VIKRAM DEB (AUTONOMOUS) COLLEGE, JEYPORE GREEN AUDIT REPORT 2019-2020



Prepared by P.G. Department of Botany

Vikram Deb (Autonomous) College, Jeypore Dist. Koraput, Odisha

GREEN AUDIT REPORT (2019-20) OF Vikram Deb (Autonomous) College, Jeypore

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 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.

CONCEPT

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 education.

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.

VIKRAM DEB (AUTONOMOUS) COLLEGE - A BRIEF PROFILE

Vikram Dev College founded by Dr. Vikram Dev Verma, the Maharaja of Jeypore in 1947, is one of the twenty-one lead Colleges of Orissa. Prof. K.M.Dwivedy was its first Principal. The undergraduate and post-graduate classes in Arts, Science & Commerce streams have been started since 1961 and 1979 respectively. In 1983 Higher Secondary streams in Arts, Science & Commerce were introduced. At present the student strength on Rolls is over 5000.

The reorientation of the College was carried out as per U.G.C. and Govt. guidelines to gain eligibility for an Autonomous status.

The College Campus includes a well protected Administrative block, an imposing Arts Block, Science and Commerce Blocks, the College Library building, Post Office, Hostel and Staff quarters. The statue of Dr. Vikram Dev Verma an erudite scholar-cum-Maharaja of Jeypore adorns the entrance of the Computer Science building.

The qualitative improvement in the academic life has gladdened the hearts of thousands of students and parents. Seminars are also regularly held in each department. After attainment of Autonomous status, the college now has prepared its own syllabus and conducts its own examination from the session 2005-2006.

The College has introduced CBCS syllabus for UG from the session 2015-16 and for PG from the Session 2016-17. The college is equipped with English language Lab, Computer Labs, Conference Hall, Students Hostels (Boys Hostel-4 no., Girls Hostel-4 no), Canteen, Gymnasium, Staff Quarters, Smart class rooms, virtual class rooms and science laboratories. It also has NCC, NSS, and YRC wings for extension activities. The college has its landmark greenery owing to the presence of more than 27 no. of mango trees in the main campus which more then 100 years old.

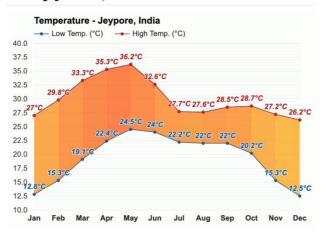
Geographical Location of our College

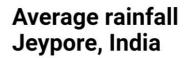
Latitude – 18° 51' 22.68" N Longitude –82° 34' 17.76" E

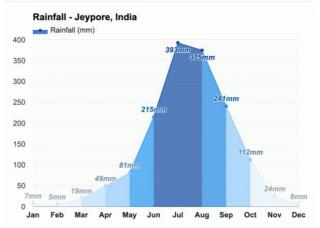
Climatic Condition

Tropical monsoon climate Annual Rainfall – 1527 mm Average High Temperature – 36.2° C Average Low Temperature – 24.5° C

Average temperature Jeypore, India







OBJECTIVES OF GREEN AUDIT

> To assess whether the measures implemented by Vikram Deb Autonomous College have helped to reduce the Carbon Footprint.

 \succ To create awareness among students regarding electricity, water, 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 campus visit, survey of office buildings and laboratories, survey of green coverage area, carbon foot print, survey of fire safety measures, waste disposal and survey of number of tree, sub tree, shrub, herbs, floriculture plants and also focus on some important species of our 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.

GREEN AUDIT ASSESSMENT TEAM

The principal of Vikram Deb Autonomous College given the responsibility to the PG department of Botany for Green audit assessment for the year of 2019-20. The following are the members of the Green audit team.

- 1. Dr. Prasanta Kumar Patra, Asst. Professor and Head of P.G. Dept. of Botany
- 2. Nikhita Singh, Lecturer
- 3. M.S. Soumyaa, Lecturer
- 4. Sri L.N. Baski, Demonstrator
- 5. Sri B.P. Singh, PET
- 6. Sri Subash Patro, Attendant

COLLEGE BUILDING SURVAY AREA

SI. No.	Name of the Building	Area in Sq. ft.
1	Admistrative Building	7242
2	Lecture Theatre Building (L1 to L4)	5304
3	Lecture Theatre Building (L5 to L8)	3458
4	Science Block (Chemistry & Physics)	14000
5	Science Block Extension (Chemistry)	2480
6	Central Library	5636
7	Humanities Block	8056
8	Biology Block	8056
9	Arts Block (Front side)	3834
10	Arts Block (Back side)	3834
11	Commerce Block	2464
12	Commerce Block	4300
13	Boys Common Room	1800
14	IGNOU Building	1914
15	UGC Hostel	4446
16	UMC Hostel	15256
17	Indravati Hostel	8288
18	PMG 1 Hostel	3200
19	PMG 2 Hostel	6375
20	PMG 3 Hostel	3410
21	PMG 4 Hostel	3740
22	Vivakananda Hostel	12450
23	VDC Hostel	11000
24	Mathematics Block	884
25	Mathematics Block	3690
26	Guest House	900
27	Computer Science Building	7700
28	Statue	110
29	Canteen	1536
30	Pump House	150
31	Old Hostel Superintendent Quarter (UMC)	2400
32	Staff Quarter	11398
33	Post Office	384
34	Under construction Building (Under World Bank)	7200
	Total Area in Square Feet	176895
	176895 sq. ft = 4.06 Acre	±50 Sq. ft.

Survay of Green Coverage

SI.	Green	Coverage	Building	Non	coverage	Total	Campus	Area
No.	Area		Coverage Area	Area		of the	College	
1	449225 Sq	. Ft.	176895 Sq. Ft.	10.77 a	cre	25.14	acre	
	(10.31 acre	2)	(4.06 acre)					

List of Lavatories

SI. No.	Location	Ladies/ Gents	No. of Toilet complex
1	Attached to Principal Room	-	1
2	Attached to Vice-Principal Room	Ladies/ Gents	1
3	Attached to Account Section	Ladies/ Gents	1
4	Near to Examination Section	Gents	1
5	Attached to Girl's Common Room	Ladies	1
6	Near to Autonomous Section	Ladies/ Gents	2
7	Near to Room No- L-1	Gents	1
8	Near to Room No- L-4	Gents	1
9	Near to Room No- L-5	Gents	1
10	Near to Room No- L-8	Gents	1
11	Attached to Comp.Sc Dept.	Ladies/ Gents	2
12	Attached to Gym	Gents	1
13	Central Library	Ladies/ Gents	2
14	Botany Dept.Staff Toilet	Ladies/ Gents	1
15	Attached to Botany Dept.	Gents	1
16	Attached to Botany Dept.	Ladies	1
17	Zoology Dept. Staff Toilet	Ladies/ Gents	1
18	Attached to Zoology Dept.	Gents	1
19	Attached to Zoology Dept.	Ladies	1
20	Humanities Block (Staff)	Ladies/ Gents	3
21	Humanities Block	Gents	3
22	Humanities Block	Ladies	3
23	HOD Chemistry	Ladies/ Gents	1
24	Chemistry Girl's Common Room	Ladies	1
25	Chemistry Department	Gents	1
26	Physics Department	Ladies	1
27	Physics Staff Common Room	Ladies/ Gents	1
28	Boy's Common Room	Gents	1
29	Mathematics Department	Gents	1
30	Girl's Common Room (Arts Block)	Ladies	1
31	Attached to OSOU Study Centre	Gents	1
32	Attached to OSOU Regional Office	Gents	1
33	English Dept. Staff Toilet	Ladies/ Gents	1
34	Common Toilet Commerce Block	Gents	1
35	Common Toilet BBA/BCA Dept.	Gents	1
36	Attached to Post Office	Gents	1

No. of fire extinguisher installed

Name of block	No. of extinguisher installed	Date of installation	Date of next renewal	remarks
Admistrative Block	11	2/12/2020	1/12/2025	
Humanities Block	3	2/12/2020	1/12/2025	
Biology Block	4	2/12/2020	1/12/2025	
Science Block	4	2/12/2020	1/12/2025	
Computer Science Block	4	2/12/2020	1/12/2025	

Survey of practical Departments:

Name of the	No.of Labs	No.of doors in	No. Of fire extinguishers	Whether fitted with		
Department		each Lab	in each Lab	Exhaust fans		
CHEMISTRY	04	02	01	Yes (4 Exhaust fans in each lab)		
PHYSICS	04	02	Nil	Yes		
ZOOLOGY	03	02	01	No		
BOTANY	03	02	01	No		
GEOGRAPHY	01	02	Nil	No		
ANTHROPOLOGY	01	02	Nil	No		
B.ED.	01	02	01	No		

Survey of waste generation:

	<u> </u>				
Category	Solid	Liquid	Hazardous	Point of disposal	Separation of
	waste per	waste per	waste/week		biodegradable and
	week	week			non biodegradable
Science	28 kg	30 liters	Nil	Internal points	manual
labs(14)	_				
Hostels	280 kg	100 liters	Nil	Concealed	Not done
				drains and	
				waste bins	
Buildings	60 kg	150 liters	Nil	Concealed	Not done
	_			channels and	
				waste bins	

The disposable of waste mechanism is purely manual based. Adequate number of dust 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. Incinerators are installed in Girls common rooms and all Ladies Hostel for disposal of sanitary napkins. Solid wastes are disposed in dust bins installed at various locations and in hostels which are regularly collected by Civic Body for disposal.

ENERGY CONSERVATION STEPS:

The following steps has undertaken for energy conservation:

- 1. All the power consuming tungsten electric lamps/florescent tube light and CFL are removed and replaced by LED Tube and Bulb periodically.
- 2. "Switch off drills" are practised in the rooms by both staff and students.
- 3. Air conditioners are set to optimum temperatures to minimise power consumption $(\geq 25^{\circ}C)$.
- 4. The maximum use of day light is made possible in all the class rooms and departments.
- 5. Regular defrosting of refrigerators is done and also the refrigerators are set to optimum temperature to minimise power consumption.

Energy conservation suggestions:

- 1. Always use energy efficient electrical appliances
- 2. 100% use of LED tubes and bulbs
- 3. Installation of solar electric plant for street light
- 4. To create awareness programme among the students and staff members on regular basis
- 5. Switch Off Appliances When Not in Use.

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 tube well, deep bore well, well and municipal pipe water connection is major sources of water in college and in all the hostels. Water is used for drinking purpose, toilets, gardening and for different laboratory. All time water failing is available through out the college campus. On an average the total use of water in the college is 15,000 liter/day, which includes 5,000 liters for toilet, 3,000 liters for gardening, 5,000 for laboratory, 2,000 for drinking purpose. All the hostels are provided with their own deep bore well system. Rain water harvesting system are not installed.

Survey of College Flora:

A detailed survey of ground flora and canopy has been done on the basis of type of plants, number, medicinal value, floriculture plants and some important species in the campus.

SI. No.	Botanical Name of the Plants	Family	Full Grown Tree	Semi Grown Tree
1	Mango (Mangifera indica) Linn	Anacardiaceae	42	4
2	Teak (Tectona grandis) L.F.	Verbenaceae	27	225
3	Eucalyptus (Eucalyptus citriodora)	Myrtaceae Hook	59	2
4	Jack Fruit Tree (Artocarpus heterophyllus)	Moraceae	12	
5	Cassia occidentalis (Caesalpiniaceae)	Caesalpiniaceae	15	2
6	Delonix regia <i>(Hook)</i> Raf	Caesalpiniaceae	10	
7	Acacia melanoxylon <i>(Mimosaceae)</i>	Mimosaceae	5	
8	<i>Pongamia pinnata (L)</i> Pierre	Fabaceae	3	3
9	Syzygium cumunis	Myrtaceae	7	2
10	Phoenix sylvestris Roxb	Arecaceae	9	
11	Millingtonia hortensis Linn. F	Bignoniaceae	3	
12	Tamarindus indica	Caesalpiniaceae	4	
13	Ficus glomerata Roxb	Moraceae	2	
14	<i>Gmelina arbore</i> a Roxb	Verbenaceae	7	
15	Dalbergia Sissoo Roxb	Fabaceae	3	
16	<i>Samanea saman</i> (Jacq.) Merr.	Mimosaceae	5	
17	Albizia lebbeck Benth	Mimosaceae	3	
17	Cocos nucifera L	Arecaceae	4	
19	Diospyros tomentosa Roxb	Ebenaceae	1	

Total Number of Plants species present in Vikram Deb (Autonomous) College, Campus

SI. No.	Botanical Name of the Plants	Family	Full Grown Tree	Semi Grown Tree
20	Ficus bengalensis L.	Moraceae	3	
21	Ficus religiosa L.	Moraceae	1	
22	Manilkara achras (Mill.) Fosb	Sapotaceae	1	
23	Syzygium jambos (L) Alston	Myrtaceae	1	
24	Mimusops elengii L	Sapotaceae	2	
25	Anthocephalus cadamba (Roxb.) Miq.	Rubiaceae	2	
26	Pithecolobium dulce (Roxb.) Benth	Mimosaceae	11	
27	<i>Polyalthia longifolia</i> (Sonn.) Thw.	Annonaceae	15	
28	Caryota urens L.	Arecaceae	1	
29	Cycas circinalis L.	Cycadaceae	4	
30	Pinus roxburghii	Pinaceae	2	
31	Michelia champaca L.	Magnoliaceae	1	
32	Annona reticulata L.	Annonaceae	3	
33	Sapindus trifoliatus L.	Sapindaceae	1	
34	<i>Duabhanga grandiflora</i> (Roxxb. Ex. Dc.)	Lythraceae	1	
35	Psidium guajava L.	Myrtaceae	8	
36	Palm Plant - Elaeis guineensis	Arecaceae	12	
37	<i>Haldina cordifolia</i> (Roxb.) Ridsdak	Rubiaceae	2	
38	<i>Spathodea campanulata</i> Beauv.	Bignoniaceae)	14	
39	X-Mas tree <i>Araucaria</i> <i>heterophylla</i> (Salisb.) Franco Family - Araucariaceae	Araucariaceae	9	
40	<i>Tabernaemontana coronaria</i> Br.	Apocynaceae	6	
41	Tecoma undulata G. Don	Bignoniaceae	2	
42	<i>Cicca acida</i> Merr.	Euphorbiaceae	1	
43	Murraya koenigii (L) Spreng	Rutaceae	1	

Bushes

SI. No.	Botanical Name of the Plants	Family	Full Grown Tree
1	Lantana camara	Verbenaceae	10
2	Solanum tarvum	Solanaceae	6
3	Zizyphus oenoplia (L.)	Rhamnaceae	4
4	Schleichera oleosa	Sapindaceae	1
5	Streblus aper lour	Moraceae	2
6	Zizyphus juiuba	Rhamnaceae	2
7	Zizyphus funiculosa	Rhamnaceae	4
8	Ipomoea digitata	Convolvulaceae	2
9	Ficus hispida	Moraceae	5
10	Murraya koenigii spreng	Rutaceae	10
11	Bombax malabaricum sch.	Bombaceae	5
12	Bixa orelena	Bixaceae	2
13	Cestrum nocturnum L.	Solanaceae	2
14	Cassia tora	Caesalpiniaceae	2

SI. No.	Botanical Name of the Plants	Family	Full Grown Tree
15	Artemisia parviflora Roxb.	Asteraceae	2
16	Breynia rhamnoides	Euphorbiaceae	2
17	Antigonon leptopus	Polygonaceae	2
18	Crotalaria striata Dc.	Fabaceae	2
19	Ipomoea quamoclit L.	Convolvulaceae	3
20	Mussaenda frondosa L.	Rubiaceae	4

Medicinal Plants

SI. No.	Botanical Name of the Plants	Family	Full Grown Tree
1	Azadirachta indica A. Juss.	Meliaceae	4
2	Aegle marmelos (L) Corr.	Rutaceae	6
3	Santalum album L.	Santalaceae	5
4	Emblica officialis Gaertn.	Euphorbiaceae	1
5	Saraca asoca (Roxb.) de. Wilde	Caesalpiniaceae	2
6	Alstonia scholaris (L.) R. Br.	Apocynaceae	21
7	Cassia fistula L.	Caesalpiniaceae	2
8	Citrus aurantifolia (Chris.) Sw.	Rutaceae	1
9	Nyctanthes arbortistis L.	Oleaceae	2
10	Moringa oleifera Lam.	Moringaceae	1
11	Erythrina Variegata L.	Fabaceae	5
		Guttiferae/Clusia	
12	Mesua ferrea L.	ceae	2
13	Rauvolfia serpentina Benth ex kurz	Apocynaceae	2
14	Adhatoda vasica nees	Acanthaceae	1
15	Centella asiatica (L.) Urb.	Umbelliferae	5
16	Plumbago indica L.	Plumbaginaceae	1
17	Plumbago zeylanica L.	Plumbaginaceae	2
18	Paederia scandens (Lour) Merr.	Rubiaceae	5
19	Acorus calanus L.	Araceae	5
20	Bryophyllum pinnatum	Crassulaceae	10
21	Kalanchoe laciniata Pers.	Crassulaceae	2
22	Amomum aromaticum Roxb.	Zingiberaceae	2
23	Zingiber officinale Rosc.	Zingiberaceae	2
24	Curcuma amada Roxb.	Zingiberaceae	2
25	Curcuma longa L.	Zingiberaceae	10
26	Curculigo orchinoides Gaertn.	Amaryllidaceae	10
27	<i>Cuscuta reflexa</i> Roxb.	Convolvulaceae	5
28	Wedelia Calendulacea lees	Asteraceae	100
29	Vallaris Solanacea Kuntz.	Apocynaceae	5
30	Asparagus racemosus Willd	Liliaceae	1
31	Costos speciosus Smth.	Zingiberaceae	5
32	Tinospora cordifolia meens	Menispermaceae	10
33	Piper longum L.	Piperaceae	5
34	Sesbania grandiflora pers.	Fabaceae	4
35	Ocimum sanctum L.	Lamiaceae	5
36	Achyranthes aspera L.	Amaranthaceae	15
37	Phyllanthus niruri auct. Non.	Euphorbiaceae	5
38	Oxalis corniculata L.	Oxalidaceae	10
39	Musa paradisiaca L.	Musaceae	15

SI. No.	Botanical Name of the Plants	Family	Full Grown Tree
40	Citrullus colocynthis (L) Schrad	Cucurbitaceae	5
41	Bauhinia varieguta L.	Caesalpiniaceae	1
42	Tridax procumbens L.	Asteraceae	20
43	Vanda roxburghii R. Br.	Orchidaceae	
44	Datura fastuosa L.	Solanaceae	5
45	Calotropis procera R. Br.	Asclepiadaceae	6

Floriculture Plants

SI. No.	Botanical Name of the Plants	Family
1	Tagetes patula L.	Asteraceae
2	Chrysanthemum coronarium	Asteraceae
3	Gloriosa superba L.	Liliaceae
4	Clitoria ternatea L.	Fabaceae
5	Murraya exotica L.	Rutaceae
6	Bougaivillea spectabilis Willd	Nyctaginaceae
7	Quisqualis indica L.	Combretaceae
8	Crossandra infundibuliformis L. nees	Acanthaceae
9	Mirabilis jalapa L.	Nyctaginaceae
10	Sansevieria roxburghiana Schf.	Liliaceae
11	Rosa indica	Rosaceae
12	Catharanthus roseus L. Don	Apocynaceae
13	Ixora coccinea L.	Rubiaceae
14	Hibiscus rosa sinensis	Malvaceae
15	Canna indica L.	Cannaceae
16	Hibiscus syriacus L.	Malvaceae
17	Rauvolfia serpentina	Apocynaceae
18	Seadoxus multiflorus	Amaryllidaceae
19	Clivia miniata (Lindl)	Amaryllidaceae
20	Sansevieria trifasciata	Asparagasceae
21	Pteridium aquilinum L.	Polypodiaceae

Important species of our Campus

SI. No.	Botanical Name of the Plants	Family
1	Santalum album (Sandalwood plant)	Santalaceae
2	Vanda roxburghii (Orchid plant)	Orchidaceae
		Colchicaceae /
3	<i>Gloriosa superba</i> (Flame lilly)	Liliaceae
4	<i>Tinospora cordifolia</i> (Giloy)	Menispermaceae
5	Millongtonia hortensis (Indian corktree)	Bignoniaceae
6	Pinus roxburghii (Pine Plant)	pinaceae
7	Duabhanga grandiflora	Lythraceae
8	Funaria hygrometrica (Moss Plant)	Funariaceae

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. Energy efficient measures such as replacement of all incandescent bulbs with LED camps, air conditioning units with all star rated systems need to be undertaken.
- 2. Seminars/symposia shall be organised amongst students and staff relating to environmental pollution, different pollution acts and waste management through Eco club.
- 3. The use of polythene carry bags shall be banned immediately in the college canteen, co-operative store and hostels.
- 4. 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.
- 5. More and more medicinal plants and fruit bearing plants shall be planted in the college garden.
- 6. Vermi composting facilities shall be made available in the college campus.
- 7. Students and teachers shall be encouraged to use bicycle/public transport at least once in a week.
- 8. College office and its allied sections shall try to reduce the use of paper and also the current practice of reusing papers shall continue.
- 9. The energy consuming old ceiling fans shall be phase wise replaced by less energy consuming ceiling fans.
- 10. The Eco club shall be open to regularly assess the environmental condition of the campus
- 11. College campus shall be declared as silent Zone. The use of motor cycle/car horns inside the campus shall be banned.
- 12. Solar panels shall be installed as a alternate sources of electrical energy.
- 13. More number of bio composting unit shall be made available in the college campus.
- 14. Adequate number of fire extinguishers shall be installed in different practical laboratories.
- 15. Fire safety measure shall be taken to avoid any incidence.