

GOVT. COLLEGE BISHRAMPUR

DIST. SURAJPUR, CHHATTISGARH - 497226

COLLEGE CODE- 3703 PHONE: 07775-296086,

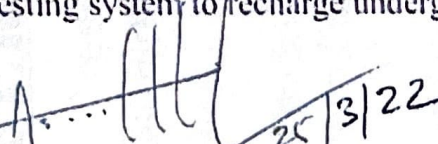
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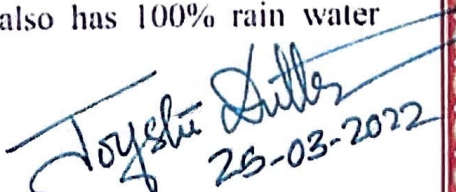
Date 25-03-2022

CERTIFICATE

This is to certify that green/ Environment Audit at Govt. College Bishrampur, Dist.- Surajpur 497226 was conduct on date. 25-03-2022.....

This institute has submitted necessary data and credential for scrutiny. It is found that the college is trying its best to reduce pollution and carbon emission. The college also has 100% rain water harvesting system to recharge underground water level.


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GOVT. COLLEGE BISHRAMPUR

DIST. SURAJPUR, CHHATTISGARH - 497226

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① *Jyoti Datta*
25/03/2022

② *A. S. Datta*
25/03/2022

Date: 25/03/2022



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CONTENTS

- 1. Introduction**
- 2. Audit objectives & scope**
- 3. Audit participants**
- 4. Green Audit Findings**
 - 4.1. Good daylight Design & Ventilation*
 - 4.2. Water Efficiency*
 - 4.3. Waste water management*
 - 4.4. Indoor air quality*
 - 4.5. Energy efficiency*
 - 4.6. Solid waste management*
 - 4.7. Green Belt*
 - 4.8. Green initiatives*
- 5. Green/Environmental audit checklist**
- 6. Recommendations**
- Annexure 1: List of Plants**




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Introduction

Govt. College Bishrampur, Surajpur was established in 2007-2008. College has more than 738 students enrolled in various Academic. It is affiliated to University of Sant Gahira Guru. It has 09 faculty members and 06 non-teaching & other staff.

The college comprises 3 departments offering 12 undergraduate programmes. College offers various courses listed below.

Undergraduate Courses

B.com - Programmes

B.A- English

B.A- History

B.A- Hindi

B.A- Political Science

B.A- Economics

B.A- Geography

Bsc - Mathematics

Bsc - Botany

Bsc - Physics

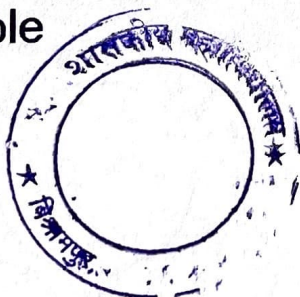
Bsc - Chemistry

Bsc - Zoology

Objectives and Scope

The broad aims/benifits of the eco-auditing system would be

- ▶ Environment education through systematic environmental management approach.
- ▶ Improving environmental standards Benchmarking for environmental protection initiatives
- ▶ Sustainable use of natural resource in the campus.
- ▶ Financial savings through a reduction in resource use
- ▶ Development of ownership, personal and social responsibility for the College campus and its environment.
- ▶ Enhancement of College profile
- ▶ Developing an environmental ethic and value systems in young people



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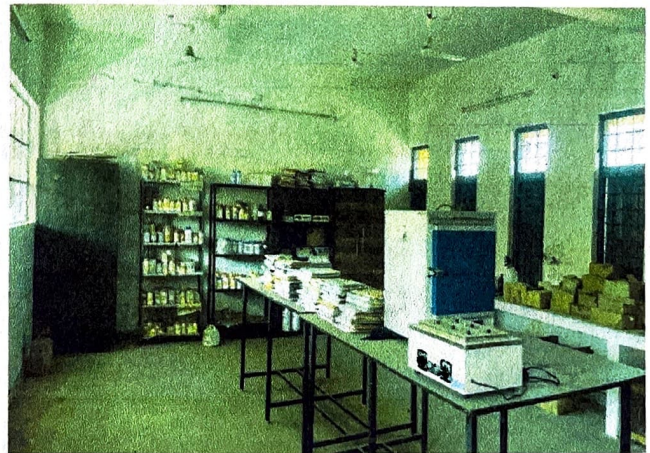
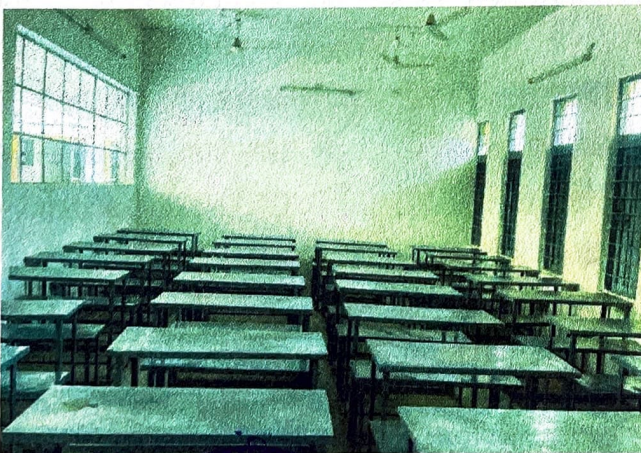
4. Green Audit Findings

For Green Audit following major areas (including their sub-sections) were covered and compliance/initiatives under these areas were verified/validated.

- a) Good Daylight Design and ventilation
- b) Water Efficiency
- c) Wastewater Management
- d) Indoor Air Quality
- e) Eenergy Management
- f) Solid Waste Management
- g) Green Belt
- h) Green Programs (Green Initiatives)

4.1. Good Daylight Design and Ventilation

- a) Classrooms, laboratories, offices, library, seminar hall etc. Have high ceiling, wide doors and large windows.
- b) Building is designed in such a way that corridors and classrooms receive ample sunlight. Curtains are provided for laboratory windows to avoid glare. Nature light in the classrooms was about 70-85 lux.
- c) Ventilation in classrooms is facilitated by windows and fans. Cross ventilation is facilitated due to large windows on sides of some classrooms.

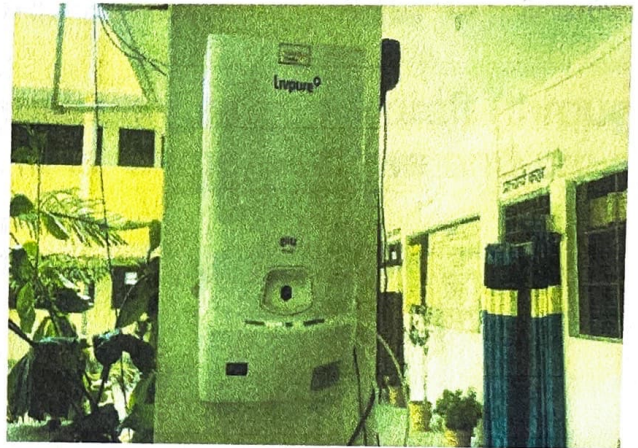


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4.2 Water Efficiency

- a) Major water source for college is borewell and tap water. College also has one borewell in the campus which is currently used for water withdrawal. As informed by college's water management team, daily water consumption for the entire campus when in full operation is 20 KL, which includes 15 KL consumption in academic area and 05 KL for gardening.
- b) Additionally, 5 tanks of 2KL capacity each are installed in the campus to provide inlet water to 10-12L/day RO system. Water from RO is sent to drinking water.
- c) 2 water coolers fitted with RO purifiers are provided in college building as a source of safe drinking water.
- d) Dry and wet mopping is practiced for floor cleaning. Floors are mopped once a day. College has appointed third-party contractor.



4.3 Wastewater Management

- a) Wastewater is mainly generated from washing, toilet, flushing, laboratories. Total 4 washrooms are provided in the college building (2 washrooms on each floor).
- b) Currently, sanitary wastewater generated is sent to septic tank.




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4.4. Indoor Air Quality

Indoor Air Quality (IAQ) refers to the air within & around buildings and structures, it relates to the health and comfort of building occupants. Common indoor pollutants are listed as below:

- Carbon monoxide - Source of carbon monoxide are incomplete combustion of fossil fuels.
 - Volatile organic compounds (VOCs) - VOCs are emitted by paints and lacquers, paint strippers, pesticides, office equipment such as copiers and printers, correction fluids and carbonless copy paper, graphics and craft materials including glues and adhesives, permanent markers and photographic solutions etc.
 - Carbon dioxide - Due to human respiration
 - Particulate matter - Due to construction and maintenance activities, vehicular pollution
 - Nitrogen Oxides - Due to vehicular pollution
- a) Science laboratories and liquefied petroleum gas (LPG), a clean fuel.
 - b) In classrooms, the mode of ventilation is natural draft (through windows) and is enhanced by fans. Large windows and cross-ventilation are observed in corridors.
 - c) Green belts have been set up in the campus area.




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4.5. Energy efficiency (Electricity)

a) Common electricity meter is provided for the entire campus. Electricity is provided by Chhattisgarh State Power Distribution Company Limited. The areas of major consumption of electricity are:

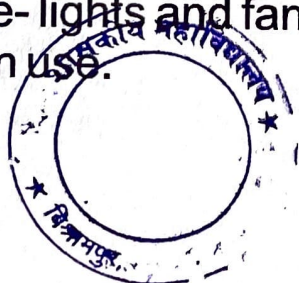
Sr. No.	Name of appliance	Capacity of appliance in watts	Connected Qty.	Qty. in service	Total watts (w)	Hrs day	wh
1.	Ceiling fans	60	128	65	4225	2.5	10562.5
2.	Tube Lights	40	79	45	2025	2.5	5062.5
3.	Cooler	250	2	2	4	4	16
4.	Water Cooler	600	2	1	1	4	4
5.	Exhaust Fan	120	7	5	25	3	75
6.	Computer	150	10	8	64	6	384
7.	Printer	1000	2	2	4	1	4
8.	Water Pump	650	1	1	1	4	4
9.	Sound system	50	1	1	1	0	0
10.	Photocopy machine	1700	2	2	4	1	4
Total (wh)							16116
Totaly (kwh)							16.116

b) Conventional tube lights. LEDs & fans are installed in classrooms, laboratories and library. For efficient energy consumption and saving on electric bill. College has initiated the process of replacing incandescent bulbs and tube lights with LEDs.

c) All computers have LED screens; computers are shut down by turning off the main switch when not in use.

d) Common switches are provided for some tube-lights & fans. To avoid wastage of energy due to common area illumination, it is recommended to have seprate switches.

e) Tube- lights and fans are switched off by students and staff when not in use.



4.6. Solid Waste Management

For the solid waste disposal many awareness and cleanliness drives have been carried out by NSS volunteers (under the **Swachh Bharat Mission Campaign**) in the campus. As a result our campus becomes litter free. Dustbins for collection of waste are placed at certain places and rooms. Waste from the college is collected to a large waste container place outside the building in the campus from where waste is collected by the municipal workers for disposal and treatment.



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7. Green Belt

- a) College campus has 2 gardens (including rock garden and rose garden). College is having 30 variety of plants , 10 trees, shrubs and 30 potted. List of few plants present in the campus is given in **Annexure 1**. Plantation improves aesthetics and helps as a buffer in reducing noise level maintaining temperature of the area. Herbal garden has different sections in which specific types of plants planted with respect to their medicinal importance.
- b) As per the findings of internal green audit conducted by college, large trees include gooler (ficus racemose), Ashok (Saraca asoca), Mango (Mangifera indica), Bael (Aegle marmelos), Gulmohar (Delonix regia), Neem (Azadirachta indica) etc. Few trees were identified and confirmed during virtual tour.
- c) College has indoor plants in the building. Indoor plants have aesthetic appearance as well as health benefits.
- d) All the plants in the college campus have been given a QR code, which can be scanned to get information about that plant.



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4.8. Green Initiatives

Due to minimum consideration for environment & sustainability, the world is facing problems of ozone depletion, climate change, water scarcity and sustainable resource management. College organises guest lectures on environmental conservation, biodiversity etc. every year.

College has demonstrated consistent commitment towards nature and environment for the last 5 years. The National Service Scheme (NSS) of the college undertakes projects for environment, rural development, education awareness, healthcare etc. Various activities like cleanliness drive, tree-plantation, seminars and workshops are organised by NSS increase the awareness and sensitivity among students and faculty.



5. Green/environmental audit checklist

College campus is audited with respect to Green Audit Checklist developed by STEP. College building is specifically designed with broad windows and wide passages to utilize sunlight and for ventilation. College has ample number of trees in the campus. Facilities such as rainwater harvesting system, rooftop solar PV systems are provided in the campus.

Students and staff demonstrate consistent efforts in arranging environmental activities and actively participate in them.

Good daylight design:

Sr. No.	Design Feature		Remarks (if any)
1.	Wide doors open to daylight	✓	
2.	Broad doors and windows allowing daylight	✓	
3.	Building architecture which allows sunlight within buildings	✓	Specifically designed with broad windows and wide passages
4.	Presence of skylight/rooflight	✗	Large number of trees and herbal garden are present in the premises
5.	Ultraviolet (UV) filtering windows/use of exterior louvers or light colored fabric of blinds for windows to control glare	✓	Light colored curtains of blinds used for laboratory windows
6.	Operable/openable windows	✓	

Ventilation:

Sr. No.	Design Feature		Remarks (if any)
1.	Good ceiling height which allows internal air circulation	✗	Height- about 4 m
2.	Wide windows and doors for classrooms, laboratories, seminar halls	✓	
3.	Wide corridors	✓	Width 2- 2.5 m
4.	Operable louvers	✗	
5.	Exhaust fans in toilets	✓	Exhaust fans are provided in washrooms



Water Efficiency & Wastewater Management:

Sr. No.	Measures		Remarks (if any)
1.	RO based water purifiers for drinking water	✓	
2.	Aerators to water taps	✓	Limited present only in some washrooms
3.	Automatic toilet faucets	✗	
4.	Dual flush toilet with cistern	✗	Dual flush is important for reducing water footprint
5.	Dry mopping/cleaning methods adopted	✓	
6.	Regular maintenance for leakage free plumbing system	✓	Maintenance is done by maintenance department
7.	Use of low flow control water equipment or gadget	✗	
8.	Routine monitoring of water quality	✗	
9.	Awareness signs displayed for promoting water conservation	✗	Water conservation signage to be displayed to create awareness among staff and students

Green program:

Sr. No.	Green program		Remarks (if any)
1.	Upcycling of waste. Recycling beyond books i.e. paper, aluminum, plastic, e-waste	✓	Dry waste is used by students for projects and during festivals for decoration purpose
2.	Creation of green team in the institution/library	✓	College has indoor garden committee
3.	Awareness programs on environment, energy management & safety (external sessions and academic courses)	✓	Each course has at least one environment related subject. Awareness sessions are arranged for student and also by faculty & students in nearby area.



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Energy Efficiency & Management:

Sr. No.	Design Feature		Remarks (if any)
1.	Maintaining correct lux levels (70-300 lux) to avoid excessive light	✓	The illumination (Lux) levels were adequate in most areas (30-50 lux sunlight). Lights are kept switched off when not required.
2.	Computerized monitoring of electrical system	✗	
3.	Photocell occupancy sensor for automatic light control	✗	
4.	Regular maintenance of electrical system	✓	On-site maintenance department is present for regular maintenance.
5.	Use of energy efficient equipment like VFDs, maximum star rated equipment	✓	30% lights are LEDs
6.	Use of energy saving bulbs (compact florescent light/LED lights)	✓	30% lights are LEDs
7.	Awareness signage on electricity conservation	✓	Electricity conservation signage are provided on laboratory notice board. Signage should be provided near all switch boards.

6. Recommendations

College has implemented several green initiatives such as rainwater harvesting under process for installation sewage treatment which help in promoting sustainability.

Water consumption can be reduced further though various conservation methods. Replacement of all old water faucets with water saving faucets such as prismatic taps, aerator taps, jet sprays etc. can save water and help in minimizing the water footprint.

College should test water quality at regular intervals, develop water demand/balance diagram and a plan delineating water conservation practice.



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Records of pipe/water taps leakage complaints should be maintained as a part of Standard Operating Procedures (SOPs).

Signage regarding water conservation, reduction & segregation of plastic waste, reduction in food waste, waste segregation can be put up in kitchen, dining areas and near drinking water facilities to create awareness among staff and students.

Every classroom and laboratory with central switch board can have a diagram linking location of a tube light, fan etc. with corresponding switch. This will ensure that correct fitting is switched on/off and can save time & unnecessary operation. The awareness regarding energy management could be improved by encouraging students to help in monitoring energy consumption and by integrating energy education into classroom learning.

① Joyshu Dutta
25/03/2022.

② [Signature]
25/03/2022



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Dist. Bishnupur

Annexure 1: List of Plants

Sl.No.	Plant Name	Botanical Name	Family
1.	Tulsi	Ocimum Sanctum	Labiatae
2.	Neem	Turnalia Cnebula	Cambretacene
3.	Aloevera	Aloevera	Liliaceae
4.	Mahua	Madhuca indica	Sapotaceae
5.	Khajoor	Phoenix Sylvestris	Palmeceae
6.	Lily	Lillium bulbiferum	Liliacase
7.	Genda	Tagetes erecta	Asteraceae
8.	Dahila	Dahlia pinnata	Asteraceae
9.	Ashok	Saraca indica	Casalpinioidac
10.	Amrud	Psidium guyaya	Myrtaceae
11.	Bel	Aegle Mormelos	Rutaceae
12.	Areca palm	Dypsis lutescens	Palmae
13.	Mango	Mangifera indica	Anacar dinceae
14.	Gudhal	Hibiscus Rosa sinensis	Malvaceae
15.	Shake Plant	Dracaena trifasciata	As paragaceae
16.	Sada bohar	Catharanthus roseus	Apocynaceae
17.	Ber	Zizypu jujube	Rhamnaceae
18.	Cycas	Cycas ciricinales	Cycadaceae
19.	Khamhar	Gmeline arborea	Verbenaceae
20.	Christmas tree	Araucaria hetrophylla	Araucariaceae
21.	Money Plant	Epipremnum aureum	Araceae
22.	Bougainvillea	Bougainvillea glabra	Nyctaginaceae
23.	Pathar Chatta	Bryophyllum pinnata	Crassulaceae
24.	Rose	Genus Rosa	Rosaceae
25.	Spider plant	Chlorophytum Comosum	Asparagaceae
26.	Cactus	Caryophyllales	Cactaceae
27.	Thuja	Arboneitae	Cupressaceae
28.	Dracaena	Dracaena	Asparagaceae
29.	Caladium bulbs	caladium bicolor	aroideae
30.	purslane	portulaca oleracea	portulacaceae
31.	bougainvillea	bougainvillea	nyctaginaceae



Sl.No.	Plant Name	Botanical Name	Family
32.	mogra	jashminum sambac	oleaceae
33.	canary pygmy plam	phoenix roebelenii	arecuaceae
34.	crepe jasmine	tabernaemontuna divaricata	apocynaceae
35.	dracaena fragrans	dracaena jragraus	asparagaceae
36.	caladium rospberry	caladium hortulanum	araceae
37.	ming arailias	polyscias	araliaceae
38.	dwarf umbrella tree	schefflera arboricola	araliaceae
39.	scarlet sage	salvia	lamiaceae
40.	dumb canes	dieffenbachia	araceae
41.	pentalinon luteum	neriandra suberectes	apocynaceae
42.	kalanchoe plant	kalanchoe blossfeldiana	crassalaceae
43.	madagascar periwinkle	catharanthus roseus	apocynaceae
44.	crotons	cadiaeu veriegatum	euphorbiaceae
45.	plumeria pudica	plumeria pudica	apocynaceae
46.	purslane	portulaca oleracea	portulacaceae
47.	jamun tree	syzygium cumini	myrtaceae
48.	treiadica	triadica sebifera	euphorbiaceae
49.	jungle jelebi	pithecellobium dulce	fabaceae
50.	karanj tree	milletta pinnate	fabaceae
51.	khamhar	gmelina arborea	verbenaceae
Total number of plants			150



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