GREEN AUDIT REPORT

2019-20

Prepared by

Green Audit Assessment Team, I.Q.A.C.
Buxi Jagabandhu Bidyadhar (Autonomous) College, Bhubaneswar,Odisha.

GREEN AUDIT REPORT (2019-20) OF B.J.B (Autonomous) College, Bhubaneswar

CONTEXT

The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory for all Higher Educational Institutions to 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. In view of the NAAC circular regarding Green Auditing, the College Management decided to conduct an internal Green Evaluation by an Institutional Green Audit Assessment Team under I.Q.A.C.

Although there is no universal definition of Green Audit, many leading companies/institutions follow the basic philosophy and approach summarized by the broad definition adopted by the International Chambers of Commerce (ICC) in its publication of Environmental Auditing (1989).Green audit can be a useful tool for a college 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.. The 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 for sustainable development and at the same time reduce a sizable amount of atmospheric carbon-di-oxide from the environment.

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 European Commission, in its proposed regulation on environmental auditing, has also adopted the ICC definition of Environmental Audit. 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 more prevalent

B.J.B (AUTONOMOUS) College – A BRIEF PROFILE

Buxi Jagabandhu Autonomous College, is a Government College which started its functioning as a "Science College", Bhubaneswar in the year 1957. Later on, in the same year the college was named after the greate freedom fighter of Odisha "Buxi Jagabandhu Bidyadhar Bhramarabara Ray Mohapatra." The college got recognition under section 2 (f) & 12(b) of UGC w.e.f 01.01.72. The college was conferred lead college status by the Govt. of Odisha in the year 1994, Autonomous status by the UGC in 1999 & A grades by NAAC in cycle -1 (2004) & cycle -2 (2016). The college also got recognition as a Centre with Potential for Excellence (CPE) in 2010. The college offers both regular and self-financing courses at UG and PG level to about 5000 students. It has its own campus well connected by Road, Rail & Airways and a host of qualified, dedicated, motivated & experienced teachers & support staff. The college is equipped with English language Lab, Computer Labs, Auditorium, Conference Hall, Students Hostels, Canteen, Gymnasium, Staff Quarters, Smart class rooms, virtual class rooms and science laboratories. It also has NCC, NSS, YRC, Rovers and rangers wings for extension activities. The college has introduced Proctorial system and regularly undertakes guardian/parents teachers meeting, alumni meet to ensure quality in teaching and learning. This college has been a dream destination of students not only from Odisha but also from neighboring states like West Bengal, Jharkhand, Chhattisgarh & Andhra Pradesh

OBJECTIVES OF GREEN AUDIT

- To assess whether the measures implemented by the College have helped to reduce the Carbon Footprint.
- To create awareness among students regarding biodiversity and environment.
- To assess whether non-academic activities of the Institution support the collection, recovery, reuse and recycling of solid wastes that harm the environment.
- To identify gaps and suggest recommendations to improve the Green Campus status of the institute.

Methodology

Methodology adopted to conduct Green Audit of the institution included onsite visit, focus group discussion, survey of office buildings and laboratories, carbon foot print, survey of fire safety measures, waste disposal and survey of Green Flora Cover in the campus. All the Department Heads of practical subjects, Hostel superintendents and office superintendent were involved in Green Audit. Student volunteers from different streams were involved to collect data. Tabulated data were analysised for necessary conclusion.

College Building Survey

1. Total No. of student intake capacity (stream wise).

Arts: 512	Science : 240	Commerce: 256	Self Financing : 522	Total: 1530

2. Name of the Block/building with type and nos. of room/s.

Name of block	No. of class room	No. of store room/s	No. of library room/s	No. of staff room/s	No. of boys common room/s	No. of girl common room/s	Any other room/s
Science Block	07	04	Nil	04	Nil	Nil	02 Glassblower rooms
Admin. Block	13	04	01	07	Nil	01	06:SAMS,IQAC,Biotech.
New Arts Block	39	Nil	Nil	10	01	01	23 rooms
Arts Block	16	02	Nil	08	Nil	01	02 for NCC,YRC

3. Total No. of Lavatories (Block wise).

Name of block	No. of Lavatories for boys	No. of lavatories for girls	No. of lavatories for staff (excluding department lavatories)	No. of times the lavatory/ies are cleaned each day.	Remarks
Science Block	02	01	02	Twice	
Admin.	02	01	06	Twice	

Block					
New Arts Block	12	04	16	Twice	
Arts Block	04	01	01	Twice	

4. No. of fire extinguisher installed (Block wise).

Name of block	No. of extinguisher/s installed	Date of installation	Date of last renewal	Date of next renewal	Remarks
Science Block	Not Installed				Purchased under IDP,shall be installed soon
Admin. Block	Not Installed				
New Arts Block	Not Installed				
Arts Block	Not Installed				

The fire extinguisher units have been purchased from I.D.P. grants and the installation work is going on. In the New Arts Block a complete and modern fire safety measure has been taken up with fire alarm, water storage tank and water supply pipe lines to each floor so as to tackle any emergency.The work is under progress and going to be complete soon.

5. Whether fire escape routes/stare available in all building: Yes.

6. (i) Waste disposal per week (For bio-degradable and non-biodegradable waste) approx. Quantity of solid, liquid or any other wastes generated per week (in kg./Ltr.).

Type of waste	Bio-degradable (Approximate quantity in kg/ltr. Per week)	Non-biodegradable (Approximate quantity in kg/ltr. Per week)	Remarks
Solid	30kg	15kg	
Liquid	50liters	nil	
Any other			

(ii) Method of separation of biodegradable and non-biodegradable wastes: Manual.

(iii) Adequate number of coloured bins are kept in all parts of building and the Civic Body regularly cleans the bins. The wastes from toilets are discharged to main drains through underground covered channels.

7. Survey of practical Departments:

Name of the Department	No.of Labs	No.of doors in each Lab	No. Of fire extinguishers in each Lab	Whether fitted with Exhaust fans	Dt. Of installation of fire extinguishers	Dt of renewal of fire extinguishers
CHEMISTRY	03	02 in two labs and 01 in one	02 in two labs and 01 in one and 01 in store	Yes	Feb2015 and Oct 2017	Feb 2017 and Oct 2020
STATISTICS	01	02	Nil	No	-	-
PSYCHOLOGY	02	02	Nil	No	_	–
PHYSICS	02	01	01 in one lab	No	01-10-2006	30-09-2018
GEOGRAPHY	01	01	Nil	No	_	_
ZOOLOGY	01	02	01	No	_	Nov 2021
BOTANY	01	01	01	No	14.1.2020	13.1.2021
BIOTECHNOLOGY	01	02	01	No	-	Nov 2021s

All the sciAAll the science laboratories are going to be fitted with fire extinguishers very soon from I.D.P. grants.

8. Survey of waste generation:

Category	Solid waste per week	Liquid waste per week	Hazardous waste/ week	Point of disposal	Separation of biodegradable and non biodegradable
Science labs(08)	23kg	10liters	Nil	Internal points	manual
Hostels	60kg	100liters	Nil	Concealed drains and waste bins	Not done
Buildings	50kg	100liters	Nil	Concealed channels and waste bins	Not done

Incinerators are installed in Girls common rooms and Ladies Hostel for disposal of sanitary napkins. Solid wastes are disposed in coloured bins installed at various locations and in hostels which are regularly collected by Civic Body for disposal. During the audit it is

observed that most of the solid wastes in college campus as well as in hostels are waste papers and polythene carry bags.

Energy Conservation Steps:

The college has undertaken several steps for energy conservation. All the power consuming tungsten electric lamps are removed Fluorescent tube lamps and CFL lamps are used. All the electric switches in old blocks are labelled and in the new blocks the labelling of switches will start soon. This makes it easy for operating electrical equipments as per the requirement.

"Switch off drills" are practised in the rooms by both staff and students. Air conditioners are set to optimum temperatures to minimise power consumption.

In the new buildings and also in most parts of the old buildings maximum use of day light is made possible in all the class rooms and departments.

Regular defrosting of refrigerators is done and also the refrigerators are set to optimum temperature to minimise power consumption.

The proposal for installation of 10KW solar electric plants in New Arts Block has been approved by the Government and the survey work has been completed. The installation work is going to be started shortly.

Water Use:

This indicator addresses water consumption, water sources, irrigation, and rain water. A water audit is an on-site survey and assessment to determine the water use and hence to improve the efficiency of its use.

Observations

The study observed that the Water tanker supply system, Tube well and Municipal connection is major sources of water in college and in both the hostels. Water is used for drinking purpose, toilets and gardening. During the survey, no loss of water is observed, by any leakages or by over flow of water from overhead tanks. On an average the total use of water in the college is 10,000 L/day, which include 9,000 L/day for domestic, gardening purposes and 1,000 L/day for drinking purpose. Sufficient Rain water harvesting units are not installed. In campus small scale/medium scale/ large scale reuse and recycle of water system is necessary to minimize wastage of water and use of electricity. Only one rain water harvesting tank is built in the college and the water harvested is mostly used for construction purposes.

Survey of College Flora:

The severe Tropical cyclone, "FANI" with a peak wind velocity of 250km/hr on 3rd May, 2019 greatly damaged the flora of the campus as about twenty big and medium sized trees were uprooted. Since

then several plantations programmes have been undertaken on regular basis but it will take time to restore the green cover of the campus. A detailed survey of ground flora and canopy has been done but only the list of tree varieties is considered for Green Audit.

LIST OF PLANT SPECIES PRESENT IN BJB COLLEGE CAMPUS

Common Name	Botanical Name	Family
(1)	(2)	(3)
Amba (O), Aam (H) Mango (E)	*Mangifera indica L.*	Anacardiaceae
Amrutabhanda (O), Papita(H), Papaya (E)	*Carica papaya L*	Caricaceae
Arakha (O), Akada (H)	*Calotropis procera (Ait), R. Br.*	Asclepiadaceae
Arjuna (O), Arjuna (H)	*Terminalia arjuna (Roxb exdc),Weight &Am*	Combretaceae
Ashok (O, E, H)	*Saraca asoca (Roxb) de wilde*	Caesalpiniaceae
Atta (O), Custard Apple (E)	*Annona squamosa L.*	Annonaceae
Babul (O),Acacia (E)	*Acacia nilotica Willd*	Mimosaceae
Bada Chakunda (O)	*Cassia hirsuta L.*	Caesalpiniaceae
Bahada (O), Bellenic Myrobalan (E)	*Terminalia bellirica (Gaertn) Roxb*	Combretaceae
Bara (O), Bargad (H), Banyan (E)	*Ficus benghalensis L.*	Moraceae
Barokoli (O)	*Ziziphus mauritiana Lam*	Rhamnaceae
Baruna (O,H),	*Cartaeva adansonii DC*	Capparaceae
Bela (O), Bael Tree (E)	*Aegle marmelos (L)*	Rutaceae
Bhursunga (O), Curry leaf (E)	*Murraya Koenigii (L), Spring*	Rutaceae
Bottle brush (E)	*Callistemon linearis DC.*	Myrtaceae
Chakunda (O), Nagro Cottee (E)	*Cassia occidentalis L.*	Caesalpiniaceae
Chakunda (O), Sickle pod (E)	*Cassia tora L.*	Caesalpiniaceae
Chandan (O,H), Sandal wood (E)	*Santalum album L.*	Santalaceae
Chini Champa (O), Champa (H)	*Artabortrys hexapetalous (L.F), Bhandari*	Annonaceae
Debadaru (O),Ashoka (H)	*Polyalthia longifolia (sonn)Thw*	Annonaceae
Dimiri (O), Kat Gulasia (H)	*Ficus hispida L.F*	Moraceae
Eucalyptus(E)	*Eucalyptus tereticornis*	Myrtaceae
Gheekuanri (O), Gheekunvar (H)	*Aloe vera (L) Burm.f*	Liliaceae
Gulmohar (O,H), Gul Mohur (E)	*Delonix regia (Bojex*	Caesalpiniaceae

	Hook) Raf	
Harida (O), Kasa phala(H)	*Terminalia chebula Retz*	Combretaceae
Jamu (O) Jamun (H), Black berry (E)	*Syzygium cumini (L) Skeeb*	Myrtaceae
Jhaun (O), Jhangi (H), Beefwood tree (E)	*Casuarinas equisetifolia L.*	Casuarinaceae
Kadamba (O,H))	*Anthocephalus cadamba (Roxb.) Miq*	Rubiaceae
Kagazaphula (O)	*Bougainvillea spectabilis willd*	Nyctaginaceae (cultivated)
Kaghzi Nimbu (H,O)	*Citrus medica (Chirston & Panz) Swingle*	Rutaceae
Kaju (O), Cashew nut tree (E)	*Anacardium occidentale L.*	Anacardiaceae
Kanchana (O), Kanchanar (H)	*Bauhinia acuminata*	Caesalpiniaceae
Karanja (O), Karanj (H), Indian beech (E)	*Pongamia pinnata (L) Pierre*	Fabaceae
Kath champa (O), Temple tree (E)	*Plumeria rubra L.*	Apocyanaceae
Kendu (O), Timburni (E)	*Diospyros melanoxylon Roxb*	Ebenaceae
Kaniyar (O), Yellow Olender (E)	*Cascabela thevetia (L) Lippoldx*	Apocyanaceae
Karabira (O), Indian oleander(E)	*Nerium oleander L.*	Apocyanaceae
Krushna chuda (O)peacock flower(E)	*Caeslpinia pulcherrima*	Caesalpiniacae
Madhumalati (O), Rangoon Crepper (E)	*Quisqualis indica L.*	Combretaceae
Mandara (O), China Rose (E)	*Hibiscus rosa-sinensis L.*	Malvaceae
Muchukunda (O)	*Pterospermum acerifolium willd.*	Sterculiaceae
Nagphani (O,H) Prickly pear (E)	*Opuntia vlugaris*	Cactaceae
Nimba(O), Neem tree (E)	*Azadirachta indica A. Juss*	Meliaceae
Panasa (O), Katahal (H), Jackfruit tree (E)	*Artocarpus heterophyllus (Lam)*	Moraceae
Pijuli (O), Amrood (H), Guava (E)	*Psidium guajava L.*	Myrtaceae
Papal (O,H), Peepal (E)	*Ficus religiosa L.*	Moraceae
Rangani (O) 4 O' clock plant (E)	*Mirabilis jalapa L.*	Nyctaginaceae
Sadabihari (O), Sadabahar (H), Periwinkle (E)	*Cartharnthus roseus (L) G. Don*	Apocyanaceae
Sagwan(O), Sagaun (H), Teak (E)	*Tectona grandis L*	Verbenaceae
Sajana gaccha(O), Drumstick (E)	*Moringa Oleifera Lam*	Moringaceae
Tejpatra(O), Tejpatta (H)	*Cinnamomum tamala Nees*	Lauraceae
Tentuli(O), Imli (H),Tamrind tree (E)	*Tamarindus indica L.*	Caesalpiniaceae

CONCLUSION:

The objective of organising Green Audit is to upgrade the environmental condition in and around the college campus. It is carried out with the aid of performing tasks like waste management, energy saving and others to turn into a better environment friendly institution.

The base line data prepared for the college will be a useful tool for campus greening, resource management, planning future projects and a document for implementation of sustainable development of the college.

Although a number of steps have been taken to improve the quality of environment in the college campus, more steps shall be adopted in future as detailed below:

1. Seminars/symposia shall be organised amongst students and staff relating to environmental pollution, different pollution acts and waste management through Eco club.
2. The use of polythene carry bags shall be banned immediately in the college canteen, co-operative store and hostels.
3. Plantation programme inside the college campus, hostel campus and around the play ground shall be taken up by the members of Eco club at regular intervals.
4. More and more medicinal plants and fruit bearing plants shall be planted in the college garden.
5. Vermi composting facilities shall be made available in the college campus.
6. Students and teachers shall be encouraged to use bicycle/public transport at least once in a week.
7. College office and its allied sections shall try to reduce the use of paper and also the current practice of reusing papers shall continue.
8. The energy consuming old ceiling fans shall be phase wise replaced by less energy consuming ceiling fans.
9. The Eco club shall regularly assess the environmental condition of the campus
10. College campus shall be declared as silent Zone. The use of motor cycle/car horns inside the campus shall be banned.