



ENVIRONMENT AUDIT/GREEN AUDIT OF
NORTH LAKHIMPUR COLLEGE (AUTONOMOUS)



P.O.- KHELMATI

DIST- LAKHIMPUR

ASSAM

PIN – 787031

**ENVIRONMENT AUDIT/GREEN AUDIT OF NORTH LAKHIMPUR COLLEGE
(AUTONOMOUS)**

Environment audit of the North Lakhimpur College primarily concerned with the appraisal of all available natural resources, those have been endowed by birth and at present context what extent of these resources have been exploited so far and also future plan of remaining resources by keeping environmental sustainability in mind. To prepare a budget on such a vital issue, we have to review first the all available resources of our environment concerned at first and secondly their existing managerial practices and lastly their future plan of exploitation keeping the RRR (Reduce, Reuse and Recycle) concept in mind. The present audit has also been prepared by keeping the slogan 'think globally and act locally'. The different heads of the present Environmental Audit are as follows.

1. Land resource and pattern of utilization.
2. Biodiversity resource, present status and conservation strategies.
3. Water resource, exploitation and conservation.
4. Waste and their management
5. Energy budget and management
6. Emission sources and their management
7. Audit Recommendations

1. Land resource and pattern of utilization:

The college has endowed a total land resource of 1093357sq ft out of which 14% of land has

Table 1: Land resource and pattern of utilization

Total Land/sq ft	Pattern of use								
	Used for construction/sq ft.					Open area/sq ft.			
	Building		Roads			Play Ground		Constructed area	
	RCC	Assam type	Concrete/ Black topped	Pavement tiles	Cacha	Synthetic	Nat. Grassed	Garden	Plantation area
1093357	67112	82392	30786	35428	82459	4800	376893	52782	360705

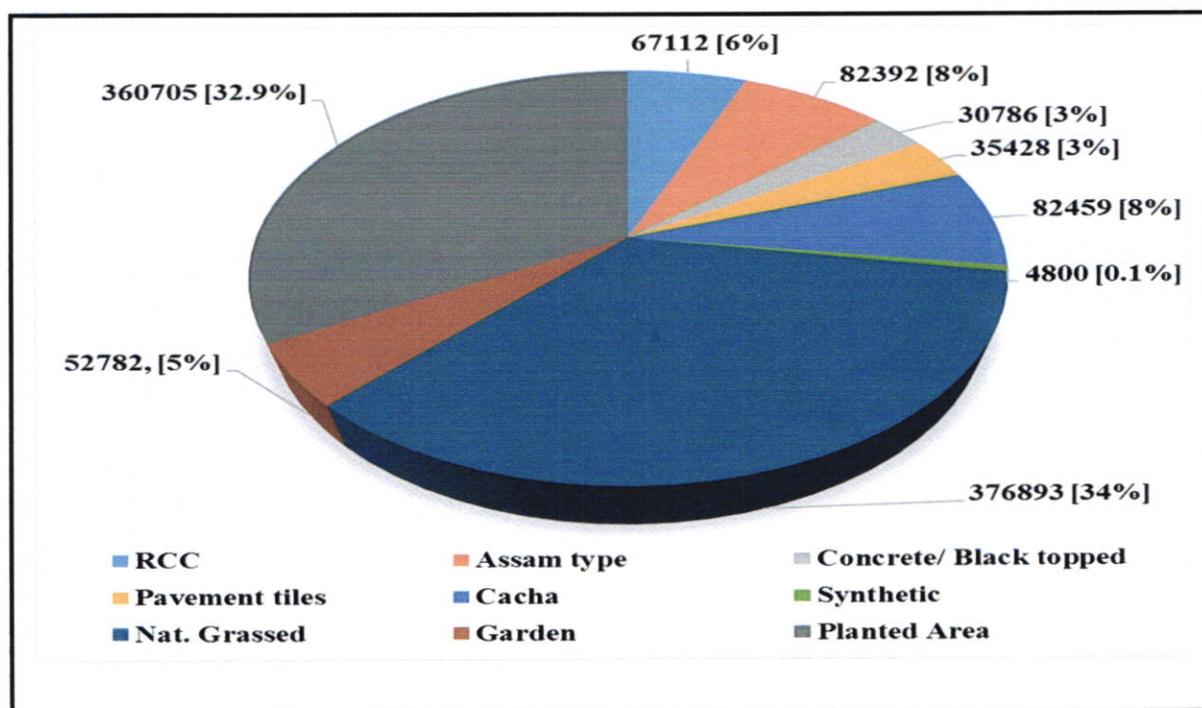


Figure 1: Land resource and pattern of utilization showing original data and percentage

been used in different construction (Building) purposes out of which 6% is on RCC buildings and remaining 8% is Assam Type buildings. An approximately 34.1% of land area is being used as playground of which 34% and 0.1% are covered with natural grasses and synthetic track respectively. Remaining 32.9% of land has been planted with varieties of timber, fruit yielding plants, ornamental and medicinal plants and 5% is covered with gardens. The existing land use pattern is primarily based on environmental restoration of the college as well as nation as a whole.

From the data of the land used pattern so far, the college is trying its best to maintain the environment health as it has sufficient percentage of green coverage which is exactly 37.9%. Presently college has planted more than three hundreds of saplings in the year (2015-16) to increase the forest coverage. There is also enough scope to increase the plantation area in near future. As per concept of Environmental footprint we are in utmost need of trees in our campus two times more as compared to the present status.

2. Biodiversity resource, present status and conservation strategies:

From the biodiversity data of the college campus it has been observed that, a wide variety of flora and fauna are there in the campus. Birds of few species are resident to the campus and some are seasonal visitors. Five species of snakes (e.g. Cobra and Krait) are available in the backyard forest area. Richness of avifauna and herpeto fauna is quite satisfactory in the campus.

College has a medicinal plant garden of local ethnic importance under supervision of Botany department. Regarding tree plantation, an attempt has been made for plantation of some local fruit yielding plants for attraction of more avifauna. The surrounding locality is rich in epiphytes particularly orchids, so all big trees have been ornamented with local orchid species.

Table 2: Biodiversity resource, present status and conservation strategies

Floral Biodiversity Status				Faunal Biodiversity Status			
Herbs	Shrubs	Tree	Epiphytes	Mammals	Birds	Hereto fauna	Invertebrates
47 species	12 species	46 species	23 species	08 species	34 species	14 species	106 species

An eco friendly agricultural practice, the agro-forestry scheme have also been initiated by cultivating black piper in back yard forest. During 2015 and 2016, an artificial nest for nesting of an endangered bird *Tyto alba* has been successfully completed. The Zoology department of the college has been implementing an induce breeding program for germ plasm conservation of local fishes during last three consecutive years.

3. Water resource, exploitation and conservation:

The college has been receiving approximately 3, 07,285.10 liters of water annually from precipitation. A major portion of the said amount has been evaporating and goes waste as surface runoff. The open grassland of the college has been re-charging ground water a lot. From the available roof area of about 149504 sq ft, college has the potentiality of about 1639742 liters of rain water to be harvested annually. The estimation so far regarding water consumption, it has been revealed that, college has been exploiting 493000 liters of water monthly.

Rain water harvesting has been successfully practiced in the fish breeding centre of the college premise. Apart from that rain water harvesting initiative is not yet practiced by the college, so an initiative will be taken to save water resources. Moreover, water re-use scheme may also be adopted in near future. There are two ponds in the college campus effectively used to save rain water for different purposes.

Table 3: Water resource, exploitation and conservation

Water resource Enjoyed/Year			Water Resource Consumed (Reservoir Capacity) liters/Month					
Total precipitation/Annual (2828mm)	Surface water	Ground water	Canteen	Hostels	Office	Laboratories	Student Toilets	Class room
3,07,285.10 liters	Nil	Not measured	23,000	3,75,000	10,000	50,000	20,000	15,000

4. Waste and their management:

From the estimation of solid waste generated by different sources of the institution, it has been observed that, as many as 4.38 quintals of biodegradable and only 11.25 kg of non-biodegradable waste have been generated monthly basis. An approximately 50% of biodegradable solid waste specially the fallen leaves and papers have been recycled by composting in the vermicomposting unit of the college. The product compost is also utilized by the college as organic manure for saplings of trees and flowers. Some of the non-biodegradable wastes are being sold as scrap for recycling. The accumulation of non-biodegradable solid waste is minimum, so there is no such ecofriendly treatment so far.

Table 4: Waste and their management

Sources of Solid waste kg/Month										
Classroom		Office		Laboratory		Hostels		Canteen		Natural
BD	NBD	BD	NBD	BD	NBD	BD	NBD	BD	NBD	BD
2.4	Nil	3.2	0.25	12.6	6.2	150	4.2	70	0.6	200

5. Energy budget and management

Power consumption data shows that, college has been consuming approximately 162363 kwatts of energy annually from ASEB supply, solar cells and diesel generator jointly (Table 5). The ways of consumption are mainly for illumination, running of fan in hot summer, computers, to run modern teaching learning (Audio-Visual) appliances, experiments and also to run water pump sets.

Table 5: Energy audit and management

Energy Budget				
Unit consumption from ASEB Supply per year	Fuel (Diesel) burnt for generator per year	Solar generation per year	Lighting Power requirement per year	Power requirement per year
102006.8 units	2672 liters producing	7 solar panels	12775kwh	162363
average/ 102006.8 k watts	42964.8 k watts of electricity	producing 17391.4 k watts		kwh

Majority of the lights used by North Lakhimpur College (Autonomous) are found to be LED lights and the lighting capacity of such lights meets approximately 75% of total lighting requirement of the institution. The college is found to have installed LED lights in all newly constructed buildings, hostels, library, labs etc. It is also found that the ordinary bulbs and tubes are being phased out and replaced by LED lights and star grade fans. To reduce power consumption from ASEB supply and Diesel generator set, initiative for more installation of solar plate is going on.

6. Emission sources and their management:

The college also evaluated the emission released by different sources. The evaluated parameters show that college is also emitting an amount of carbon monoxides and hydrocarbons

Table 6: Emission sources and their management

Emission Audit							
Four wheeler (Average emission 1.87g/km/vehicle) Distance run by about 10 km/day	Two Wheeler 1.22 g/km/vehicle) Distance run by about 10 km/day	Public Transport	Emission/ Person/Da y	Gen Set	Kitchen (Canteen , Hostel)	Total emissio n	
34 Nos. of vehicles emitting 673.2 g of CO and hydrocarbons/day	230 Nos. of two wheelers are emitting 2806 g of CO and hydrocarbons/day	Nil	1.08 g CO and Hydrocarb ons	Not Evalu ated	Not evaluate d	3479.2 g/day	

every day to its atmosphere (3479.2 g/day). An average calculated value of per person emission of the college is only 1.08 g/ day. The timber yielding plants of the college premises have been effectively used as carbon sink for environmental restoration.

To minimize the reported emission rate a thorough checking of vehicles to keep their minimum standard is advisable. Moreover, sharing of cars, two wheelers, use of bicycle and walking (if possible for nearby ones) are also encouraged among the college family members to come to college.

7. Audit Recommendations:

In view of the facts and figures found by the Environment Audit Committee and the experts the following suggestions are offered to the college:

- I. More plantations is needed to increase the green coverage of the campus.
- II. The college needs to devise more effective measures for disposing solid wastes particularly e-wastes.

- III. The college should generate more power from the non-conventional energy sources reducing its dependence on the electricity provided by the Assam Power Distribution Corporation Limited.
- IV. The college should encourage its teachers, employees and students to use the public transport system more and to take measures like for car pooling.
- V. Effective measures should be taken for scientific management of water resources particularly rain water and ground water.
- VI. An effective measure must be taken to manage the toxic chemicals released by laboratories.

Dr. Lakhi Prasad Hazarika
Associate Professor, Deptt of Zoology
and Co-ordinator
Environmental Audit Committee
North Lakhimpur College (Autonomous)

Dr. Mridul Borgohain
Assistant Professor and Environmental
Expert
Deptt. of Chemistry
Lakhimpur Girls College
(Ph.D in Chemistry)

Dr. Biman Ch. Chetia
Principal and Chairperson
Environmental Audit Committee
North Lakhimpur College (Autonomous)
North Lakhimpur College (Autonomous)
North Lakhimpur (Assam)

Mr. Mahendra Gogoi
Associatr Professor and Environmental Expert
Deptt. of Zoology
Lakhimpur Girls College

Dr. Budhadev Basumatary
Assistant Professor Deptt of Botany and Asst. Co-ordinator,
Environmental Audit Committee
North Lakhimpur College (Autonomous)