
c)
d)

2.5 Whether college has developed any reuse and recyclable of water system: **"yes", "no" and "not applicable"**
2.6 Is there any scope of measurement of water quality parameters used in hostel, lab, office, canteen, tap water (if so, parameters: pH, EC, TDS *etc*.)
2.7 Lab-wise water consumption (lt/d)
Chemistry
Zoology
Botany

Physiology
Geography
2.8 Whether college has sufficient/adequate drainage system: **"yes", "no" and "not applicable"**

3. ENERGY CONSERVATION

3.1 Reduction of energy consumptions, especially fossil fuel energy

3.1.1 Total electric consumption amount ……. KWH/Yr
3.1.2 Average electrical consumption in a month ……
3.1.3 Total No. of
i)LED
ii) CFL
iii) Tube lights
iv) Incandescent lamps
v) Fans
vi) Air conditioners/Air Coolers
3.1.4 Whether college has any provision/choice of renewable and carbon-neutral electricity options: **"yes", "no" and "not applicable"**
3.1.5 Whether college has planned to install solar panels: **"yes", "no" and "not applicable"**
(if so, Project installed/working: Date/Month/Year)
3.1.6 Whether college has efficient water heating system: **"yes", "no" and "not applicable"**
3.1.7 Whether the staff members of all sectors are concerned in turning off electrical appliances when not in use in both commercial and residential area: **"yes", "no" and "not applicable"**
3.1.7 Is there any monitoring system – like put off the main switch where there is no need of electricity:
"yes", "no" and "not applicable"
3.1.8 Whether the users follow the appropriate and measurable targets for a reduction of energy, such as, computer, printers, electrical equipment when not in use: **"yes", "no" and "not applicable"**
3.1.9 Is there any options for equipment's running on standby mode: **"yes", "no" and "not applicable"**
3.1.10 Whethercollege has taken initiative to purchase efficient and environmentally sound appliances in order to fulfill the green budget: **"yes", "no" and "not applicable"**
3.1.11 Whether college has its own mechanism in repairing of electrical fault:
"yes", "no" and "not applicable"
3.1.12 Whether the class rooms are with sufficient illumination in day time and ventilation:
"yes", "no" and "not applicable"
Number of lights & fans in class room (average):
Use of light & fans in the day time (average hours):
Number of windows per class:
Natural light source in day time (in hours) (average per class):
3.1.13 How many (%) e-notice generated by the college for academic/administrative purposes in a month
3.1.14 How many (%) paper-notice generated by the collegefor academic/administrative purposes in a month
3.1.15 Total number of computer, printer, Laptop, Xerox machine
3.1.16 Whether college has organized lectures on energy conservation in order to give awareness to the students:
"yes", "no" and "not applicable"

3.2 Energy conservation strategies

3.2.1 Whether the architectural design for college is based upon use of natural lighting & ventilation, to save extra power for bulbs and fans: **"yes", "no" and "not applicable"**
3.2.2 Whether florescent bulbs are replaced with CFL bulbs/LEDs: **"yes", "no" and "not applicable"**

3.3Minimize the use of unsustainable transport

3.3.1 What are the available/maximum transport facility used by the staff members/students etc., - mention the number (in average per day):
3.3.2 Whether college has any common car sharing/car pool among the students and faculty:
"yes", "no" and "not applicable"

4.WASTE MANAGEMENT

4.1 Maximization of the process of wastes & minimization of non-renewable refuse

4.1.1 Is there any method of segregation of waste materials?**"yes", "no" and "not applicable"**
4.1.2 Total amount of solid waste generated in the campus (including tree droppings & Lawn wastes)
Total number of staff
Per capita production per day
4.1.3 Whether college arrange any workshop/seminar/conference for awaring the students/staff for specific arrangements for recyclable wastes: **"yes", "no" and "not applicable"**
4.1.4 Whether college follow specific disposal method for solid or liquid waste in specific manner:
"yes", "no" and "not applicable"
4.1.5 Whether the recycling/collection facilities are provided by the city Municipality and/or private suppliers (including glass, white plastic bottle, printer cartridges, cardboard, furniture, plastics, thermocol, waste papers, electrical goods & alliances, electronic gadgets, instruments, equipment, packing materials):
"yes", "no" and "not applicable"
4.1.6 Whether college has any composting ground/vat or any collection unit*etc*.:
"yes", "no" and "not applicable"
(if yes, what is the percentage of waste undergone composting and the final use of the products)
4.1.7 Is there any mechanism of treatment/uses of domestic influent in the college campus (if so, what is the capacity of treatment plant/composting *etc*.): **"yes", "no" and "not applicable"**
4.1.8 Minimize use of chemical pollutants

Sl No.	Department	Name of the waste			Total (a+b+c)	Characterization(if any)	Method of disposal	Agency if any
		Chemical (a)	Biological waste (b)	Microbial waste (c)				

4.1.9 Records of dustbins/collection bins inside the campus

Sl no.	Location of dustbin	No. of dustbins			Quantity of collection (per day)	Disposal time	Cleaning by ecofriendly product Y/N
		Biodegradable	Non-biodegradable	Plastic waste			

4.1.9 Whether the cleaning products used by the college staff are ecofriendly and under the COSHH (Control of Substances Hazard to Health) regulations: **"yes", "no" and "not applicable"**
Whether the college is using fertilizers, pesticides for any purposes, if so, amount used per month and places of uses

Use of public transport: **"yes", "no" and "not applicable"**

5.E-WASTE MANAGEMENT

5.1 Quantity of e-waste generated:
5.2 Number of cartridge used month-wise:
5.3 Number of cartridge disposed in a year (average):
5.4 Number of times refilling & reusing method of disposal of e-waste (if any)
5.5 Whether college has conducted any awareness programme on e-waste management:
"yes", "no" and "not applicable"
5.6 Is there any means of disposal of unused computers, printers and electronic wastes through authorized agents:
"yes", "no" and "not applicable"
5.7 Disposal methods

Sl No.	Location	Amount of generation	Method of disposal	Name of the Agency (if any) for disposal

6. GREEN AREA MANAGEMENT

6.1 Is there any garden in the college campus/outside the campus under college custody:
"yes", "no" and "not applicable"
6.2 Whether the garden is watered by using drip/sprinkler irrigation system: **"yes", "no" and "not applicable"**
6.3 Is there any mechanism of review of periodical monitoring of tree species: **"yes", "no" and "not applicable"**
6.4 Whether the college has taken any programme for plantation of some fruit trees which can attract birds, bees *etc*.
"yes", "no" and "not applicable"

6.5 Biodiversity mapping

Sl No.	Name of the place	Area	Type of plantation				Species name& quantity	Name of the Family	Total no. of species
			Indigenous plants	Medicinal plants	Ornamental plants	Exotic plants			

6.6 Records of Plantation programmes

Sl No.	Programme conducted	Date of functioning	No. of tree planted	Present status of the species	Documentation (if any)	No. of beneficiaries