

Green Audit Report

Anandaram Dhekial Phookan College

2019-20

A Green Audit was carried out in the college during 2019-20. The Green Audit Committee had Dr Ajit Bharali as Convener. Members of the committee were Mr Suranjan Bhowal, Dr Kishor Kr Shah, Mr Bijumoni Borah and Mr Pranjal Hazarika.

INTRODUCTION

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of various establishments. It aims to analyze environmental practices within and outside the concerned sites, which will have an impact on the eco-friendly ambience. Green audit can be a useful tool for a college to determine how and where they are using the most energy or water or resources; the college can then consider how to implement changes and make savings. It can also be used to determine the type and volume of waste, which can be used for a recycling project or to improve waste minimization plan. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact on campus. If self enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self enquiry is a natural and necessary outgrowth of a quality educational institution. Thus it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is assuming more importance.

Rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead to sustainable development and at the same time reduce a sizable amount of atmospheric carbon-di-oxide from the environment. The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory that all Higher Educational Institutions should submit an annual Green Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

OBJECTIVES:

In recent time, the Green Audit of an institution has become a matter of paramount importance for self assessment of the institution which reflects the role of the institution in mitigating the present environmental problems. ADP College has been putting efforts to keep our environment clean since its inception. But the auditing of this non-scholastic effort of the college has not been documented. Therefore, the purpose of the present green audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green Audit are:

1. To map the Geographical Location of the college
2. To document the floral and faunal diversity of the college
3. To record the meteorological parameter of Nagaon where the college is situated
4. To estimate the Energy requirements of the college
5. To document the Waste disposal system
6. To document the ambient environmental condition of air, water and noise of the college

METHODOLOGY:

The purpose of the green audit of ADP College is to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. The methodology include: preparation and filling up of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. Some data have also been taken from the students' research works carried out by various science departments of the college.

ABOUT THE COLLEGE

Established in 1959 by the people of Nagaon, ADP College is permanently affiliated to Gauhati University. ADP College has an adequate academic and physical infrastructure catering to the 20 subjects in Under Graduate Classes. ADP College has regular PG courses in 3 departments: Assamese, History and Herbal Science and Technology under Gauhati University.

VISION & MISSION STATEMENT:

ADP College stands firm to reach the top among the best institutions of the country by generating fruitful social, economic, cultural and human resources through promotion of quality education and thus to mould the society to cope with changing need of time

GREEN AUDITING

The college has adopted the motto 'Green Campus' for environmental conservation and sustainability. There are main three pillars i.e. zero carbon foot print, positive impact on occupant health and performance and 100% graduates demonstrating environmental literacy. The goal is to reduce CO₂ emission, energy and water use, while creating atmosphere where students can learn and be healthy.

LAND USE ANALYSIS, ADP COLLEGE, NAGAON, ASSAM (As on 29-10-2019)

CLASSIFICATION SCHEME FOR LAND USE ANALYSIS OF BUILT UP AREA

Level I	Level II
1.Built-up land area	Dense Moderate Sparse

Therefore, attempt has been made in this study to map land use for ADP College, Nagaon, Assam with a view to detect the land consumption in the built-up land area using both remote sensing and GIS techniques.

LAND USE DATA OF ADP COLLEGE, NAGAON, ASSAM

Categories of Land Use	Area in Sq. Feet
Open Space and Plantation	48,923
Built Up Area	73,477
Total Area	1,22,400

The total area of ADP College is 1,22,400 sq. ft. out of which the built up area is 60.03 % (i.e 73,477 sq. ft.) and open space & plantation area is 39.97 % (i.e 48,923 sq. ft).

LAND USE (BUILT UP AREA) ANALYSIS:

Categories of Land Used (Built Up Area)	Area in Sq. Feet
<u>RCC</u>	
Botany Department	2720
Philosophy, Bengali, Sanskrit and Hindi Department	2720
Assamese Department & Class Room	2720
Boys Common Room	2296
Zone and Class Room	2296
Economics Department & Class Room (Bezbaruah Bhaban, G.Floor)	7595
Zoology and Geography Department & Class Room (Bezbaruah Bhaban, F. Floor)	7595
Library (G. Floor)	2046
Reading Room (F.Floor)	2046
Chemistry Department (Laboratory) (G. Floor)	1519
Chemistry Department (Laboratory & Class Room) (F. Floor)	1519
Girls' Hostel No. 1 (Ground & First Floor)	6500
Girls' Hostel No. 2 (Ground, First & Second Floor)	14020
Education Department	3074
Girls' common & Class Room	3800
Teachers' Common Room & Meeting Room	1520
Arabic Department, Class Room & Electronics Department	1520
Principal's chamber & Office Room	2407
Computer Department & Class Room	2407
Class Room (Second Floor, Administrative Building)	7595
Vice Principal's Chamber, IQAC Room & Canteen	2414
English Department & Class Room	2414
Library Extension	1200
Chemistry Extension	1200
MSc Herbal Science & Technology (Laboratory & Class Room)	5600
Class Room (Second Floor)	5600
New Building	1200
Sports Complex Auditorium	6000
<u>Assam Type</u>	
Statistics and Mathematics Department & Class Room	2000
NEW ARTS BUILDING	
GIRLS HOSTEL	
AUDITORIUM	
N.C.C AND CANTEEN	
INDOOR STADIUM	
CYCLE STAND (WEST)	
NEW BUILDING UNDER CONSTRUCTION	
GENERAL LIBRARY	
COMMERCE BUILDING	
HERITAGE BUILDING(IDOL AND IGNOU)	
BOYS COMMON ROOM CUM UNION HALL	
GYM,CAREER COUNSELLING AND ENVIROMENTAL STUDIES	
CYCLE STAND (EAST)	
STUDENTS AND TEACHER CANTEEN	
SECURITY QUATER	
ALUMNI BUILDING	
OLD BENGALI DEPT (PART OF OLD ARTS BUILDING)	
TOILET (NORTH UNDER CONSTRUTION)	
BOYS HOSTEL WARDEN'S QUARTER	
TOILET (SOUTH-WEST)	
TOILET (NORTH)	
TOTAL	

FINDINGS:

ADP College, which was established in the year 1959, has an eco-friendly environment. It has a long legacy of healthy environmental practices including periodic plantation, their preservation and maintenance. Its land use is such that 39.97 % of the total area is occupied by open land and plantation that generates a better and sustainable campus environment.

TREE DIVERSITY OF ADP COLLEGE, NAGAON

ADP College is within the geo-position of latitude 26.6528⁰ N and longitude 92.7926⁰ E in Nagaon, Assam, India. It encompasses an area of about 15.04 acres. The area is immensely diverse with a variety of tree species performing a variety of functions. Most of these tree species are planted in different periods of time through various plantation programmes organised by the college authority and have become an integral part of the college. The trees of the college have increased the quality of life, not only for the college fraternity but also the people around of the college in terms of contributing to our environment by providing oxygen, improving air quality, climate amelioration, conservation of water, preserving soil, and supporting wildlife, controlling climate by moderating the effects of the sun, rain and wind. Leaves of the trees absorb and filter the Sun's radiant energy, keeping things cool in summer. Many animals are dependent on these trees mainly for food and shelter. Flowers and fruits are eaten by monkeys, and nectar of the flower is a favorite of birds and many insects. Leaf – covered branches keep many animals, such as birds and squirrels, out of reach of predators. Different species display a seemingly endless variety of shapes, forms, texture and vibrant colors. Even individual trees vary in their appearance throughout the course of the year as the seasons change. The strength, long life-span and regal stature of trees give them a monument-like quality. They also remind us the glorious history of our institution. We often make an emotional connection with these trees and sometime become personally attached to the ones that we see every day. A thick belt of large shady trees in the periphery of the college have found to be bringing down noise and cut down dust and storms. A recent study has revealed that the rich diversity of 48 tree species belonging to 27 families have sequestered a total of 362.65 ton of organic carbon. Thus, the college has been playing a significant role in maintaining the environment of the entire Nagaon town and its surrounding areas. The following are the tree species with whom we are being attached-

Table: List of tree species of ADP College, Nagaon

S.No	Name of the plant species	Number	Family	Common Name
1	<i>Samania saman</i> Merr	4	Fabaceae	Rain Tree
2	<i>Caesalpinia pulcherrima</i>	15	Fabaceae	Peacock Flower
3	<i>Borassus flabellifer</i>	1	Arecaceae	Tall Palm (wine palm)
4	<i>Cassia fistula</i>	4	Fabaceae	Golden Rain Tree
5	<i>Tectona grandis</i>	22	Lamiaceae	Teak
6	<i>Gmelina arborea</i>	1	Verbenaceae	Gomari
7	<i>Mangifera indica</i>	8	Anacardiaceae	Mango
8	<i>Anacardium occidentale</i> L.	2	Anacardiaceae	Kaju Badam
9	<i>Mimusops elengi</i>	40	Sapotaceae	Bakul
10	<i>Cocos nucifera</i>	10	Arecaceae	Coconut
11	<i>Phoenix sylvestris</i>	29	Arecaceae	Silver Date Palm
12	<i>Ficus benghalensis</i>	6	Moraceae	Banyan Tree
13	<i>Azadirachta indica</i>	15	Meliaceae	Neem
14	<i>Calliandra</i>	2	Fabaceae	Powder puff flower
	<i>haematocephala</i>			tree
15	<i>Eucalyptus</i> sp.	1	Myrtaceae	Gums trees
16	<i>Phyllanthus emblica</i>	6	Phyllanthaceae	Amlakhi(Indian gooseberry)
17	<i>Artocarpus heterophyllus</i>	6	Moraceae	Jackfruit
18	<i>Areca catechu</i>	2	Arecaceae	Beetle nut
19	<i>Zizyphus jujuba</i>	6	Rhamnaceae	Bogori(Chinese date)
20	<i>Syzygium cumini</i>	2	Myrtaceae	Jamun tree
21	<i>Psidium guajava</i>	1	Myrtaceae	guava

22	<i>Albizia lebbek</i>	8	Fabaceae	women's tongue tree
23	<i>Terminalia chebula</i>	2	Combretaceae	Xilikha(Haritaki)
24	<i>Olea europaea</i>	1	Oleaceae	Olive
25	<i>Citrus maxima</i>	1	Rutaceae	Pomello(Robab tenga)
26	<i>Litchi chinensis</i>	1	Sapindaceae	Litchi
27	<i>Lagerstroeni speciosa</i>	19	Lythraceae	Ajar Tree
28	<i>Mesua ferrea</i>	4	Calophyllaceae	Nahar
29	<i>Grevillea robusta</i>	5	Proteaceae	Silver Oak
30	<i>Cycas revoluta</i>	1	Cycadaceae	Japanese sago palm
31	<i>Callistemon sp.</i>	2	Myrtaceae	Bottle Brush Tree
32	<i>Alstonia scholaris</i>	6	Apocynaceae	Devil tree
33	<i>Neolamarckia cadamba</i>	2	Rubiaceae	Kadam
34	<i>Michelia champaca</i>	2	Magnoliaceae	Tetachapa
35	<i>Averrhoa carambola</i>	1	Oxalidaceae	Star fruit
36	<i>Dalbergia sissoo</i>	2	Fabaceae	sisu
37	<i>Tamarindus indica</i>	1	Fabaceae	Tamarind
38	<i>Polyalthia longifolia</i>	4	Annonaceae	Ashoka Tree
39	<i>Delonix regia</i>	14	Fabaceae	Krishnachura(Flame Tree)
40	<i>Butea monosperma</i>	6	Fabaceae	Bastard Teak
41	<i>Terminalia arjuna</i>	2	Combretaceae	Arjun
42	<i>Aegle marmelos</i>	1	Rutaceae	bael
43	<i>Calotropis gigantea</i>	1	Apocynaceae	Madar
44	<i>Bombax ceiba</i>	1	Malvaceae	Red cotton Tree
45	<i>Sapthodea campanulata</i>	4	Bignoniaceae	Fountain Tree
46	<i>Cedrus atlantica</i>	1	Pinaceae	Atlas
47	<i>Jacaranda mimosifolia</i>	1	Bignoniaceae	Fern Tree
48	<i>Pterospermom acerifolium</i>	1	Sterculiaceae	Hatipolia(dinner plate Tree)

FAUNAL DIVERSITY IN ADP COLLEGE CAMPUS

ADP College is located in Nagaon district of Assam at the northern bank of river Brahmaputra, at the conjunction of Himalayan and Indo-Malayan Biodiversity hotspots. ADP College of Nagaon district falls in the Sub-Tropical climate region, and enjoys monsoon type of climate. The highest temperature is recorded just prior to the onset of monsoon (around May-early June). Summer rain is heavy, and is principally caused from late June to August by the moisture-laden South-West Monsoon, on striking the Himalayan foothills of the north. The climatic condition of the Nagaon district as a whole and ADP College in particular is very suitable for a wide variety of flora and fauna to support its rich biodiversity. The faunal Diversity of ADP College campus has been studied and documented as below-

FAUNAL GROUP	SCIENTIFIC NAMES
SPIDERS	<i>Myrmachne orientalis</i> (Family Salticidae); <i>Nephila plipes</i> (Family-Nephilidae); <i>Heteropoda sp</i> (Family-Sparassidae); <i>Phintella vitatta</i> (Family Salticidae)
MOTHS & BUTTERFLIES	<i>Antheria assmensis</i> ; <i>Bombyx mori</i> ; <i>Philosamia ricini</i> ; <i>Junonia atlites atlites</i> ; <i>Commander (Moduza procris procris)</i> ; <i>Ethope himachala</i> ; <i>Melanitis leda leda</i> ; <i>Paltoporia paraka paraka</i> ; <i>Ypthima baldus</i> ; <i>Acraea terpsicore</i> ; <i>Elymnias hypermnestra undularis</i> ; <i>Mycalesis perseus blasius</i> ; <i>Tanaecia lepidea lepidae</i> ; <i>Euploea core core</i>
OTHER INSECTS	<i>Apis indica</i> ; <i>Apis dorsata</i> ; <i>Apis florae</i> , <i>Crocothemis erythraea</i> (Scarlet dragonfly); <i>Pantala flavescens</i> (wandering glider)
AMPHIBIANS	<i>Duttaphrynus melanostictus</i> (Assian common toad), <i>Leptobranchium smithi</i> ; <i>Fejervarya pierrei</i> ; <i>Hoplobatrachus tigerinus</i> ; <i>Hylarana tytleri</i> ; <i>Humerana humeralis</i> ; <i>Hylarana leptoglossa</i> ; <i>Polypedates leucomystax</i> .

REPTILES	Calotes versicolor; Hemidactylus frenatus; Hemidactylus brookii; Hemidactylus platyurus; Hemidactylus flaviviridis; Gekko gekko; Eutropis multifasciata; H. Sphenomorphus maculates Enhydria enhydria; Xenochrophis schnurrenbergeri; Xenochrophis cerasogaster; Rhabdophis subminiatus; Amphiesma stolatum; Chrysopelea ornate
BIRDS	Acridotheres tristis (Common myna); Streptopelia orientalis (Oriental Turtle Dove); Athene noctua (little owl); Pycnonotus cafer (Red-vented Bulbul)
MAMMALS	Macaca mulatta (The rhesus macaque); Sciurus carolinensis (Eastern gray squirrel); Pteropus giganteus (The Indian flying fox)

ELECTRICAL POWER CONSUMPTION AT ADP COLLEGE

ADP College, being one of the largest colleges of Assam, consumes on an average **8165** kW- hr (units) of electricity per month which turns out to be **97981** kW-hr per year only to maintain its volumetric activities throughout the year. There is one Solar Plant in the college but it is not functional at present. The college authority is planning to make it functional. The contribution of LED bulbs and LED tubes to the net power consumption is **17.53 %**.

There are total of 126 nos. of LED bulbs, 234 nos. of tubes, 103 nos. of CFL bulbs, 107 nos. of filament bulbs and 467 nos. of fans in the entire college campus. The authority keeps on replacing the old filament bulbs, CFL bulbs and tube lights by low energy consuming LED bulbs and LED tubes and bulky high power consuming fans by energy efficient fans in order to keep the electricity consumption of the college as low as possible. 69.954 kW is the total consumption of power in the college.

Suggestions :

1. For power saving purposes, CFL bulbs should be replaced with LED bulbs.
2. Rain water should be harvested
3. Green area should be increased
4. Solar plant should be made working
5. More medicinal plants should be planted in botanical garden.

Action taken on the Green Audit Report :

1. The college administration has decided to replace all existing CFL bulbs with LED bulbs in phases.
2. Rain water will be harvested in the upcoming buildings.
3. Green area will be preserved as there is no space for increasing it.
4. Solar plant will be repaired.
5. More medicinal plants will be planted in the botanical garden.