

NETAJI NAGAR COLLEGE FOR WOMEN
170/13/1 N.S.C Bose Road, Kolkata-700092
ESTD. 1986

REPORT
ON GREEN AND ENERGY AUDIT

ACADEMIC PERIOD: 2022-'23

Prepared by
The Green and Energy Audit Team

Schedule for Green and Energy Audit

May 03, 2023 Time	Schedule	Venue
11:30 AM	Introductory Meeting	Principal's Office
12:00 NOON	Meeting with Coordinator IQAC and Members	Principal's Office
12:15 NOON	Presentation by Convener of Green Audit Committee	Principal's Office
02:00 PM	Lunch	
02.30 PM	Interaction & Physical visit with Convener & Committee Members	Physical facility in and around the campus
03.00 PM	Visit to Campus	
04:45 PM	Exit Meeting	Seminar Hall
05:30 PM	Tea	

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I. Introduction

Netaji Nagar College for Women, a HE Institution began its journey under the affiliation of the University of Calcutta since its establishment on 1986. During a period of political and social turmoil in the state, the college was established by the generous and enthusiastic people of the local area. It has started as a morning college in the same premises as its two other sister colleges and finally it became a day shift college from the year 2005 with its own building. The establishment of Netaji Nagar College stands as a testament to the commitment to educational accessibility, addressing the needs of the local students and fostering a conducive environment for higher learning. Now, College offers 12 UG Hons. Courses and 28 Program Courses. Right now, there are 51 full-time teaching faculties, including 25 SACT serving in teaching-learning system.

Since inception, College is maintaining its academic and administrative excellence, and has been continuously upgrading the curricula and infrastructure in order to improve the quality of education.

Now, the College voluntarily has started the Environmental/Green and Energy audit as well as other relevant audits for the last year 2022 -'23 to look into its strengths and weaknesses and identify the scope of further improvement.

Audit Committee

The authority of the Netaji Nagar College for Women has constituted a two members committee to conduct Green and Energy Audit of the Netaji Nagar College for Women, Kolkata. The Audit Committee comprises the following members:

Dr. Subrata Kr. Dey, Professor in Chemistry & Head-in-Charge, Department of Environmental Science, Sidho-Kanho-Birsha University, Purulia

Dr. Sankar Bhattacharyya, Head, Department of Zoology, Sidho-Kanho-Birsha University, Purulia

II. Objective & Scope of the Audit

Members along with the Principal, Dr. Tapan Kumar Ghosh in presence of Convener of Green Audit Committee and IQAC members at a preliminary meeting, held on 03-05-2024 at 11.30 am, outlines the broad objectives of the environmental audit as an assessment of the College. Accordingly, the audit team members decided to look into the prevailing situation at the College along the following aspects in course of the audit.

The team is empowered and expected to express their views and give suggestions for the improvement of the systems being followed by the College.

II. Executive Summary

Netaji Nagar College for Women started on 1986 under the affiliation of the University of Calcutta. During First Cycle on 2007, College awarded C ++ by the NAAC and re-accredited in the year 2016 with grade B+ . Now the college is preparing for the third Cycle of NAAC accreditation.

In accordance with the "Format of Green and Energy Audit: Questionnaire", Netaji Nagar College for Women is performed the audit on 3rd of May, 2024. The purpose of the audit was to propose some best practices to be followed in near future in the campus which are in accordance with the Green Policy. With this in mind, the specific objectives of the audit were to evaluate the adequacy of the management control framework of Environment Sustainability.

The analysis was based upon a physical examination of the different sectors including green areas *etc.*, and standards that govern the environmental sustainability, and on the results of preliminary interviews with personnel considered key in the environmental management in the campus.

The methodology used included the physical inspection of the campus, review of the relevant documentation and interviews.

III. Observations

a. General

College has a total campus area of 1375 sq. mts, built up area 890 sq. mts and green area of 75 sq. mts. College has taken some efforts for sustainable development in the College campus and to maintain greenery.

1. College has constituted a team member to help the Audit Team members.
2. Some of the best practices such as maintaining tree plantation, introducing plastic free zone, celebration of World Environment Day, Earth Day, International Day of Biodiversity, *etc.*, are followed in the campus organized by the different departments and NSS.
3. College organises Tree Plantation Programs on regular basis; entire campus is divided into different plots for maintain the greenery as well as giving exposure to the students about biodiversity index.
4. Disposal of all degradable and non-degradable solid wastes are processed through the KMC and the Switch on Foundation in collaboration with Hulladek.
5. E-waste is also disposed through the Switch on Foundation in collaboration with Hulladek.
6. College has conducted Environmental Awareness programmes on regular basis for faculty and students, and involved the students in maintaining the cleanliness of the campus.
7. College maintains the ecological balance in the campus through maintaining gardens.

8. Rainwater is collected in specific water tank and used for gardening purposes.
9. College maintains the composting pit/vermicomposting pit.
10. College has organised workshop on vermicomposting techniques.
11. College has the MCP for monitoring of energy savings.
12. College has procured one Green Generator for uninterrupted power supply.

On detailed review, it was observed that the college has already taken some measurements constitute “Green and Energy Audit Committee” to implement the Green Policy with applicable standards. In addition, College is taking care of to improve their efficiency, fairness and consistency.

IV. Suggestions

1. College is requested to maintain the “College Environmental Committee” properly and update the Green/Environmental Policy time to time. During formation of “College Environmental Committee” College should follow the composition, where Principal will act as Chairman and inclusion of student members from SEM I, III & V.
2. College is requested to maintain their gardens at different locations through students of different departments.
3. Butterfly Garden be initiated in order for proper maintenance.
5. Students should be trained to handle the PBR through workshop *etc.*, mapping of plants be done accordingly.
6. Safe disposal methods should be adopted for solid, liquid, wooden wastes, electrical wastes, *etc.*, through proper disposal methods.
7. Existing composting be managed properly.
8. Formal MoU with KMC be maintained for long-term basis and periodical monitoring.
9. College may maintain ‘Green and Energy Budget’ for the said purposes.
10. Plantation program be monitored and periodical maintenance of plants be followed.

AUDIT FRAMEWORK AND DETAILED ANALYSIS

V. Detailed findings & Analysis

The following audit framework is used for conducting Green and Energy Audit during the period of 2022-'23. The framework also lists the findings and observations for every criterion.

Control objectives	Control(s)	Audit Observations
Maximize the proportion of waste that is recycled & minimize the quantity of non-recyclable refuse	Reduce the absolute amount of waste that it produces from the Institute & Staff offices.	The College has used some control measures to reduce the waste that it produces from the departments, staff offices, inside Campus, <i>etc.</i> Segregation method is followed properly.
	Make full use of all recycling facilities provided by City Municipality and private suppliers, including glass, cans, white, coloured and brown paper, plastic bottles, batteries, print cartridges, cardboard and furniture.	College disposes all wastes through the KMC and the Switch on Foundation in collaboration with Hulladek.
	Compost, or cause to be composted, all organic waste, green waste and un-recycled cardboard produced in or collected from kitchens, gardens, offices and rooms.	The College uses different bins for disposal of different types of wastes. <i>The fallen dead leaves from the garden be managed properly in the composting/cistern pit.</i>
	Recycle or safely dispose of white goods, computers and electrical appliances.	The College has adopted safe disposal methods for electrical wastes, printer cartridges, <i>etc.</i> , through proper disposal methods.
	Use reusable resources and containers and avoid unnecessary packaging where possible	College has proposed some steps for management of vegetable, food wastes produced from canteen.
	Provide sufficient, accessible and well-publicized collection points for recyclable waste, with responsibility for recycling clearly allocated	The College has limited scope of accessible and well-publicized collection points for recyclable waste.
Minimize the quantity of wastes during special events/occasions	Make specific arrangements for events, such as cultural Events, internal and external seminars and conferences, where significant recyclable waste is likely to be produced, in order to both minimize the waste produced and maximize what is recycled/reused	Amount of wastes generated during special events or occasions, such as Cultural Events, International and National seminars and Conferences, <i>etc.</i> , be disposed through own system

Control objectives	Control(s)	Audit Observations
	Promote reuse of items and waste recycling among staff, students and conference guests through training, posters and incentives	The College has limited scope of reuse of items and waste recycling among staff, students and conference guests through some incentives.
	Dispose all waste, whether solid or otherwise, in a scientific manner and ensure that it is not released directly to the environment	Yes, the College follows environment friendly disposal management system and ensures that it is not released directly to the environment.
Reduce energy consumption, especially of energy derived from fossil fuels	Support renewable and carbon-neutral electricity options on any energy-purchasing consortium, with the aim of supplying all college properties with electricity that can be attributed to renewable and carbon-neutral sources.	College follows paper-less communications through using digital media like Website notice, Whatsapp, generate e-notice for academic/administrative purposes.
	Appreciate that it is preferable to purchase electricity from a company that invests in new sources of renewable and carbon-neutral electricity	College has to maintain sources of renewable energy and carbon-neutral electricity like solar panels.
	Look into the possibility of on-site micro-generation of renewable electricity.	College has planned to install SOLAR PANNELS (Proposal submitted to the Govt. of WB in this direction)
	Give preference to the most energy efficient and environmentally sound appliances available, this includes only using energy-saving light bulbs	College is using LED light (mostly).
Effective energy consumption and management practices	Encourage staff, students and conference guests to save energy through visible reminders, incentives and information to increase awareness. This particularly concerns turning off electrical appliances when not in use in both communal and residential rooms	College has a mechanism to reduce the misuse of electricity by turning off the appliances when not required through MCP. All the stakeholders are aware and doing their bests and practices to save electricity.
	Ensure that all electronic and electrical equipment's, such as computers, are switched off when not in use, and is generally configured in power saving mode when such option is available	Students and all the members are used to follow this practice.
	Ensure that the equipment's running on standby mode, reduce the energy consumption on standby mode or minimize the running of equipment's on standby mode	Maintaining energy saving mechanism for most of the instruments; some of the equipment's are running on standby mode.

Control objectives	Control(s)	Audit Observations
	Purchase efficient and environmentally sound appliances and consider replacing old stock with 'greener', more efficient alternatives.	Presently, College is using environmental-friendly appliances as much as possible and taking initiative replacing all the tube lights with LEDs, <i>etc.</i> , as effective alternatives.
Minimize the use of unsustainable transport	Make available information about bicycle and pedestrian routes, public transport services and car share schemes to staff and students.	The College is connected through bus services; metro station. However a good number of the college students use bicycle.
	Reduce the proportion of travel on the University/Institute business carried out in private transport and eliminate unnecessary and inefficient use of the University/Institute vehicles	College does not have any common bus services to all stakeholders. College has one cycle stand for students as well as staff members.
	Promote car sharing / car pool among the students and faculty members	No, the College does not promote car sharing/car pool among the students and faculty members.
Minimize consumption of water	Repair sources of water leakage, such as dripping taps and showers as quickly as possible.	College should follow regular checking and maintenance of pipelines to control the water wastage through dedicated personnel.
	Install appliances which reduce water consumption	Practised as much as possible.
	Encourage a decrease in water usage among staff, students and conference guests	All the stakeholders of the College are encouraged in judicious use of water.
	Use an efficient and hygienic water storage mechanism is to minimize the loss of water during storage	College is taking some steps to aware about use of hygienic water, proper storage of water. <i>Advanced Sensor-based system be introduced to minimize the loss of water during storage, as well as in some places for effective saving of electricity.</i>
	Minimize wastage of water and use of electricity during water filtration process, if used, such as RO filtration process and ensure that the equipment's used for such usage, are regularly serviced, and the wastage of water is not below the industry average for such equipment's used in similar capacity	Inside the Campus building, there are existing THREE water cooler & purifier installed in the strategic location for the students and other members; it needs proper maintenance.
	Install Water recycling mechanism, such as rain water harvesting system	Rainwater harvesting system is used for gardening; College may develop groundwater recharge system.

Control objectives	Control(s)	Audit Observations
Minimize the risk of environmental health	Ensure that all cleaning products used by the University/Institute staff have a minimal detrimental impact on the environment, i.e., are biodegradable and non-toxic, even where this exceeds the Control of Substances Hazardous to Health (COSHH) regulations	Negligible amount of cleaning/washing liquids are used in the College. <i>College may maintain 'Green and Energy Budget' for the said purposes.</i>
	Minimize the use of fertilizers and pesticides in the University/Institutional gardens, opting for the use of compost produced on site wherever possible	College uses mostly organic fertilizers for maintenance of gardens, infected plants as and when required basis.
	Dispose the chemical waste generated from the laboratories in a scientific manner	Disposal of solid wastes are managed. <i>Drainage of liquid wastes from wash rooms, labs and other similar sources be managed properly.</i>
	Reduce the practice of burning plastic and other materials that emit the harmful gas on burning is prevented in the campus.	No such burning.
Maintenance of green campus	Ensure the green environment	College is positive about increasing greenery. Tree plantation programmes are followed in different occasions on year-wise.
	Establish a Garden in the campus	<i>Students should be trained on regular basis to handle People Biodiversity Register (PBR).</i>
	Encourage the faculties and students to plant trees in the garden	College conducts tree plantation programmes through students and staff members on year-wise. <i>Choice-plantation and fruit-plantations be followed on regular basis considering the suitability of the region.</i>
	Reviews periodically the list of trees planted in the garden periodically	<i>Periodical maintenance of gardens/plants be followed through student members.</i>
Ensure that environmental awareness is created	Conduct environmental awareness workshops as a part of the program.	College celebrates World Environment Day, Earth Day, International day of Biodiversity, etc.
	Create awareness of environmental sustainability and takes actions to ensure environmental sustainability.	College conducts environmental awareness programmes to ensure environmental sustainability.
	Reduce the rate at which the University/Institute contributes to the depletion and degradation of natural resources	College is not directly or indirectly responsible in depletion and/or degradation of natural resources.

Control objectives	Control(s)	Audit Observations
	Promote environmental awareness as a part of course work in various curricular areas, independent research projects, and community service	Compulsory ENVIS paper as per University guidelines for all the students of all streams are mandatory to have an awareness on Environmental issues.
Ensure that the buildings conform to green standards	Review architecture of existing buildings and reviews ways, in consultation with experts, to reduce usage of energy for such buildings, offering greatest efficiency for energy and water usage, and reducing carbon emission	Presently, there is no proposal of new construction.
Ensure that the Environmental Policy is enacted, enforced and reviewed	Establish the University/Institute Environmental Committee that will hold responsibility for the enactment, enforcement and review of the Environmental Policy. The Environmental Committee shall be the source of advice and guidance to staff and students on how to implement this Policy	College has the Environmental Committee. <i>College should reframe College Environmental Committee as per guide lines.</i>
	Ensure that on the Nature Club/Environmental Committee there will be appropriate representatives of the relevant university departments and authorities – such as catering, gardening, maintenance, cleaning and finance	College has constituted the Eco Club.
Ensure that the Environmental Policy is enacted, enforced and reviewed	Ensure that on the Environmental Committee there will be the Green Officer from an external agency who is engaged in the profession of providing guidance on environmental impact	College has the Environmental Committee. <i>College required to reframe the committee and one Green Officer may be included in this Committee for maintaining budget.</i>
	Ensure that the Environmental Committee will review the Environmental Policy on an annual basis, and will monitor progress and set measurable targets wherever possible	College campus is declared as ‘Plastic Free Zone’.
	Ensure that the Environmental Policy is enforced regardless of whether its requirements exceed the mandate of the law	Beautification and cleanliness are maintained involving students. <i>The existing Green Policy of the College be re-framed.</i>
	Require that every staff and student member recognizes their responsibility to ensure that the commitments in the Environmental Policy are properly put into practice	Members of the team constituted by the College authority are actively engaged in maintaining green practices.
	Ensure that an audit is conducted annually and action is taken on the basis of audit report, recommendation and findings	First ‘Green Audit’ is conducted on 3 rd of May 2024 based on the report of year 2022-‘23.

VI. Recommendations

Considering the audit, following recommendations were made to the management.

Criteria	Recommendations
Publication of Audit Report	1. Resolutions of the “College Environmental Committee” along with audit report be published in the College website.
Maximize the proportion of waste that is recycled & minimize the quantity of non-recyclable refuse	1. Composting system be upgraded for degradable/bio-wastes in a proper way. 2. Existing vermicomposting system should be upgraded considering its vegetable wastes, food wastes from canteens and campus litters.
Reduce energy consumption, especially of energy derived from fossil fuels,	1. Use energy efficient lighting/solar light fully in and around the campus; Ecological street may be developed in and around the campus, Pedestrian access be marked. 2. The control switch and sensor-based system for water consumption building wise/department wise be maintained through the involvement of student members.
Maintenance of Campus and biodiversity	1. PUC (Pollution under control) certificate for all the vehicles used by the staffs and students, to be made mandatory and to be checked by security. 2. Update about the importance of Medicinal Gardens and PBR for different locations be continued. Proper training, workshop on maintenance of PBR for surrounding localities, as an outreach program be initiated. 3. Choice-plantation, fruit-plantation, artificial nesting, <i>etc.</i> , be followed to maintain attract birds and other animals within the campus. 4. Proposal of Butterfly Garden may be initiated.
Proper cleaning of water storage Tanks	1. Proper cleaning of the water tanks for fruitful uses be followed; management of dead leaves, litters of trees inside the campus be taken care off on regular basis. 2. Sensor-based system be maintained for checking of wastage of tank water.
Rainwater harvesting project	1. Existing rainwater harvesting project has to be reformed in large scale and may be used for ground water recharge, toilet cleanings and gardening purposes
Project-based learning on Environment related subjects	1. Creation of opportunity to start with technical, skill-oriented and hands-on-training programmes for environmental monitoring. 2. Recognition/Awards on green & clean campus from authorised persons/organisations.

VII. Objectives and Scope

The purpose of this audit was to ensure that the Green Management Practices are followed and implemented in the campus, across all departments, administrative bodies and students.

VIII. Methodology

The methodology includes - preparation and filling up of questionnaire, screening of the report, physical interaction with the members in presence of Principal and the Members of the College Environmental Committee as well as Members of IQAC, record checking and review of the submitted documentations, interviewing key persons and data analysis, measurements and recommendations. It works on the several aspects of ‘Green and Energy Audit’ including Water Conservation, Tree Plantation, Waste Management, Paperless Work, Alternative Energy and Mapping of Biodiversity.

- 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, Green Audit Committee and IQAC Coordinator and also members of the Committee.

Physical Inspection

Physical inspection was made on 3rd of May, 2024 and this audit report was prepared based on the physical verification and validation and interaction with the members of the College.

IX. Declaration

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


Date:

Place: Netaji Nagar College for Women
170/13/1 N.S.C Bose Road, Kolkata-700092

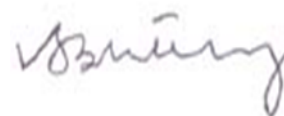


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Principal
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Signed by
College Principal with Seal



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Date:03.05.2023

**AUDIT REPORT ON ENVIRONMENTAL AUDIT/
GREEN AUDIT AND ENERGY AUDIT**

CERTIFICATE

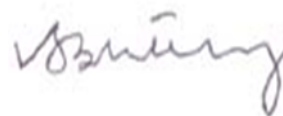
This is to certify that the Environmental Audit/Green Audit Report and Energy Monitoring & Management System followed at Netaji Nagar College for Women, Kolkata (AISHE Code: C11931) is based on the original data collected during the period of 2022-'23. This has been assessed and is applicable to provide 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 Green and Energy Audit Committee team members of Netaji Nagar College for Women 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 "Green and Energy Audit Team" constituted by the Governing Body of Netaji Nagar College for Women 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 'Green and Energy Audit Committee' team members during preparing their Report of the concerned year 2022 - '23.



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To
The Principal
Netaji Nagar College for Women
170/13/1 Netaji Subhas Chandra Bose Road, Regent Estate
Kolkata -700092
West Bengal

Date: 03-05-2023

Subject: Audit Report Submission from Experts

Sir

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

We request you to please acknowledge and oblige.

Yours,



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