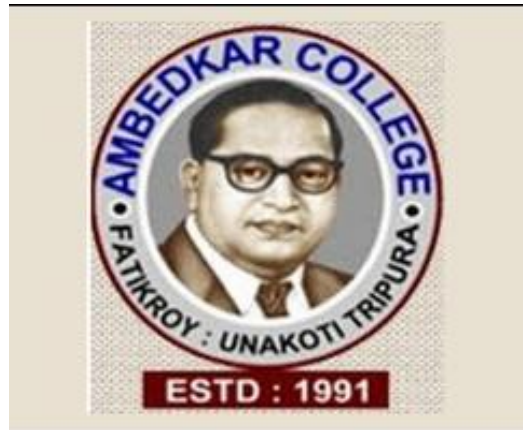


GREEN AUDIT

2022-2023



Ambedkar College

**A Govt. Degree College under DHE, Govt. of
Tripura Affiliated to Tripura University**

(A Central University)

**UGC 2f & 12B recognized and Accredited by NAAC with 'B+' Grade
Fatikroy, Unakoti, Tripura – 799 290**

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1. Executive Summary:

Numerous environmental and ecological crises have been brought on by the fast urbanization and economic growth at the local, regional, and worldwide levels. As a result, educational institutes must also embrace the “Green Campus” concept in order to promote sustainable development. Ambedkar College, Fatikroy is extremely concerned and firmly feels that in order to resist the trend, these core problems must be addressed immediately. The audit's goal was to confirm that campus procedures adhered to the environmental policy. It focuses on several aspects of a "Green Campus," such as waste management, water conservation, tree planting, paperless work, alternative energy, etc. In light of this, the audit's specific goal was to assess the institute's compliance with relevant laws, rules, and standards, as well as the suitability of its management control system for environmental sustainability.

2.1 Introduction

A green audit is the methodical identification, measurement, documentation, reporting, and analysis of environmental diversity components. The goal of the green audit is to examine environmental policies both inside and outside the college campus, as this will affect the eco-friendly atmosphere. It was started with the intention of examining organizational activities that can endanger the environment's and the people's health. The expansion of the college's green campus is determined by a number of criteria, some of which are included in the Green Audit, which provides guidance on how to enhance the state of the environment.

2.2 About the College

Ambedkar College, Fatikroy is a prestigious college in Unakoti District of Tripura. The college's 10.34-acre campus, which includes classrooms, an administration building, an auditorium, a well-stocked library, a computer lab, and a language lab, is located 4 kilometers from Kumarghat town. The college is home to active N.S.S. and N.C.C. units that are doing a fantastic job arranging events such as blood drives, tree plantings, health screenings, and personality development programs, among other things. The N.S.S unit of the college has adopted a village named Rajnagar of Fatikroy Gram Panchayat. The college carries out awareness-raising campaigns, sanitation programs, tree planting, anti-addiction programs, etc. in collaboration with the villagers and the relevant authorities through the N.S.S, N.C.C, and other wings of the college.

3. Objectives of the Study:

The main objectives of the green audit are to promote Environmental Management and Conservation in the college campus. The purpose of the audit is to identify, quantify, describe and prioritize framework of Environmental Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of the Audit are:

- To introduce and make students aware of the real concerns of the environment and its sustainability.
- Protecting the environment and reducing threats to human health by analyzing the pattern and extent of campus resource use.
- To establish a baseline data to assess future sustainability by avoiding the interruptions in environment that are more difficult to handle and their corrections requiring high cost.

- To release an update on environmental compliance.

4. Observations and Recommendations

4.1 Water Use:

This indicator is aimed to assess current water consumption practices, identify areas for improvement, and recommend sustainable water management strategies.

(a). Methodology:

- Conducted physical inspections of facilities, interviewed campus stakeholders, and analyzed relevant policies and practices.

(b). Observations:

- **Water Metering:** Metering systems for individual buildings or departments is lacking, hindering accurate water use tracking.
- **Infrastructure:** No loss of water is observed due to Leaky faucets or malfunctioning taps. College authority has installed push taps/faucets in washrooms of administrative building and academic building thereby reducing wastage of water.
- **Behaviour:** There is Adequate Awareness among students and staff about water conservation practices.
- **Landscaping:** Inefficient irrigation practices for watering the garden, such as not using sprinklers/drip irrigation during peak sun hours, lead to water loss.
- **Rainwater Harvesting:** Two rainwater harvesting setups; one of 24KL capacity storage installed in Administrative building and another one of 15KL capacity storage installed in Academic building provides enormous opportunity for water reuse.

(c). Recommendations:

Infrastructure:

- Install individual water meters for various buildings/departments..
- Install automatic shut-off sensors for taps and urinals.

Behavior:

- Launch awareness campaigns on water conservation and responsible water use for newly admitted students especially for the students of science departments.
- Organize workshops and competitions to promote water-saving practices.
- Display water consumption data in prominent locations to encourage behavioural change.

Landscaping:

- Utilize drip irrigation systems for efficient water delivery to plants.
- Plant drought-tolerant native species to reduce watering needs.
- Promote mulching around plants to retain moisture.

Policy and Planning:

- Develop a comprehensive water management policy outlining conservation goals and practices.
- Allocate a budget for water conservation initiatives and infrastructure upgrades.
- Conduct regular water audits to track progress and identify new areas for improvement.

- Integrate water conservation into the college curriculum and student activities.

(d). Conclusion:

Implementing these recommendations can significantly reduce water consumption at Ambedkar College Fatikroy, conserve this precious resource, and promote a culture of environmental responsibility within the college community. The initial investment in water-efficient technologies and awareness campaigns will yield long-term benefits in terms of cost savings, reduced environmental impact, and a more sustainable campus environment.

4.2 Energy use and Conservation:

This indicator focuses on the indicator of **Energy Use and Conservation**. The audit aims to identify areas for improvement, quantify potential savings, and recommend actionable steps to reduce energy consumption and promote conservation practices within the college campus.

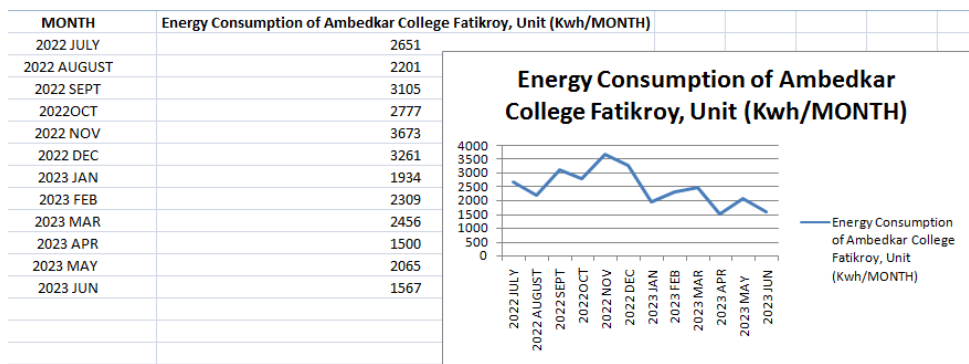
(a). Methodology:

The audit employed a combination of approaches, including:

- **Data collection:** Reviewing past energy bills, analyzing existing infrastructure and equipment, and conducting physical inspections of buildings and facilities.
- **Interviews:** Engaging with faculty, staff, and students to understand their energy-related behaviours and practices.

(b). Observations:

- The energy consumption trend of the college is displayed below in graphical form for the period July 2022 to June 2023:



The declining trend in energy consumption can be attributed to the various steps that have been undertaken by the college administration to promote judicious usage of electricity.

- **Lighting systems:** The campus has been mostly equipped with energy efficient LED lamps.
- **Natural daylight optimization:** Classrooms and office rooms have been well ventilated to reduce the use of electric light and fans during day time.
- **Appliances and equipment:** Are operated efficiently i.e they are turned off when not in use.
- **Behavioural practices:** The faculty, staff, and students are well aware of energy conservation practices.
- **Ten (10) numbers of Photovoltaic street lights** have been installed in the college campus which is a encouraging step towards the use of renewal energy.

(c). Recommendations:

- **Lighting:** Upgrading the entire campus to LED lighting, installing occupancy sensors and automatic timers.
- **Renewable energy sources:** Rooftop solar plant can be installed to reduce electricity consumption.
- **Appliances and equipment:** Replacing old equipment with energy-efficient models, implementing proper operation and maintenance practices.
- **Renewable energy:** Conducting feasibility studies for integrating solar panels.
- **Behaviour change:** Launching awareness campaigns for newly admitted students every year, organizing workshops, implementing incentive programs, and integrating sustainability education into the curriculum.
- **Data monitoring and analysis:** Installing energy meters to track consumption patterns, investing in software tools for data analysis and performance evaluation.

(d). Conclusion:

By implementing the recommended measures, the college can significantly reduce its energy consumption; lower operating costs, and contribute to a more sustainable environment. The green audit process should be ongoing, with regular monitoring and evaluation to ensure continuous improvement in energy efficiency and conservation practices.

4.3 Waste Generation:

The indicator "waste generation" aims to assess the college's current waste management practices, identify areas for improvement, and recommend sustainable waste reduction and management strategies.

(a). Methodology:

- **Data collection:** This involves reviewing existing waste management practices, conducting waste composition analysis, observing waste disposal practices, and interviewing stakeholders like students, faculty, and housekeeping staff.
- **Data analysis:** Analyzing the collected data to understand the types and quantities of waste generated, current disposal methods, and existing infrastructure.

(b). Observations:

- Yard waste from landscaping and gardening is the major solid waste generated in the campus.
- Very less quantity of plastic waste is generated in the campus.
- Metal and wooden waste is stored and given to authorized scrap agents for further processing and recycling.
- A Vermi Composting unit has been set up in the campus for the production of organic manure out of waste materials.
- There is Presence of designated bins for different waste types.
- Double-sided printing and digital resources is encouraged by the office and academic departments.

(c). Recommendations:

- **Reduce waste generation:** This can be done by promoting reusable water bottles and lunchboxes, choosing eco-friendly stationery and packaging and conducting workshops on waste minimization and responsible consumption.
- **Improve waste segregation:** This can be done by implementing a colour-coded bin system for different waste types, providing clear signage and instructions for proper waste disposal and organizing regular awareness campaigns and competitions.
- **Enhance composting:** This can be done by training staff and students on proper composting techniques and utilizing compost for campus gardens or sell it as organic fertilizer
- **Promote recycling:** This can be done by establishing partnerships with local recyclers for paper and plastic waste, provide easily accessible recycling bins in common areas and educating students and staff about the importance of recycling
- **Capacity building:** This can be done by training housekeeping staff on effective waste management practices, conducting workshops for students and faculty on sustainable living and including waste management education in the curriculum

(d). Conclusion:

By implementing the recommended strategies, the college can significantly reduce its waste generation, improve overall waste management practices, and contribute to a more sustainable campus environment. Consistent monitoring, evaluation, and feedback mechanisms are crucial for ensuring the effectiveness of the implemented waste reduction and management efforts.

4.4 E-waste generation:

This indicator presents a green audit of e-waste generation and highlights key observations regarding current practices and offers recommendations for improvement.

(a). Methodology:

- Literature review of applicable e-waste regulations in India.
- Interviews with college administration, faculty, and students.

- Physical inspection of e-waste storage and disposal facilities.
- Data collection on e-waste types and quantities generated.

(b). Observations:

- E-waste generated in campus (e.g., computers, printers, batteries) is moderate in quantity.
- E-waste and defective items from IT lab, office, Academic Departments are stored properly in a separate dumping room.

(c). Recommendations:

- Implement a comprehensive e-waste management policy aligned with Indian regulations.
- Increase awareness through workshops, campaigns, and signage.
- Establish well-defined procedures for data wiping and secure disposal.
- Set up designated collection points for different e-waste categories.
- Partner with authorized e-waste recyclers for responsible disposal.
- Explore options for reuse and refurbishment of functional equipment.
- Encourage research and development in e-waste management solutions.

(d). Conclusion:

By implementing these recommendations, the college can minimize its e-waste footprint, contribute to a cleaner environment, and set an example for responsible e-waste management in the community.

4.5. Laboratory Waste Management

This indicator assesses the current practices, identify areas for improvement, and recommend measures to minimize laboratory waste generation and promote environmentally sustainable practices.

(a). Methodology

The audit utilized the following methods:

- **Document review:** Examination of existing waste management policies, procedures, and reports.
- **Site inspection:** Physical observation of laboratory practices, waste segregation, and storage facilities.
- **Interviews:** Discussions with laboratory staff, students, and administrators.

(b). Observations

- **Segregation and Storage:** Proper segregation and storage of reagents is in practice:
- **Waste minimization practices:** Techniques like Virtual lab and microscale experiments are not in use maybe due to the fact that these methods have not been sufficiently endorsed in the syllabus provided by the affiliating university.
- **Disposal:** No provision for collection of Chemical waste by authorized vendors.

(c). Recommendations

- **Implement strict waste segregation:** Provide labelled bins for different categories (organic, inorganic, solvents, sharps, etc.).

- **Promote waste minimization:** Encourage micro scale experiments, solvent recycling, and use of less hazardous alternatives.
- **Develop and implement a comprehensive waste management policy:** Clearly define procedures for segregation, storage, transportation, and disposal of all laboratory waste.
- **Enhance awareness:** Conduct regular training sessions for students and staff on waste minimization, segregation, and safe handling practices.
- **Invest in infrastructure:** Procure appropriate storage containers,
- **Explore partnerships:** Collaborate with authorized waste disposal agencies for safe and environmentally sound treatment of hazardous waste.
- **Monitoring and evaluation:** Regularly monitor waste generation, track progress towards goals, and adapt strategies based on results.

(d). Conclusion

Reducing laboratory waste generation is crucial for protecting human health and the environment. This green audit identified several areas for improvement in the college's laboratory waste management practices, particularly in the chemistry lab. By implementing the recommended actions, the college can significantly minimize waste generation, promote sustainable practices, and contribute to a healthier environment.

4.6 Green Area:

This indicator analyzes the greenery and environmental sustainability of the campus. This also helps in ensuring that the Environmental Policies are enacted.

(a). Observations:

- **Biodiversity:** Campus is located in the vicinity of a river and is surrounded by many tree species revealing a rich biodiversity.
- **Presence of vegetation:** Various tree plantation programmes are organized at the college campus during different occasions with the help of NCC and NSS units which leads to eco-friendly environment and also creates awareness among the people of surrounding areas. This provides various benefits like air purification, providing shade, and habitat for wildlife.
- **Aesthetic value:** Green areas thus created contribute immensely in enhancing the visual appeal of the institute and contribute to mental well-being.

(b). Recommendations:


- **Improve biodiversity:** Introduce diverse plant types and create different habitats.
- **Enhance maintenance:** Implement proper irrigation, fertilization, and pest control methods.
- **Provide public access:** Create pathways, seating areas, and educational signage.
- **Awareness:** Promote environmental awareness as a part of course work in various curricular areas, and independent research projects.
- **Integrate water-efficient practices:** Utilize rainwater harvesting, low-flow irrigation, and native drought-resistant plants.
- **Consider sustainable management:** Minimize pesticide use, choose organic fertilizers, and compost yard waste.
- Celebrate every year 5th June as “Environment Day”
- Establish a College Environmental Committee That will hold responsibility for the enactment, enforcement and review of the Environmental Policies.
- Indoor plantation like plantation of Bonsai in the corridor of academic buildings can be done to inculcate interest in students and to build a healthy bonding with nature.

(c). Conclusion:

Green areas play a crucial role in environmental health and human well-being. By addressing the identified weaknesses and implementing the recommended actions, the green area can be optimized to deliver maximum ecological, social, and aesthetic benefits.

5. Final Conclusion

Considering that the college is a general degree college, there are a lot of environmental awareness projects being carried out by the faculty and students. There are a lot of significant environmental awareness programs. The administration's environmental awareness initiatives demonstrate how the campus is going green. A few more suggestions have been made to use scientific and environmentally friendly methods to further reduce the threat of waste management. In the context of Green Campus, this will result in a successful future and, consequently, in the development of sustainable environments and communities.



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