

2023-2024

GREEN AUDIT REPORT



OF

KALIABOR COLLEGE OF EDUCATION

Kuwaritol, Kaliabor, Nagaon



AUDIT COMPONENT:
GREEN CAMPUS (BIODIVERSITY) AUDIT

PREPARED BY



ASSAM SCIENCE TECHNOLOGY AND ENVIRONMENT COUNCIL
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(বিজ্ঞান, প্রযুক্তি আৰু জলবায়ু পৰিৱৰ্তন বিভাগ, অসম চৰকাৰ)

ASSAM SCIENCE TECHNOLOGY AND ENVIRONMENT COUNCIL
(Science, Technology and Climate Change Department, Govt. of Assam)

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No. ASTEC/ENV/2161/2023/1996

Dated: 14/08/2024

DECLARATION

It is hereby declared that Assam Science Technology and Environment Council (ASTE C) have conducted a “Green Audit” for Kaliabor College of Education on 10th August 2024 for the academic year 2023-2024. The green audit was conducted in accordance with the applicable standards prescribed by the Central Pollution Control Board, New Delhi, and the Ministry of Environment, Forest and Climate Change, New Delhi. The audit involved the following target area: **Biodiversity (Green campus) Audit**, and the audit report provides the college with recommendations that can be used to develop an 'Environmental Management Plan', which the institution can follow to minimize the impact on the institutional working framework. In an opinion and to the best of our information and according to the information given to us, said green audit gives a true and fair view in conformity with environmental auditing principles' accepted in India.

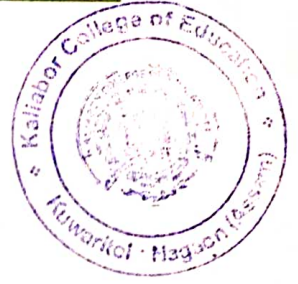
Date: 14/08/2024

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ACKNOWLEDGEMENT



The green audit team of Assam Science Technology and Environment Council (ASTEAC) express our sincere gratitude to Kaliabor College of Education of Education, Kuwaritol, Nagaon, for choosing the organisation to conduct a Green Audit for their college and giving us the opportunity to be a part of their mission towards environmental sustainability.

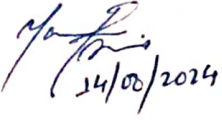
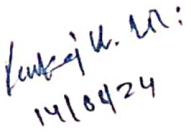
We are thankful to Dr. Tileswar Kumbang, Principal, Mr. Himen Bhyuan, Assistant Secretary of the Governing Body, and faculty members Ms. Lipika Kalita, IQAC Coordinator and Mr. Debajit Kakati, ICT Instructor and other associate staff of Kaliabor College of Education with whom we have interacted during the audit for their valuable support and cooperation through sharing of information sought during the assessment and providing the needed inputs to carry out this green audit. Their willingness to participate in this programme is truly commendable and is duly acknowledged.

Green Audit Team
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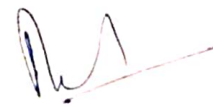
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Authorised Seal
ASTE Council



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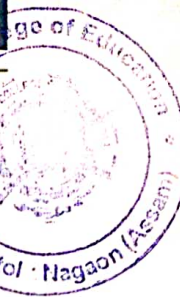


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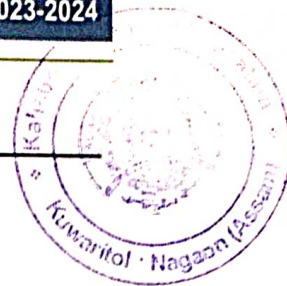
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EXECUTIVE SUMMARY

Environmental development is seen as a critical component in educational institutions, which serve as the foundation for a nation's development. Today's educational institutions are more environmentally concerned and more eco-friendly practices are being employed. Many educational institutions use an assortment of methods to address their environmental deficiencies in order to protect the environment on campus. It is critical, especially at educational institutions where young minds congregate, to ensure an eco-friendly and sustainable environment with long-lasting attributes. Therefore, in order to foster an eco-friendly environment in educational institutions, conducting a green audit is a critical first step.

The process of determining and analysing whether an institution's practices are sustainable and environmentally friendly is known as "green auditing." The primary purpose of carrying out a green audit at Kaliabor College of Education in Kuwaritol, Kaliabor, Nagaon, is to examine the institution's green practices and compile an in-depth audit report to establish where they stand on the environmental coherence spectrum. Kaliabor College of Education's initiative to complete a Green Audit of its campus is a noteworthy long-term goal.

For the green audit, one target area was selected and audited: **Green campus (Biodiversity)**, where the overall biodiversity of the campus and green practices relevant to green campus were inspected and assessed. Pre-audit meetings were held, questionnaires were prepared for the indicated target areas, an on-site physical examination and questionnaire survey were conducted, recommendations and an action plan were provided, and an audit report was prepared. Questionnaires were developed in accordance with the guidelines, rules, statutes, and formats established by the Government of India, Ministry of Environment and Forest, New Delhi, and Central Pollution Control Board, New Delhi. The findings of the Green Audit are only indicators on where and why additional efforts are required, and not in any way a criticism or commendation on its present performance.


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1. INTRODUCTION

A nation's educational institutions lay the groundwork for its development, with environmental development playing an important role. Environmental issues are becoming more prevalent in today's educational institutions, and new ideas have been implemented to make them environmentally conscious and friendly. Numerous educational institutions employ an assortment of strategies to address environmental issues on campus, such as energy conservation, waste recycling, wastewater reduction, and water harvesting. Educational institutions' operations can have a variety of negative environmental repercussions. Environmental sustainability is a growing concern across the country. It is vital to create a sustainable atmosphere, especially in educational institutions where young minds congregate. To ensure the optimum environment for learning and a balanced ecosystem for everyone associated to the institutions, the green influence on the campus is essential.

Beginning with the academic year 2016-17, all higher education institutions are obliged by the National Assessment and Accreditation Council (NAAC), New Delhi, to submit an annual Environmental or Green Audit Report. The corporate social responsibility of higher education institutions stipulates that they contribute to the reduction of global warming through carbon footprint reduction strategies. Environmental auditing, sometimes known as "green" auditing, compares an organization's environmental performance to its environmental goals and standards. A "green audit" is an official inquiry into an organization's environmental effect. As part of this activity, a green audit is performed to evaluate the present circumstances on campus.

1.1. CONCEPT OF GREEN AUDIT

Green Audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. It refers to a broad range of assessments that aim to pinpoint implementation problems, environmental management system compliance issues, and related corrective measures. It is a process whereby an organization's environmental performance is tested against its environmental policies and objectives. It intends to examine environmental activities on and off the subject areas, which will affect the environment-friendly ambiance. With an eye towards improving the eco-friendly atmosphere of an establishment, the "Green Audit" examines environmental



practices both inside and outside the organisation. Green auditing's primary goal is to examine the work done by an organisation whose operations may endanger the environment's and people's health. Through Green Audit, one can identify and address the numerous variables that determine environmental growth, as well as get a direction as to how to further improve the condition of the environment.

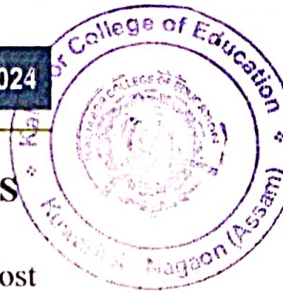
The process of a green audit involves collecting and analysing data on various environmental aspects of the institution's operations. This data includes energy and water usage, biodiversity, waste generation, and compliance with environmental laws and standards. By analysing the data, a green audit assesses the status of green practices in an institution, which are actions and strategies designed to reduce environmental impact and promote sustainability by minimising waste, reducing pollution, and protecting natural ecosystems. It aims to pinpoint inefficiencies and areas where improvements can be made to reduce the organisation's environmental footprint.

1.2. NEED FOR GREEN AUDIT IN EDUCATIONAL INSTITUTIONS

Increased urbanisation and economic advancement have resulted in a slew of ecological and environmental issues at the local, regional, and global levels. The use of resources such as water, energy, and others has resulted in environmental degradation over time. It is vital to ensure that our way of life and resource management do not negatively impact the environment. Educational institutions regularly utilise large amounts of water, energy, and other resources, resulting in Greenhouse Gas (GHG) emissions, waste, and energy and water loss, all of which can contribute to the deterioration of local environmental sustainability. The role of educational institutions in environmental sustainability is becoming more significant as environmental sustainability becomes a critical concern for the nation. As a result, it is critical for educational institutions to develop a "Green Campus" strategy that promotes long-term growth while effectively reducing atmospheric carbon dioxide levels.

Furthermore, the National Assessment and Accreditation Council (NAAC), New Delhi has mandated that all Higher Educational Institutions submit an annual Green Audit Report. Moreover, it is part of the Higher Educational Institutions' Corporate Social Responsibility to guarantee that they contribute to the curbing of global warming through Carbon Footprint reduction efforts. As a result, green auditing has become a fundamental need for all educational institutions.

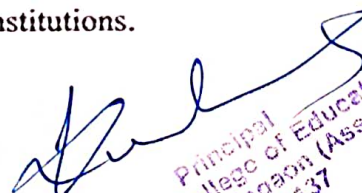

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1.3. BENEFITS OF GREEN AUDIT FOR EDUCATIONAL INSTITUTIONS

An educational establishment that wants to know where and how it is utilising the most water, electricity, or other resources can benefit from a green audit. The institution might next consider how to make improvements and generate savings. It may also be used to estimate waste quantity and type, which is important for recycling operations or improving waste minimization programmes. Students and faculty members may become more conscious of their health as well as environmental, moral, and ethical principles through the execution of green audits. It helps faculty, staff, and students grasp the advantages of going green on campus. Green auditing promotes resource efficiency in order to reduce costs. It provides a chance for educators and learners to cultivate a feeling of social responsibility and personal accountability. Therefore, it is critical that educational institutions review their own contributions, duties, and commitments to a sustainable future. Some of the benefits of green audit in educational institutions are given below.

- More efficient resource management
- Provide basis for improved sustainability
- Provide a basis for development of green campus
- Enable waste management through reduction of waste generation, solid waste and water recycling
- Enable to create plastic free campus and evolve health consciousness among the stakeholders
- Enable determining cost saving methods through waste minimizing and managing
- Authenticate conformity with the implemented laws
- Empower the organizations to frame a better environmental performance
- Impart environmental education through systematic environmental management approach and improving environmental standards
- Assists in setting benchmarks for environmental protection initiatives
- Enable financial savings through a reduction in resource use
- Enhances the profiles of educational institutions
- Develops environmental ethic and value systems in students and staff
- Provides a valuable tool in the management and monitoring of environmental and sustainable development programs of educational institutions.



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1.4. ABOUT CRITERIA 7 OF NAAC

Around the world, educational institutions are essential to the development of human resources. Higher education campuses engage in an assortment of initiatives for extending knowledge and its applications in real life throughout society. Higher education institutions also offer numerous technological remedies for the environment. Many evolutionary approaches are used to examine environmental issues. It covers items like Environmental Impact Assessments (EIA), Social Impact Assessments (SIA), Carbon Footprint Mapping, Green Audits, etc.

Based on the evaluations submitted by the institution during the accreditation process, the self-governing National Assessment and Accreditation Council (NAAC) assigns grades to various types of institutions. According to NAAC Criterion VII, conducting a green audit is now required for educational institutions. The purpose of a green audit is to improve the institution's external and internal environmental conditions. The institution uses environmentally friendly practices such as waste management, energy conservation, air and noise monitoring, and water and wastewater accounting.


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2. OBJECTIVES, GOALS AND SCOPE OF GREEN AUDIT

2.1. OBJECTIVES OF GREEN AUDIT


- To carry out a baseline survey in order to ascertain the actual state of green practices within the educational institution.
- To determine the issues encountered when implementing green practices on the campus of the educational institution.
- To assess how present practises affect the environment.
- To raise students' and staff members' and teachers' understanding of environmental consciousness.
- To identify and assess any environmental risk that may exist on the campus of the educational institution.

2.2. GOALS OF GREEN AUDIT

- Establishing the baseline of current environmental conditions, emphasising the physical and natural environments.
- Understanding the sustainability strategies that are currently being used to make the campus a green campus.
- Awareness generation among students concerning real issues of environment and its sustainability through participatory auditing process.
- Development of strategies and action plans towards improving environmental quality for future.

2.3. SCOPE OF GREEN AUDIT

An environment that is both clean and healthy encourages and facilitates learning. There are several programmes globally to address environmental education concerns. A green audit is the most effective and environmentally responsible way to address issues related to the environment. This form of professional care is the responsibility of every individual who is a part of an economic, financial, social, or environmental component. Green audits should be conducted on educational institution campuses because they assist students understand the importance of environmental preservation and help them grow into responsible citizens. It also specifies the tasks that educational institutions must carry out in order to build a green campus. Therefore, green audit is essential at the institutional level of education.


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3. ABOUT THE EDUCATIONAL INSTITUTION

3.1. A BRIEF HISTORY

The Kaliabor College of Education was established in 1992 in Kaliabor, Nagaon with the sole aim to promote the Teacher Education in India and Kaliabor, Nagaon, Assam in Particular. The institution was founded following a resolution passed during a public meeting on January 12, 1992. Officially inaugurated on August 5, 1992, by Prof. Dr. D. P. Boruah, former Vice-Chancellor of Gauhati University, it commenced operations from the academic year 1992-93. Nestled in a historically significant area enveloped by natural beauty, it has earned distinction as one of Assam's premier teacher training institutions. It is the only B.Ed College in the heart of Kuwaritol, Kaliabor.

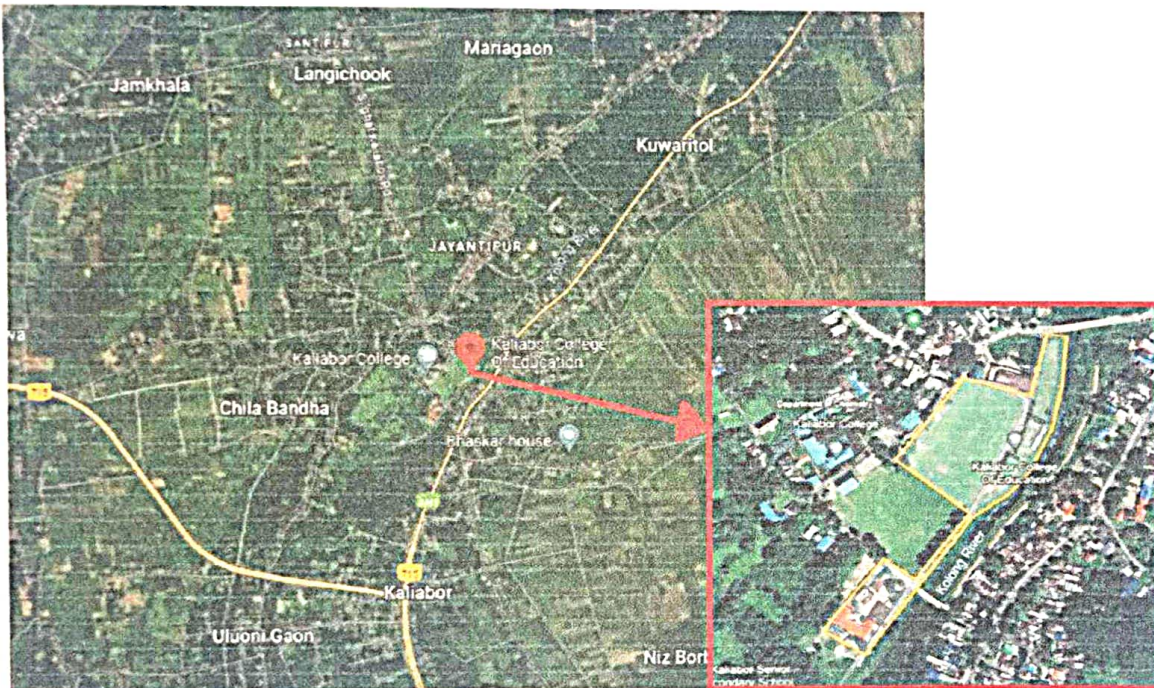


Photo 1: Location of Kaliabor College of Education (Source: Google Earth).

3.2. GEOGRAPHY

The college is located at a small town of Kaliabor under the Kaliabor Sub-Division of Nagaon district. Its locational coordinates are 26°32'56" N and 92°55'54" E. The college is situated in the Middle Brahmaputra Valley zone at an elevation of 91 m above sea level. The soil structure is mainly alluvial in nature. Vegetation found around the campus is a mixture of evergreen, semi-evergreen, and deciduous trees, and perennial grasses.

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3.3. VISION, MISSION AND OBJECTIVES OF THE INSTITUTION

3.3.1. VISION OF THE INSTITUTION

- To develop academic integrity and accountability with sincerity, dedication and a joy full team work.
- To sustain intellectual excellence and creativity.
- To improve positive attitude among the teaching professionals committed the teaching professionals committed to the future generation.
- To develop an institution of Teachers Education that will stand in future as an effective instrument for enriching school education and society as a whole.
- Empowering the Student-Teachers with contemporary teaching skills with Academic Excellence.
- To become the Centre of academic excellence in the area teacher education programme at par with the National and International standards to the youth including in them our culture, patriotism, heritage and values along with complete education.

3.3.2. MISSION OF THE INSTITUTION


- To prepare the finest teacher capable of responding the global social demands and meeting the challenges in Education.
- To rejuvenate the teaching learning process with ICT and value imbedded education in the context of modernization and social change.
- To address to the ever emerging issues and problems of school and Teacher Education and discover remedial measures.
- To ensure the contribution of all stakeholders in the all-pervasive sustainable development of the society.
- To evolve as a model institution for teacher education with global standard to develop social responsibilities with improved performance among the teachers of the new generation.
- To strive for Academic Excellence and quality assurance in the field of Teacher Education.
- To enhance the level of confidence among the teachers in the Classroom to manage congenial Classroom situation for effective teaching.

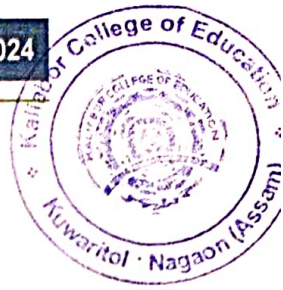

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3.3.3. OBJECTIVES OF THE INSTITUTION

- To empower student teachers to deepen their knowledge in their chosen subjects for both secondary and elementary school education.
- To enhance teaching skills to expand their capabilities and effectiveness.
- To utilize training experiences to enrich their professional teaching practices.
- To foster punctuality and time management skills among student teachers.
- To cultivate a habit of reading and emphasize the significance of books.
- To encourage creativity and innovation in their roles as educators.
- To foster a sense of equality among student teachers.
- To promote a positive attitude and approach in their teaching endeavours.
- To prepare them to become future pillars and leaders within society.
- To contribute to the holistic development of society.
- To lead society and the nation towards progress and growth.
- To instil a sense of nationalism and unity among student teachers.
- To develop an international perspective and outlook.
- To cultivate a scientific mind-set and approach.
- To educate on the importance of environmental conservation.
- To ensure proficiency in managing educational institution systems.
- To equip student teachers with diverse teaching aids and ICT tools for effective classroom instruction.
- To train dedicated educators to enhance the quality of school education nationwide.
- To adopt modern teaching techniques to foster skill development.
- To guide student teachers towards excellence across academic, social, mental, physical, moral, and cultural domains.
- To provide opportunities to enhance competence and construct knowledge for creating positive learning environments in schools.
- To raise awareness among stakeholders on environmental protection issues..


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3.4. GENERAL INFORMATION

3.4.1. COLLEGE CAMPUS

The college campus extends over 3.3 acres of land, bordered by Kaliabor College on one side. The campus includes 2 Assam type blocks along with 3 RCC buildings housing the Principal's office, Teachers' common rooms, Departments, IQAC room, classrooms, library, laboratories, students' common room, multipurpose hall, seminar hall and sports ground. There is a girl's hostel within a walking distance from the college campus. The canteen is being constructed in a separate multi-storeyed building within the college campus.



Photo 2: Campus of Kaliabor College of Education.


3.4.2. FACILITIES

Classroom

The college is equipped with 7 well-maintained classrooms for conduction of regular classes and has 3 well-equipped Digital Classrooms for Academic purpose. 2 more regular classrooms are being constructed in the campus.

Laboratories

There are a total of 10 laboratories associated with different subjects in the college. The college also has one computer lab and one language lab.


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Library

Kaliabor College of Education has a library which has a well-furnished reading room and a reference section. The library is computerised having facilities of automated circulation; automated attendance system along with search facility through OPAC (Online Public Access Catalogue). It is using the standard ILMS with the latest version SOUL 3.0 software of INFLIBNET centre an IUC of UGC. It is well stocked with approx. 6500+ books, which includes textbooks, reference books etc. Besides these, there are newspapers, magazines, journals, maps, etc. The library has taken initiative to access the facility for e-resources from N-LIST and DELL-NET as college component for accessing the e-books and e-journals.



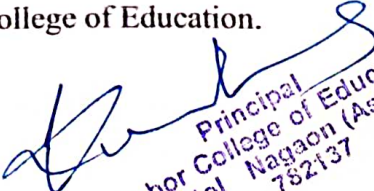
Photo 3: Classrooms of Kaliabor College of Education.



Photo 4: Laboratories of Kaliabor College of Education



Photo 5: Library of Kaliabor College of Education.


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Common rooms for teachers and students

There are separate common rooms for male and female faculty members with attached washrooms. The College has its Course wise separate wall magazines. There are separate common rooms for boys and girls with adequate facilities for recreation and entertainment.

Games and Sports Facilities

The college is well-equipped with outdoor sports facilities which include a football ground. An indoor sports facility with table tennis is currently under construction.



Photo 6: Outdoor Sports Facility of Kaliabor College of Education.

Conference Room and Auditorium

The college is currently constructing one multipurpose hall, one seminar hall and one conference room with state of the art equipment and facilities.

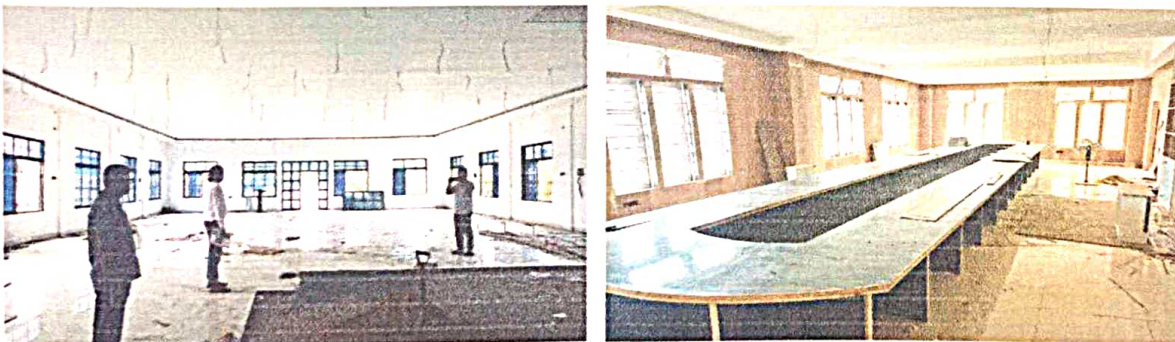


Photo 7: Construction of Multipurpose Hall and Conference Room.

Hostel

There is a private hostel for girls nearby college campus namely Panchajanya Girls Hostel, which have a signed MoU with Kaliabor College of Education. The hostel is equipped with all the required facilities such as drinking water, inverter, tables, beds, and chairs.

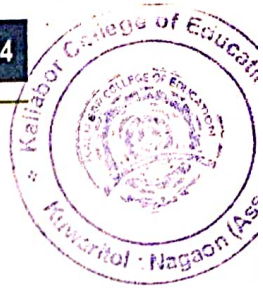


Photo 8: Girl's Hostel of Kaliabor College of Education.

Canteen Facility

The college is constructing a double-storeyed canteen in a separate building within the campus.

Solar Street Lights and Panels for Electricity Generation

There are 6 solar powered street lights installed within the college campus. The college is also currently installing 6 rooftop solar panels along with a three-phased 5 KW Grid tie inverter.

3.4.3. COURSES


The College offers the following programmes:

Under-Graduate Programme

Programme	Subjects
Bachelor of Arts (Major/Honours)	Assamese, Economics, Education, English, History, and Political Science.
Bachelor of Arts (Minor)	Offered with a combination of subjects
Bachelor of Education (D.Ed)	Papers of Teacher Education
Diploma in Elementary Education (D.El.Ed.)	Papers of Teacher Education

3.5. PREVIOUS GREEN AUDIT

No previous Green Audit has been conducted in Kaliabor College of Education. This is the first time Kaliabor College of Education is going to be Green Audited for the academic year 2023-2024.


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4. METHODOLOGY

A green audit has three phases - pre-audit stage, audit stage and post-audit stage, accordingly the audit was conducted.

4.1. PRE AUDIT STAGE

A pre-audit meeting provided an opportunity to reinforce the scope and objectives of the audit and pre-audit discussions were held to determine the targets of the auditing. This meeting is an important prerequisite for the green audit because it is the first opportunity to understand the concerns. It was held with the concerned persons of the college where target areas were identified and the audit protocol and audit plan were handed over and discussed in advance of the audit itself. The pre-audit meeting was conducted successfully and necessary documents were collected directly from the college before the initiation of the audit processes. Accordingly, as per the request of the college authority the following target area was identified for the audit:

- **Green Campus (Biodiversity)**

4.2. AUDIT STAGE

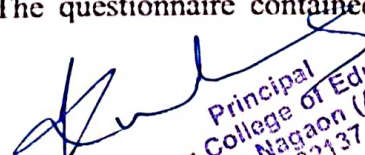
The following processes were involved during the audit stage:

4.2.1. DATA COLLECTION

In the data collection phase, exhaustive data collection is performed using different tools such as observation, questionnaire survey, physical inspection of the campus, review of the documentation, and interviewing key persons. A mixture of open ended and closed ended questionnaires were developed and used for data collection. Meetings with specific stakeholders identified in the pre-audit stage were conducted for getting the desired information. Detailed discussions on some specific topic were also held.

Survey by Questionnaire

By using a questionnaire survey method, baseline data for the creation of the green audit report were gathered. On the basis of the guidelines, regulations, laws, and formats prepared by the Central Pollution Control Board, the Ministry of Environment, Forests, and Climate Change, New Delhi, and other statutory institutions, questionnaires have been developed to conduct the green audit on the college campus. The questionnaire contained the general


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information of the college as well as information pertaining to college biodiversity and maintenance of green campus.

Review of documents, records and policies

This was carried out in order to understand the various initiatives taken by the university towards sustainable environmental conservation and amelioration. Documents such as activity reports, plantation lists, biodiversity register, photographs, etc. were examined and data was collected.

Site Inspection

The audit team also visited the various sections in its premises in order to have an idea of campus flora and fauna as well as various activities carried out in the campus pertaining to biodiversity and development of green campus. The present condition of the site is also checked with the help of the questionnaires. Campus greenery and gaps were identified. Personal observations were made during the onsite visit.

4.2.2. DATA ANALYSIS

A proper analysis is a vital element of the green audit. The data required for the analysis is taken from the data collection and is tabulated for the convenience of data availability. Detailed analysis of the data collected include: documentation of biodiversity in the campus as well as the green initiatives taken by the college.

4.3. POST AUDIT STAGE

The post-audit stage ensures formulation of draft findings and placing it before the authority for final response. Since the audit is done, it was important to ensure college authority's approval for the draft. After getting draft approval, the audit team went for final report formulation. The post audit phase involved the following components:

- ✓ Identification of the best practices followed by the institution
- ✓ Compiling a report of the data collected
- ✓ Distributing the report and certificate to the institution
- ✓ Preparing an action plan to overcome the flaws
- ✓ Providing suggestions to implement the action plan
- ✓ Setting up the future environmental aims and objectives


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5. GREEN CAMPUS (BIODIVERSITY) AUDIT

5.1. OPEN AREA

Along with the built-up area of 4.8 bigha or 1.59 acre (48.19% of the total land), the college campus offers roughly 5.2 bighas or 1.71 acres (51.81% of the total land) of open space. The auditing team observed that the college authority had made an attempt to preserve the open space in as natural of a state as feasible. The open region, which consists primarily of the open ground is covered in grass and other vegetation, promotes natural water percolation, which is a crucial ecological mechanism for replenishing the groundwater level.



Photo 9: Open-area playground and open spaces Kaliabor College of Education.

5.2. CAMPUS FLORA

The college has undertaken an extensive drive of plantation. A number of avenue trees have been recorded during the audit. The college have also planted numerous indoor plants. During the audit a total of 31 species under 31 genera from 24 families has been enumerated. Species occurrence was highest from the Apocynaceae family with 3 species, followed by Arecaceae, Fabaceae, Lamiaceae, Meliaceae and Rutaceae with 2 species each. The college is planning to establish a Medicinal Plant cum Herbal Garden to inculcate scientific aptitudes among the students towards conservation importance of medicinal plants and have identified designated areas within the campus. A list of plant species enumerated in the campus is given as follows.


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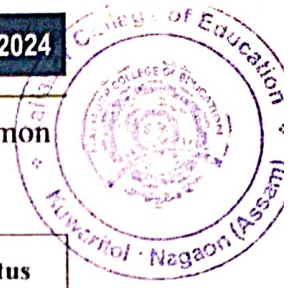
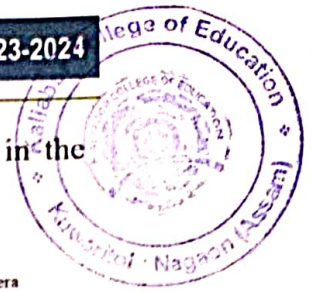


Table 1: Floral species enumerated in the college campus along with their family, common and vernacular name, and IUCN status.

Sl. No.	Plant species	Family	Common / Vernacular Name	IUCN Status
1	<i>Aegle marmelos</i> (L.) Corrêa	Rutaceae	Stone Apple (বেল)	Near Threatened
2	<i>Aloe vera</i> (L.) Burm	Asphodelaceae	Aloe Vera (চাল-কুঁৱৰী)	Not Evaluated
3	<i>Areca catechu</i> L.	Arecaceae	Areca Palm (ভামোল)	Data Deficient
4	<i>Asparagus racemosus</i> Willd.	Asparagaceae	Indian Asparagus (শতমূল)	Not Evaluated
5	<i>Azadirachta indica</i> A.Juss.	Meliaceae	Neem (নিম)	Least Concern
6	<i>Bauhinia variegata</i> L.	Fabaceae	Mountain Ebony (কাঞ্চন)	Least Concern
7	<i>Canna indica</i> L.	Cannaceae	Indian Shot (পাৰিজাত)	Not Evaluated
8	<i>Cascabela thevetia</i> (L.) Lippold	Apocynaceae	Yellow Oleander (কৰবী)	Least Concern
9	<i>Centella asiatica</i> (L.) Urb.	Apiaceae	Asiatic pennywort (বৰ মানিমুনি)	Least Concern
10	<i>Cocos nucifera</i> L.	Arecaceae	Coconut (নাৰিকল)	Not Evaluated
11	<i>Delonix regia</i> (Bojer ex Hook.) Raf.	Fabaceae	Flame tree (কৃষ্ণচূড়া)	Least Concern
12	<i>Gmelina arborea</i> Roxb. ex Sm.	Lamiaceae	White Teak (গমাবী)	Least Concern
13	<i>Hibiscus rosa-sinensis</i> L.	Malvaceae	Chinese Hibiscus (জবা)	Not Evaluated
14	<i>Houttuynia cordata</i> Thunb.	Saururaceae	Fresh Mint (মছন্দৰী)	Not Evaluated
15	<i>Lagerstroemia speciosa</i> (L.) Pers.	Lythraceae	Queen's Crape Myrtle (আজাৰ)	Not Evaluated
16	<i>Mangifera indica</i> L.	Anacardiaceae	Common Indian Mango (আম)	Data Deficient
17	<i>Melia azedarach</i> L.	Meliaceae	Chinaberry (ঘোঁৰা নিম)	Least Concern
18	<i>Mimusops elengi</i> L.	Sapotaceae	Indian Medlar (বকুল)	Least Concern
19	<i>Monoon longifolium</i> (Sonn.) B.Xue & R.M.K.Saunders	Annonaceae	False Ashoka (দেৱদাৰু)	Not Evaluated
20	<i>Murraya paniculata</i> (L.) Jack	Rutaceae	Orange Jasmine (কামিনী কাঞ্চন)	Not Evaluated
21	<i>Nerium oleander</i> L.	Apocynaceae	Rose Bay (কৰবি)	Least Concern
22	<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Holy Basil (তুলসী)	Not Evaluated
23	<i>Phyllanthus emblica</i> L.	Phyllanthaceae	Indian Gooseberry (আমলখি)	Least Concern
24	<i>Rhynchosyris retusa</i> (L.) Blume	Orchidaceae	Foxtail Orchid (কপৌ)	Not Evaluated
25	<i>Rosa indica</i> L.	Rosaceae	Rose (গোলাপ)	Not Evaluated
26	<i>Sphagneticola calendulacea</i> (L.) Pruski	Asteraceae	Chinese Wedelia (ভুংগৰাজ)	Not Evaluated
27	<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Jamun (ক'লা জামু)	Least Concern
28	<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn.	Combretaceae	Arjun (অৰ্জুন)	Not Evaluated
29	<i>Tinospora cordifolia</i> (Willd.) Miers ex Hook.f. & Thomson	Menispermaceae	Heart-leaved Moonseed (শঙণী লতা)	Not Evaluated
30	<i>Vinca minor</i> L.	Apocynaceae	Common Periwinkle (নয়নভৰা)	Least Concern
31	<i>Ziziphus mauritiana</i> Lam.	Rhamnaceae	Indian Jujube (বগৰী)	Least Concern

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A graph representing the number of floral species, genera, and family enumerated in the college campus during audit is given below.

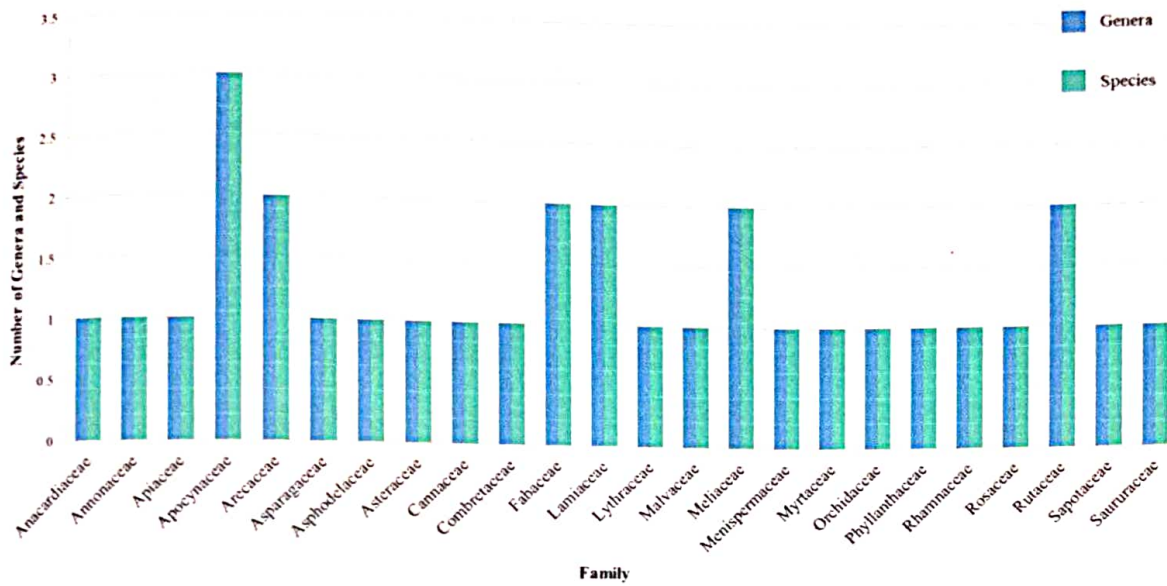
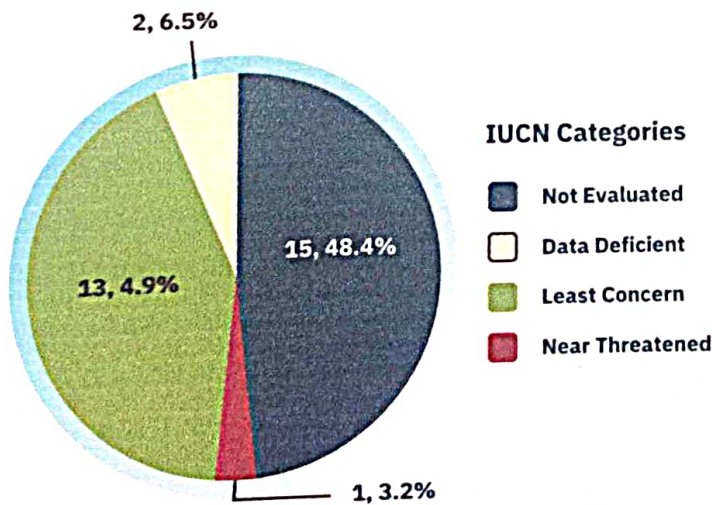


Figure 1: No. of floral species, genera, and family enumerated in the college campus during audit.

Evaluation of IUCN status of the plants listed above showed that most of the species are “Not Evaluated” (15 species), followed by 13 species falling under the “Least Concern” category. However, the college houses species that is “Near Threatened” (1 species). 2 species were found to be falling under the “Data Deficient” category. A pie-chart showing the above mentioned data is given as follows.

IUCN Status of Floral Species



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Figure 2: IUCN status of the floral species enumerated in the college campus during audit.



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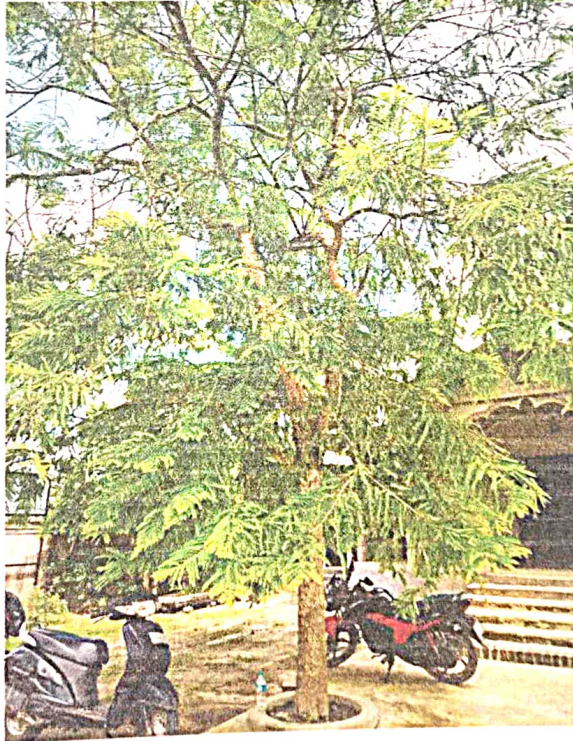
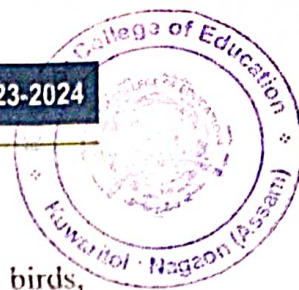


Photo 10: A few of the plant species enumerated in the college campus during the audit.

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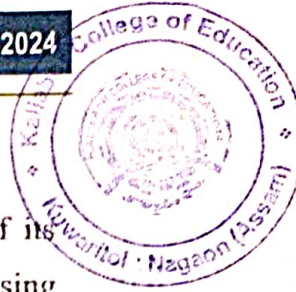
5.3. CAMPUS FAUNA

Numerous faunal species are frequently observed in the campus, including mammals, birds, amphibians, reptiles, etc. The vegetation of the nearby Kaliabor College acts as the adobe for the faunal species present in the college campus. A list of faunal species in the campus is given as follows.

Table 2: Faunal species in the college campus along with their class, order, family, and common and vernacular name.

Sl. No.	Faunal species	Class	Order	Family	Common / Vernacular Name
1	<i>Acridotheres javanicus</i>	Aves	Passeriformes	Sturnidae	Javan Myna
2	<i>Acridotheres tristis</i>	Aves	Passeriformes	Sturnidae	Common Myna
3	<i>Anastomus oscitans</i>	Aves	Ciconiiformes	Ciconiidae	Asian Openbill
4	<i>Apus apus</i>	Aves	Apodiformes	Apodidae	Common Swift
5	<i>Ardea intermedia</i>	Aves	Pelecaniformes	Ardeidae	Intermediate Egret
6	<i>Ardeola grayii</i>	Aves	Pelecaniformes	Ardeidae	Indian Pond Heron
7	<i>Bubulcus ibis</i>	Aves	Pelecaniformes	Ardeidae	Cattle egret
8	<i>Callosciurus pygerythrus</i>	Mammalia	Rodentia	Sciuridae	Hoary bellied Squirrel
9	<i>Calotes versicolor</i>	Mammalia	Squamata	Agamidae	Garden Lizard
10	<i>Canis lupus familiaris</i>	Mammalia	Carnivora	Canidae	Dog
11	<i>Catopsilia pomona</i>	Insecta	Lepidoptera	Pieridae	Common Emigrant Butterfly
12	<i>Chalcophaps indica</i>	Aves	Columbiformes	Columbidae	Common Emerald Dove
13	<i>Copsychus saularis</i>	Aves	Passeriformes	Muscicapidae	Oriental Magpie Robin
14	<i>Corvus splendens</i>	Aves	Passeriformes	Corvidae	House Crow
15	<i>Cuculus micropterus</i>	Aves	Cuculiformes	Cuculidae	Indian Cuckoo
16	<i>Danaus genutia</i>	Insecta	Lepidoptera	Nymphalidae	Striped Tiger Butterfly
17	<i>Dendrocopos darjellensis</i>	Aves	Piciformes	Picidae	Darjeeling Woodpecker
18	<i>Dicrurus macrocercus</i>	Aves	Passeriformes	Dicruridae	Black Drongo
19	<i>Eudynamis scolopaceus</i>	Aves	Cuculiformes	Cuculidae	Asian Koel
20	<i>Eurema hecabe</i>	Insecta	Lepidoptera	Pieridae	Grass Yellow Butterfly
21	<i>Gracula religiosa</i>	Aves	Passeriformes	Sturnidae	Common Hill Myna
22	<i>Gracupica contra</i>	Aves	Passeriformes	Sturnidae	Indian Pied Starling
23	<i>Halcyon smyrnensis</i>	Aves	Coraciiformes	Alcedinidae	White Breasted Kingfisher
24	<i>Hemidactylus frenatus</i>	Reptilia	Squamata	Gekkonidae	Common House Gecko
25	<i>Herpestes edwardsi</i>	Mammalia	Carnivora	Herpestidae	Indian Gray Mongoose
26	<i>Junonia almana</i>	Insecta	Lepidoptera	Nymphalidae	Peacock Pansy Butterfly
27	<i>Junonia atlites</i>	Insecta	Lepidoptera	Nymphalidae	Grey pansy Butterfly
28	<i>Junonia lemonias</i>	Insecta	Lepidoptera	Nymphalidae	Lemon Pansy Butterfly
29	<i>Lepus nigricollis</i>	Mammalia	Lagomorpha	Leporidae	Indian Hare
30	<i>Lonchura punctulata</i>	Aves	Passeriformes	Estrildidae	Spotted Munia
31	<i>Macaca mulatta</i>	Mammalia	Primates	Cercopithecidae	Rhesus Macaque

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5.4. BEST PRACTICES PERTAINING TO GREEN CAMPUS

The institution has been involved in a range of environmental programmes as part of its continued commitment to preserving a green campus. Planting and nurturing trees, organising campus-wide clean-up efforts, and celebrating environmentally important days are just a few examples. Such noteworthy activities include:

5.4.1. PLANTATIONS

The Kaliabor College of Education administration promotes environmental protection and organises tree planting programmes on the Kaliabor College of Education campus on World Environment Day and other occasions every year. The programmes engage both students and members of the teaching and non-teaching faculties. Individual students and teachers with whom the audit team interacted were aware of and interested in caring for the campus florae. The flora on campus serve an assortment of functions, including enhancing the quality of the surrounding natural environment, bringing in more wildlife, including birds, and expanding its habitat, as well as enhancing the area's water quality. Following are the occasions and dates in which plantation programmes were organised by the college during 2023-24:

Table 3: Plantation programmes organised by the college in 2023-24.

Plantation Programmes organised by the College in 2023-24

Sl. No	Date	Occasion
1	05/06/2023	World Environment Day 2023
2	22/02/2024	National Science Day
3	05/06/2024	World Environment Day 2024
4	05/06/2024	Swachh Bharat Abhiyan

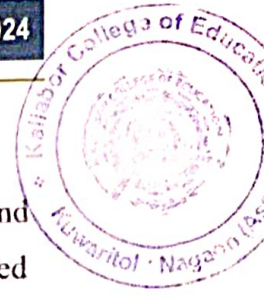
Photos of the plantation activities organised by Kaliabor College of Education is given as follows:


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Photo 11: Plantation programmes organised by Kaliabor College of Education during 2023-2024.

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5.4.2. *CAMPUS CLEANLINESS*

Kaliabor College of Education prioritise the cleanliness of the campus, hostels and departments. The college campus is regularly cleaned and all the waste collected is separated into three categories: i) Organic waste, ii) Plastic waste and iii) other waste. Multiple dustbins are placed strategically within the campus to reduce littering.



Photo 12: Dustbin placed in the campus.

5.4.3. *AWARENESS ON GREEN CAMPUS (BIODIVERSITY) AND RELEVANT ISSUES*

The College has undertaken several initiatives in creating awareness among the students as well as among people of the locality on the importance of biodiversity and its conservation. Some of the initiatives include:

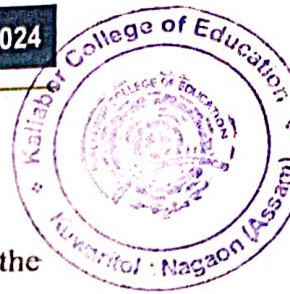
- Undertaking of a field trip to Orchid Garden, Kaziranga on 26th November 2022.
- Undertaking of a field trip to Kaliabor Nursery, Kaliabor on 25th February 2023.
- Undertaking of a field trip to Orchid Garden, Kaziranga on 08th December 2023.
- Cleaning of campus and nearby areas as part of the Swachh Bharat Abhiyan on the occasion of World Environment Day 2024 on 05th June 2024.
- Cleaning of nearby market area as part of the Community Service for Clean Kaliabor, Green Kaliabor on 05th June 2024.
- Organising a poster making competition on the occasion of World Environment Day 2024 on 05th June 2024.


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Photo 13: Various awareness programmes conducted by Kaliabor College of Education on Green Campus (biodiversity) and relevant issues.



6. RECOMMENDATIONS

Based on the visit and discussions with college authority officials, the audit team came to the conclusion that the institution needed a future road map in order to strengthen its efforts in adopting a green and clean approach and exhibit its concern for the environment and nature. Additionally, it is recommended that the college administration keep up this routine for carrying out environmental and green audits, as the audit team felt that doing so would raise awareness and foster participation among faculty, staff, and students, and that the positive trend would endure over time. The audit team has also recommended the following:

- 1) In order to streamline the activities and measures taken by the college pertaining to the environment, it is recommended that an Environmental Management System (EMS) be constituted in the college that will be responsible for overseeing all the environment related issues of the college and the activities pertaining to it. The EMS will act as an internal audit team, assisting external audit officers with future audits. Along with the college's teaching and non-teaching personnel, students shall be included as volunteer members of the EMS.
- 2) It is recommended that clubs and cells pertaining to environment, ecology and climate change such as Eco-clubs, College Environment and Climate Cells, etc. may be constituted. The club can be a part of the EMS.
- 3) The college has undertaken multiple plantations drives in the college campus and have planted a number of trees. It is recommended that the number of trees may be increased with more extensive plantation drives. A suggestive list of prospective plants for plantation is given in **Annexure I**.
- 4) In order to increase the faunal diversity of the college, plantation of more indigenous fruit yielding plants such as *Baccaurea ramiflora* (লেটেকু), *Flacourtia jangomas* (পনিয়ল), *Averrhoa carambola* (কর্দে), etc. may be given priority. The college can also opt to develop a butterfly garden with local flowering plant species to create, improve, and maintain habitat for lepidopterans including butterflies, skippers, and moths.
- 5) The college has a plan for developing a medicinal and an herbal garden. It is recommended that local and indigenous plants with high medicinal value be planted


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instead of exotic plants. A suggestive list of prospective medicinal plants for plantation is given in **Annexure II**.

- 6) The college can also opt to develop an orchidarium for conservation of locally available and exotic orchid species.
- 7) It has been observed during the audit that tree species within the campus was not properly tagged. It is therefore recommended that all the trees and plants within the campus be properly tagged with permanent nameplates depicting their scientific and local names. If possible their taxonomic classification can also be listed.
- 8) The college can also deploy a "QR Codes for Plant" initiative in the college where QR codes can be placed alongside each plant and upon scanning the code the user can gain access to additional information about the plants. This can be developed by the college in house or through freely available applications. This initiative would help in developing scientific temperament of students to know more about the flora of their locality and state as well as to understand their environment and ecosystem.
- 9) It is recommended that the college may intensify their plantation drives and plant floral species which are locally available and gives economic benefits to the people. Whenever such plantation drives are conducted the college must ensure to maintain a list of the plant species and their numbers being planted as well as of the people who have planted them.
- 10) It is also recommended that periodic cleaning of weeds and grasses in the campus be done so that the planted trees can grow easily.
- 11) During the audit it was also observed that the college has ample space to develop a vermicomposting unit within the campus. As vermicomposting can be a healthy alternative to chemical fertilisers, the college may opt to install the composting unit and ensure its proper maintenance so that the compost generated from it can be used to grow and sustain the plant species which have low viability and low probability of survival.
- 12) The institution has a tremendous opportunity to harvest rainwater from the roofs of the buildings on campus, which the college administration can use for a wide range of applications. In light of this, the college may decide to develop extensive rainwater harvesting infrastructures on the building roofs in a phased manner. This will allow the

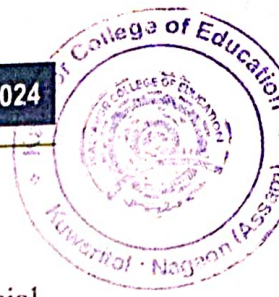
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future Green Audit team to compare the advancements being made by college administration.

- 13) As the college is undergoing extensive infrastructural modification and up-gradation, it is recommended that the debris be properly disposed. Non-toxic debris may be used to fill up the low lying areas of the college, especially near the river bank area.
- 14) It is recommended that the college generate awareness among the faculty and the students on waste segregation and management. A comprehensive waste management plan be developed, including e-waste to minimize the generation of solid waste and their proper disposal.
- 15) An environmental policy must be prepared and developed that includes all of the recommendations, the college's current practises, and a roadmap and action plan for adopting the recommendations within a certain time frame. This policy shall be revised following each green audit, and the college will adhere to it to make the campus more sustainable for the environment. To be a comprehensive policy, the policy must also incorporate the overarching environmental vision, mission, goals, and objectives.


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7. CONCLUSION

To make sure that natural resources are used fairly and in balance, the green audit is a crucial instrument. Green audits are critical for investigating and evaluating whether institutional practises are sustainable and environmentally conscious. It is an approach of methodically identifying, quantifying, documenting, reporting, and monitoring ecologically and environmentally relevant components in an area in question. The primary goals of a green audit are to evaluate the college's green practises and conduct a comprehensive audit to determine whether the organisation is headed in the right direction for long-term expansion.

The audit team believes that students, faculty, and support staff all have strong environmental consciences. The audit team believes that the entire college campus is well-maintained, and administrators have been observed to be quite attentive about the general upkeep and sanitation of the institution. The college campus's unstructured areas have helped to recharge ground water. Future development projects must balance regions with appropriate amounts of open space to allow for ground water recharging. A few recommendations made by the audit team could help the college campus go greener and more environmentally friendly. Recommendations are provided for the college administration to consider in addition to the findings.

Based on the visit and discussions with college authority officials, the audit team concluded that the institution needs a future road map to increase its efforts in adopting a green and clean approach and demonstrating its concern for the environment and nature. Furthermore, it is recommended that the college administration maintain this routine of conducting green audits, as the audit team believed that doing so would bring about awareness and encourage participation among faculty, staff, and students, and that the positive trend would keep growing over time.


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**ANNEXURE I****SUGGESTIVE LIST OF PROSPECTIVE PLANTS FOR PLANTATION**

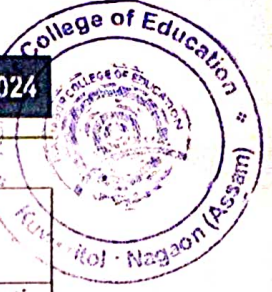
Sl. No	Plant species	Family	Common / Vernacular Name
1	<i>Acampe praemorsa</i> (Roxb.) Blatt. & McCann	Orchidaceae	Brittle Orchid
2	<i>Aerides odorata</i> Lour.	Orchidaceae	Fragrant Fox Brush Orchid (গনেশ কপৌ)
3	<i>Albizia lebbek</i> (L.) Benth.	Fabaceae	Indian Siris (শিৰীষ)
4	<i>Alstonia scholaris</i> (L.) R.Br.	Apocynaceae	Blackboard Tree (ছতিয়না)
5	<i>Bombax ceiba</i> L.	Malvaceae	Red Silk Cotton Tree (শিমুল)
6	<i>Bougainvillea glabra</i> Choisy	Nyctaginaceae	Paper Flower (কাগজ ফুল)
7	<i>Caesalpinia pulcherrima</i> (L.) Sw.	Fabaceae	Peacock Flower (বাধাচূড়া)
8	<i>Cassia fistula</i> L.	Fabaceae	Golden Shower Tree (সোণাবু)
9	<i>Citrus aurantiifolia</i> (Christm.) Swingle	Rutaceae	Lime (গোল লেমু)
10	<i>Coelogyne imbricata</i> (Hook.) Rehb.f.	Orchidaceae	Necklace Orchid
11	<i>Cycas revoluta</i> Thunb.	Cycadaceae	Sago Palm
12	<i>Cymbidium aloifolium</i> (L.) Sw.	Orchidaceae	Aloe-leaved Cymbidium (মতা কপৌ)
13	<i>Dendrobium aphyllum</i> (Roxb.) C.E.C.Fisch.	Orchidaceae	Hooded Orchid (শালিকী ঠোঁটিয়া কপৌ)
14	<i>Dendrobium mannii</i> Ridl.	Orchidaceae	Mann's Dendrobium
15	<i>Dendrobium moschatum</i> (Buch.-Ham.) Sw.	Orchidaceae	Musky-smelling Dendrobium
16	<i>Dendrolirium lasiopetalum</i> (Willd.) S.C.Chen & J.J.Wood	Orchidaceae	Woolly Eria
17	<i>Duranta erecta</i> L.	Verbenaceae	Golden Dewdrop (কনকান্ত)
18	<i>Eucalyptus camaldulensis</i> Dehnh.	Myrtaceae	River Red Gum
19	<i>Ficus rumphii</i> Blume	Moraceae	Golden Rumph's Fig (পাকৰি)
20	<i>Garuga pinnata</i> Roxb.	Bursaceae	Grey Downy Balsam (ৰহিমলা)
21	<i>Kalanchoe pinnata</i> (Lam.) Pers.	Crassulaceae	Air Plant (দুপৰ টেঙা)
22	<i>Melaleuca citrina</i> (Curtis) Dum.Cours.	Myrtaceae	Crimson Bottle Brush
23	<i>Mesua ferrea</i> L.	Calophyllaceae	Nahor (নাহৰ)
24	<i>Moringa oleifera</i> Lam.	Moringaceae	Drumstick Tree (চজিনা)
25	<i>Morus alba</i> L.	Moraceae	White Mulberry (নুনি)
26	<i>Musa paradisiaca</i> L.	Musaceae	Plantain (কাচকল)
27	<i>Piper longum</i> L.	Piperaceae	Indian Long Pepper (পিশলি)
28	<i>Platycladus orientalis</i> (L.) Franco	Cupressaceae	Oriental Arborvitae (থুজা)
29	<i>Punica granatum</i> L.	Lythraceae	Pomegranate (ডালিম)
30	<i>Santalum album</i> L.	Santalaceae	Indian Sandalwood (বগা চন্দন)
31	<i>Shorea robusta</i> C.F.Gaertn.	Dipterocarpaceae	Sai (শাল)
32	<i>Tectona grandis</i> L.f.	Lamiaceae	Teak (চেঙন)
33	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	Beleric Myrobalan (ভোমোৰা)
34	<i>Terminalia chebula</i> Retz.	Combretaceae	Chebolic Myrobalan (শিলিখা)

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ANNEXURE II**SUGGESTIVE LIST OF PROSPECTIVE MEDICINAL PLANTS FOR MEDICINAL AND HERBAL GARDEN**

Sl. No	Species	Family	Common/Vernacular Name	Medicinal value/use
1	<i>Aloe vera</i> (L.) Burm	Asphodelaceae	Aloe Vera (চাল-কুঁৱৰী)	Anti-inflammatory, anti-microbial. It is used to treat skin injuries, burns, cuts, insect bites, eczemas, and digestive problems.
2	<i>Asparagus racemosus</i> Willd.	Asparagaceae	Indian Asparagus (শতমূল)	It is used against upset stomach (dyspepsia), constipation, stomach spasms, and stomach ulcers.
3	<i>Azadirachta indica</i> A.Juss.	Meliaceae	Neem (নিম)	Anti-fungal, anti-oxidant, anti-inflammatory and anti-bacterial. It is used to treat leprosy, eye disorders, bloody nose, intestinal worms, stomach upset, loss of appetite, skin ulcers, etc.
4	<i>Centella asiatica</i> (L.) Urb.	Apiaceae	Asiatic pennywort (বৰ মানিমুনি)	Anti-oxidant, anti-cellulite and anti-inflammatory. It is used to treat skin diseases, infective wounds, burns, hypertrophic scar, anaemia, nosebleeds, mental illness and dehydration.
5	<i>Houttuynia cordata</i> Thunb.	Saururaceae	Fresh Mint (মহন্দৰী)	Anti-inflammatory, anti-bacterial, anti-viral, and anti-oxidant. It is used to treat cold, cough, fever, pneumonia, mumps, and tumors.
6	<i>Kalanchoe pinnata</i> (Lam.) Pers.	Crassulaceae	Air Plant (দূপৰ টেঙা)	Anti-bacterial, anti-inflammatory, anti-viral, and antifungal. It is used to treat stomach disorder, jaundice, fever, diarrhoea, etc.
7	<i>Morus alba</i> L.	Moraceae	White Mulberry (নুলি)	It is used against dizziness, insomnia, premature aging, liver and kidney disorders, and inflammation
8	<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Holy Basil (তুলসী)	Anti-microbial, anti-diarrheal, anti-oxidant, anti-cataract, and anti-inflammatory. It is used to treat cough, asthma, diarrhoea, fever, dysentery, arthritis, eye diseases, indigestion, gastric ailments, etc.
9	<i>Phyllanthus emblica</i> L.	Phyllanthaceae	Indian Gooseberry (আমলখি)	Anti-diabetic, hypolipemic, anti-microbial, anti-inflammatory, and anti-oxidant. It is used to treat diabetes, fever, anaemia, jaundice, bleeding disorders, hiccough, arthritis, diarrhoea, inflammation, etc.
10	<i>Piper longum</i> L.	Piperaceae	Indian Long Pepper (পিপলি)	It is used to treat chronic bronchitis, asthma, constipation, gonorrhoea, paralysis of the tongue, diarrhea, cholera, chronic malaria, viral hepatitis, respiratory infections, stomach ache, bronchitis, diseases of the spleen, cough, and tumors.


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Sl. No	Species	Family	Common/ Vernacular Name	Medicinal value/use
11	<i>Tinospora cordifolia</i> (Willd.) Miers ex Hook.f. & Thomson	Menispermaceae	Heart-leaved Moonseed (শুগুণী লতা)	Anti-periodic, anti-spasmodic, anti-microbial, anti-osteoporotic, anti-inflammatory, anti-arthritic, anti-allergic, and anti-diabetic properties. It is used to treat diabetes, high cholesterol, allergic rhinitis (hay fever), upset stomach, gout, lymphoma and other cancers.
12	<i>Vinca minor</i> L.	Apocynaceae	Common Periwinkle (নয়নতৰা)	It is used to treat diarrhea, vaginal discharge, throat ailments, tonsillitis, chest pain, high blood pressure, sore throat, intestinal pain, etc.


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