KUNTALA KUMARI SABAT WOMEN'S COLLEGE
BALASORE

GREEN AUDIT REPORT
2021-22

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INTRODUCTION

Auditing is an evaluating system of college in terms of internal controls for achieving goals. The steps of the auditing process that are most crucial include planning, work on the ground, creating the audit report, and follow-up. In addition to providing education, colleges are dedicated to protecting the environment by minimizing negative effects, such as lowering trash, water, and energy usage. The main goal is to examine ongoing college procedures whose actions may be detrimental to the environment, the health of students, and the welfare of the entire workforce. By putting improved, environmentally sound principles into practice, we want to attain environmental sustainability.

Comprehensive procedures of on-site observation and verification are included in the planning and preparation of the Green Audit. The planning process began with a discussion among the committee members, followed by the framing of the objectives, the methodology, followed by sampling and the compilation of the final report, which included a slew of initiatives to be carried out for ecological sustainability.

Corporate social responsibility is the main focus of a green audit. It reveals the truth about claims made by institutions and governments regarding the consequences of environmental contamination. The aim of the green audit is to review the measures taken to combat pollution.

The act of systematically identifying, quantifying, documenting, reporting and analyzing elements of environmentally diverse enterprises is known as a "green audit." The management of Kuntala Kumari Sabat Women's College holds the view that protecting "Mother Earth" is an essential component of education and that the college's carbon footprint may be left through sustainable actions and an environmentally friendly form of administration.

OBJECTIVES

Natural resources on Earth are crucial for supporting life, but if they are misused, they may disturb the natural equilibrium. The objectives of a green audit are crucial for an institution's self-evaluation since they represent their involvement in addressing the environmental problems on the campus. The following objectives were the main emphasis of the green audit process:

1. To create a green and plastic free campus.
2. To enhance awareness towards environmental responsibilities.
3. To observe land use for various purposes.
4. To record and catalog floral and faunal diversity in the college premises.
5. To evaluate the water quality.
6. To measure the degree of noise within the institution and outside area.
7. To compile a report on the management and disposal of e-waste.
8. To examine solid waste management practices.
9. To investigate the electrical power consumption in college.

REPORT

Green and Plastic Free Campus

Students' everyday lives are positively impacted by a greener college campus. Studies have indicated that students who attend campuses that are actively green have superior memory retention abilities, environmental practices, and community togetherness. Our college is surrounded by trees which welcomes everyone who enters the entrance. In addition to this, the campus has a colorful environment that has created several green spaces, and it takes great care to minimize the use of plastics. Several efforts are made by our college students and administration to keep a plastic-free and environmentally friendly campus.

Green View of the Campus

Environmental Awareness Activity

Environmental awareness means being informed about our natural surroundings, and understanding how our actions affect the well-being of our local and global environments. Being aware of the environment is important because of the increasing environmental challenges the world is experiencing. Our college therefore organizes relevant awareness activities and sensitisation to instruct and shape young minds such as cleaning of campus premises, collection of plastic wastes and use of bicycles for transportation purposes are encouraged.

Awareness Activity

Land Use Observation and Mapping

The total area of the College is 2.675 Acres out of which the built up area is 4604 sq. meters, from which the open space & plantation area is 2108 and 4113 sq.meters respectively.

Aerial view of the college campus

Floral Diversity in the College Premises

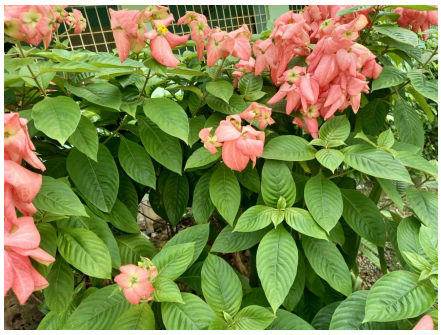
Most of the trees are planted with the intention of lowering atmospheric carbon dioxide. The lush green floral diversity of the college campus effectively maintains the soil, offers habitat for both diurnal as well as nocturnal animals, provides cover for invertebrates and protects students from summer heat waves. Ornamental trees are planted to maintain aesthetic qualities. While on-site diversity analysis, the following medicinal, ornamental, fruit bearing, gymnosperms, pteridophyte and timber yielding species were seen.

SL. NO.	FLORA	SCIENTIFIC NAME	COMMON NAME
1.	Medicinal Plants	*Acalypha indica*	Indian Acalypha
		Achyranthes aspera	Prickly chaff Flower
		Aerva lanata	Polpala
		Aloe vera	Indian Aloe
		Amaranthus spinosus	Prickly Amaranth
		Andrographis paniculata	Creat
		Argemone mexicana	Mexican Poppy
		Azadirachta indica	Neem
		Boerhavia diffusa	Spreading HogWeed
		Cassia occidentalis	Stinking Weed
		Cassia tora	Wild Senna
		Cleome gynandra	Spider Flower
		Cleome viscosa	Tick weed
		Curcuma longa	Turmeric
		Cyperus rotundus	Common Sedge
		Datura alba	Thorn-Apple
		Eclipta alba	Bhringraj
		Euphorbia hirta	Hairy spurge

		Evolvulus alsinoides	Dwarf morning-glory
		Mimosa pudica	Sensitive Plant
		Mirabilis jalapa	Four O'Clock Plant
		Moringa oleifera	Drumstick Tree
		Nyctanthes arbortristis	Night Jasmine
		Ocimum basilicum	Common Basil
		Ocimum sanctum	Holy Basil
		Oxalis corniculata	Indian Sorrel
		Phyllanthus niruri	Gale of the Wind
		Sida cordifolia	Country Mallow
		Tamarindus indica	Tamarind
		Tridax procumbens	Mexican Daisy
		Murraya koenigii	Curry Leaf Tree
		Ficus religiosa	Sacred Fig
		Zingiber officinale	Ginger
2.	Fruit bearing plants	*Emblica officinalis*	Amla
		Aegle marmelos	Wood Apple
		Psidium guajava	Guava
		Artocarpus heterophyllus	Jackfruit
		Nephelium litchi	Lichi
		Mangifera indica	Mango
		Carica papaya	Papaya
		Ananas comosus	Pineapple
		Punica granatum	Pomegranate
		Manilkara achras	Sapota
		Syzygium samarangense	Star Apple
		Averrhoa carambola	Star Fruit
		Cocos nucifera	Coconut
3.	Ornamental Plants	*Amaryllis belladonna*	Belladonna Lily
		Allamanda cathartica	Golden Trumpet
		Barleria cristata	Bluebell Bacteria
		Bougainvillea spectabilis	Glory of the Garden
		Catharanthus roseus	Sadabahar
		Clitoria ternatea	Asian Pigeonwings
		Chrysanthemum grandiflorum	Chrysanthemum
		Caesalpinia pulcherrima	Peacock Flower
		Dahlia tuberosa	Dahlia
		Euphorbia milii	Christ Plant
		Euphorbia pulcherrima	Poinsettia
		Hibiscus rosa sinensis	Chinarose
		Hibiscus mutabilis	Cotton Rose
		Ixora coccinea	Jungle Flame Ixora
		Jasminum auriculatum	Jasmine
		Jasminum sambac	Arabian Jasmine

		Michelia champaca	Champak
		Mussaenda philippica	Bangkok Rose
		Nerium oleander	Indian Oleander
		Peltophorum pterocarpum	Copperpod
		Rosa indica	Rose
		Rhoeo discolor	Boat Lily
		Tecoma stans	Yellow Bells
		Tagetes erecta	Marigold
		Thevetia peruviana	Yellow Oleander
		Tabernaemontana divaricata	Pinwheel Flower
		Wrightia antidysenterica	Coral Swirl
		Zephyranthes citrina	Rain Lily
4.	Gymnosperms	*Cycas revoluta*	Sago Palm
		Thuja occidentalis	Eastern White Cedar
5.	Pteridophyte	*Pteris vittata*	Chinese Brake
6.	Timber Yielding	*Tectona grandis*	Teak

Rhoeo discolor



Mussaenda philippica

Bougainvillea spectabilis

Mangifera indica

Peltophorum pterocarpum

Aloe vera

Mimosa pudica

Cycas revoluta

Phyllanthus emblica

Catharanthus roseus

Ficus religiosa

Ficus benghalensis

Thuja occidentalis

Michelia champaca

Ocimum basillicum

Manilkara achras

Psidium guajava

Nerium oleander

Tabernaemontana divaricata

Rosa indica

Faunal diversity in the college premises

The faunal diversity consists of both invertebrates and vertebrates. Invertebrates have occupied every ecological niche. Vertebrates depend on invertebrates for food. It is very essential to record their existence for balance of nature. Presence of vertebrates and invertebrates were simply noted by sighting. The faunal diversity is sighted and observed at different time intervals.

SL. NO	FAUNA	SCIENTIFIC NAMES	COMMON NAMES
1.	Amphibians	*Duttaphrynus melanostictus*	Asian common toad
		Rana tigirina	Indian bullfrog
2.	Butterflies and Moths	*Papilio polytes*	Common mormon
		Papilio demoleus	Common demoleus
		Triodes Helena	Common birdwing
		Eurema brigitta	Small grass yellow
		Euploea core	Common crow
		Hypolimnas bolina	Great eggfly
		Papilio clytia	Common mime
		Danaus chrysippus	Plain tiger
3.	Arthropods	*Harmonia axyridis*	Harlequin ladybug
		Cotinus nitida	Green scarab beetle
		Oxya hyla hyla	Grasshopper
		Apis indica	Indian bee
		Vespula vulgaris	Wasp
		Musca domestica	Housefly
		Ischnura senegalensis	Dragon fly
		Achaearanea tepidariorum	House spider
		Eratigena agrestis	Hobo spider
		Myrmarachne orientalis	Ant spider
		Nephila pilipes	Giant golden orb weaver
4.	Birds	*Columba livia*	Rock pigeon
		Pycnonotus cafer	Red-vented bulbul

		Corvus splendens	House crow
		Passer domesticus	House sparrow
		Treron bicinctus	Orange breasted green pigeon
		Psittacula krameri	Rose ringed parakeet
		Pericrocotus cinnamomeus	Small minivet
		Aegithina tiphia	Common lora
		Dicrurus aeneus	Bronzed drongo
		Pycnonotus jocosus	Red whiskered bulbul
		Turdus unicolor	Tickell's thrush
		Chloropsis aurifrons	Golden fronted leafbird
		Acridotheres tristis	Common myna
		Athene brama	Spotted owlet
		Tyto alba	Barn owls
		Eudynamys scolopaceus	Asian koel
		Streptopelia chinensis	Spotted dove
5.	Reptiles	*Hemidactylus frenatus*	Common house gecko
		Chamaeleo zeylanicus	Indian chameleon
		Calotes versicolor	Common garden lizard
6.	Mammals	*Funambulus palmarum*	Indian palm squirrel
		Felis silvestris gordoni	Arabian wildcat

Chamaeleo zeylanicus

Corvus splendens

Columbia livia

Tyto alba

Eudynamys scolopaceus

Felis silvestris gordoni

Danaus chrysippus

Ischnura senegalensis

Myrmarachne orientalis

Funambulus palmarum

Water Quality Assessment and Management

Water quality of a place is paramount as it is related to human health. Supplying clean and reliable water supplies is a prime necessity. The source of drinking water supply is majorly groundwater and privately owned R.O. (reverse osmosis) supplier. The groundwater is treated by R. O. unit prior being used by students and staff.

Two Rainwater harvesting units are installed for maximum percolation of rainwater. Water used in laboratories comes out as wastewater, which is diluted prior to disposal in sewer lines where it mixes with sewage. Water required for drinking and laboratory purposes is analyzed for various physical and chemical parameters.

PARAMETER	**PHYSICAL AND CHEMICAL ANALYSIS OF WATER SAMPLE**			
	Tap Water	**R.O. (Hostel)**	**R.O. (Science Block)**	**R.O (Common Room)**
Colour	Colourless	Colourless	Colourless	Colourless
pH	6.8	6.9	7.0	6.8
TDS (ppm)	220	123	141	135
Temperature (ºC)	25	22	21	23

Rainwater Harvesting Unit

Weather Conditions in the College Premises

The climate of Balasore is hot, humid and dry which represents mainly that of a tropical climate.

Temperature in (^{0} F)

Average	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
High	80	86	93	97	96	91	88	87	88	87	84	80
Low	60	66	73	79	81	81	80	80	80	76	68	61

Clouds Fraction in (%)

Fraction	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cloudier	17	15	18	25	54	86	91	92	84	49	27	21
Clearer	83	85	82	75	46	14	9	8	16	51	73	79

Rainfall in (inch)

Months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall	0.5”	1.0”	1.0”	1.7”	4.0”	8.7”	10.5”	10.8”	9.3”	4.8”	1.2”	0.3”

Sunlight during the daytime

Hours	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Daylight	11.0 h	11.5 h	12.0 h	12.7 h	13.2 h	13.4 h	13.3 h	12.8 h	12.2 h	11.6 h	11.1 h	10.8 h

Humidity in day (d)

Months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Muggy days	4.2	10.8	20.8	26.6	30.4	30.0	31.0	31.0	30.0	28.5	13.6	3.1

Noise Quality Analysis

Noise Quality Measurement imparts information about potential noise generating places in the workplace, students and staff likely to be affected. Noise measurement during busy hours gives valuable numbers which may be useful for planning, avoiding, controlling noise at the workplace. Noise monitoring in the campus premises is carried out with the help of a sound level meter where the readings were taken from various locations.

LOCATION	NOISE LEVEL (DECIBEL-dB)	REMARKS
Arts Block	57	Conversation to Noisy
Science Block	55	Conversation to Noisy
Administrative Block	47	Conversation
Common room	61	Noisy
Library	32	Quiet
Hostel	58	Conversation to Noisy
Parking area	65	Disturbing Noise
Outside Premises	73	Potential Hazard

Solid waste management

Solid waste is a heterogeneous material, it must be disposed of properly while taking care to protect the environment. The administrative office, the campus and the hostel are the sources of the solid waste produced at colleges which include plastic, paper, glass, food which are either bio-degradable or non-biodegradable. Colleges separate their solid trash and place it in collecting dustbins, which are then taken away by the municipal corporations. Litter from plants is gathered and dumped in a specially constructed trench where it can decompose. Ventilation arrangement of laboratories is effective to reduce gaseous waste.

Dustbins at various location

Electrical power consumption

The main source of energy inside the college campus is electricity only. The total electricity supply to the college is done by TP Northern Odisha Distribution Limited (TPNODL). The college is committed to reduce consumption of electricity by replacing old fluorescent lamps with LED bulbs and tube lights. Students and staff are aware to minimize electric consumption by switching off electrical appliances when not in use. The entire campus along with the college building is equipped with LED lamps, CFL Bulbs and LED Tube lights except at a few locations. Neither the college nor the hostels have a solar water heating system installed. All the computers, photocopiers are set to automatic power saving mode when not in use to reduce the energy consumption. Along with that the college has many numbers of invertors and one Diesel Generator (DG) is fitted so that short time electrical failure will not affect the day to day activity.

Diesel Generator (DG)

LED lamps

CONCLUSIONS

The process of identifying and establishing an institution's resource usage that is eco-friendly and sustainable is known as "green audits." Environmental metrics, energy usage, water use, and waste management information were all noted during the procedure. The following conclusions and suggestions can be adopted for maintaining an eco-friendly and green environment. Many different types of trees including blooming plants, medicinal plants, fruit plants, and local variants are found in the college campus. Numerous types of animals, including birds, butterflies and moths, reptiles, amphibians, and others, contribute to the campus's unique biodiversity.

Other factors, such as the quality of the ambient water and air, are within the permitted ranges. Natural light and ventilation is sufficient. Biodegradable waste is used for composting and vermicomposting. The groundwater level table is refilled via rooftop rainwater collection. E-waste is appropriately handled, separated, and disposed of in an environmentally sustainable way. There has been a decrease in the usage of single-use plastic bottles, glasses, folders, and decorative objects.

RECOMMENDATIONS

Following are some of the key recommendations for improving campus environment:

1. To improve and maintain the green cover in the college premises.
2. Establishment of an E-waste collection management system in the campus.
3. Installation of water meter.
4. Solid waste should be reused or recycled at maximum possible places.
5. Install a water meter to record water usage in the college premises.
6. Installation of incinerator for napkin burning.
7. All the CFL bulbs must be replaced by LED bulbs/tubes.
8. Photovoltaic cells or solar panels must be installed on the rooftops of the college buildings to reduce the intake of electricity from the grid.

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