

2022-2023

GREEN AUDIT REPORT

OF

KALIABOR COLLEGE

Kuwaritol, Kaliabor, Nagaon



AUDIT COMPONENT:

GREEN CAMPUS (BIODIVERSITY) AUDIT

PREPARED BY



ASSAM SCIENCE TECHNOLOGY AND ENVIRONMENT COUNCIL

BIGYAN BHAWAN, G.S. ROAD

BHANGAGARH, GUWAHATI-05

অসম বিজ্ঞান প্রযুক্তিবিদ্যা আৰু পৰিৱেশ পৰিষদ
(বিজ্ঞান, প্রযুক্তি আৰু জলবায়ু পৰিৱৰ্তন বিভাগ, অসম চৰকাৰ)

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

BIGYAN BHAWAN
G.S. ROAD
GUWAHATI – 781005
Assam, India



Telephone : +91-361-3518292
E-Mail : directorastec@gmail.com
astec@rediffmail.com
Website: astec.assam.gov.in

No. ASTEC/ENV/2161/2023/3135

Dated: 27/10/2023

DECLARATION

It is hereby declared that Assam Science Technology and Environment Council (ASTEC) have conducted a “Green Audit” for **Kaliabor College** on **19th October 2023** for the academic year 2022-2023. 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 and environment audit gives a true and fair view in conformity with environmental auditing principles' accepted in India.

Date: 27/10/2023

Place: Guwahati

Director
ASTE Council


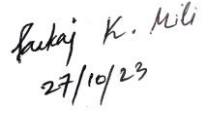
ACKNOWLEDGEMENT

The green audit team of Assam Science Technology and Environment Council (ASTE) express our sincere gratitude to Kaliabor College, 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. Uttam Kr. Baruah, Principal, Mr. Rupsagar Sahni, Vice Principal, and faculty members Dr. Basistha Kalita, Dr. Birender Pal, Dr Barnali Sarma, Mr. Chiranjeev Bezbaruah, Dr. Dipankar Borah, Mr. Ujjal Sut, Dr. Rijib Borah, Dr. Barnali Kakati, Ms. Rajashree Payeng, Ms. Rimbiso Terangpi, IQAC committee members and other associate staff of Kaliabor College 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
ASTE Council

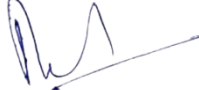
EXTERNAL GREEN AUDIT TEAM
(Assam Science Technology and Environment Council)

Sl. No	Name	Designation	Audit Role	Signature
1	Mr. Manish Kuntal Buragohain	Project Scientist, Climate Cell, Environment Division, ASTEAC	Green campus (Biodiversity) Audit Officer	 27/10/23
2	Mr. Pankaj Mili	Project Expert, CMCRVFP, Environment Division, ASTEAC	Green campus (Biodiversity) Audit Officer	 27/10/23



Authorised Seal

ASTE Council



Dr. Jaideep Baruah

Director
ASTE Council

Table of Contents

List of tables	i
List of figures	i
List of photo plates	ii
Executive Summary	1
1. Introduction	2
1.1. Concept of green audit	2
1.2. Need for green audit in educational institutions	3
1.3. Benefits of green audit for educational institutions	4
1.4. About criteria 7 of NAAC.....	5
2. Objectives, goals and scope of green audit	6
2.1. Objectives of green audit	6
2.2. Goals of green audit	6
2.3. Scope of green audit.....	6
3. About the educational institution	7
3.1. A brief history	7
3.2. Geography.....	7
3.3. Motto, vision, mission and objectives of the institution	8
3.4. General information	9
3.5. Previous green audit.....	13
4. Methodology	14
4.1. Pre-audit stage.....	14
4.2. Audit stage	14
4.3. Post-audit stage	15
5. Green campus (Biodiversity) audit	16
5.1. Open space	16
5.2. Campus flora.....	16
5.3. Campus fauna.....	21
5.4. Best practices pertaining to green campus.....	23
6. Recommendations	30
7. Conclusion	32

LIST OF TABLES

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

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

Table 3: Plantation programmes organised by the college in 2022-23.

Table 4: Medicinal plants of the college and their uses.

Table 5: Orchids housed in the orchidarium of the college.

LIST OF FIGURES

Figure 1: IUCN status of the floral species enumerated in the college campus during audit.

LIST OF PHOTO PLATES

- Photo 1:** Location of Kaliabor College.
- Photo 2:** Campus of Kaliabor College.
- Photo 3:** Classrooms of Kaliabor College.
- Photo 4:** Laboratories of Kaliabor College.
- Photo 5:** Library of Kaliabor College.
- Photo 6:** Indoor and Outdoor Playground of Kaliabor College.
- Photo 7:** Hostels of Kaliabor College.
- Photo 8:** Open-area playground and artificial pond of Kaliabor College.
- Photo 9:** A few of the plant species enumerated in the college campus during the audit.
- Photo 10:** Plantation programmes organised by Kaliabor College during 2022-2023.
- Photo 11:** Botanical garden in the college campus.
- Photo 12:** Orchidarium of Kaliabor College.
- Photo 13:** Vermicomposting unit, Eco-brick making equipment and dustbins placed in the campus.
- Photo 14:** Various awareness programmes conducted by Kaliabor College on Green Campus (biodiversity) and relevant issues.

EXECUTIVE SUMMARY

Environmental development is seen as a fundamental component in educational institutions, which serve as an underlying basis for a nation's development. Educational institutions today are more conscious of environmental issues, as a fundamental component in educational institutions, which serve as an underlying basis for a nation's development. Educational institutions today are more conscious of environmental issues, and more eco-friendly approaches are being adopted. Many educational institutions employ a range of strategies to manage their environmental shortcomings in order to preserve the environment on campus. Particularly in educational institutions where young brains congregate, it is vital to ensure an eco-friendly and sustainable environment with durable attributes. Therefore, in order to develop an eco-friendly environment in educational institutions, conduction of a green audit is a much needed preliminary but vital initiative.

The process of finding and evaluating whether an institution's practises are sustainable and environmentally friendly is known as "green auditing." The major goal of conducting a green audit of **Kaliabor College, Kuwaritol, Kaliabor, Nagaon**, is to examine the green practises adopted by the institution and to compile an in-depth audit report to determine where we stand on the spectrum of environmental coherence. The initiative taken by Kaliabor College to conduct a Green Audit of the college campus is a commendable sustainable goal.

One target area was determined and audited for the green audit, viz. **Green campus (Biodiversity)**, where the overall biodiversity of the campus and the green practises pertaining to green campus were observed and assessed. The strategies followed were conduction of pre-audit meetings, preparation of questionnaires on the specified target areas, on-site physical assessment and questionnaire survey, providing recommendations and development of an action plan, and audit report preparation. Questionnaires were prepared based on the guidelines, rules, acts, and formats set 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.

1. INTRODUCTION

The educational institutions of a nation serve as the foundation for its development, with environmental development being a crucial component. Environmental issues are becoming increasingly prominent in today's educational institutions, and new concepts are being implemented to make them more environmentally friendly. Numerous educational institutions use a range of approaches to tackle environmental challenges on campus, including energy conservation, waste recycling, wastewater reduction, and water harvesting. Educational institutions' operations can have a wide range of detrimental environmental consequences. Environmental sustainability is becoming a significant concern across the country. It is critical to ensure a long-lasting environment, particularly 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. 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

"Environmental audit" or "Green audit" might mean different things depending on who you ask. Term such as "assessment", "survey", and "review" are frequently used to denote comparable operations. Furthermore, although some organizations/institutions believe that an "environmental audit" just investigates environmental concerns, others use the term to refer to an assessment of health, safety, and environmental issues. Although there is no common definition of Green Audit, many prominent organisations and institutions adhere to the core

idea and methodology summed up by the broad definition given by the International Chambers of Commerce (ICC) in its publication Environmental Auditing (1989).

The ICC defines Environmental Auditing as:

“A management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of safeguarding the environment and natural resources in its operations/projects.”

The term "environmental audit" or "green audit" refers to a wide range of evaluations designed to identify implementation flaws, environmental management system compliance concerns, and related remedial actions. It seeks to investigate environmental activities both on and off the subject areas that have an impact on the environment-friendly ambience. According to the World Bank, it is a systematic investigation of environmental data about an organisation, a facility, or a place in order to establish whether or not they correspond to predefined environmental criteria. Environmental regulations may be based on regional, national, or worldwide norms. As a matter of fact, it is a methodical process of gathering and analysing data on environmental issues.

1.2. NEED FOR GREEN AUDIT IN EDUCATIONAL INSTITUTIONS

Increased urbanisation and economic progress have created a multitude of ecological and environmental challenges at the local, regional, and global levels. The use of resources such as water, energy, and others has caused environmental degradation throughout time. It is critical to ensure that our way of life, as well as how we manage resources, do not have a harmful influence on the environment. Educational institutions frequently use vast quantities of water, electricity, and other resources, resulting in the generation of CO₂, waste, and energy and water loss, which may often contribute to the deterioration of environmental sustainability at the local level. The function of educational institutions in connection to environmental sustainability is growing more prominent as environmental sustainability becomes an increasingly crucial issue 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.

1.3. BENEFITS OF GREEN AUDIT FOR EDUCATIONAL INSTITUTIONS

A green audit can assist an educational institution understand how and where it is using and utilising the most energy, water, or other resources. 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. Green auditing may promote environmental awareness, morality, and ethical values, as well as health awareness among students and faculty. It assists staff and students in understanding the benefits of going green on campus. Green auditing supports cost savings through the use of fewer resources. It offers students and teachers an opportunity to foster a sense of personal ownership and social responsibility. 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.

1.4. ABOUT CRITERIA 7 OF NAAC

Educational institutions are vital to the development of human resources all around the world. Campuses of higher education institutions engage in a number of activities to disseminate knowledge and its practical application across society. Many technological environmental solutions are also provided by higher education institutes. 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.

The National Assessment and Accreditation Council (NAAC) is a self-governing organisation that grades institutions based on the assessments provided throughout the institution's accreditation process. Green Audit is now a mandatory exercise for educational institutions under NAAC Criterion VII. The goal of green audit is to enhance the internal and external environmental conditions of the institution. Environment-related factors such as waste management, energy saving, air and noise monitoring, and water and wastewater accounting are used to make the institution more ecologically friendly.

2. OBJECTIVES, GOALS AND SCOPE OF GREEN AUDIT

2.1. OBJECTIVES OF GREEN AUDIT

- To conduct a baseline survey to know the real status of green practices in the educational institution.
- To identify the problems faced while practising green practices in the educational institution campus.
- To examine current practises that has impact on the environment.
- To spread awareness for environmental consciousness amongst the students, teaching and non-teaching staff members.
- To identify and access environmental risk if any inside the institution campus.

2.2. GOALS OF GREEN AUDIT

- Establishing a baseline of existing environmental conditions with focus on natural and physical environment.
- Understanding the current practices of sustainability with regard to 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.

3. ABOUT THE EDUCATIONAL INSTITUTION

3.1. A BRIEF HISTORY

The Kaliabor College was established on 26th July, 1969 in Nagaon with the aim of providing higher education at a reasonable cost, to the people of the surrounding economically backward sub-urban areas. Kaliabor College which is affiliated to Gauhati University is a fast growing institution of higher education in middle Assam. It has been catering quality education in Arts, Science and Commerce to the students from Nagaon district as well as parts of Sonitpur, Karbi Anglong and Golaghat districts. The campus is surrounded by heterogeneous vegetation with a fair amount of shady trees naturally found in the locality.

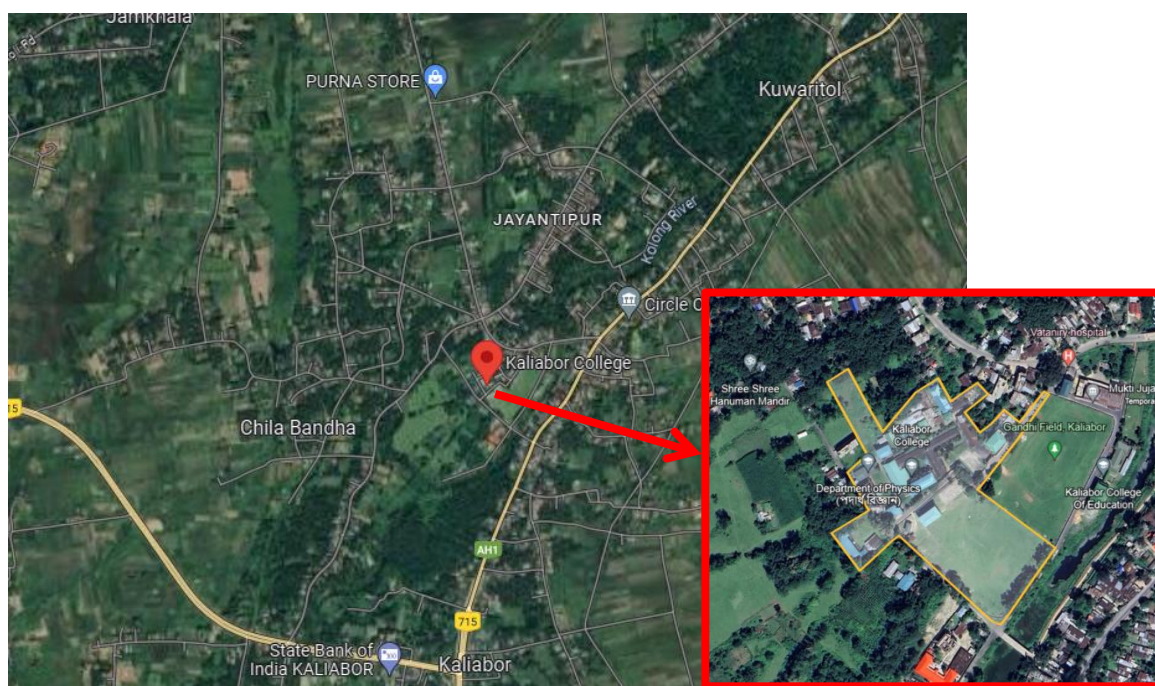


Photo 1: Location of Kaliabor College (*Source: Google Earth*).

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°32'57" N and 92°55'45" E. The college is situated in the Middle Brahmaputra Valley zone at an elevation of 93m 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.

3.3. MOTTO, VISION, MISSION AND OBJECTIVES OF THE INSTITUTION

3.3.1. MOTTO OF THE INSTITUTION

- Knowledge with values.

3.3.2. VISION AND MISSION OF THE INSTITUTION

- To make it a Rural Institute of Excellence.
- To create morally and culturally strong human resources with defined skill and competencies that are useful members of the society for the service of the nation.
- To provide opportunity for quality higher education to the deprived and marginalized section of the society in this area.
- To reduce the economic outflow in the form of students opting for institutes outside the area and state.

3.3.3. OBJECTIVES OF THE INSTITUTION

- To provide immediate opportunity for the quality higher education in the area.
- To increase the number of useful graduates in the locality.
- To develop knowledge and skills in the emerging fields by incorporating new and upcoming courses.
- To provide opportunities for physical development sports and extracurricular activities.
- To assume parental role in the area in developing moral and spiritual values among the youths and in making them emotionally sound and enlightened.
- To work against social evils and superstitions in the society.
- To nurture and develop rich cultural heritages following equal opportunity principle emphasising tolerance and humanity.
- To develop the college into an information hub for the rural population not having access to information technology.
- To make up leadership role in creating environmental awareness among the local population.
- To act as a centre of positive social changes and value addition to human resources in the rural area.

3.4. GENERAL INFORMATION

3.4.1. COLLEGE CAMPUS

The college campus extends over 39 bighas of land, bordered by Kaliabor College of Education on one side. The campus includes 5-6 Assam type blocks along with 4-5 RCC buildings housing the Principal's office, Teachers' common rooms, Departments, IQAC room, classrooms, library, laboratories, students' common room, well equipped conference rooms and an indoor sports complex. There are also separate hostels for boys and girls in the college campus. The canteen is in a separate two-storeyed building within the college campus.



Photo 2: Campus of Kaliabor College.

3.4.2. FACILITIES

Classroom

The college is equipped with 47 well-maintained classrooms for conduction of regular classes and has 11 well-equipped Digital Classrooms for Academic purpose.

Laboratories

There are a total of 15 laboratories associated with different departments of Science and Arts, and Computer Education Faculty in the college. The college also has one computer lab and one language lab that was constructed with RUSA funds.

Central Library

Kaliabor College has a central 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) kiosk machine. 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 42246 books, which includes textbooks, reference books, institutional and local history publications, etc. Besides these, there are newspapers, magazines, journals, maps, etc. The library also has the access facility of E-shodhsindhu (N-LIST) as college component for accessing the e-books and e-journals.



Photo 3: Classrooms of Kaliabor College.



Photo 4: Laboratories of Kaliabor College



Photo 5: Library of Kaliabor College.

Common rooms for teachers and students

There are separate rooms for academic departments with attached washrooms and Kitchenettes. All departments are equipped with departmental libraries and 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 indoor and outdoor sports facilities, including a football ground and a basketball court. The College encourages students to take part in games and sports at various levels and gives financial support whenever found necessary.



Photo 6: Indoor and Outdoor Sports Facilities of Kaliabor College.

Conference Room and Auditorium

The college has three well-equipped conference rooms named Mahabahu, Kollong, and Smart Classroom Biological Science. The college also has an auditorium named Kaziranga.

Hostel

There are 2 two-storeyed hostels, one each for girls and boys in the college campus with all the required facilities such as drinking water, inverter, tables, beds, and chairs.

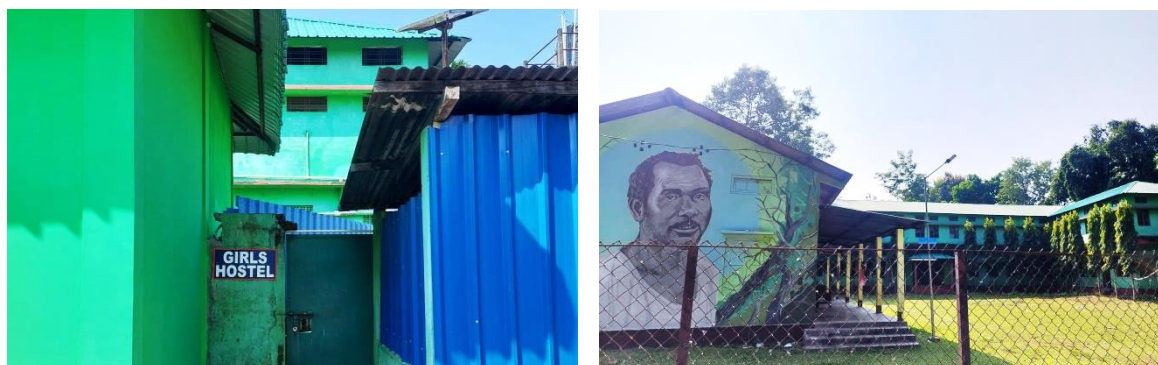


Photo 7: Hostels of Kaliabor College.

Canteen Facility

The college has an established double-storeyed canteen in a separate building within the campus.

Solar Street Lights and Panels for Electricity Generation

There are 10 solar powered street lights installed within the college campus along with 30 solar panels installed on the roof of physics department and 20 solar panels on the roof of commerce block.

3.4.3. COURSES AND DEPARTMENTS

The College offers the following programmes:

Higher Secondary Programme

Higher Secondary in Science	Higher Secondary in Arts	Higher Secondary in Commerce
-----------------------------	--------------------------	------------------------------

Under-Graduate Programme in a Stream

Programme	Subjects
Bachelor of Science (Honours)	Physics, Mathematics, Chemistry, Zoology, Botany, and Statistics
Bachelor of Science (Regular)	Offered with a combination of subjects
Bachelor of Arts (Honours)	Assamese, Economics, Education, English, History, and Political Science.
Bachelor of Arts (Regular)	Offered with a combination of subjects
Bachelor of Commerce (Honours)	Accountancy and Management.
Bachelor of Commerce (Regular)	Offered with a combination of subjects

Under-Graduate Programme in a Discipline (Self-Financed)

- Bachelor of Business Administration (BBA)
- Bachelor of Computer Application (BCA)
- Bachelor of Science in Biotechnology
- Bachelor of Vocation in Tourism and Service Industry (TSI)
- Bachelor of Vocation in Small Tea Garden Management (STGM)

Post-Graduate Programme (Self-Financed)

- Master of Arts in Education (Under Gauhati University)
- Master of Commerce in Accountancy & Finance (Under Gauhati University)
- Master of Commerce in Human Resource & Marketing (Under Gauhati University)

Departments

Department of English	Department of Assamese
Department of Economics	Department of Education
Department of History	Department of Sociology
Department of Political Science	Department of Mathematics
Department of Statistics	Department of Physics
Department of Chemistry	Department of Botany
Department of Zoology	Department of Computer Science
Department of Biotechnology	Department of Tourism and Service Industry
Department of Travel and Tourism Management	Department of Small Tea Garden Management
Department of Commerce (B.Com & M.Com)	Department of Business Administration

3.5. PREVIOUS GREEN AUDIT

The previous green audit of Kaliabor College was conducted for the year 2020-2021 by Kaliabor Branch Science Society which is affiliated to Assam Science Society. The respective green audit report was the result of a brief review of all factors associated with the campus's relevant green operations such as land-use, energy, water, solid waste, and plantation. Additionally, they made certain recommendations and suggestions to make it a greener campus. The following were the common recommendations posted in the previous audit.

- Conduction of Green Auditing by the college every year.
- Development of rainwater harvesting facilities in the college campus.

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

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

5. GREEN CAMPUS (BIODIVERSITY) AUDIT

5.1. OPEN AREA

Along with the built-up area of 22 bigha (56.5% of the total land), the college campus offers roughly 17 bighas (45.5% 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. These include botanical garden, open playground, and one small artificial pond. The open region, which consists primarily of open ground and botanical garden is covered in grass and other vegetation, promotes natural water percolation, which is a crucial ecological mechanism for replenishing the groundwater level.



Photo 8: Open-area playground and artificial pond of Kaliabor College.

5.2. CAMPUS FLORA

The college has meticulously cultivated its own botanical garden and initiated extensive plantation drives, transforming the campus into a vibrant, green sanctuary teeming with a varied spectrum of floral biodiversity. During the audit a total of 66 species under 62 genera from 38 families has been enumerated. Species occurrence was highest from the Orchidaceae family with 9 species, followed by Fabaceae with 5 species, Apocynaceae with 4 species, and Combretaceae, Lamiaceae, Myrtaceae and Rutaceae with 3 species each. The college has also established a Medicinal Plant cum Herbal Garden, and an Orchidarium to inculcate scientific aptitudes among the students towards conservation importance of medicinal plants and orchid species. A list of plant species enumerated in the campus is given as follows.

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>Acampe praemorsa</i> (Roxb.) Blatt. & McCann	Orchidaceae	Brittle Orchid	Not Evaluated
2	<i>Aegle marmelos</i> (L.) Corrêa	Rutaceae	Stone Apple (বেল)	Near Threatened
3	<i>Aerides odorata</i> Lour.	Orchidaceae	Fragrant Fox Brush Orchid (গনেশ কপৌ)	Not Evaluated
4	<i>Albizia lebbek</i> (L.) Benth.	Fabaceae	Indian Siris (শিৰীষ)	Least Concern
5	<i>Aloe vera</i> (L.) Burm	Asphodelaceae	Aloe Vera (চাল-কুঁৱৰী)	Not Evaluated
6	<i>Alstonia scholaris</i> (L.) R.Br.	Apocynaceae	Blackboard Tree (ছতিয়না)	Least Concern
7	<i>Areca catechu</i> L.	Arecaceae	Areca Palm (ভামোল)	Data Deficient
8	<i>Asparagus racemosus</i> Willd.	Asparagaceae	Indian Asparagus (শতমূল)	Not Evaluated
9	<i>Azadirachta indica</i> A.Juss.	Meliaceae	Neem (নিম)	Least Concern
10	<i>Bauhinia variegata</i> L.	Fabaceae	Mountain Ebony (কাঞ্চন)	Least Concern
11	<i>Bombax ceiba</i> L.	Malvaceae	Red Silk Cotton Tree (শিমুল)	Least Concern
12	<i>Bougainvillea glabra</i> Choisy	Nyctaginaceae	Paper Flower (কাগজ ফুল)	Least Concern
13	<i>Caesalpinia pulcherrima</i> (L.) Sw.	Fabaceae	Peacock Flower (ৰাধাচূড়া)	Least Concern
14	<i>Camellia sinensis</i> var. <i>assamica</i> (Royle ex Hook.) Steenis	Theaceae	Assam Tea (অসমীয়া চাহপাত)	Not Evaluated
15	<i>Canna indica</i> L.	Cannaceae	Indian Shot (পাৰিজাত)	Not Evaluated
16	<i>Cascabela thevetia</i> (L.) Lippold	Apocynaceae	Yellow Oleander (কৰবী)	Least Concern
17	<i>Cassia fistula</i> L.	Fabaceae	Golden Shower Tree (সোণাৰু)	Least Concern
18	<i>Centella asiatica</i> (L.) Urb.	Apiaceae	Asiatic pennywort (বৰ মানিমুনি)	Least Concern
19	<i>Citrus aurantiifolia</i> (Christm.) Swingle	Rutaceae	Lime (গোল নেমু)	Not Evaluated
20	<i>Cocos nucifera</i> L.	Arecaceae	Coconut (নাৰিকল)	Not Evaluated
21	<i>Coelogyne imbricata</i> (Hook.) Rchb.f.	Orchidaceae	Necklace Orchid	Not Evaluated
22	<i>Cycas revoluta</i> Thunb.	Cycadaceae	Sago Palm	Least Concern
23	<i>Cymbidium aloifolium</i> (L.) Sw.	Orchidaceae	Aloe-leafed Cymbidium (মতা কপৌ)	Not Evaluated
24	<i>Delonix regia</i> (Bojer ex Hook.) Raf.	Fabaceae	Flame tree (কৃষ্ণচূড়া)	Least Concern
25	<i>Dendrobium aphyllum</i> (Roxb.) C.E.C.Fisch.	Orchidaceae	Hooded Orchid (শালিকী ঠোঁটিয়া কপৌ)	Least Concern
26	<i>Dendrobium mannii</i> Ridl.	Orchidaceae	Mann's Dendrobium	Not Evaluated
27	<i>Dendrobium moschatum</i> (Buch.-Ham.) Sw.	Orchidaceae	Musky-smelling Dendrobium	Not Evaluated
28	<i>Dendrolirium lasiopetalum</i> (Willd.) S.C.Chen & J.J.Wood	Orchidaceae	Woolly Eria	Not Evaluated
29	<i>Duranta erecta</i> L.	Verbenaceae	Golden Dewdrop (কনকান্ত)	Least Concern
30	<i>Eucalyptus camaldulensis</i> Dehnh.	Myrtaceae	River Red Gum	Near Threatened
31	<i>Ficus rumphii</i> Blume	Moraceae	Golden Rumph's Fig (পাকৰি)	Not Evaluated

Sl. No	Species	Family	Common / Vernacular Name	IUCN Status
32	<i>Garuga pinnata</i> Roxb.	Burseraceae	Grey Downy Balsam (ৰহিমলা)	Not Evaluated
33	<i>Gmelina arborea</i> Roxb. ex Sm.	Lamiaceae	White Teak (গমৰী)	Least Concern
34	<i>Hibiscus rosa-sinensis</i> L.	Malvaceae	Chinese Hibiscus (জবা)	Not Evaluated
35	<i>Houttuynia cordata</i> Thunb.	Saururaceae	Fresh Mint (মছন্দৰী)	Not Evaluated
36	<i>Kalanchoe pinnata</i> (Lam.) Pers.	Crassulaceae	Air Plant (দুপৰ টেঙা)	Not Evaluated
37	<i>Lagerstroemia speciosa</i> (L.) Pers.	Lythraceae	Queen's Crape Myrtle (আজাৰ)	Not Evaluated
38	<i>Mangifera indica</i> L.	Anacardiaceae	Common Indian Mango (আম)	Data Deficient
39	<i>Melaleuca citrina</i> (Curtis) Dum.Cours.	Myrtaceae	Crimson Bottle Brush	Not Evaluated
40	<i>Melia azedarach</i> L.	Meliaceae	Chinaberry (ঘোঁৰা নিম)	Least Concern
41	<i>Mesua ferrea</i> L.	Calophyllaceae	Nahor (নাহৰ)	Not Evaluated
42	<i>Mimusops elengi</i> L.	Sapotaceae	Indian Medlar (বকুল)	Least Concern
43	<i>Monoon longifolium</i> (Sonn.) B.Xue & R.M.K.Saunders	Annonaceae	False Ashoka (দেৰদাৰু)	Not Evaluated
44	<i>Moringa oleifera</i> Lam.	Moringaceae	Drumstick Tree (চজিনা)	Least Concern
45	<i>Morus alba</i> L.	Moraceae	White Mulberry (নুনি)	Not Evaluated
46	<i>Murraya paniculata</i> (L.) Jack	Rutaceae	Orange Jasmine (কামিনী কাঞ্চন)	Not Evaluated
47	<i>Musa paradisiaca</i> L.	Musaceae	Plantain (কাচকল)	Not Evaluated
48	<i>Nerium oleander</i> L.	Apocynaceae	Rose Bay (কৰবি)	Least Concern
49	<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Holy Basil (তুলসী)	Not Evaluated
50	<i>Phyllanthus emblica</i> L.	Phyllanthaceae	Indian Gooseberry (আমলখি)	Least Concern
51	<i>Piper longum</i> L.	Piperaceae	Indian Long Pepper (পিপলি)	Not Evaluated
52	<i>Platyclusus orientalis</i> (L.) Franco	Cupressaceae	Oriental Arborvitae (খুজা)	Near Threatened
53	<i>Punica granatum</i> L.	Lythraceae	Pomegranate (ডালিম)	Least Concern
54	<i>Rhynchostylis retusa</i> (L.) Blume	Orchidaceae	Foxtail Orchid (কপৌ)	Not Evaluated
55	<i>Rosa indica</i> L.	Rosaceae	Rose (গোলাপ)	Not Evaluated
56	<i>Santalum album</i> L.	Santalaceae	Indian Sandalwood (বগা চন্দন)	Vulnerable
57	<i>Shorea robusta</i> C.F.Gaertn.	Dipterocarpaceae	Sal (শাল)	Least Concern
58	<i>Sphagneticola calendulacea</i> (L.) Pruski	Asteraceae	Chinese Wedelia (ভুংগৰাজ)	Not Evaluated
59	<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Jamun (ক'লা জামু)	Least Concern
60	<i>Tectona grandis</i> L.f.	Lamiaceae	Teak (চেগুন)	Endangered
61	<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn.	Combretaceae	Arjun (অৰ্জুন)	Not Evaluated
62	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	Beleric Myrobalan (ভোমোৰা)	Least Concern
63	<i>Terminalia chebula</i> Retz.	Combretaceae	Chebolic Myrobalan (শিলিখা)	Least Concern
64	<i>Tinospora cordifolia</i> (Willd.) Miers ex Hook.f. & Thomson	Menispermaceae	Heart-leaved Moonseed (শঙী লতা)	Not Evaluated
65	<i>Vinca minor</i> L.	Apocynaceae	Common Periwinkle (নয়নতৰা)	Least Concern
66	<i>Ziziphus mauritiana</i> Lam.	Rhamnaceae	Indian Jujube (বগৰী)	Least Concern

Evaluation of IUCN status of the plants listed above showed that most of the species are “Not Evaluated” (32 species), followed by 27 species falling under the “Least Concern” category. However, the college houses species that is “Vulnerable” (1 species), “Endangered” (1 species), as well as “Near Threatened” (3 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.

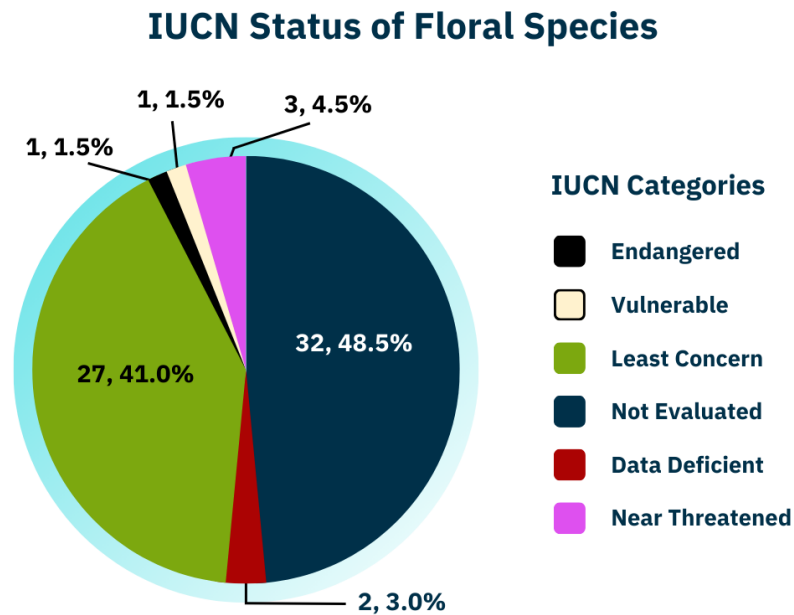


Figure 1: IUCN status of the floral species enumerated in the college campus during audit.





Photo 9: A few of the plant species enumerated in the college campus during the audit.

5.3. CAMPUS FAUNA

Numerous faunal species are frequently observed in the campus, including mammals, birds, amphibians, reptiles, etc. The vegetation in the campus 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>Eudynamys 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

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, maintaining a botanical and a medicinal garden on campus, maintaining an Orchidarium, 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 administration promotes environmental protection and organises tree planting programmes on the Kaliabor college 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 floras. 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 2022-23:

Table 3: Plantation programmes organised by the college in 2022-23.

Plantation Programmes organised by the College in 2022-23

Sl. No	Date	Occasion
1	22/02/2022	National Science Day 2022
2	18/07/2022	Chief Minister's Institutional Plantation Programme (CMIPP)
3	20/11/2022	Atmanirbhar Bharat Campaign
4	21/03/2023	International Forest Day 2023
5	22/04/2023	World Earth Day 2023
6	23 – 24/05/2023	7-Day NSS Special Camp
7	05/06/2023	World Environment Day 2023

5.4.2. DEVELOPMENT OF BOTANICAL GARDEN

The college has also established a Botanical Garden in a 2 bigha land within the college campus to conserve and propagate locally available floral species. Different species of tree species has been planted in the garden which has been listed in Table 1.



Photo 10: Plantation programmes organised by Kaliabor College during 2022-2023.



Photo 11: Botanical garden in the college campus.

5.4.3. DEVELOPMENT OF MEDICINAL GARDEN

The college has also established a Medicinal Plant Garden to instil scientific aptitudes in students regarding the necessity of medicinal plant conservation. Plantation and conservation of locally available medicinal plants are undertaken by the college authorities through the medicinal plant garden. Following are some of the key medical plant species found in the garden:

Table 4: Medicinal plants of the college and their uses.

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 (মছন্দৰী)	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 (দুপৰ 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 (বুনি)	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, hypolipidemic, anti-microbial, anti-inflammatory, and anti-oxidant. It is used to treat diabetes, fever, anaemia, jaundice, bleeding disorders, hiccough, arthritis, diarrhoea, inflammation, etc.

Cont.

Sl. No	Species	Family	Common/ Vernacular Name	Medicinal value/use
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.
11	<i>Tinospora cordifolia</i> (Willd.) Miers ex Hook.f. & Thomson	Menispermaceae	Heart-leaved Moonseed (শগুণী লতা)	Anti-periodic, anti-spasmodic, anti-microbial, anti-osteoporotic, anti-inflammatory, anti-arthritis, 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.

5.4.4. DEVELOPMENT OF ORCHIDARIUM

The College has also developed an orchidarium where locally available orchid species are conserved and propagated. A list of the orchid species housed in the orchidarium is given as follows:

Table 5: Orchids housed in the orchidarium of the college.

Sl. No.	Plant species	Family	Common / Vernacular Name	IUCN Status
1	<i>Acampe praemorsa</i> (Roxb.) Blatt. & McCann	Orchidaceae	Brittle Orchid	Not Evaluated
2	<i>Aerides odorata</i> Lour.	Orchidaceae	Fragrant Fox Brush Orchid (গনেশ কপৌ)	Not Evaluated
3	<i>Coelogyne imbricata</i> (Hook.) Rchb.f.	Orchidaceae	Necklace Orchid	Not Evaluated
4	<i>Cymbidium aloifolium</i> (L.) Sw.	Orchidaceae	Aloe-leaved Cymbidium (মতা কপৌ)	Not Evaluated
5	<i>Dendrobium aphyllum</i> (Roxb.) C.E.C.Fisch.	Orchidaceae	Hooded Orchid (শালিকী ঠোঁটিয়া কপৌ)	Least Concern
6	<i>Dendrobium mannii</i> Ridl.	Orchidaceae	Mann's Dendrobium	Not Evaluated
7	<i>Dendrobium moschatum</i> (Buch.-Ham.) Sw.	Orchidaceae	Musky-smelling Dendrobium	Not Evaluated
8	<i>Dendrolirium lasiopetalum</i> (Willd.) S.C.Chen & J.J.Wood	Orchidaceae	Woolly Eria	Not Evaluated
9	<i>Rhynchostylis retusa</i> (L.) Blume	Orchidaceae	Foxtail Orchid (কপৌ)	Not Evaluated



Photo 12: Orchidarium of Kaliabor College.

5.4.5. *CAMPUS CLEANLINESS: VERMICOMPOSTING AND ECO-BRICK*

Kaliabor College has its own facility that collects the solid wastes daily from residential complex, 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. The college has established a vermicomposting unit where all the collected organic wastes are accumulated and turned into vermicompost which is used as manure for the plants within the campus. The college also has an Eco-brick making equipment (prototype) which is used to convert the collected plastic wastes into environment friendly eco bricks. Apart from these, solid waste management in the college is in order with installation of incinerator and dustbins placed strategically within the campus.



Photo 13: Vermicomposting unit, Eco-brick making equipment and dustbins placed in the campus.

5.4.6. *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:

- Guest lecture programme on “Orchid diversity in Assam and orchid cultivation techniques” on 18/02/2022.
- Undertaking of a field study on “Documentation of Avian and Lepidopteron diversity of Kaliabor College campus” on the occasion of National Science Day 2022 on 28/02/2022.
- Undertaking of a field study on “Documentation of floral diversity of Kaliabor College campus” on the occasion of World Environment Day 2023 on 05/06/2022.
- Cleaning of waste materials on the bank of Kolong River, located in Kuwaritol, Kaliabor on the occasion of World River Day 2022 on 25/09/2022.
- Special drive of cleaning at Kuwaritol weekly market under “CLEAN INDIA CAMPAIGN” on 16/11/2022.
- Distribution and plantation of 300 Areca, Orange and Guava plants at Rangolu Paharguri Village (adopted village of Kaliabor College) under the campaign of “ATMANIRBHAR BHARAT” on 20/11/22.
- Street Play and documentary screening to spread environmental awareness within the campus on the occasion of International Forest Day 2023 on 21/03/2023.
- Street play on “Environmental Preservation” on the occasion of World Environment Day 2023 on 05/06/2023.





Photo 14: Various awareness programmes conducted by Kaliabor College 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 increase the faunal diversity of the college, plantation of more indigenous fruit yielding plants such as *Baccaurea ramiflora* (লেটেকু), *Flacourtia jangomas* (পনিয়ল), *Averrhoa carambola* (করৌন্দ), 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.
- 2) 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.
- 3) 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.
- 4) 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.
- 5) It is also recommended that periodic cleaning of weeds and grasses in the botanical garden be done so that the planted trees can grow easily. The number of orchid species in

the orchidarium may be increased and exotic species be collected and introduced in order to increase their numbers and facilitate their conservation

- 6) During the audit it was also observed that the college has also set up a vermicomposting unit within the campus. As vermicomposting can be a healthy alternative to chemical fertilisers, the college may opt to strengthen 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.
- 7) 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 the fact that rainwater harvesting has been employed by the college in a smaller scale, the college may decide to develop more extensive rainwater harvesting infrastructures on the building roofs in a phased manner. This will allow the future Green Audit team to compare the advancements being made by college administration.
- 8) 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.
- 9) An environmental policy paper 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.

7. CONCLUSION

The green audit is an important tool for ensuring that natural resources are used equitably and in balance. 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. A green audit's two main targets are to examine the college's green practises and carry out a thorough audit to assess whether the institution is on the correct track for long-term growth.

The audit team feels that academics, support office employees, and students all have a high sense of environmental responsibility. The audit team opines that there is good maintenance of the environment throughout the whole college campus, and officials have been noted to be really concerned with the college's overall appearance and cleanliness. The college campus has contributed to ground water recharge through its unstructured sections. To provide for ground water recharge, areas planned for future development projects must be suitably balanced with proportionate open space. A couple of the audit team's findings may assist the college campus become greener and more ecologically friendly. Along with the findings, recommendations are made for the college administration to follow.

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.