Assabah Arts and Science College Valayamkulam

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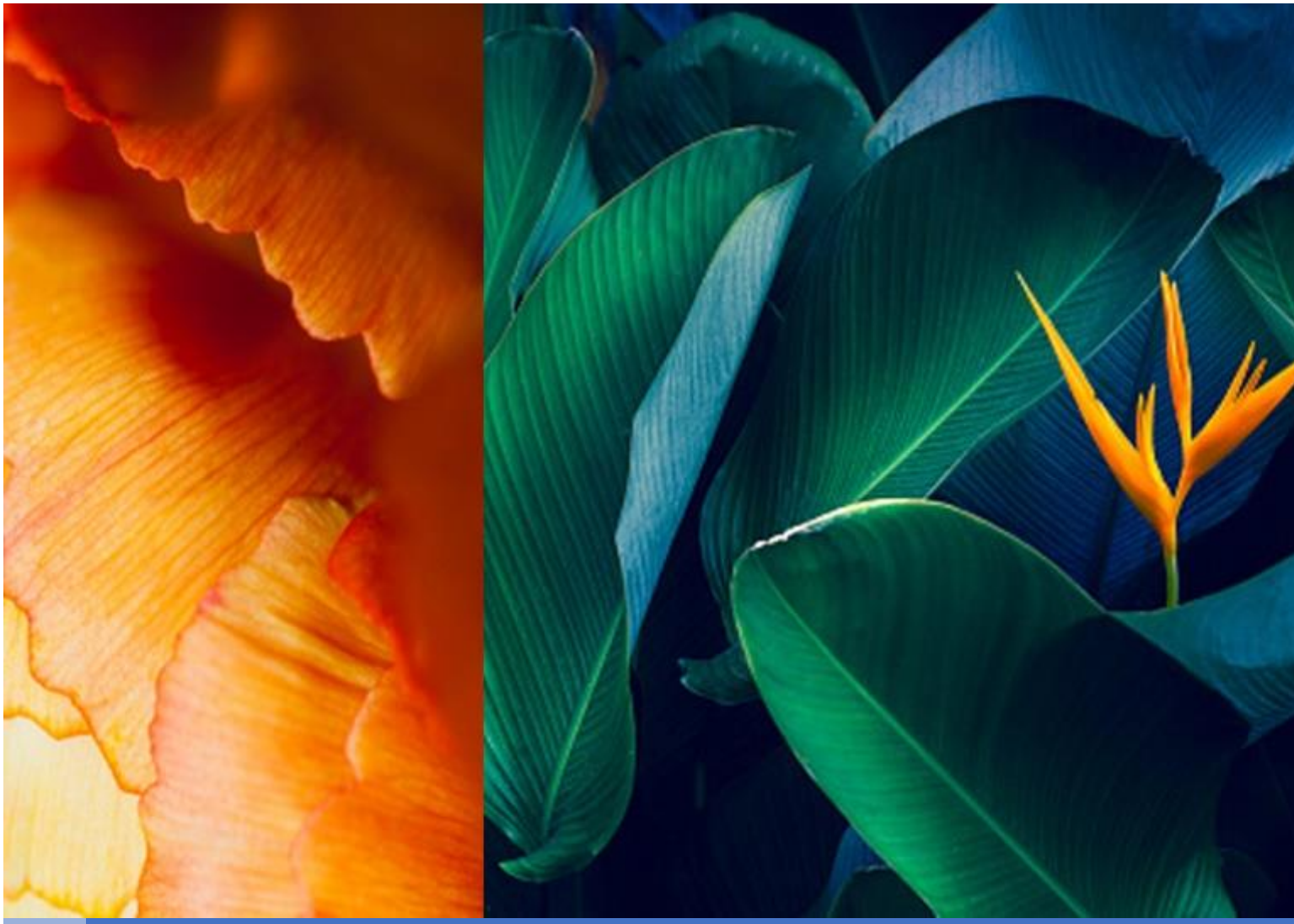

Green, Energy and Environment Audit Report 2023-2024

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ACKNOWLEDGEMENT

The Audit Assessment Team extends its sincere appreciation to Assabah arts & Science College, for entrusting us with the significant responsibility of conducting the Green, Energy, and Environment Audit. We deeply value and acknowledge the college's cooperation throughout the entire assessment process. Your collaborative approach and unwavering support have played a crucial role in facilitating a thorough and effective audit.

We commend Assabah arts & Science College, for its commitment to sustainability and environmental consciousness by initiating the Green, Energy, and Environment Audit. This dedication to evaluating and enhancing eco-friendly practices reflects a commendable step toward fostering a more environmentally responsible campus.

Our team eagerly anticipates presenting comprehensive findings and recommendations that align with Assabah arts & Science College's commitment to sustainability. We are grateful for the opportunity to contribute to the university's ongoing endeavors to promote green initiatives and energy efficiency. Thank you for your continued cooperation and dedication to cultivating a more sustainable and environmentally friendly academic environment.

Our special thanks to:

- Prof. Mohamed Koya MN, Principal
- Dr. Baiju MK, Assistant professor
- Mr. Mohammed Ajmal RS, Assistant professor
- Mr. Muhammed Swalih, Assistant professor
- Ms. Nazreen PV, Assistant Professor

We express gratitude for providing us with the essential inputs required to conduct the crucial Green, Energy, and Environment Audit. Additionally, we extend our thanks to the other staff members who actively participated in data collection and field measurements.

Audit Assessment Team

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CONCEPT

An environmental management system (EMS) is a data system that tracks air, water, and waste to improve performance. It helps maintain a clean and green environment that leads to partnerships. EMS provides a 360-degree view of the surrounding campus, making it easier for owners, managers, and environmentalists to collaborate, measure, control, and mitigate environmental impacts. Ultimately, it leads to raising the living standards of humans, animals, and plants. Due to changes in environmental conditions, global warming, and the growing human population, green campus initiatives are needed around the world. The goal is to create a sustainable and eco-friendly campus for participants.

Environmental management audits, such as green campus audit and energy audit, are well-developed processes for extracting information about an organization's environmental impact. These audits provide an actual assessment of how organizations are taking action to protect the environment. To save the eco-friendly atmosphere of an institution, well-developed environmental objectives and targets should be undertaken to reduce harmful effects. These audits can significantly reduce environmental pollution on campus, which in turn reduces the overall impact of global warming. According to government law, all institutions and organizations must comply with environmental legislation and ensure that their activities do not harm the environment.

INTRODUCTION

The foundation of a nation's development lies in its educational institutions, where ecological considerations are pivotal for environmental progress. Today, educational establishments are increasingly attuned to environmental concerns, advocating eco-friendly initiatives such as energy conservation, waste management, and water conservation. These efforts aim to mitigate environmental impacts stemming from college activities. Environmental auditing evaluates an organization's adherence to environmental policies and objectives, providing insights into campus environmental performance. Through internal audits, colleges assess their environmental footprint and identify opportunities for improvement. Such audits offer valuable data on resource consumption, waste generation, and enable colleges to implement effective conservation measures, benefiting both the institution and its students

OVERVIEW OF INSTITUTION

Vision

To impart a high quality education to the people of India, with Special focus to empower with competencies and Character the living standard of backward communities minorities, women, scheduled castes, scheduled tribes, and Other socially, educationally and economically marginalized Sections of the society for constructive nation building and making India a global leader.

Mission

- To offer academic programmes of national and global significance
- To create higher centers of learning and research in areas of Commerce, Management, Arts, Humanities, Science and Technology.
- To create an academic innovative ecosystem for holistic development of Students.
- To inculcate character leadership skill, life skills, social skills, emotional and spiritual values.
- To promote equity, social justice, secular outlook, plurality, inclusiveness and patriotism.

COURSES OFFERED

The institutes offer 14 undergraduate programs and 4 postgraduate programs under the affiliation of University of Calicut. At present institution also offer several addon courses and certificate courses along with the university affiliated programmes.

UNDERGRADUATE PROGRAMME	UNDERGRADUATE PROGRAMME
B Sc Physics	BA English
B Sc Chemistry	B Com Travel &Tourism
B Sc Mathematics	B Com Computer Application
B Sc Food Technology	B Com Finance
B Sc Computer Science	B Com Co operation
B Sc Geology	BCA
B Sc Psychology	BBA

POSTGRADUATE PROGRAMME	POSTGRADUATE PROGRAMME
M Sc Physics	MA English
M Sc Chemistry	M Com

Green Campus Audit-Report

INTRODUCTION

The Green Audit serves as a valuable tool in pinpointing opportunities for sustainable development practices, enhancing environmental quality, bolstering health, hygiene, and safety standards, mitigating liability, cutting costs, and embodying virtuous values. It involves a methodical process of identifying, measuring, documenting, reporting, and analyzing the various facets of an institution's environmental diversity.

The primary objective of Green Auditing is to assist organizations in adopting sustainable development practices while also setting exemplary standards for the wider community and upcoming generations. It fosters health consciousness and fosters awareness about environmental values and ethics. This cultivates a heightened understanding among staff and students regarding the ecological footprint within the campus environment.

If the pursuit of self-examination is seen as a natural progression of quality education, then institutional introspection can be viewed as the inherent evolution of a distinguished educational establishment. Given the escalating significance of environmental sustainability within the nation, the role of higher education institutions concerning environmental stewardship is gaining increasing prominence.

General and specific objectives of green auditing

The primary aim of the Green Audit is to compile a foundational report on biodiversity and other resources, proposing strategies to reduce wastage and enhance resource quality and sustainability.

Outlined below are the specific objectives:

- Create a checklist detailing the flora and fauna present on and around the college campus.
- Propose initiatives to enhance biodiversity within the college premises.
- Monitor the energy consumption patterns of the college.
- Evaluate the levels of water usage within the campus.
- Recommend sustainable methods for energy use and water conservation.
- Investigate various sources of organic and solid waste, along with potential mitigation approaches.
- Foster the principles of sustainable development through the implementation of a green audit system.
- Identify sources of organic and solid waste generation, alongside potential mitigation strategies.
- Document the expenditure on green initiatives over the past five years.

Green campus policy

A green campus is one where environmentally friendly policies and an eco-friendly educational program work together to create a sustainable and environmentally friendly campus atmosphere. By generating sustainable answers to the environmental, social, and economic requirements of humanity, an institution can redefine its environmental culture and create new paradigms by implementing the green campus concept.

Objectives of policy:

- The primary objective is environment conservation by minimizing the environmental impact of campus operations, including reducing energy consumption, water usage, and waste generation.
- Implementing practices to maximize resource efficiency, such as using renewable energy sources, optimizing building design for energy conservation, and promoting water conservation measures.
- Setting targets to reduce waste generation and increase recycling rates through effective waste management practices.
- Encouraging the use of sustainable transportation options like walking, cycling, and public transit to reduce carbon emissions from commuting.
- Integrating sustainability principles into the curriculum and raising awareness among students, faculty, and staff about environmental issues and the importance of sustainable practices.
- Prioritizing the purchase of environmentally friendly products and services, such as eco-friendly cleaning supplies, energy-efficient appliances, and sustainably sourced materials.
- To make the campus free of plastics.
- To include environmental issues in social development, outreach policies, plans, and programs.

Achieving green campus status involves advancing cross-campus community engagement under one or more of the following topics to a notable degree:

- Waste
- Water
- Energy
- Green campus and biodiversity

Waste

Because it makes financial sense to preserve the environment and improve environmental performance, waste minimization is crucial. The goal of waste minimization strategies is to stop waste from ever occurring, sometimes referred to as recycling and reducing the source.

Thus, our college pledges to:

- Papers that are printed on one side are kept and used as rough paper for work.
- Increase the amount of soft-form readout material. Cut back on the hard copy readings. Increase the amount of email you use for official correspondence, online reading, maintaining attendance records through LMS rather than paper registers, etc.
- Minimize the habit of burning plastic and other items that release toxic gases when burned on campus.
- Make sure that no cleaning product used by college employees harms the environment excessively.
- On college campuses and in dorms, use different types of bins for biodegradable and non-biodegradable waste.
- Utilize the e-waste recycling containers scattered over campus to recycle batteries and devices.
- Look for a single device that can do several tasks. As a result, less e-waste will be produced at the source.
- Make sure you dispose of laboratory-generated chemical waste in an environmentally responsible way.
- Reduce the number of fertilizers and pesticides you use on college property. Whenever possible, utilize compost that is made locally.

Water

Water is an essential part of the living system. So, for the minimized consumption of water, Assabah Arts and Science College adopted the following strategies.

- Fix water leak sources such as dripping showers and taps as quickly as possible for which dedicated staff for maintenance is available inside campus from 9.30 AM to 4.30 PM every working day.
- Encourage the installation of appliances that reduce water consumption.
- Use of rainwater harvesting system. The college has committed to using rainwater gathering techniques to raise the groundwater table. This procedure aids in the recharging and replenishment of groundwater.

- Water purification system to recycle the grey water and wastewater coming out of labs.
- Reduce the amount of water lost during storage by using an effective and hygienic water storage system.

Energy

For the reduced consumption of energy, Assabah Arts and Science College has adopted the following policies.

- The college is committed to reducing and managing its electricity use sustainably. The college is in Favor of using sustainable energy sources, such as solar energy, to replace non-renewable resource-based electricity for campus lighting and other purposes.
- Use of sensor lights to avoid unwanted electricity consumption.
- Installed biogas plant for various purposes in labs.
- Turn off the lights, fans, and other equipment in conference halls, classrooms, lecture halls, labs, and offices when they are not in use.
- We promise to install energy-efficient, environmentally friendly electrical appliances that minimize unnecessary inefficiencies. The college supports the use of greener energy sources, like LED lighting, star-rated appliances, etc.
- Avoid using electricity-consuming lights in the daytime and use daylight instead.
- Staff and students are advised to turn off the monitor when the system is not in use.
- Staff and students are advised to turn on power management features on the computer and monitor so that, when they are not using them, they will enter a low power “sleep” mode.

METHODOLOGY

The objective of the Green Audit is to verify that the campus practices align with the nation's green policy. The methodology involves data collection, physical inspections of the campus, monitoring and reviewing documentation, and thorough data analysis.

Introduction

Assabah arts & Sciencs College, is committed to cultivating a green campus atmosphere with a strong emphasis on environmental protection, conservation, and safety. The policy document delineates dollege strategy for establishing a sustainable and environmentally aware campus. The Green policy of Assabah arts & Sciencs College encompasses both Green/Environment and Energy policies.

Objectives

Green Campus Environment Conservation Policy aims to:

- To encourage students/Faculties to keep environment clean.
- Set forth a Green Campus Mission and a Statement of Principles.
- To educate students/Faculties to create awareness amongst public about clean and green energy.
- To make students/Faculties understand the importance of environment and its problem areas.

Conservation Measures

To materialize the GREEN CAMPUS initiative, the following are required.

- To sensitize the students/Faculties to minimize the use of polluting product.
- Phase out the CFL and conventional light source such as bulbs and tube lights, halogen and mercury street/campus lights and get them replace by the LEDs.
- To improvise the waste handling methods so that the waste disposed from campus do not create any sort of pollution to the environment.
- The E-waste of the college must be properly handed over to approved E-waste handling agencies so that they do properly discard and dispose them.
- The water conservation facilities of the college such as ¬ rainwater harvesting pits campus ¬ proper water distribution system in the campus.

- To motivate students/Faculties to adopt environment friendly practices which include paper bags, save electricity, etc.
- Purchase only Energy Efficient Computers viz: “ENERGYSTAR” or any other equivalent.
- Improving the green system of the campus in all aspects like ¬ To reduce the use of vehicles ¬To promote the usage of bicycles and walking culture which makes everybody fit. ¬Make the campus Green gradually increasing the green cover of the College.
- To take necessary steps to protect the environment.

The College promotes “Save Energy Tips” in and outside the institute through.

- Activate power management features on the computer and monitor so that it will go into a low power “sleep” mode when not working on it.
- Turn off the monitor when it is left on the Table not functioning.
- Activate power management features on the laser printer.
- Whenever possible, shut down rather than logging off.
- Turn off unnecessary lights and use daylight instead. Avoid the use of decorative lighting.
- Use LED or compact fluorescent bulbs.
- Keep lights off in conference rooms, classrooms, lecture halls when they are not in use.
- Use the fans only when they are needed.

Other major green campus initiatives of the College comprise of the following:

- Installation of Solar Power Station
- Displayed poster on E-waste Management, save water and save energy.
- Initiatives to make paperless administration.
- Plastic free Campus
- Tree Plantation Drive /Cleanliness Drive
- Digital Library/ E-Learning Centre
- Restricted entry of automobiles.

A. Biodiversity Conservation

Assabah Arts & Science College recognizes the importance of biodiversity in maintaining a healthy environment. Colleges' conservation measures will include:

- Establishing green spaces with native plants to support local biodiversity.
- Implementing sustainable landscaping practices to preserve natural habitats.
- Conducting various awareness programmes

B. Waste Reduction and Recycling

- To minimize our impact on the environment, college will focus on waste reduction and recycling initiatives:
- Implementing a campus-wide recycling program for paper, plastics, and other recyclables.
- Encouraging the reduction of single-use plastics and promoting reusable alternatives.
- Separate waste collection bins
- Using biogas plant
- Tie up and Mou with various NGO'S and Schemed

C. Water Conservation

Assabah arts & Science Collegeis *committed to responsible water usage and conservation:*

- Installing water-efficient fixtures and irrigation systems.
- Rainwater harvesting pond.
- Promoting water conservation awareness campaigns among students and staff.

D. Sustainable Transportation

To reduce carbon emissions and promote sustainable transportation,

- Encourage the use of public transportation, EV's, cycling, and carpooling.
- Provide designated areas and facilities for bicycle parking.

E. Safety and Well-being

Ensuring the safety and well-being of the college community is paramount. College includes the following measures:

- Conducting regular safety drills and emergency preparedness training.

- Implementing sustainable construction and maintenance practices to create safe environments.
- Functioning of NSS, Nature club.
- Implementation of nature policies

Responsibility and Accountability

Every member of the college community shares the responsibility for creating a green campus environment. To ensure accountability, specific roles and responsibilities will be assigned. A designated Green Campus Committee will oversee the implementation of this policy and report progress to college leadership and stakeholders.

Effective Measures for Environment Protection and Conservation

1. Renewable Energy Integration
   - Implement renewable energy sources such as solar or wind power to meet a significant portion of the college's energy needs.
2. Sustainable Lighting Practices
   - Utilize energy-efficient lighting solutions for all buildings and outdoor spaces.
     Replace conventional lighting fixtures with LED bulbs to reduce energy consumption and promote sustainable illumination.
3. Sustainable Infrastructure
   - Give precedence to the utilization of eco-friendly materials in construction and renovation endeavours.
   - Integrate green building design principles to improve energy efficiency and lessen the environmental footprint of structures.
4. Effective Electronic Devices
   - Embrace energy-efficient electronic gadgets with high STAR ratings to decrease power usage.
   - Routinely maintain and upgrade electronic equipment to uphold optimal energy efficiency.
5. Environmental Monitoring Committee
   - Establish an Environmental Monitoring Committee comprising student and staff representatives from all departments.
   - Task the committee with overseeing the implementation of environmental protection and conservation programs.
6. Resource Use and Waste Reduction
   - Regularly monitor and benchmark the college's resource use, emphasizing reduction and optimization.

- Implement waste reduction initiatives, including recycling programs and proper waste disposal practices.

7. Training Programs for Environmental Conservation
   - Provide training sessions for faculty and students to raise awareness about environmental conservation.
   - Offer workshops on sustainable practices, waste management, and biodiversity preservation.
8. Annual Environmental Audits
   - Conduct annual environmental audits to assess the college's impact on the surrounding ecosystem.
   - Evaluate the effectiveness of conservation measures and identify areas for improvement based on audit findings.

These measures aim to enhance environmental protection and conservation within the college, fostering a commitment to sustainable practices among students, faculty, and staff. The implementation of these initiatives will contribute to the overall well-being of the environment and support the college's dedication to creating a green and eco-conscious campus.

Continuous Improvement

Acknowledging that environmental preservation is a continuous journey, this policy will undergo periodic reviews and updates to integrate emerging technologies and best practices. We are committed to continual enhancement in our endeavours to establish a sustainable and eco-conscious campus. Assabah arts & Science College, is devoted to setting a precedent in environmental conservation. Through initiatives like biodiversity preservation, waste reduction, and sustainable practices, we aspire to build a campus that prioritizes the welfare of our community while making positive contributions to the environment.

CONCLUSION

The Green Audit Report conducted for **Assabah arts & Science College** reflects the institution's strong commitment to fostering a sustainable and environmentally conscious campus. Through the implementation of various conservation measures and initiatives, the college has made significant strides towards achieving its objectives of environmental protection, biodiversity conservation, waste reduction, water conservation, sustainable transportation, and ensuring safety and well-being.

Key Achievements:

Biodiversity Conservation: The establishment of green spaces with native plants and sustainable landscaping practices demonstrates the college's commitment to preserving natural habitats and supporting local biodiversity.

Waste Reduction and Recycling: The implementation of a campus-wide recycling program, reduction of single-use plastics, and utilization of biogas plants showcase the college's efforts to minimize its ecological footprint and promote sustainable waste management practices.

Water Conservation: Initiatives such as installing water-efficient fixtures, implementing rainwater harvesting ponds, and promoting water conservation awareness campaigns highlight the college's dedication to responsible water usage and conservation.

Sustainable Transportation: Encouraging the use of public transportation, electric vehicles, cycling, and carpooling underscores the college's commitment to reducing carbon emissions and promoting sustainable commuting practices.

Safety and Well-being: The implementation of safety drills, sustainable construction practices, and the functioning of NSS and Nature Clubs reflect the college's focus on ensuring the safety and well-being of its community while maintaining environmental sustainability.

Continuous Improvement:

The college's commitment to continuous improvement is evident through its participation in various activities such as nature treks, webinars, World Environment Day celebrations, and training programs on green auditing. By periodically reviewing and updating its policies and practices, the college aims to stay abreast of new technologies and best practices in environmental conservation.

Future Outlook

Moving forward, **Assabah arts & Science College** will continue its efforts to create a greener and more sustainable campus environment. By leveraging renewable energy sources, implementing eco-friendly infrastructure, promoting resource efficiency, and conducting regular environmental audits, the college aims to further enhance its environmental performance and contribute positively to the well-being of the environment and its community.

In conclusion, the Green Audit Report underscores **Assabah arts & Science College** steadfast commitment to environmental stewardship and sustainability. Through concerted efforts and ongoing initiatives, the college is poised to serve as a beacon of environmental responsibility and inspire positive change within its campus and beyond.

Energy Audit-Report

INTRODUCTION

Energy efficiency involves conserving energy without compromising economic growth and development. This encompasses enhancing the efficiency of energy extraction, transmission, and distribution, as well as maximizing the effectiveness of energy utilization.

An Energy Audit is described as "the process of verifying, monitoring, and analyzing energy usage, including the submission of a technical report containing suggestions for enhancing energy efficiency with cost-benefit analysis and an action plan to reduce energy consumption."

The purpose of this energy audit is to assess energy consumption, identify areas for improvement, and recommend measures to enhance energy efficiency and sustainability at Assabah arts & Science College. The audit covers various aspects including air ventilation, irrigation systems, energy awareness programs, and the use of renewable energy sources.

Objectives

The Energy Audit aimed to achieve the following objectives:

- Perform a basic walk-through audit or observation of the energy usage of electrical appliances across the campus of Assabah arts & Science College.
- Review and analyze the institution's energy usage history to establish a baseline against which savings can be assessed in the audited buildings.
- Recommend actions to decrease energy consumption throughout the buildings and propose feasible options for system enhancements within budget constraints.
- Identify and assess measures that could enhance the environmental sustainability of the buildings/areas and offer corresponding recommendations**.**

Methodology

Energy Audit comprises three phases:

1. Pre-audit Phase
2. Audit Phase
3. Post-audit Phase

Each of these phases includes specific stages as follows:

Data Collection:

During the initial data collection stage, various tools were utilized to gather executive data. This involved activities such as observation, surveys, communication with responsible individuals, and measurements. The following steps were undertaken for data collection:

- The team visited each department, classroom, office, library, canteen, hostel, etc.
- General information was collected through observations and interviews.
- Power consumption of appliances was recorded by averaging values in certain cases.

Audit Phase:

At Assabah arts & Science College, the energy audit was conducted in collaboration with faculty members. The audit commenced with the team conducting a thorough walkthrough of all college facilities. This included identifying various types of appliances and utilities such as lights, fans, taps, fridges, air conditioners, etc. Additionally, the team measured the usage per item, indicated in Watts on the appliances, and analyzed relevant consumption patterns and their impacts. Staff members were interviewed to gather details on usage frequency and general characteristics of specific appliances.

Energy Conservation Policy

The college is committed to maximizing conservation and energy efficiency, especially considering the climate crisis and the increasing public concern for the environment. This policy aims to help the institution create a campus that is both economically and environmentally sustainable.

Strategies for the efficient use of Environment & Energy include:

- Planning the institution's development, communications, purchases, curriculum, research, and campus activities with consideration for their impact on the environment.
- Expanding its responsibility to encompass environmental education through various extension activities.
- Reducing environmental impacts by promoting best practices for recycling, reusing, and reducing waste.
- Encouraging the preservation of natural habitats on campus whenever possible.
- Promoting the use of environmentally friendly modes of transportation, such as carpooling and public transit.
- Collaborating with government organizations to improve best practices for energy conservation in campus activities.

- Implementing practices such as turning off computers and other office and lab equipment when not in use.
- Conducting green audits and developing policies to ensure proper compliance with sustainability measures.

Responsibility

The Energy Management Team comprises of:

- Head of the institution
- Staff and Students Representatives
- Faculty familiar with Energy auditing
- Technical Staff

Findings

Energy Consumption Overview

1. *Major Areas of Energy Use:*

Laboratories (Chemistry, Food Technology, etc.), Classroom and office lighting and equipment, conference hall, reading room cum mini auditorium, Canteen and kitchen facilities.

2. *Electricity Supply*:

KSEB, One 30 kVA generator,19 UPS units across various departments.

3. *Energy Efficiency Measures*

Lighting:

- LED bulbs installed in various locations.
- Sensor lights to avoid unnecessary electricity consumption.

Appliances:

- Use of star-rated refrigerators in labs (three-star and two-star with eco-friendly refrigerants).
- Installation of energy-efficient electrical appliances.

Heating, Ventilation, and Air Conditioning (HVAC):

- Air conditioning units in the conference hall and auditorium.

Renewable Energy Utilization:

- Biogas plant for energy generation from kitchen and canteen waste.
- Rainwater harvesting tanks with capacities of 75,000 liters and 20,000 liters.

Energy Saving Practices:

- Instructions for staff and students to turn off lights, fans, and equipment when not in use.

- Use of daylight instead of electrical lighting where possible.
- Implementation of power management features on computers.

4. Energy Audit Findings

Lighting:

- Most classrooms and office rooms use natural lighting, minimizing the need for electrical lights during the day.

Electrical Equipment:

- Regular maintenance and calibration of electrical equipment by dedicated staff.

Energy Training and Workshops:

- LED bulb-making workshops to educate students on energy-saving techniques.

Power Backup:

- Generator and UPS systems ensure uninterrupted power supply.

5. Recommendations for Further Energy Efficiency Improvements

Upgrade to More Efficient Appliances:

- Replace remaining non-LED lighting with LED bulbs.
- Upgrade older appliances to more energy-efficient models.

Enhance Renewable Energy Use:

- Consider installing solar panels to reduce reliance on the grid and generator.
- Expand biogas plant capacity to handle more organic waste.

Optimize HVAC Systems:

- Regularly maintain and service air conditioning units to ensure optimal performance.
- Install programmable thermostats to manage HVAC usage efficiently.

Increase Awareness and Training:

- Conduct regular energy conservation workshops for students and staff.
- Promote carpooling and the use of public transportation to reduce carbon emissions.

Implement Smart Energy Management:

- Use energy management systems to monitor and control energy usage across the campus.
- Install motion sensors in low-traffic areas to automatically turn off lights and appliances.

Improve Waste Management:

- Enhance the existing waste segregation and recycling programs.
- Increase composting activities to handle more organic waste.

ENVIRONMENT Audit-Report

INTRODUCTION

Environmental Audit is a thorough process designed to gather information about an Institution or Organization, providing a realistic assessment of their efforts in protecting the environment. To preserve the eco-friendly ethos of an Institution or Organization, well-defined environmental objectives and targets should be implemented to minimize harmful effects. These audits can significantly reduce environmental pollution on campus, thereby contributing to a broader reduction in global warming effects. They are instrumental in maintaining a clean, green environment that benefits stakeholders.

By offering a comprehensive 360˚ view of the surrounding campus, Environmental Audits facilitate collaboration among Owners, Managers, and Environmentalists. They aid in measuring, controlling, and reducing environmental impacts systematically. Ultimately, these audits contribute to enhancing the quality of life for humans, animals, and plants alike.

This audit process involves a systematic, documented, periodic, and objective review conducted by a regulated entity of facility operations and practices related to meeting environmental requirements. It entails observing, measuring, recording data, and collecting and analyzing various components within an organization concerning the environment.

Objectives of Environmental Auditing

- Identify sources and quantify the types of waste generated.
- Gather data on unit operations, raw materials, products, water usage, and waste.
- Identify process inefficiencies and areas of inadequate management.
- Assist in establishing targets for waste reduction.
- Facilitate the development of cost-effective waste management strategies.
- Raise awareness among the workforce about the advantages of waste reduction.
- Aid in enhancing process efficiency.
- Evaluate the volume of water usage within the institution.
- Identify various sources of organic and solid waste generation along with mitigation options.
- Document the waste disposal system.
- Provide a status report on environmental compliance.

Methodology

Methodology includes data collection, campus physical inspection, monitoring and review of documentation, and data analysis.

Plastic ban policy

The college developed the policy based on the UGC Guidelines for Ban of Plastic Use in Higher Education Institutions. The policy aims to make our campus 'plastic-free' by systematically banning use of plastics and replacing the same with suitable environment- friendly substitutes.

The policy aims at:

- Prohibiting the use of single-use plastics at the college's canteen and other treas.
- Conducting sensitization and awareness campaigns on the negative impacts of single-use plastics.
- Using alternate materials, such as paper l:nr, cloth bags, dnd drinking water facilities, can help reduce the amount of plastic water bottles on campus.
- Segregating the wastes at the point of generation and then transferred, via authorized trash collection service, to approved waste processing centers, disposal sites, or deposition centers.
- All events organized inside the campus should strictly follow plastic ban guidelines.

Finding

Environmental initiatives and practices

- Air ventilation:

Indoor and outdoor auditoriums, conference hall, reading room cum mini auditorium, basketball court, and football ground are designed to ensure proper air ventilation.

- Energy efficiency measures:

Use of LED lighting and sensor lights.

Installation of star-rated appliances with eco-friendly refrigerants.

Biogas plant utilization for the kitchen and canteen.

- Water management:

Rainwater harvesting with tanks.

Use of well water and borewell water.

- Waste management:

Waste segregation with color-coded bins.

Composting and biogas plants for organic waste.

Collaboration with haritha karma sena for recycling non-biodegradable waste.

E-waste management through proper recycling and disposal.

- Tree planting and green initiatives:

Tree planting in association with NYKS kerala.

Various environmental awareness programs such as "*mera mitti mera desh*", "*nunaj theerna madhuram*", and "*kuttikalude haritha sabha*".

- Sustainable transportation:

Promotion of public transportation and carpooling among staff and students.

Use of electric vehicles by some faculty members.

- Renewable energy:

Biogas plant for renewable energy generation.

Consideration for installing solar panels for further energy sustainability.

- Hazardous materials management:

Proper disposal of chemicals through designated pits.

Use of autoclave in microbiology labs to sterilize harmful microbes.

- Biodiversity conservation:

Maintenance of gardens and herbal plants within the campus.

Nature camp organized to foster environmental awareness.

- Environmental awareness programs

Programs conducted:

- Mera mitti mera desh: awareness on soil conservation and sustainable practices.
- Tree planting: in collaboration with nyks kerala to increase green cover.
- Nunaj theerna madhuram: promoting environmental consciousness through cultural activities.
- Kuttikalude haritha sabha: engaging children in environmental conservation activities.
- Environment day: tree planting and other activities to celebrate world environment day.
- Ozone day: painting competition to raise awareness about ozone layer protection.
- Pen box challenge: reducing plastic use by encouraging alternatives.
- Nature camp: educating participants on biodiversity and conservation.
- Environmental facilities and infrastructure

- Waste management facilities:

Composting pits and vermicomposting pits.

Waste management manual outlining strategies for waste reduction, recycling, and hazardous waste management.

- Energy infrastructure:

Energy-efficient appliances and systems.

30 kva power generator and 19 ups units.

- Water conservation:

Effective use of rainwater harvesting and well water.

Proper sewage disposal with septic tanks and soak pits.

- Recommendations for improvement
- Enhance waste management:
- Increase the capacity of composting and biogas plants.
- Implement a more rigorous recycling program for all waste types.
- Boost renewable energy use:
- Install solar panels to reduce dependency on non-renewable energy sources.
- Expand biogas plant operations to handle more organic waste.
- Improve awareness and training:
- Regular workshops and training sessions on environmental practices for students and staff.
- Increase participation in environmental programs and initiatives.
- Optimize resource use:
- Further reduce paper usage by promoting digital documentation.
- Encourage the use of eco-friendly materials in all campus operations.
- Strengthen environmental policies:
- Regularly update the green campus policy.
- Ensure strict adherence to environmental regulations and best practices.

This environmental audit report aims to provide a comprehensive overview of the current practices and offer actionable strategies for improvement. Continued commitment to sustainability will not only benefit the college but also contribute to broader environmental conservation efforts

CONCLUSION

Introduction:

This environmental audit report aims to evaluate the environmental management practices and initiatives undertaken by Assabah arts & Science College, based on the provided documents. The audit focuses on assessing waste management, biodiversity conservation efforts, plastic ban policy implementation, and overall environmental sustainability practices.

1. Waste Management:

The audit identified comprehensive efforts towards waste management within the institution. The institution has diligently documented sources of waste generation, quantified waste types, and highlighted areas of inefficiency. Notably, there is a focus on setting targets for waste reduction, promoting cost-effective waste management strategies, and raising awareness among the workforce. The waste disposal system is well-documented, indicating a structured approach towards waste handling and disposal.

2. Plastic Ban Policy:

The institution has developed and implemented a robust plastic ban policy aligned with UGC guidelines. The policy encompasses various measures to reduce single-use plastics on campus, including prohibition at canteens and events, awareness campaigns, and the promotion of alternative materials. The emphasis on waste segregation and authorized waste processing centers demonstrates a systematic approach to plastic waste management.

3. Biodiversity Conservation Initiatives:

The institution has actively engaged in biodiversity conservation through a series of workshops, competitions, and nature-related activities. Collaborations with external organizations and government bodies indicate a concerted effort to raise awareness and empower stakeholders in biodiversity management. Events such as World Wetland Day celebrations and Wildlife Week activities contribute significantly to fostering a deeper understanding of ecological issues among students and faculty.

4. Student Engagement and Participation:

A notable aspect of the audit is the high level of student engagement and participation in environmental initiatives. Various activities such as quiz competitions, faunal hunts, and flash mobs demonstrate student involvement in environmental conservation efforts. These activities not only enhance students' knowledge but also instill a sense of responsibility towards environmental stewardship.

5. Collaborations and Partnerships:

The institution has established collaborations and partnerships with external organizations, sponsors, and government bodies to support its environmental initiatives. These collaborations have facilitated

knowledge exchange, resource sharing, and the amplification of impact in environmental conservation efforts.

Conclusion

Overall, the environmental audit findings indicate that has demonstrated a commendable commitment to environmental sustainability. Through effective waste management practices, implementation of a plastic ban policy, biodiversity conservation initiatives, and active student engagement, the institution has made significant strides towards creating a cleaner, greener campus environment. Continued efforts in these areas, along with ongoing monitoring and improvement, will further enhance the institution's environmental performance and contribute to a better quality of life for all stakeholders.

Assabah arts and science college has made significant strides in promoting environmental sustainability and responsibility. By implementing the recommendations outlined in this report, the college can further enhance its environmental performance and set a benchmark for other institutions.

ACTIVITIES COORDINATED BY THE COLLEGE FOR THE FOLLOWING OBJECTIVES.

Assabah College is organized an Amritakasham filling event as part of the Meri Matti Mera Desh (My Soil, My Country) project, initiated by the Central and State Governments and the Calicut University NSS Directorate in connection with Amrita Mahotsavam. The aim is to foster a love for the native soil and country among students and encourage their active involvement in the nation's welfare and prosperity. Students will bring a handful of soil from their homes and deposit it in a specially prepared amrita kalash.

On August 15, 2023, NSS 240-unit volunteers participated in the "MERI MAATI MERA DESH" program organized by the Local Self-Government Department, Nehru Yuva Kendra, and Central Government NSS Units NSS volunteers then planted trees along roadsides, demonstrating their commitment to environmental conservation and the nation's heritage

'Nunanj theerna Madhuram,' a new campaign inspired by the 'Pen box challenge,' has been launched to promote environmental sustainability and eliminate campus plastic waste. It addresses littered wrappers from sweets, ice cream, and chips by encouraging students to collect and deposit them responsibly. Spearheaded by College Staff Secretary Praveen KU, the campaign's inauguration marks a significant step towards a cleaner, greener campus. By engaging students in proactive waste management, it not only addresses plastic pollution but also instils environmental consciousness within the college community.

A workshop organized by Suchitva Mission and Haritakarma Sena as part of the Garbage Mukta Navekaralam campaign took place at the Changaramkulam MCF Center. Alamcode Grama Panchayat President Shaheer inaugurated the event, with greetings from Assabah NSS Program Officer Abdul Rahman. Attendees included the Ward Member and Panchayat Development Standing Committee Chairman. The workshop educated students on how Harita Karma Sena segregates non-organic waste from households, featuring detailed explanations and a practical session on waste segregation. This initiative aimed to enhance awareness and practical skills in effective waste management.

On Chingam 1 (August 17, 2023), Agriculture Day was celebrated at Assabah Arts and Science College, Valayamkulam. The college, along with NSS 240 Unit and the Agricultural Department of Nannammukku, honored MS Kunjunni, a distinguished local farmer known for his remarkable contributions to agriculture in the Naranipuzha region. Kunjunni's expertise and dedication were lauded, serving as an inspiration for sustainable farming practices. The event symbolized appreciation for his tireless efforts in advancing agriculture, emphasizing the importance of agricultural innovation and community impact.

Nature Club organized a Nature Camp in Attappadi, aiming to immerse participants in the region's rich biodiversity, fostering environmental awareness and conservation efforts. Additionally, as part of World Environment Day, Nature Club Coordinator Asharudheen and members planted a tree on the campus, inaugurated by Principal Mohammed Koya. On Ozone Day, a painting competition was held on September 15, 2023.

Efficient Paper File Distribution Drive:

The NSS 240 Unit of Assabah Arts and Science College Valayamkulam led a paper file distribution campaign in alignment with NSS objectives. Targeting entities like police stations, KSEB, and village offices, the initiative aimed to streamline operational processes by ensuring timely delivery of essential documents. Meticulously executed, designated members oversaw each stop, labeling and categorizing files for easy identification. NSS volunteers collaborated seamlessly with authorities, facilitating smooth handover and receipt of files. The drive significantly enhanced communication and workflow efficiency within the community, highlighting the unit's dedication and teamwork towards societal betterment.

The LED Repairing and Assembling Workshop, organized by the PG Department of Physics in collaboration with the Science Club, was held on December 21, 2023, in the college auditorium. Led by Mr. Sabir P., an expert from the EMC of Kerala, the workshop aimed to enhance participants' skills in LED repair and assembly.A total of 47 students, including undergraduates and postgraduates, actively participated, adding vibrancy to the learning environment.The workshop provided valuable hands-on experience and insights into LED technology, .

World Environment Day program organized by the NSS 240 Unit of Assabah Arts and Science College on June 5th, 2023, was a resounding success, leaving a lasting impact on participants. Led by College Principal M.N Mohammad Koya, who inaugurated the event by planting a tree on the college campus, and coordinated by NSS programme officer Rajesh Kannan, the program aimed to raise awareness about environmental issues and promote sustainable practices. Focused on "Ecosystem Restoration," it effectively conveyed the importance of preserving ecosystems for a sustainable future. Participants gained a deeper understanding of environmental conservation, with

many inspired to join the NSS and contribute to conservation efforts, fostering a culture of environmental stewardship within the college community.

Harvesting Wisdom:

On Chingam 1 (August 17, 2023), commemorating Agriculture Day, Assabah NSS-240 Unit, Nannammuk Gram Panchayat, and Krishi Bhavan Nannammuk collaborated for a harvesting and planting event at the plantation of renowned farmer MS Kunjunniyettan. Students had the privilege of working alongside MS Kunjunniyettan, a recipient of district-level best farmer awards, learning agricultural practices firsthand. They harvested and planted tapioca, gaining valuable insights. MS Kunjunniyettan's hospitality was evident as he treated the students to a feast. With guidance from teachers Subin sir and Ajmal sir, the event fostered practical learning and deepened students' appreciation for agriculture and the hard work of farmers.

CONCLUSION AND RECOMMENDATIONS

Green Audit

- Increase MoU with Govt and Non-Governmental organizations to ensure a green campus.
- QR-coded labelling for plants and trees.
- Butterfly, Zodiac, Vegetable and ornamental plant garden on the campus to be established.
- Sign boards and green quotes display in campus.
- The number of indoor plants needs to be increased.
- List of names of visiting birds and names of visiting animals on the campus to be displayed.
- Collaborate with government agencies for E-waste disposal.
- Keep soft copies of student's projects to reduce paper waste.
- Open Group discussion points to be demarked.
- Strengthen Organic waste management and reuse methods.
- Project and dissertation work on environmental science and management carried out by students and staff members.
- Establishment of Open Class.
- Purchase environmental studies-related books and Journals to the library.
- Increase the number of flowering plants.
- Strengthen the vermicompost unit.
- Greenery of the new block area need to be strengthened. Vertical garden has been suggested

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Environment Audit

- Sign boards indicating the following to be created.Plastic free campus,Tobacco-free campus and Don’t pluck the flowers.
- Separate boards to be used for the following (with names in English, Malayalam and scientific name). A QR code also can be implemented with short descriptions.Vegetable garden, Butterfly garden, Herbal garden
- Some schemes of Government can be implemented for environmental protection of the campus like Swatch Bharath Abhiyan and Clean India Mission
- Recycling of kitchen wastes collected from Canteen and other places should implemented properly.
- Steps should be taken for organic waste management, segregation of waste and reuse methods.
- Projects or dissertation works on environmental science and management can be carried out by students and teachers in collaboration with concerned bodies.
- Methods should be adopted for E-waste management in the campus.
- Digital or automatic technology to reduce the consumption of paper, gas, water, and energy can implemented.
- Number of Tri-Colour Waste bins to be increased.
- List of trees in the campus and their variety can be prepared as a biodiversity register.
- Keep details of services and maintenance on the drinking water machines to ensure its credibility among users.
- Ensure proper cleanliness and maintenance in classrooms and Labs.
- Rainwater harvesting Facility and Well recharge should be systematized.
- Biogas plant make functional.
- Sufficient staff should be designated for waste management.
- Water from the treatment plant may be used for irrigation of plants

Energy Audit

- Sensor-based lights and water taps to be implemented.
- Ventilation in Labs to be improved.
- Refrigerators, Air conditioners, and other electrical equipment to be assured five-star category in the coming purchases.
- Awareness boards need to be displayed near switches and water taps.
- Solar streetlights are suggested.
- E-waste management should be strengthened in association with LSG agencies or Private bodies.
- List of E vehicles and register for car pooling has been suggested.

Reference

- The Environment [Protection] Act – 1986 (Amended 1991) & Rules-1986 (Amended 2010)
- The Petroleum Act: 1934 – The Petroleum Rules: 2002 13
- The Central Motor Vehicle Act: 1988 (Amended 2011) and The Central Motor VehicleRules:1989 (Amended in 2005)
- Energy Conservation Act 2010.
- The Water [Prevention & Control of Pollution] Act – 1974 (Amended 1988) & the
- Water (Prevention & Control of Pollution) Rules – 1975
- The Air [Prevention & Control of Pollution] Act – 1981 (Amended 1987) The Air
- (Prevention & Control of Pollution) Rules – 1982
- The Gas Cylinders Rules – 2016 (Replaces the Gas Cylinder Rules – 1981
- E-waste management rules 2016
- Electrical Act 2003 (Amended 2001) / Rules 1956 (Amended 2006)
- The Hazardous Waste (Management and Handling and Trans-boundary Movement) Rules,2008 (Amended 2016)
- The Noise Pollution Regulation & Control rules, 2000 (Amended 2010)
- The Batteries (Management and Handling) rules, 2001 (Amended 2010)
- Relevant Indian Standard Code practices
- Internal Records of the Campus