

# ENERGY AUDIT, ENVIRONMENTAL AUDIT & GREEN AUDIT OF GOVT. DR. W. W. PATANKAR GIRLS' PG COLLEGE, DURG, CHHATTISGARH



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.....dedicated in energy conservation

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### 3. ACKNOWLEDGEMENTS

We express our sincere thanks to Dr. Sushil Chandra Tiwari, Principal for his kind support and giving us the assignment to contribute in his effort towards green initiatives & efficient energy management in Govt. Dr. W. W. Patankar Girls' PG College, Durg, Chhattisgarh.

We are highly indebted to Dr. Richa Thakur, Professor, Dance and IQAC coordinator for her guidance, intellectual advice, and her kind support in completing the project.

Our boundless gratitude to Dr. Meera Gupta, Dr. K L Rathi, Dr Mohammad Shoeb, Dr. Yasmeen Fatima Pervej of IQAC cell & other teaching and non-teaching staff associated with this Energy Audit, Environmental Audit, and Green Audit study of Govt. Dr. W. W. Patankar Girls' PG College, Durg, for extending cooperation during collection of data and field study work.

We trust that the findings of this study will help the college in improving its green initiative towards creating awareness for healthy and sustainable environment.

#### **Raj Energy Services**



#### **Sanjay Kumar Mishra**

Certified Energy Auditor, EA- 8696



## **4. DISCLAIMER**

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### **Exceptions**

Nothing in this disclaimer notice excludes or limits any warranty implied by law for death, fraud, personal injury through negligence, or anything else which it would not be lawful for to exclude.

We trust the data provided by Dr. W. W. Patankar Girls’ PG College, Durg, personnel are true to their best of knowledge.

## 5. CERTIFICATE



**RAJ ENERGY SERVICES**

*dedicated in energy Conservation*

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### **ENERGY AUDIT, ENVIRONMENTAL AUDIT & GREEN AUDIT CERTIFICATE**

This is to certify that M/s. Raj Energy Services has conducted Energy Audit, Environmental Audit & Green Audit of Govt. Dr W.W. Patankar Girls PG College, Durg and submitted report under their Policy for Green Campus of the Institute.

Name and Address of the Educational Institute	Govt. Dr W.W. Patankar Girls PG College, Near Kendriya Vidyalaya, Jail Road, Durg, Chhattisgarh, 491 001
Contact Details	Phone No.: 0788 2323773 E-Mail: <a href="mailto:govtgirlspgcollege@gmail.com">govtgirlspgcollege@gmail.com</a> Website :- <a href="https://govtgirlspgcollegedurg.ac.in">https://govtgirlspgcollegedurg.ac.in</a>
Name of Principal	Dr. Sushil Chandra Tiwari
Details of facilities Audited	Administration building, All College building, Office, All Departments, Laboratories, Classrooms, Library, Electrical Systems, Rain Water Harvesting System, water Management System, Waste Management System, and complete Installations.
Date of Audit Conducted	20 <sup>th</sup> , 21 <sup>st</sup> , 22 <sup>nd</sup> & 23 <sup>rd</sup> June 2023
Name of Certified Energy Auditor	Sanjay Kumar Mishra
Registration Number	EA- 8696

For, Raj Energy Services

Date: August 14, 2023

(Sanjay Kumar Mishra)

Certified Energy Auditor from Bureau of Energy Efficiency, Ministry of Power, Government of India, New Delhi  
EA- 8696

## 6. AUDITOR'S CERTIFICATE



### BUREAU OF ENERGY EFFICIENCY



Examination Registration No. : **EA-8696** Serial Number **5435**

Certificate Registration No. : **5435**

### Certificate For Certified Energy Manager

This is to certify that Mr./Mrs./Ms. **Sanjay Kumar Mishra** Son/Daughter of Mr./Mrs. **R. B. Mishra** who has passed the National Examination for certification of energy manager held in the month of **May 2008** is qualified as certified energy manager subject to the provisions of Bureau of Energy Efficiency (Certification Procedures for Energy Managers) Regulations, 2010.

This certificate shall be valid for five years with effect from the date of award of this certificate and shall be renewable subject to attending the prescribed refresher training course once in every five years.

His /Her name has been entered in the Register of certified energy manager at Serial Number **5435** being maintained by the Bureau of Energy Efficiency under the aforesaid regulations.

Mr./Mrs./Ms. **Sanjay Kumar Mishra** is deemed to have qualified for appointment or designation as energy manager under clause (j) of Section 14 of the Energy Conservation Act, 2001 (Act No.52 of 2001).

Given under the seal of the Bureau of Energy Efficiency, this **7<sup>th</sup>** day of **February, 2013**

Secretary  
Bureau of Energy Efficiency  
New Delhi

Digitally Signed: RAKESH KUMAR RAI  
Sun Mar 01 10:31:41 IST 2020  
Secretary, BEE New Delhi

Dates of attending the refresher course	Secretary's Signature	Dates of attending the refresher course	Secretary's Signature
<b>22.01.2019</b>			

## 7. INTRODUCTION

### Introduction

Govt. Dr. W. W. Patankar Girls' PG College, Durg, is a renowned and successful educational Institute of Higher Education for girls in Chhattisgarh. The College began its journey on 15th September 1982 with a modest setup of minimal infrastructure and handful of students, albeit with a clear vision and mission. Affiliated to Hemchand Yadav University, Durg, the College imparts higher education to the girl students of Chhattisgarh by offering undergraduate and postgraduate programmes encompassing the faculties of Science, Commerce, Arts and Home-Science and thereby provides a launch pad to students especially from lower socio-economic strata to realize their ambitions through affordable and quality higher education.



### Vision

We aspire to emerge as an institute of excellence with a difference wherein we develop intellectual, emotional, cultural, moral, ethical and entrepreneurial values in female students by imparting higher learning and value-based education in line with global standards so that the whole society is benefited and uplifted.

### Mission

- To provide quality higher education and value- based learning to female students at minimal cost.
- To maintain excellent academic standards by utilizing modern tools & technologies for effective teaching-learning processes.
- To orient students towards honest academic practices and quality research through research & innovation.
- To motivate female students to strive for self-reliance and entrepreneurship.
- To encourage and promote faculty members for advanced research and teaching methods.

- To inspire and prepare our students to compete at national and international platforms in the fields of academics, arts and sports.
- To inculcate the Indian heritage and culture and to instill moral values of life in the minds of the youth.
- To promote leadership qualities and to develop entrepreneurial skills among students.
- To extend the services of the institution for the betterment of the society.



### Core Value of College

- Students are of primary concern in our Institution.
- We religiously follow integrity, civility, chivalry and honesty.
- We pursue excellence with righteousness.
- We appreciate and propagate equality and unity in diversity.
- We support and promote creativity, inquiry, critical and scientific thinking.
- We follow the best methods of interactive teaching for better academics.
- We aim at building a future generation of responsible citizens for better India.

### मोनिका ने रचा इतिहास

महाविद्यालय में बी.ए. द्वितीय वर्ष की छात्रा कु. मोनिका ने राष्ट्रीय सायकल पोलो प्रतियोगिता में प्रथम स्थान प्राप्त किया। उक्त प्रतियोगिता भारतीय सायकल पोलो फेडरेशन द्वारा कोयम्बटूर तमिलनाडु में दिनांक 21 जुलाई से 24 जुलाई 2022 तक आयोजित की गयी थी। मोनिका ने इस प्रतियोगिता में उत्कृष्ट प्रदर्शन कर स्वर्ण पदक प्राप्त किया। मोनिका पहले भी कई फेडरेशन कप प्रतियोगिता में पदक जीत चुकी है। कु. मोनिका कक्षा आठवीं से सायकल पोलो खेल रही है।

महाविद्यालय के प्राचार्य डॉ. सुशील चन्द्र तिवारी, क्रीड़ा समिति की संयोजिका डॉ. सुचित्रा खोत्रागड़े, श्री गणेश नायक, क्रीड़ाधिकारी डॉ. ऋतु दुबे ने मोनिका की इस उपलब्धि पर उसे शुभकामनायें दीं और उज्ज्वल भविष्य की कामना की।



डॉ. ऋतु दुबे का ऑल इंडिया टेबल टेनिस के लिये चयन हुआ

College offers UG program in Arts (includes B.A. in Hindi, English, Sociology, Political Science, Economics, Geography, Home Science, Music, History, Psychology, Bharat Natyam, Drawing & Painting); UG program in science (includes B.Sc. in Mathematics, Biology, Microbiology,

Computer Science); UG program in Home Science (includes B.Sc. Home Science) and UG program in Commerce includes B.Com. & B.Com. Computer Application.

College also offers PG program in Arts (includes M.A. in Hindi, English, Economics, Sociology, Geography, Political Science and Home Science); PG program in science (includes M.Sc. in Mathematics, Physics, Chemistry, Zoology, Botany); PG program in Home Science (includes M.Sc. Food & Nutrition) and PG program in Commerce (includes M.Com.) and PGDCA in Computer Science to girl students while also providing them a platform to hone and develop their individual skills.

Sr. No.	Programme Level	Name of Programme/ Course	Duration in Months	Sanctioned Strength
1	Under Graduate	BA, Arts	36	650
2	Under Graduate	BA, Arts	36	400
3	Under Graduate	BSc, Science	36	300
4	Under Graduate	BSc, Science	36	540
5	Under Graduate	BSc, Home Science	36	180
6	Under Graduate	BCom, Commerce	36	1110
7	Post Graduate	MA, Home Science	24	40
8	Post Graduate	MSc, Home Science	24	40
9	Post Graduate	MCom, Commerce	24	160
10	Post Graduate	MSc, Mathematics	24	40
11	Post Graduate	MSc, Physics	24	40
12	Post Graduate	MSc, Chemistry	24	20
13	Post Graduate	MSc, Botany	24	30
14	Post Graduate	MSc, Zoology	24	40
15	Post Graduate	MA, Sociology	24	60
16	Post Graduate	MA, Economics	24	60
17	Post Graduate	MA, Geography	24	30
18	Post Graduate	MA, Hindi	24	60
19	Post Graduate	MA, English	24	60
20	Post Graduate	MA, Political Science	24	60
21	PG Diploma recognized by statutory authority including university	PGDCA	12	50
22	Doctoral (Ph.D)	PhD or DPhil, Home Science	48	8
23	Doctoral (Ph.D)	PhD or DPhil, Hindi	48	4

Table 1: Course offered

Total computers are in the college; out of which are used for academic purpose. Almost all departments are provided at least 1 or 2 computers. Laboratories are equipped with State-of-the-art instruments. There is

a computer lab with 22 computers for the students who are doing different computer courses. The Department of Law has Moot Courts for simulation of cases leading to pleading, drafting and developing arguments.

The College has constituted a Green Army which is comprised of student members who discharge their duties towards Environmental protection & Ecological preservation and also towards Cleanliness. The student members of the Green Army run tree plantation drives by planting saplings in and around the College Campus and also in the villages adopted by the College. The student members of the Green Army also see to it that the green landscaping inside the College campus remains intact and the College campus remains plastic free and filth free by regularly doing cleanliness drives in support of Swachh India.



The College has constituted an Aqua Club which is comprised of student members who work in close association with the College Admin in emphasizing the importance and need of Water Conservation and Rain Water Harvesting in the College campus. The student members of Aqua Club watch out for any wastage of water, leakages of pipelines / taps and also water sanitation & maintenance of RO purifiers inside the College campus.



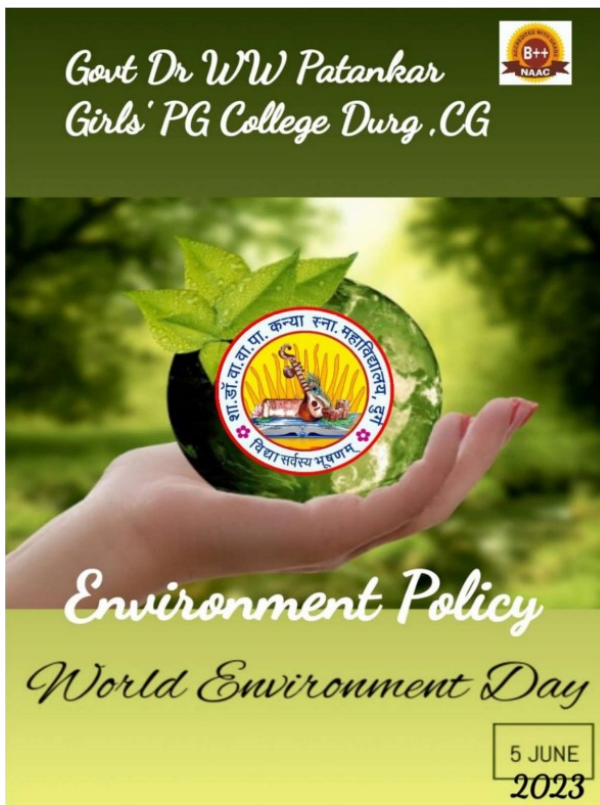
The College has constituted a Kasturba Samuh which is comprised of student members who dedicate their time and duties towards various social causes like community cleanliness, personal hygiene of women,

prevention of Dengue / Malaria / Chikungunya and other seasonal contagious diseases, rural education, voter awareness, philanthropy and gender sensitization.



of Dr W.W. Patankar Girls Government College, Durg has prepared the Environmental Policy to provide an overview of the College's vision to minimize the environmental impacts of its activities and operation and sustainable management of the available resources. The policy statement highlights how the college would pursue environmental best practises and inspire the sustainable use of resources at the community level within and outside college premise.

The environment policy was launched on environmental day i.e., 5<sup>th</sup> July,2023.



राजाव गांधी किसान न्याय योजना स जाय, हमाशु सन्हा उपास्थत थ।

### गर्ल्स कॉलेज में पर्यावरण नीति का विमोचन

शासकीय डॉ. वा.वा. पाटणकर कन्या महाविद्यालय में विश्व पर्यावरण दिवस के अवसर पर विभिन्न आयोजन किए गए। महाविद्यालय की पर्यावरण नीति का विमोचन अतिथियों द्वारा किया गया। मुख्य कार्यक्रम में पर्यावरण विशेषज्ञ संजय मिश्रा ने कहा कि इस वर्ष का पर्यावरण दिवस प्लास्टिक मुक्त पर्यावरण के लिए समर्पित है। समस्या के साथ उसका समाधान भी आवश्यक है तभी हम विश्व को प्रदूषण से मुक्त करा सकेंगे। उन्होंने विभिन्न आकड़ों के माध्यम से प्रदूषण की विकराल स्थिति को बताया। विभिन्न देशों में इसके लिए किए जा रहे प्रयासों की भी उन्होंने चर्चा की। महाविद्यालय के प्राचार्य डॉ. सुशीलचन्द्र तिवारी ने महाविद्यालय में पर्यावरण नीति के अनुरूप योजनाबद्ध तरीके से कार्य करने पर जोर दिया। उन्होंने राष्ट्रीय सेवा योजना इकाई, ग्रीन आर्मी तथा एक्वा क्लब को सत्र भर नियमित रूप से पेड़ पौधे की सुरक्षा, प्लास्टिक कचरे का निष्पादन और जागरूकता के विभिन्न कार्यक्रमों का आयोजन करने का आह्वान किया। कार्यक्रम की संयोजक डॉ. ऋचा ठाकुर ने बताया कि इस अवसर पर रसायनशास्त्र की प्राध्यापक डॉ. यास्मीन फातीमा परवेज ने पावर प्वाइंट के माध्यम से पर्यावरण से संबंधित अपनी प्रस्तुति दी। कु. पूजा चेलक ने कविता प्रस्तुत कर पर्यावरण का संदेश दिया। इस दिवस के अवसर पर पोस्टर बनाओ प्रतियोगिता आयोजित की गई। महाविद्यालय परिसर में पौधारोपण किया गया। इस कार्यक्रम में प्राध्यापक, कर्मचारी एवं छात्राएं उपस्थित थीं। राष्ट्रीय सेवा योजना की छात्राओं ने परिसर की साफ-सफाई की तथा पौधे लगाए। अंत में आभार प्रदर्शन डॉ. यशोश्र्वरी ध्रुव, सहायक प्राध्यापक, हिन्दी ने किया।



## 8. SCOPE OF STUDY

The 'Green Audit' aims to analyse environmental practices within and outside the College campus, which will have an impact on the eco-friendly ambience. An energy audit can be defined as an inspection or survey analysis of energy flows in a structure, in a process or in a system, intended to reduce the amount of energy input without negatively affecting the outputs. An Environmental Audit is an independent assessment performed to ensure that businesses and organizations are complying with environmental policies

### Objectives of the Study

The main objective of this audit is to promote the Environment Management and Conservation in the College Campus including the maximum use of renewable energy. The purpose of the audit is to identify, quantify, describe, and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards.

The main objectives of carrying out Green Audit are:

- To introduce and aware staff and students to real concerns of environment and its sustainability.
- To secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use of the campus.
- To establish a baseline data to assess future sustainability by avoiding the interruptions in environment that are more difficult to handle and their corrections requiring high cost.
- To bring out a status report on environmental compliance.

### Methodology

We had discussed in detail with Principal and Staff members of the college. The discussion was focused on identifying the attitudes and awareness towards energy and environmental issues at the institutional, district, national and global level. In order to perform the audit, the methodology included different tools such as preparation of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations.

The study covered the following areas to summarize the present status of environment management in the campus:

- Water Management
- Energy Management
- Waste Management
- E-waste Management
- Green Campus Management
- Carbon Footprint

## **9.WATER MANAGEMENT**

### **1. Water Management**

### **2. Rain water harvesting structures and utilization in the campus**

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#### **Water Management**

This indicator addresses water consumption, water sources, irrigation, storm water, appliances and fixtures. Aquifer depletion and water contamination are taking place at unprecedented rates. It is therefore essential that any environmentally responsible institution should examine its water use practices.

#### **9.1 Water Storage Tanks**

Dr. W.W. Patankar Girls' PG College, Durg gets water from a ground water bore well sources. One pump operated two times to fulfil the daily needs of college. College has three overhead water storage tanks each having capacity of 1000 liter.

<b>Place</b>	<b>Capacity in liter</b>	<b>Quantity in Nos.</b>	<b>Total capacity in liter</b>
College Building	1000	03	3,000

Table 2: Water storage capacity

There is a submersible water pump of rating 3 HP.



College has not installed Water level indicator/ controller to avoid overflow from water tank.

## 9.2 Water Consumption at Dr. W.W. Patankar Girls' PG College, Durg

The water consumed in various works like washing, drinking, gardening, canteen, bath, toilet etc. The details of average water consumption per day is shown in following table:-

Water Audit at Dr. W.W. Patankar Girls' PG College, Durg					
1	2	3	4	5	6
Activity	Average Liters of water used per activity in Liters	Number of times activity done each day	Total water used by a person each day (Liters)	Number of people in the College using water	Water Consumption per day (Liters)
Wash hands and face	1.5 Liters	Once	1.0	650	650
Toilet flush	4	once	4	300	1200
Drinking (cup)	0.25	Twice	0.5	1400	700
Wash Basin (Lab)					100
Gardening		once			
Overflow of water & leakage	50 Liters	Once	50	3 tanks	150
Others					200
<b>Total Consumption of water in Liters</b>					<b>6,000</b>

Table 3: Total Water Consumption Per Day

Maximum amount of water is consumed for gardening purpose. Water is also consumed in wash basin, toilets etc. In Dr. W.W. Patankar Girls' PG College, total numbers of water taps are 83.

Purpose	Total Numbers
Urinal	26
Toilet	13
Wash Basin for lab	20
Wash Basin for Toilet	9
Tap for bathing	3
Tap for washing	4
Tap for gardening	4
Water Cooler	4
Total	83

Table 4: Total numbers of water taps in college.

### 9.3 Rain Water Harvesting System

Rainwater harvesting is a technology used to collect, convey and store rain water for later use from relatively clean surfaces such as a roof, land surface or rock catchment. RWH is the technique of collecting water from roof, Filtering and storing for further uses. Rainwater Harvesting is a simple technique of catching and holding rainwater where its falls. Either, we can store it in tanks for further use or we can use it to recharge groundwater depending upon the situation.

#### Rain Water Harvesting System at Dr. W.W. Patankar Girls' PG College

Dr. W.W. Patankar Girls' PG College, Durg has a large open roof area for collecting rain water. The college has two rain water harvesting systems.

Sr. No.	RWH pit details	Dimension	Capacity in Cu. Feet	Capacity in Liters
1	Rain Water Harvesting 1	4' x3' x 2.5'	30	850
2	Rain Water Harvesting 2	5' x5' x 6'	150	4,250
3	Total Capacity of RWH pits			5,100

Table 5: Capacity of rain water harvesting pits





Rain water harvesting pit

The college has 1878 sq. meter open roof area for rain water collection. It is observed that the discharging pipe for rain water is connected with inner as well as outer side of building. This arrangement limits the efficient operation of rain water harvesting system. The total potential of rain water harvesting system is calculated as under :-

Open roof area College building (A)	1055 Sq. Meter
Roof area used for rain water harvesting system (B)	1878 Sq. Meter
Average rain fall per square meter in Durg (C)	1200 mm or 1.20 Meter
Amount of water received through rain (D=B x C)	2254 Cu. Meter
Run off Coefficient factor through rain ( E)	0.8
Total water received (F =D x G)	1803 Cu. Meter

## 9.4 Recommendations

### 1) **Controlled Water Management:**

Overflowing of water through overhead tank should be installed by installing water level controller at overhead tanks. This will not only save water but also reduce operational time of pump. Gardens should be watered by using drip/sprinkler irrigation system to minimize water use., It is recommended to install taps with reduced water flow. Since there are no signs of addressing people to turn off water taps in the campus it is recommended to reward the personnel informing Leaky taps, Paste Labels where ever water is expected to be wasted.

### 2) **Re-use of waste water from Air Conditioners**

The air conditioning system cools the warm air and humidity form condensation in the unit. The water is normally drained to drain system. This waste water from air conditioners should be directed to the pots or garden. This comprehensive strategy plays a vital role in re-use of water from air conditioners unit.

### 3) **Installation of Rain Water Harvesting System for remaining roof area of college building**

The Dr. W.W. Patankar Girls' PG College has a very large roof area for roof top rainy water The remaining roof area of college building should also be used for rain water harvesting system. This will improve the recharging of ground water level.

### 4) **Awareness activities for water conservation**

Our government has started **National Green Hydrogen Mission** to use hydrogen as a fuel. As water is raw material to produce hydrogen and the water demand in our country is higher compared to water supply. Then, it is our duty to educate students and all, to encourage the awareness of water conservation activities. In college, various stickers/posters should be fixed near wash basin, water cooler etc; Seminar & Webinars may be conducted time to time for spreading awareness towards water conservation.

## **10. ENERGY MANAGEMENT**

- **Alternate Energy initiatives such as: Percentage of annual power requirement of the Institution met by the renewable energy sources**
- **Percentage of annual lighting power requirements met through LED bulbs**

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### **Energy Management**

This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliances, and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment.

#### **10.1 Electricity**

The class rooms and labs are well ventilated and permit enough daylight. Maximum utilization of natural light is done to cut down usage of power in both classrooms and laboratories. Electrical Energy is purchased from Chhattisgarh State Power Distribution Company Limited.

##### **10.1.1 Contract Demand**

Dr. W.W. Patankar Girls' PG College, Durg has one service connection.

<b>Sr. No.</b>	<b>B.P. No.</b>	<b>Sanctioned Load in watts</b>	<b>Purpose of Connection</b>
1	1004807124	29,165	College Building

Table 6: Service connection details

##### **10.1.2 Annual Electricity Consumption**

The college building has average monthly electricity consumption is 2,543 unit and maximum of maximum demand was 19.2 KW in the month of September 2022.

The electricity consumption of canteen is very less; hence we are not considering. The maximum demand of college building is 13.9 KW. The monthly electricity bill detail of college building is mentioned below:

<b>Year 2021</b>	<b>Unit Consumption</b>	<b>Year 2022</b>	<b>Unit Consumption</b>	<b>Year 2023</b>	<b>Unit Consumption</b>
Jan	1402	Jan	1577	Jan	1993
Feb	2927	Feb	1860	Feb	2381
Mar	1506	Mar	2496	Mar	2338

Apr	1729	Apr	4131	Apr	3321
May	1546	May	3059	May	2725
Jun	2998	Jun	2459		
Jul	1263	Jul	2447		
Aug	3889	Aug	3162		
Sep	1263	Sep	3623		
Oct	2216	Oct	2416		
Nov	3159	Nov	2037		
Dec	2086	Dec	1616		
<b>Total</b>	<b>25984</b>		<b>30883</b>		<b>12758</b>
<b>Average</b>	<b>2165</b>		<b>2574</b>		<b>2552</b>

Table 7: Annual Electricity Consumption of college building.

### Graphical Representation of Monthly Electricity Consumption of College Building

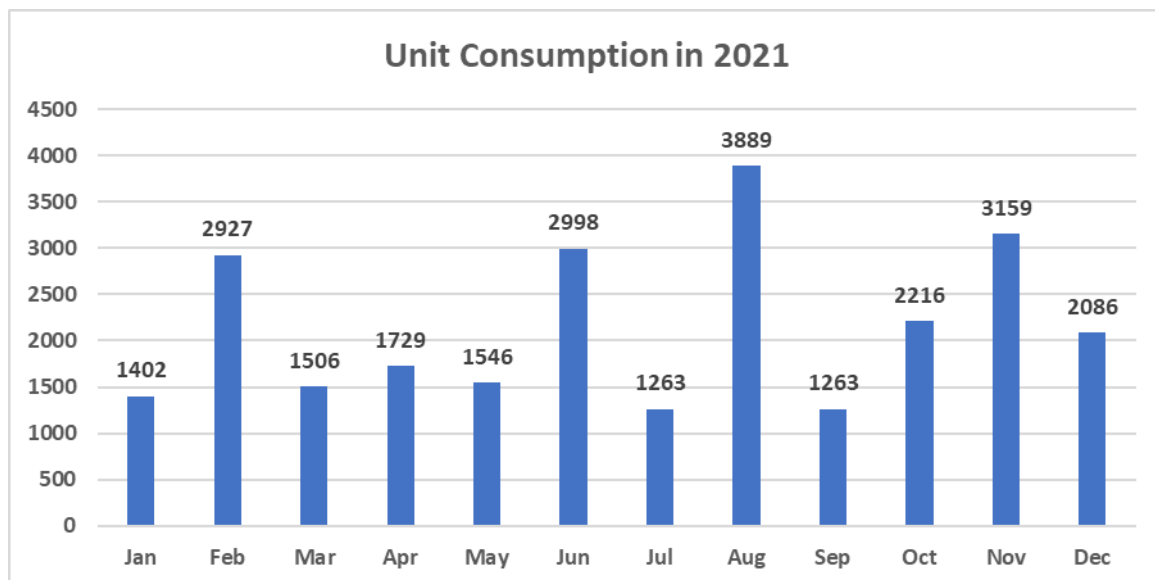


Figure 1: Monthly unit consumption of college building for the year 2021

The average monthly consumption of college building was 2165 units for the year 2021 and the total yearly consumption of college is 25,984 units



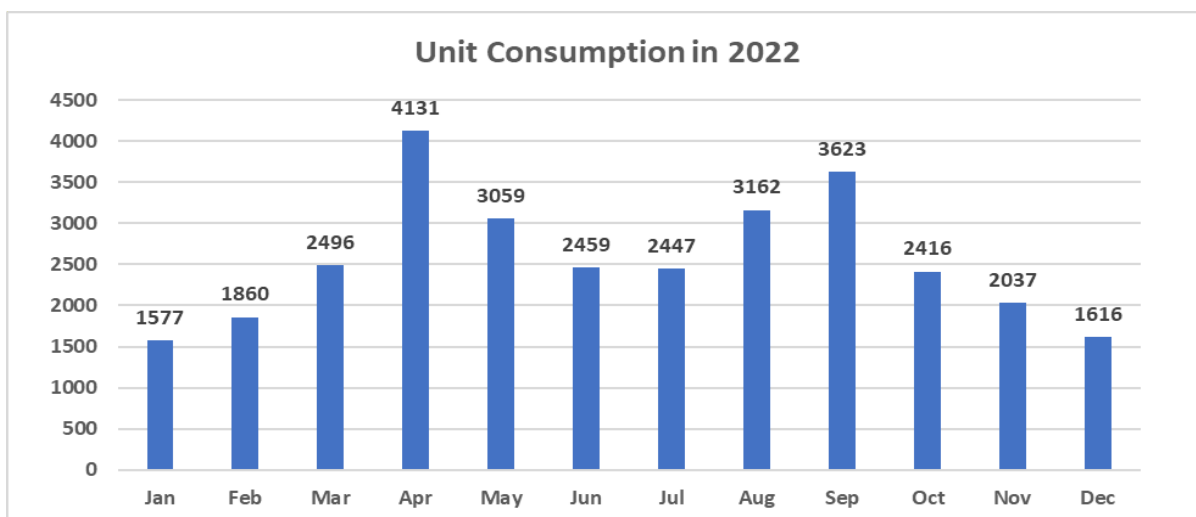


Figure 2: Monthly unit consumption of college building for the year 2022

The average monthly consumption of college building was 2574 units for the year 2022 and the total yearly consumption of college is 30,833 units.

### 10.1.3 Electrical Connected Load:

The connected load of college building is as under:

Sr. No.	Segment	Particulars	Average Wattage	Quantity	Total Wattage
1	Lighting	LED Tube light	22	196	4312
2		LED D light	15	18	270
3		LED Bulb	12	9	108
4		LED Street light	50	3	150
5		Conventional Tube light	40	71	2840
6	Heating, Ventilation & Air Conditioning	Fan	70	254	17780
7		Exhaust medium	150	3	450
8		Exhaust mini	100	6	600
9		Air Cooler	250	10	2500
11		Air Conditioner	1700	7	11900
12	Office Equipment	Computer set	100	22	2200
13		Printer	500	10	5000
14		Photo Copy Machine	800	5	4000
15	Water Supply	Water Pump	2250	1	2250
16	Others	Refrigerator medium	750	2	1500

		Refrigerator	300	8	2400
17		Computer set (Lab)	100	26	2600
18		Television	200	2	400
19		Water Cooler	325	4	1300
21		Miscellaneous			1500
<b>Total connected load in watts</b>					<b>64060</b>

Table 8: Connected Load of College Campus

The total connected load of Dr. W.W. Patankar Girls' PG College, campus is about 82 KW.

#### Segment wise connected Load of Dr. W.W. Patankar Girls' PG College

Segment	Total Connected Load in Wattage
Lighting	7680
Heating, Ventilation & Air Conditioning	33230
Office Equipment	11200
Water Supply	2250
Others	9700

Table 9: Segment wise Connected Load of College Campus

#### Graphical representation of Connected Load of Dr. W.W. Patankar Girls' PG College

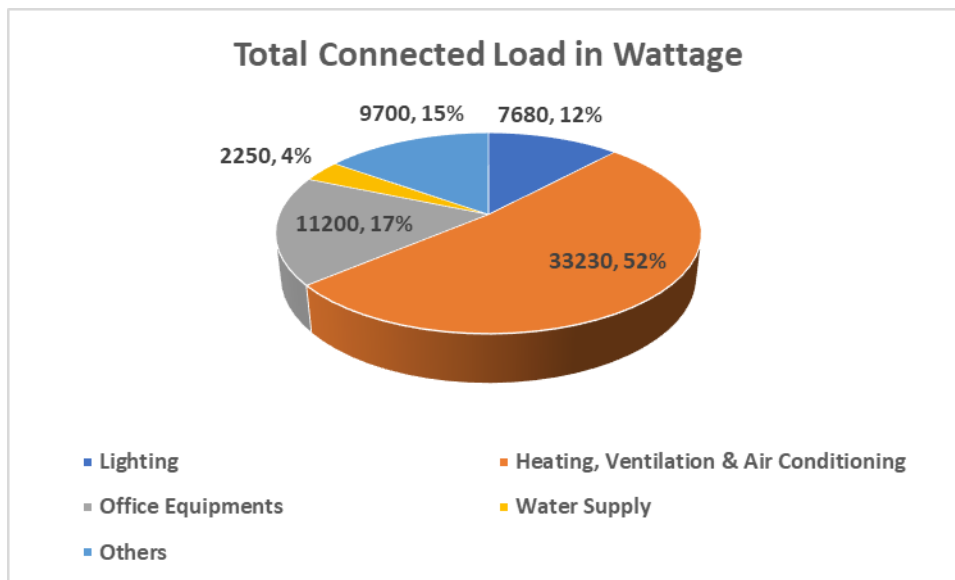


Figure 3: Graphical representation of connected Load

The maximum share of connected load is in HVAC segment, which is about 52%.

As per requirement of NAAC, we have calculated installed load of LED light fittings and Conventional light fittings.

#### 10.1.4 Percentage of Lighting Power requirement met through LED lights

Segment	Total load in watt
Conventional Lights	2840
Energy Efficient Lights (LED)	4840
Total Lighting Load	7680
Share of LED light in total lighting load	63%

Table 10: Percentage of Lighting Power requirement met through LED lights

Thus, total Percentage of Lighting Power requirement met through LED lights is about 63 %.

#### Graphical representation of Percentage of Lighting Power requirement met through LED lights

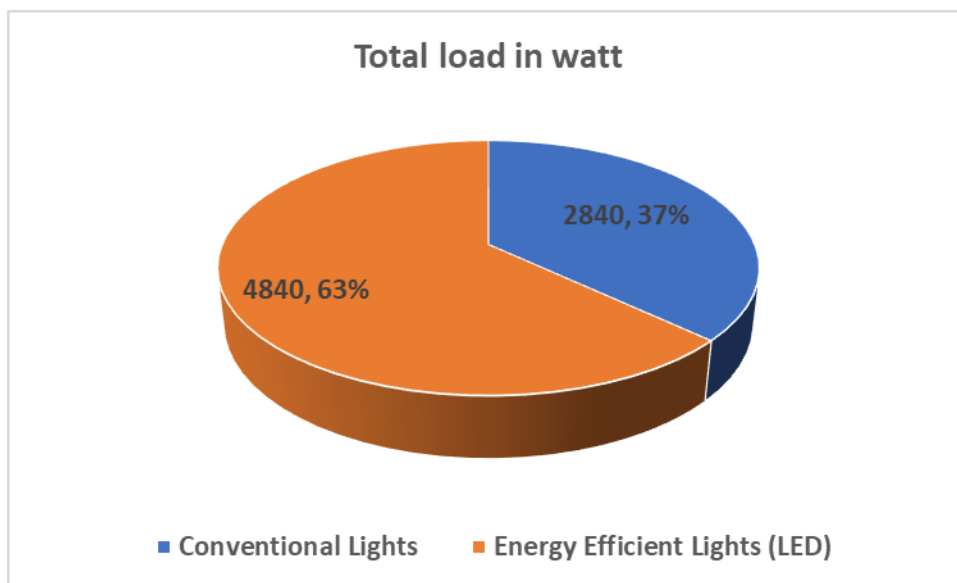


Figure 4: Graphical representation of Percentage of Lighting Power requirement met through LED lights

#### 10.1.5 Alternative Energy Initiative: Percentage of Power requirement met by Renewable Energy Source

The college has planned to install grid connected solar power plant in the year 2023. At present, renewable energy is not used in the college premises.

## 10.2 Recommendation

### 1) Installation of grid connected solar power plant for college building

We recommend to install grid connected solar power plant of 15 KW capacity. It will require less than 150 sq. meter roof area. The seller can sell energy maximum up to 49%. The supply arrangement of Solar Power Plant is such that it will first meet in-house electricity consumption of college, then after it will supply surplus energy to grid, which will be recorded by Import/Export meter.

In a solar rooftop system, the solar panels are installed in the roof of any residential, institutional, social, Government, commercial, industrial buildings etc. This can be of two types

- a) Solar Rooftop System with storage facility using battery,
- b) Grid Connected Solar Rooftop System.

In grid connected rooftop or small SPV system, the DC power generated from SPV panel is converted to AC power using power conditioning unit/Inverter and is fed to the grid either of 440/220 Volt three/single phase line or of 33 kV/11 kV three phase lines depending on the capacity of the system installed at residential, institution/commercial establishment and the regulatory framework specified for respective States.

These systems generate power during the day time which is utilized by powering captive loads and feed excess power to the grid as long as grid is available. In case, where solar power is not sufficient due to cloud cover etc., the captive loads are served by drawing balance power from the grid.

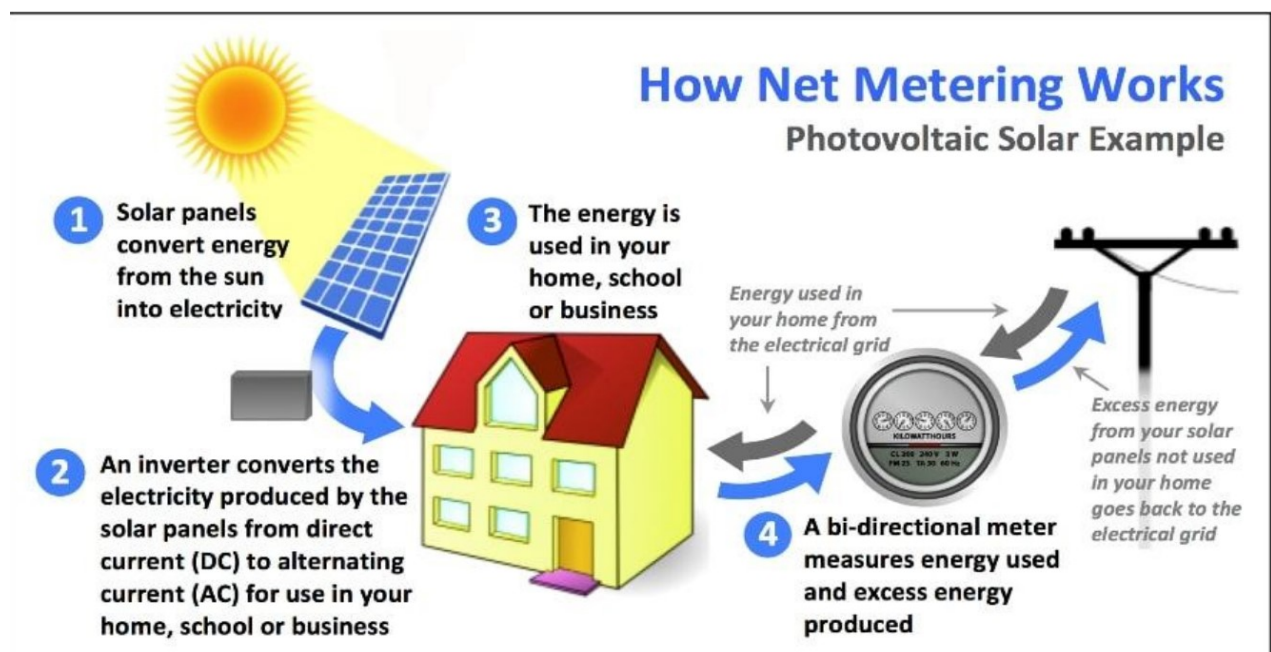


Figure 5: How Net Metering works

Main components of Solar rooftop system

- Solar PV Modules/Solar Panels – The Solar PV modules/Solar Panels convert solar energy to electrical energy. They are available in different technologies such as crystalline, thin film, CIGS, CdTe, HIT, etc. Crystalline Solar PV panels are most common in use on roof tops.
- Inverter – Inverter converts DC output of Solar PV panels into AC power.
- Mounting structure – The mounting structure, is the support structure that holds the Solar PV panels
- Balance of System – These consist of cables, switchboards, junction boxes, meters, structures, tracking system (if required), earthing system ,circuit breaker, fuses etc. Models for implementation of Rooftop PV systems

**CAPEX Model** : Here, the entire system is owned by the rooftop owners and he bears the cost of the Solar system. Responsibility of O&M for the system lifetime (25 years) is also with the rooftop owner. Developer is responsible for installing the system and initial 2 years O&M and five years warranty.

**RESCO Model** : Here, the entire system is owned by the developer. Responsibility of O&M for the system lifetime (say about 25 years) is also with the developer. Rooftop owners may consume the electricity generated, for which they have to pay a pre decided tariff on a monthly basis. Excess generation may be exported to the grid, subject to availability of requisite state regulations.

For consumers that have adequate manpower/expertise for O&M, rooftop access concerns, availability of funds upfront, CAPEX model is better. Chhattisgarh state have net metering regulations; thus, consumer can take benefit of the same in case they have substantial excess generation. On the other hand, consumers who prefer not to take responsibility for the system O&M, do not have rooftop security concerns and prefer to pay on a monthly basis rather than bulk upfront payment may choose to go for RESCO model.

**Net Metering** The grid connected rooftop system can work on net metering basis wherein the beneficiary pays to the utility on net meter reading basis only. Alternatively, two meters can also be installed to measure the export and import of power separately. The mechanism based on gross metering at mutually agreed tariff can also be adopted.

The application for solar roof top can be submitted through online link [https://cspc.co.in/sp/\(X\(1\)S\(0icij2epxn5ka0sc23ddpyfs\)\)/Index.aspx?AspxAutoDetectCookieSupport=1](https://cspc.co.in/sp/(X(1)S(0icij2epxn5ka0sc23ddpyfs))/Index.aspx?AspxAutoDetectCookieSupport=1)

## 2) Installation of Solar Power Pump

It is recommended to use solar water pump of 4 KW capacity in college for pumping to water storage tanks and gardening. A solar water pump is an application of photovoltaic technology which converts solar energy into electricity to run the pumping system thereby, replacing erratic grid supply and pollution-causing diesel-powered versions. The solar water pump is powered by solar modules that helps draw surface or ground water out for irrigation.

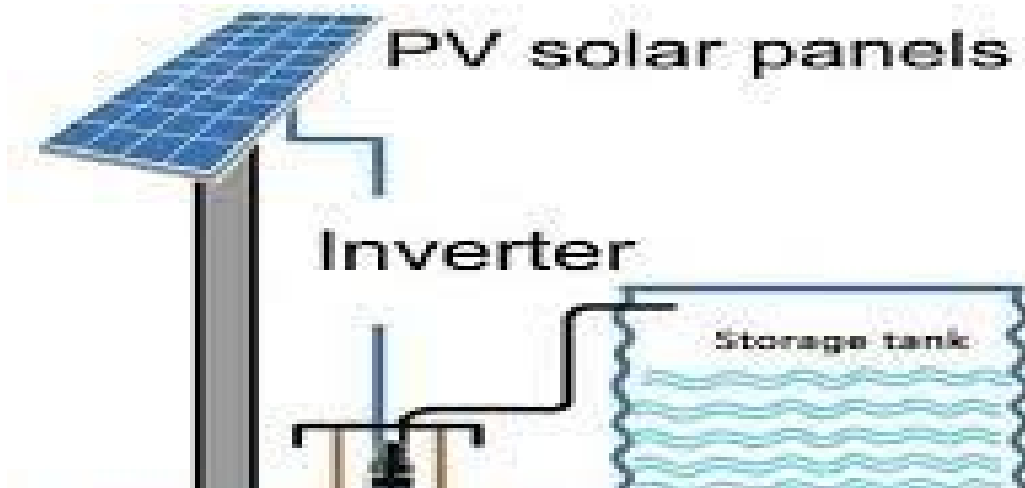


Figure 6: Solar pumping system

The college should install a solar power water pump for watering in garden and filling water in overhead tanks for daily use.



A view of solar pump

### 3) Formation of ENCON Club:

We recommend to formation of the ENCON (Energy Conservation) in Dr. W.W. Patankar Girls' PG College, Anda, Durg for spreading awareness on the importance of energy conservation. ENCON Club will participate in all energy conservation activities and organize program with the support of Chhattisgarh State Renewable

Energy Development Agency, (CREDA) Raipur and Bureau of Energy Efficiency,(BEE) New Delhi.

Energy Club will celebrate “Energy Conservation Day” on 14<sup>th</sup> December, each year. It would not only help in imparting knowledge on energy efficiency but also in its implementation in households and institutions.

### Objective of ENCON Club

The objective of the club is to create awareness among the students, staff and teachers and equip them for efficient management of all forms of energy, to promote energy efficiency and energy conservation. The club will keen to spread “Energy Conservation Messages” in the society by conducting awareness programmes to students and public.

### 4) General recommendations

Equipment	Wattage	Comments
CRT Monitor	100 - 120W ( during operating condition)	CRT monitors consume a lot of power, much of which is wasted as heat, and represent the largest power consumption component in a typical desktop computer. Emit potentially harmful radiation. Fortunately, most CRT monitors these days are legacy equipment as new computers are generally supplied with LCD monitors. Unfortunately, most CRT monitors end up in landfill.
Desktop Computer	150W ( during operating condition)	Power consumption will differ significantly depending on whether a CRT or LCD monitor is used. In home and office situations where it is necessary to run multiple desktop computers, it may be possible to make significant power savings by running a single terminal server computer with several LCD monitors and keyboards attached. Terminal server computers can also greatly simplify network management, software upgrades, etc
Photocopier	7-30W (Sl. Mode) 40-300W (Standby) 200-1300W ( op. cond)	Most of the energy used in a photocopier is consumed by the hot rollers, which are usually kept hot on stand-bay, consuming from 40-300W. Significant energy savings (40% to 60%) can be made by ensuring that photocopiers are switched off at night and on weekends. Some photocopiers consume up to 30 watts even when switched off, so photo copiers should be switched off at the power outlet to ensure they are really "off".
LCD Monitor	30-50W (during operating condition)	LCD monitors typically require about 30% of the power required for a CRT monitor with the same screen area. In addition, the amount of heat generated by an LCD monitor is considerably less than a CRT monitor, resulting in a lower load on ACs. Building cooling needs may be decreased by up to 20%.

Inkjet Printer	120W (during operating condition)	Inkjet printers use relatively little power in comparison to laser printers. From an energy consumption point of view, inkjets are preferable to lasers. Unfortunately, they typically cost more to run on a cost-per-print basis and sometimes produce less than optimum results
Laser Printer	25-80W (Standby) 150-1100W (during operating condition)	Laser printers consume significant amounts of power even when in standby mode. Over the course of an 8-10 hr working day, a laser printer could consume around 1kWh of energy. On the other hand, laser printers are cheaper to run on a cost-per page basis and generally produce better results. Both the number of laser printers used, and the number of hours they are operated for, should be minimized. As with printing of any kind, office procedures should be developed which minimize the need for printing to paper
Laptop Computer	15-40 W (during operating condition)	Laptop computer power consumption is typically 10% to 25% of that of a desktop computer. In situations such as an office or home office, where computers may operate for 8 to 10 hours a day, this difference is significant and could represent an energy saving of up to 1kWh per day.



## **11. WASTE MANAGEMENT**

- **Solid waste management**
- **Liquid waste management**
- **E-waste management**

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### **Waste Management**

This indicator addresses waste production and disposal, plastic waste, paper waste, food waste, and recycling. Municipal solid waste has several adverse environmental impacts, most of which are well known and not in need of elaboration.

The details of waste generation in Dr. W.W. Patankar Girls' PG College is shown in the table :-

<b>Location</b>	<b>Biodegradable</b>	<b>Non-biodegradable</b>	<b>Hazardous</b>
Office/ Class rooms	< 1 Kg	< 1 Kg	No
Laboratories	< 1 Kg	< 1 Kg	Very less

Table 11: Details of waste generation

#### **11.1 Biodegradable Solid Waste Management**

To reduce paper consumption in college both side of paper is used No waste is polluting surface/ ground water, Small bucket and big buckets are used for solid waste.

Small Plastic bucket = 35 Nos.

Big Plastic Bucket = 08 Nos.

Dr. W.W. Patankar Girls' PG College has provided dust bins in all class room & offices.

The college has installed two Sanitary Napkins Vending Machine for girls at the college campus. The vending machines were installed to ensure an effective, safe and convenient mode for any time access to the sanitary napkins. The purpose is to promote safe and hygienic sanitary practices among the women and girls.

This is in line with "Swatch Bharat" scheme as well as the "Beti Bachao" scheme and also in line with maintenance of the hygienic needs of the female staff and students.

### 11.1.1 Composting Pit

The college had prepared a compost pit having dimension of 10' x 8' x 6' in the campus, where green biodegradable waste from canteen and dry leaves from trees were filled up to prepare compost. But, now it needs proper attention and maintenance.



### 11.2 Non Bio degradable Solid Waste

Non- biodegradable are those waste, which cannot be decomposed by biological processes. These are of two types - Recyclable: waste having economic values but destined for disposal can be recovered and reused along with their energy value. e.g. Plastic, paper, old cloth etc. Non-recyclable: waste which do not have economic value of recovery. e.g. Carbon paper, thermocol, tetra packs etc. Disposal of non-biodegradable waste is a major concern, not just plastic, a variety of waste being accumulated. There are a few ways to help non-biodegradable waste management. The impact of non-biodegradable waste on the environment and also focus on its safe disposal for sustainable environment.

Non-biodegradable waste like plastics, metal, glass etc. is collected in the dig and sold to the vendors

### 11.3 Liquid Waste Management

The waste water of chemistry lab should not mix with ground water. A dedicated pit should be constructed to collect the waste water. College has a concealed sewage system comprising of underground septic tanks made of concrete. The sewage effluent water is passed inside the concealed drainage which connects to the main sewage drainage system provided by the Municipal Corporation. Canteen's liquid waste is collected in to the Liquid Waste Pit.

## 11.4 E-Waste Management

Waste Electrical and Electronic Equipment (WEEE) or E-waste is one of the fastest growing waste streams in the world. In developed countries, it equals 1% of total solid waste on an average.



In developing countries, it ranges from 0.01% to 1% of the total municipal solid waste generation. In countries like China and India, though annual generation per capita is less than 1 kg, it is growing at an exponential pace. Presently, a very small amount of E waste from offices is generated in Dr. W.W. Patankar Girls' PG College, Durg. E-waste are usually given to the stores where its parts are used in repairing other system and these wastes are used for demonstration purpose for students. The total e-waste kept in college is about 9 Kg.

## 11.5 Recommendations

- 1) The college can increase the number of dustbins targeting the areas with no or less no. of dust bins, waste segregation at the micro level is a necessity; separate bins for recyclable and non-recyclable wastes have to be set up throughout the campus, awareness has to be created among the staff and student through various programmes and policies, emphasis to be laid on –reduce, reuse and recycle.
- 2) It is recommended to construct separate bins for different types of waste like plastic, glass, iron so these wastes are segregated automatically in the premises of Dr. W.W. Patankar Girls' PG College.
- 3) To reduce waste at institute, students and staff are educated on proper waste management practices through lectures, advertisement on notice boards, displaying slogan boards in the campus.
- 4) Efforts should be taken to produce compost manure from compost pit, which may be used for the purpose of herbal garden as well or for planted tree.
- 5) The waste chemicals mixed water from laboratory should be connected with a separate dedicated pit.
- 6) Awareness being made through signboards and posters displayed at various places in the college premises.

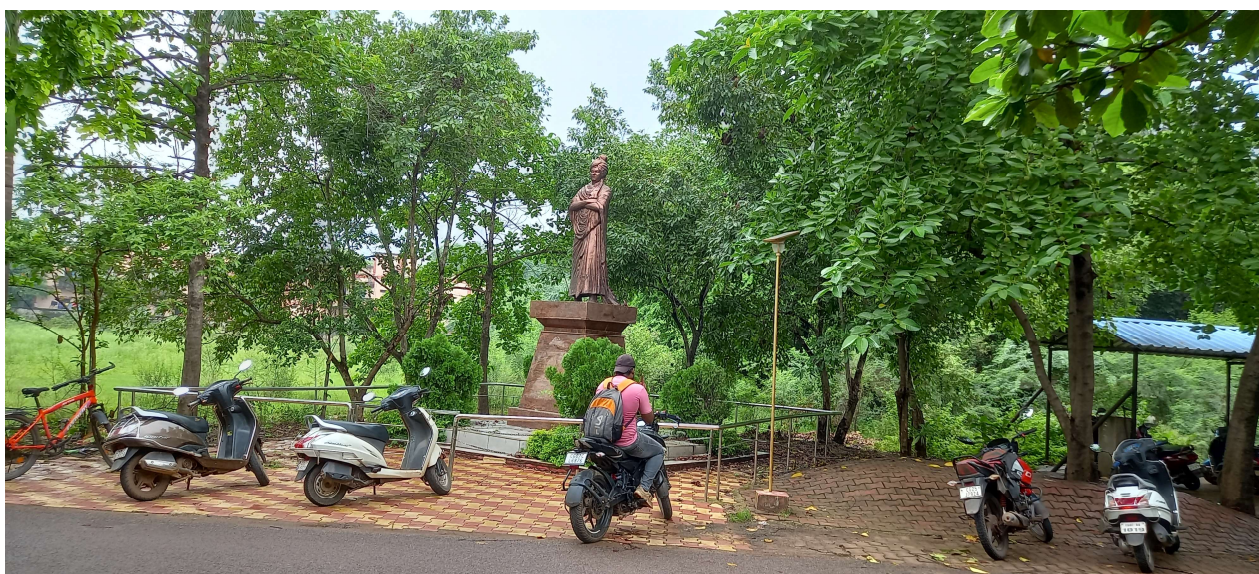
## 12. GREEN CAMPUS MANAGEMENT

- **Green Practices**
- **Green landscaping with trees and plants**
- **Flora of the College Campus**

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### Green Campus Management

All plant and animal species - including humans - are linked together in a complex web of life; we depend upon biodiversity for our survival. Biodiversity is the key to healthy ecosystems and ultimately a healthy planet. It keeps the air and water clean, regulates our climate and provides us food, shelter, clothing, medicine and other useful products. Each part within this complex web diminishes a little when one part weakens or disappears.



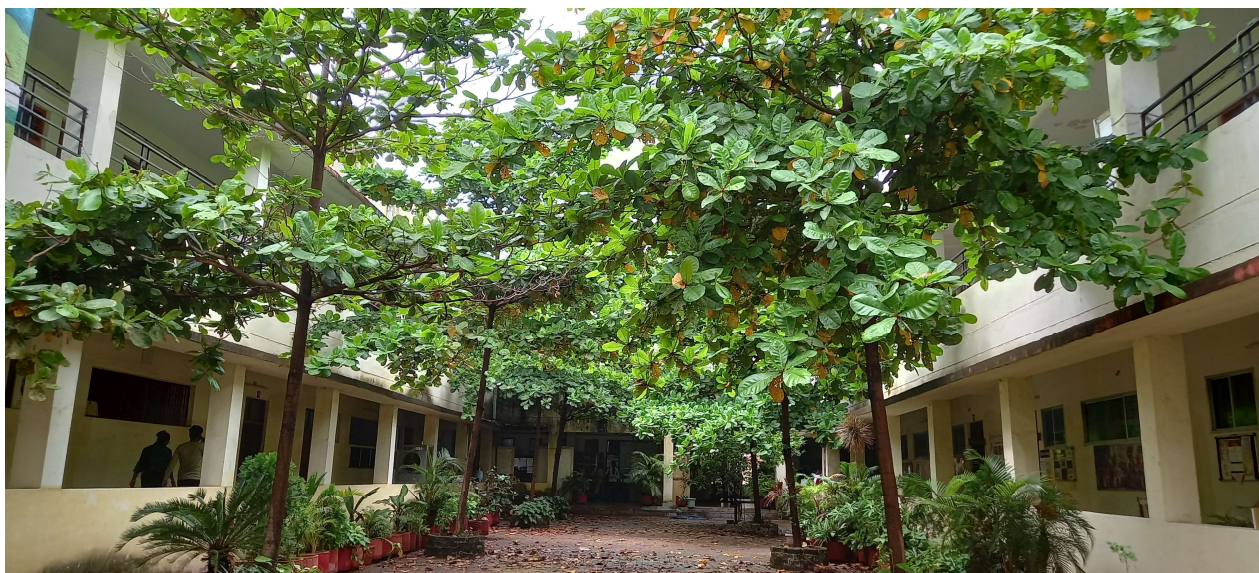
The college has a circular related to maintenance of Green Campus in the college since the year of 2017.

### 12.1 Circular for Maintenance of Green Campus

In view of the recommendations by Green Audit Committee in the Internal Green Audit Report of College, the College has decided to implement several policy decisions for the upkeep and maintenance of greenery inside the College premises. The point-wise initiatives for maintenance of green campus are as follows:

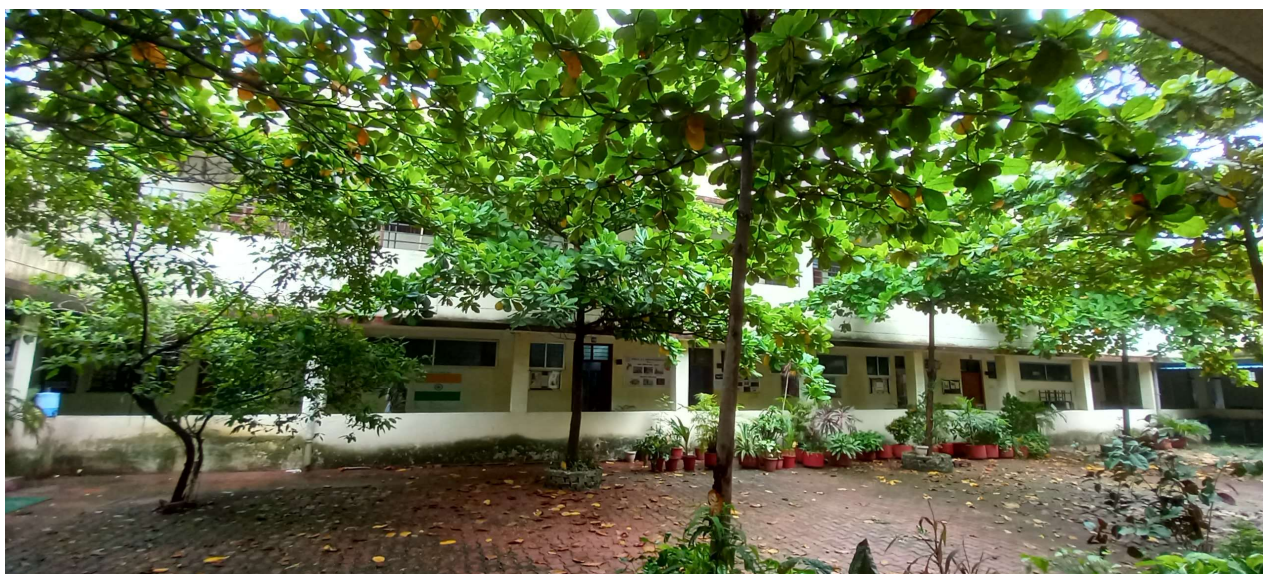
1. Landscaping of College premises with trees and plants through regular plantation of saplings.

2. Plantation of saplings of medicinal importance and air purifying properties.
3. Formation of Green Army – a group of students dedicated towards clean and green campus initiatives.
4. Establishment of Green Zone, Oxy Zone, Plastic-free Zone inside the College campus.
5. Display of messages for environment protection, water conservation and saving trees.
6. Use of Plastic bags and other use & throw plastic items to be banned inside the College premises.
7. Outside traffic shall be completely restricted inside the College campus while the vehicles of outsiders / visitors to be allowed conditionally and occasionally.
8. Speed of more than 10 km/h for vehicles plying inside the College campus shall not be entertained.
9. Students and Staff to be encouraged for use of bicycles, zero/low emission vehicles and public transport.



The trees work hard to keep the air we breathe clean and healthy. They are like sponges. Their leaves take in much of the poisonous unwanted carbon dioxide in the air, and replace it with the oxygen we need for healthy living. This system of absorbing gases on which all plants rely for their food is called photosynthesis. In this process, the plants with the help of sunlight, water, minerals and the green material called Chlorophyll within the leaves change the carbon-dioxide into food for themselves. When doing this they release oxygen into the air which is vital for all life on earth. At night when there is no sunlight the plant no longer makes food, so it does not release the same amount of oxygen.

One is often told not to sleep with plants in one's room, as they will use up all the oxygen. However, at night although photosynthesis does take place the plants also rest, so that little oxygen is absorbed from the air and very little harm can be done to the ones sleeping in the room.



The roots of trees dig deep into the earth and hold it together so that the rain and wind cannot wash or blow it away. This is very important as the earth has only a very thin layer (seldom more than one foot) of fertile soil covering it. If this is washed, blown or worn away leaving rock or sand on which no plants can grow then the earth would become a desert. The removal of this top-soil is called soil erosion. Scientists, all over the world are trying to find ways to prevent soil erosion. One of the most important ways is creating by planting more trees.



Trees send up water vapour into the atmosphere through their leaves. When this vapour meets the cool air above it turns into drops of water which then fall as rain. They give us beauty, colour and greenery. This is something which we often forget and fail to appreciate. They are the homes of many birds, animals and insects. Each of these is important in maintaining the balance of nature.



The college has a green Landscaping with Trees and Plants and the campus is beautifully landscaped. appreciation in form of many awards and certificates. Plantation of around 600 plants has been done and also an ECO club ensures the organization of tree plantation on World Environment Day, Hareli, and various awareness programs.



## 12.2 Environment Policy of College

The college has prepared an Environment policy

## OFFICE OF THE PRINCIPAL, GOVT.DR.W.W. PATANKAR GIRLS' PG COLLEGE



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College Code : 1602



### ENVIRONMENT POLICY

#### 1. Waste management and Responsible disposal:

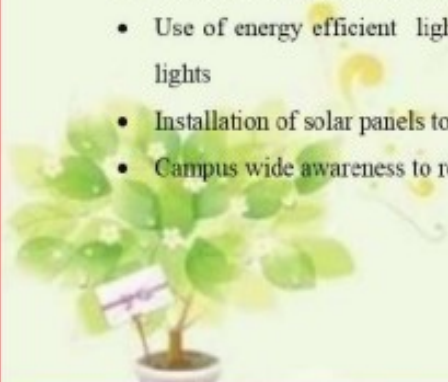
- Classification of waste
- Designation of predetermined waste disposal points
- Arrangement of waste disposal through Nagar Nigam
- Composting facility for biodegradable waste
- Reduce the use of paper and recycle for photocopying
- Reduce the use of plastic, non biodegradable material
- Create awareness among college students and staff

#### 2. Pollution control

- Treatment of Chemical and Biological lab waste before disposal
- Use of eco-friendly cleaning agents
- Prohibition of use of pesticides and agricultural chemicals in college campus
- Make campus Smoke and Tobacco free zone
- Regulated use of vehicles in college campus
- No horn policy in college campus
- Monitoring of ambient air quality in college campus

#### 3. Energy Policy

- Use of energy efficient equipments
- Use of energy efficient light sources like LEDs instead of conventional Bulbs and Tube lights
- Installation of solar panels to partially meet energy requirement
- Campus wide awareness to reduce energy wastage





## OFFICE OF THE PRINCIPAL, GOVT.DR.W.W. PATANKAR GIRLS' PG COLLEGE

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College Code : 1602



### 4. Water Resource Management

- Monitoring of Water usage across departments and campus
- Efficient mechanism to reduce water consumption and prevent wastage
- Rain water harvesting system for all buildings
- Reuse and Recycling of water for gardening and plantations
- Campus wide awareness to reduce water wastage

### 5. Protection of Campus Ecosystem and Biodiversity

- Collection of data on the Campus flora and fauna
- Reduce the impact of college activities on campus biodiversity
- Implementation of Green campus concept through tree plantations, green landscaping
- Enhance ecological awareness through student participation and awareness programs

### 6. Enhance Student Participation

- Strengthening of National Service Scheme(NSS)
- Encouragement of student participation in campus cleanliness drives, plantation drives
- Eco-Club to create eco-friendly environment in the campus
- Green Army to create awareness and participation in tree plantations
- Aqua-club to create awareness about water conservation and prevention of water wastage and pollution

### 7. Implementation and Monitoring System

- Efficient Check and balance system for college functioning and implementation of the environment policy goals
- Involvement of IQAC in policy implementation and setting of achievable targets
- Environment, Energy and Green audits
- Create awareness about environment policy among students and staff





**OFFICE OF THE PRINCIPAL, GOVT.DR.W.W. PATANKAR GIRLS' PG COLLEGE**

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Website: <https://govtdrwwpgcollegedurg.ac.in>

College Code : 1662



**8. Continue improvement and quality assurance through PDCA**

- **Plan:** Establish environmental policy objectives and processes
- **Do:** Implement the process developed through documentation, training and communication
- **Check:** Monitor and evaluate the implemented process through regular auditing
- **Act:** Management review, implement corrective actions and improvements

**(Dr. Richa Thakur)**  
IQAC- Coordinator  
Govt.Dr.W.W. Patankar Girls'  
PG College, Durg (C.G.)

**(Dr. Sushil Chandra Tiwari)**  
Principal  
Govt.Dr.W.W. Patankar Girls'  
PG College, Durg (C.G.)



## 12.3 Green Calender of College

OFFICE OF THE PRINCIPAL, GOVT.DR.W.W. PATANKAR GIRLS' PG COLLEGE  
NEAR KENDRIYA VIDYALAYA, JAIL ROAD, DURG (C.G.)  
[Old Name – Govt. Girls' College, Durg (C.G.) Ph.No. – 0788-2323773]  
Email- [govtgirlspgcollege@gmail.com](mailto:govtgirlspgcollege@gmail.com) Website: [www.govtgirlspgcollegedurg.ac.in](http://www.govtgirlspgcollegedurg.ac.in)  
College Code – 1802



### GREEN CALENDAR

- 2 February - World Wetlands Day
- 3 March - World Wildlife Day
- 14 March - International Day of Action for ~~riners~~ riners
- 22 March - World Water Day
- 23 March - World Meteorological Day
- 22 April - International Earth Day
- 08 May – World Red Cross Day
- 22 May - International Day for Biological Diversity
- 5 June - World Environment Day
- 8 June - World Oceans Day
- 15 June - World Wind Day
- 21 June – World Hydrography Day
- 20 Aug – Renewable Energy
- 16 September - World Ozone Day
- 4<sup>th</sup> Sunday of Sept. – World Rivers Day
- 14 December – Energy Conservation Day



Principal  
Dr. Sushil Chandra Tiwari

The college has given land to Forest department, Govt. of Chhattisgarh for their scheme of Krishna Kunj with culturally significant trees Chhattisgarh selects sites in urban areas for setting up Krishna Kunj. In Krishna Kunj, culturally significant trees like Banyan, Peepal, Neem and Kadam are planted in college campus.

<b>Flora</b>	<b>Numbers</b>
Full grown Tree	158
Semi Grown Tree	110
Quarter grown plants	430

Table 12: Type and quantity of flora

## 12.4 Types of Flora in College Campus

S.No.	Common Name	Botanical Name	Family Name	No. of Plants Approx	Habit
1.	Karanj	Pongamia pinnata	Fabaceae	20	Trees
2.	Almond	Prunus amygdalus	Rosaceae	11	Trees
3.	Kadam	Anthocephalus cadamba	Rubiaceae	05	Trees
4.	Peltophorum	Peltophorum pterocarpum	Fabaceae	03	Trees
5.	Guava (Amrood)	Psidium guajava	Myrtaceae	04	Trees
6.	Shisham	Dalbergia sissoo	Fabaceae	10	Trees
7.	Sitafal	Annona squamosa	Annonaceae	10	Shrub
8.	Mango (Aam)	Mangifera indica	Anacardiaceae	04	Trees
9.	Ashok	Saraca indica	Fabaceae	12	Trees
10.	Ber	Ziziphus jujuba	Rhamnaceae	20	Trees
11.	Pipal	Ficus religiosa	Moraceae	04	Trees
12.	Neem	Azadirachta indica	Meliaceae	09	Trees
13.	Bel	Aegle marmelos	Rutaceae	04	Trees
14.	Bottle Palm	Hyophorbe lagenicaulis	Arecaceae	14	Ornamental Plant
15.	Babul	Acacia nilotica	Fabaceae	14	Trees
16.	Ganga Imli	Pithecellobium dulce	Fabaceae	04	Trees
17.	Chhatim	Alstonia scholaris	Apocynaceae	05	Trees
18.	Jamun	Syzygium cumini	Myrtaceae	11	Trees
19.	Arjun	Terminalia arjuna	Combretaceae	01	Tree
20.	Amla	Phyllanthus emblica	Euphorbiaceae	02	Trees
21.	Tecoma	Tecoma stans	Bignoniaceae	01	Climber
22.	Harsingar (Parijat)	Nyctanthes arbor- tristis	Oleaceae	15	Trees
23.	Gudhal (China rose)	Hibiscus-rosa-sinensis	Malvaceae	03	Shrub
24.	Yellow kaner	Thevetia peruviana	Apocynaceae	34	Shrub
25.	Giloy	Tinospora cordifolia	Menispermaceae	03	Climber
26.	Madar (Aak)	Calotropis procera	Asclepiadaceae	15	Shrub
27.	Thuja (Vidyapatti)	Thuja occidentalis	Cupressaceae	15	Shrub
28.	Ixora	Ixora coccinea	Rubiaceae	05	Shrub
29.	Rose	Rosa indica	Rosaceae	03	Shrub

30.	Cycas	Cycas revoluta	Cycadaceae	08	Perennial Xerophyte
31.	Christmas Tree	Araucaria columnaris	Araucariaceae	01	Shrub
32.	Lemon grass	Cymbopogon citratus	Poaceae	02	Herb
33.	Euphorbia (Crown of thorns)	Euphorbia milii	Euphorbiaceae	03	Herb
34.	Dracaena	Dracaena marginata	Asparagaceae	08	Herb
35.	Tulsi	Ocimum sanctum	Lamiaceae	10	Herb
36.	Dumb cane	Dieffenbachia segunine	Araceae	05	Herb
37.	Dauna	Ocimum basilicum	Lamiaceae	08	Herb
38.	Bryophyllum (Patharchatta)	Bryophyllum pinnatum	Crassulaceae	03	Herb
39.	Sadabahar	Catharanthus roseus	Apocynaceae	08	Herb
40.	Paperflower	Bougainvillea glabra	Nyctaginaceae	05	Climber
41.	Croton	Codiaeum variegatum	Euphorbiaceae	10	Herb
42.	Agave	Agave speceabilis	Asparagaceae	05	Herb
43.	Gulmohar	Delonix regia	Fabaceae	05	Trees
44.	Money Plant	Epipremnum aureum	Araceae	10	Climber
45.	Turmeric	Curcuma longa	Zingiberaceae	23	Herb
46.	Ginger	Zingiber officinale	Zingiberaceae	24	Herb
47.	Ashwagandha	Withania somnifera	Solanaceae	02	Herb
48.	Kateri plant	Solanum xanthocarpum	Solanaceae	15	Herb
49.	Canna (Indian shot)	Canna indica	Cannaceae	02	Herb
50.	Lantana	Lantana camera	Verbenaceae	10	Shrub
51.	Talamakhana	Astercantha longifolia	Acanthaceae	10	Herb



**Dr. Sushil Chandra Tiwari**  
**PRINCIPAL**

## **13. CARBON FOOTPRINT**

- **Scope 1 Direct Green House Gases Emission**
  - **Scope 2 Indirect Green House Gas Emission from Purchased Electricity**
  - **Scope 3 Other Indirect Green House Gas Emission**
- 

### **India's National Determined Contribution**

India's Nationally Determined Contributions (NDCs) commit to reduce its emission intensity per unit GDP by 33 to 35% below 2005 by 2030 under the Paris Agreement. This has resulted in the need for various sectors to come up and report their carbon emissions so that appropriate measures can be adopted. Reporting the emissions will enable them to set practical targets for carbon reduction in upcoming years. An educational institution plays an influential role in both local and national policymaking, both by informing society through research and educating graduates. It sets ground for imparting responsible perspectives to the young minds who act as successful incubators for innovation, from which many sustainability initiatives originate.

### **13.1 Green Credit Programme**

India's environment ministry has proposed a Green Credit Programme under which individuals, organisations and industries can earn and sell credits for certain environment-friendly activities, which can then be traded.

#### **Objectives of the Green Credit Programme**

The main objectives of the Green Credit Programme are as follows: -

- a. Create a market-based mechanism for providing incentives in the form of Green Credits to individuals, Farmer Producer Organizations, cooperatives, forestry enterprises, sustainable agriculture enterprises, Urban and Rural Local Bodies, private sectors, industries and organizations for environment positive actions;
- b. Create mass movement around environment positive actions and realize the vision of "Mission LiFE" through pro-planet-people and entities. Sectors identified for the Programme with respective objectives are as follows:

#### **i. Tree Plantation-based Green Credit:**

To promote activities for increasing the green cover across the country through tree plantation and related activities.

**ii. Water-based Green Credit:**

To promote water conservation, water harvesting and water use efficiency/savings, including treatment and reuse of wastewater.

**iii. Sustainable Agriculture based Green Credit:**

To promote natural and regenerative agricultural practices and land restoration to improve productivity, soil health and nutritional value of food produced.

**iv. Waste Management based Green Credit:**

To promote sustainable and improved practices for waste management, including collection, segregation and treatment.

**v. Air Pollution Reduction based Green Credit:**

To promote measures for reducing air pollution and other pollution abatement activities. vi. Mangrove Conservation and Restoration based Green Credit: To promote measures for conservation and restoration of mangroves.

**vii. Eco mark based Green Credit:**

To encourage manufacturers to obtain Eco mark label for their goods and services. viii. Sustainable building and infrastructure based Green Credit: To encourage the construction of buildings and other infrastructure using sustainable technologies and materials.

## **13.2 Scopes of Carbon Footprint Project**

A carbon footprint is the amount of greenhouse gases—primarily carbon dioxide— released into the atmosphere by an individual, event, organization, service, or product, expressed as carbon dioxide equivalent. In addition to the water, waste, energy and biodiversity audits we can also determine what our carbon footprint is, based on the amount of carbon emissions created. The release of carbon dioxide gas into the Earth's atmosphere through human activities is commonly known as carbon emissions.

An important aspect of doing an audit is to be able to measure our impact so that we can determine better ways to manage the impact. In addition to the water, waste, energy and biodiversity audits we can also determine what our carbon footprint is, based on the amount of carbon emissions created.



Scope 1, 2 and 3 is a way of categorizing the different kinds of carbon emissions a company creates in its own operations, and in its wider value chain.

a) Physical boundary

- *Location of the Building* : Dr.W.W. Patankar Girls PG College, Durg PIN – 491 001
- *Description of areas excluded from GHG accounting*: The computer block (non-operational) and the Hostel (non - operational) were not in the scope.



b) Operational boundary

- *Scope 1 Direct GHG emissions from*:
  - Combustion of fuels in stationary sources – LPG consumption in canteen and Chemistry laboratories
- *Scope 2 Indirect emissions from*:
  - Purchased electricity
- *Scope 3 Other Indirect GHG emissions from*:
  - GHG emissions due to daily commuting of Teaching Staff, Non-Teaching Staff and Students to and from college
  - GHG emissions due to paper consumption

### 13.3 Methodology for GHG Quantification

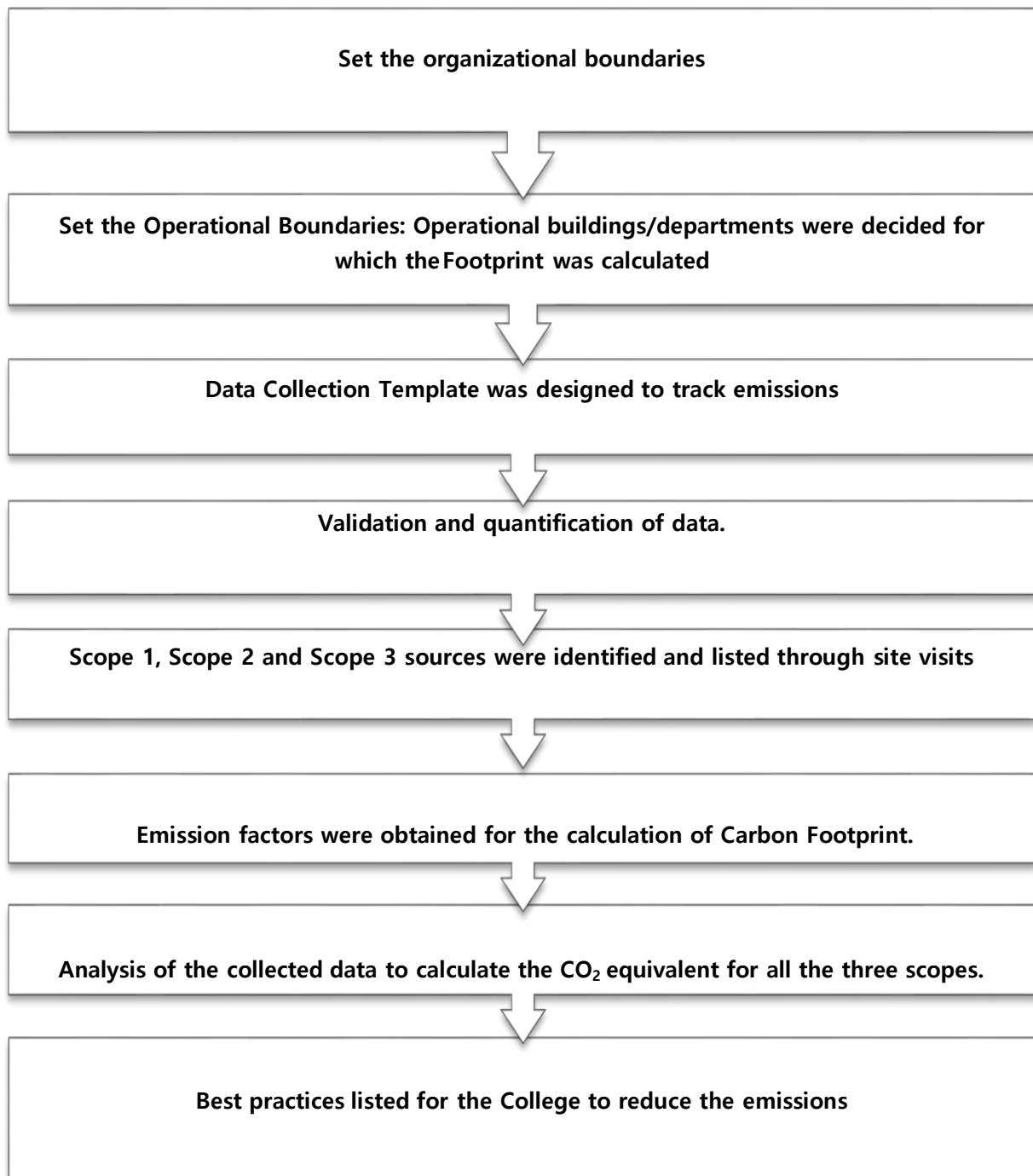


Figure 7: Flowchart showing adopted methodology for estimation of Carbon Footprint Both qualitative and quantitative data was collected for the project

On the basis of data collected, Emission factors were obtained for the calculation of Carbon Footprint. Scope 1, Scope 2 and Scope 3 sources were identified and listed through site visits Validation and quantification of data. Data Collection Template was designed to track emissions Set the Operational Boundaries:

Operational buildings/departments were decided for which the Footprint was calculated Set the organizational boundaries

### 13.4 Data Collection

#### Scope 1 Direct GHG Emissions

Direct GHG emissions occur from sources that are owned or controlled by the organization, for example, emissions from combustion by LPG cylinders

#### Scope 2 Electricity Indirect GHG Emissions

Scope 2 accounts for the GHG emissions from the generation of purchased electricity consumed by the organization.

#### Scope 3 Other Indirect GHG Emissions

It includes emissions from outsourced activities i.e. from the activities of members of the organization but occurred at sources owned/controlled by another organization. (E.g. commuting activities, paper consumption etc.)

Sr. No.	GHG accounting activity	Activity subset	Data collection sources	Units
1	Stationary Combustion	LPG Consumption in all Laboratories	Head of the Departments.	Kg of LPG/ yr.
2	Purchased Electricity	Units of electricity used during the FY 18-19	Monthly Electricity Bills	KWh / yr.
3	Paper Consumption	Amount of paper (fresh & recycled) used	Data Shared by College Administration	Kg of Paper Consumption/ yr.
4	Students, Teaching, Non-teaching & Supporting staff Commuting	Distance travelled; Mode of Transport used	Online Survey through google form	Distance travelled by students, teaching, non-teaching & supporting staff.

Table 13:- GHG accounting activity in college

#### Use of Google Form

Data of Students, Teaching, Non-teaching & Supporting staff Commuting, an Online Survey through google form. Total about 1200 responses received from students through google form.

**GOVT. DR. W.W. PATANKAR GIRLS PG COLLEGE, DURG (C.G.)**  
**छात्रा आवागमन संबंधी जानकारी (Students Conveyance Information)**

richa.jyotindra@gmail.com  
[Switch account](#)  
 Not shared

\* Indicates required question

छात्रा का नाम (Student Name) \*

Your answer

कक्षा (Class) \*

Online survey for conveyance among students, supporting staff, Non-teaching staff and teaching staff through google form.

## 13.5 GHG Emission

### Scope-1

#### 13.5.1 Stationary Combustion: Carbon Emission by LPG cylinder

The data of LPG cylinder consumed is taken by respective laboratories.

Parameter	Emission Factor (A)	Total LPG consumed in KG (B)	Total emission (C= A x B)
LPG 19 Kg Cylinder- 11 Nos	0.2983	209	62
<b>Total CO<sub>2</sub> Emission by LPG cylinders</b>			<b>62</b>

Table 14:- Carbon Emission by LPG cylinder

### Scope 2

#### 13.5.2 Purchase Electricity From CSPDCL: Carbon Emission by Electricity

Electricity is purchased by CSPDCL. As per electricity bills of one-year, Total unit consumption for a year is about 30,518 unit.

Parameter	Emission Factor	Unit in KWH	Total emission in KG CO <sub>2</sub> equivalent Per Year
Grid Electricity	0.82	30,518	25,025

Table 15: Carbon Emission by Electricity

Thus, total emission by purchased electricity is 25,025 KG CO<sub>2</sub> eq. Per year.

### Scope 3

#### 13.5.3 Paper Consumption: Paper consumption in printing.

Parameter	Emission Factor	Annual Consumption in Kg	Total emission in KG CO <sub>2</sub> equivalent Per Year
Paper Consumption	3.4	1960	6664

Table 16 :- Paper consumption

#### 13.5.4 Students, Teaching, Non-teaching & Supporting staff Commuting : Carbon Emission by Transportation

The two major fuels used for transportation by students, college faculties and directors are petrol and diesel. These fuels contain 80-85% of carbon by weight. It was also noticed that a large number of students come by bicycle.

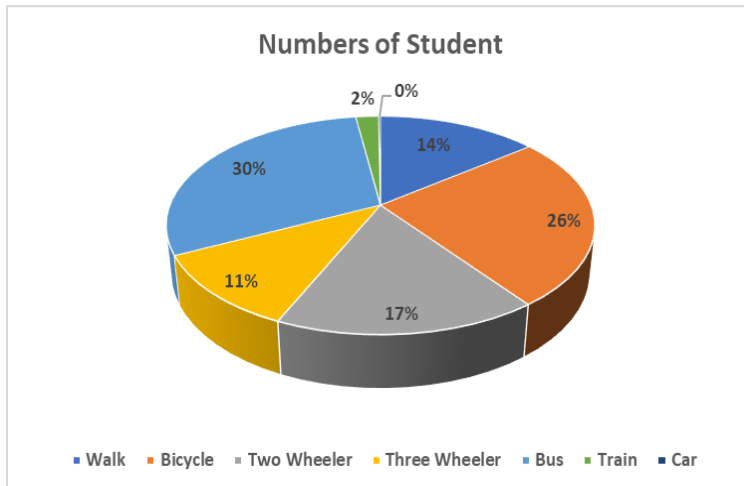


Particulars	Mode of conveyance	Average Numbers of students	A	B	C	D= C/B	E	F=E x D	G	H=G x F x A
			Number of vehicles used	milage in KM/ hour	Mean distance in KM ( To & Fro)	Fuel Consumed per Day per Vehicle in ltr	Total working days	Fuel Consumption Per Vehicle in a year	Emission factor	Total emission by college students/faculty
Students	On foot	350								
	Bicycle	618								
	Two-Wheeler	408	300	40	15	0.375	210	78.75	2.65	62606
	Auto	270	90	20	14	0.7	210	147	2.65	35060
	Car	4	4	20	29	1.45	210	304.5	2.65	3228
	Bus	730	30	6	45	7.5	210	1575	2.65	125213
	Train	50	1		90		210		0.035	33075
Supporting Staff	On foot	3								
	Cycle	7								
	Two-Wheeler	5	5	40	16	0.4	210	84	2.65	1113
Teaching Staff	Cycle	1								
	Car	28	28	20	12.2	0.61	210	128.1	2.65	9505
	Two-Wheeler	20	20	40	11.5	0.2875	210	60.375	2.65	3200
	Auto	2	2	20	8	0.4	210	84	2.65	445
	Train	1	1		80		210		0.035	588
Non-teaching staff	On foot	2								
	Two-Wheeler	17	17	40	16.5	0.4125	210	86.625	2.65	3902
	Car	3	3	20	9	0.45	210	94.5	2.65	751
	Train	1			80		210		0.035	588
<b>Total Co2 emission in KgCo2 eq per Year</b>										<b>2,79,274</b>

Table 17: Carbon emission by transport

Thus, total emission by the transport is 2,79,274 KG CO<sub>2</sub> eq. Per year

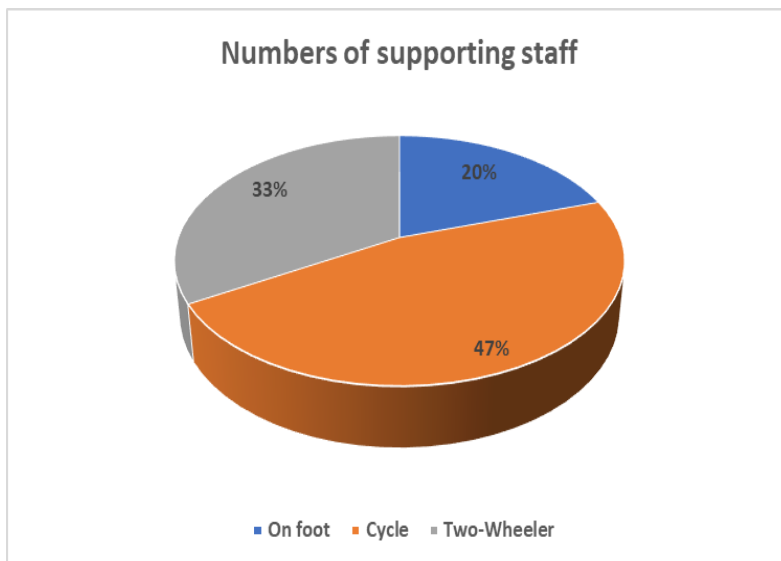
### Graphical representation of mode of Conveyance used by Students



The graph shows that maximum students use bus for coming college, then followed by bicycle, which is 26%. It's a good number in view of reducing Carbon footprint of the Institution.

Figure 8: Mode of Conveyance used by Students

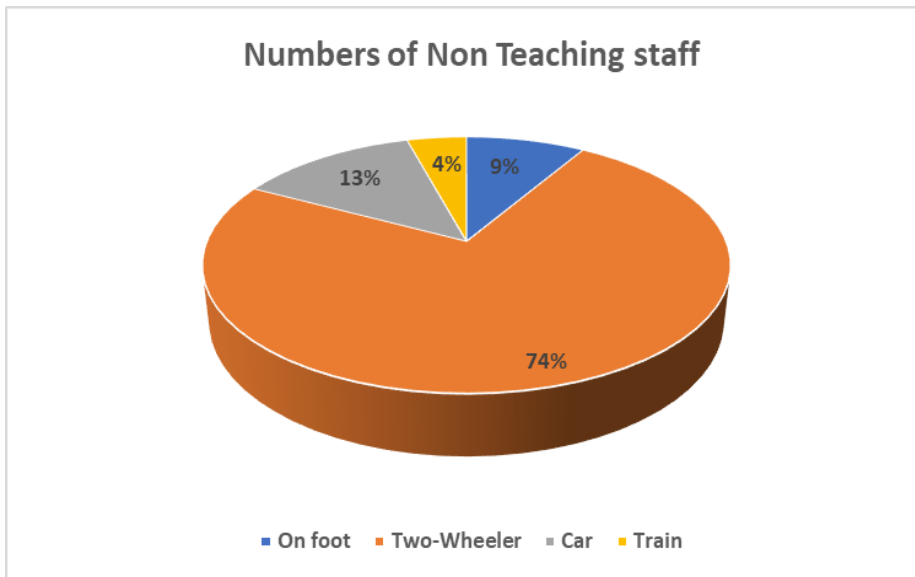
### Graphical representation of mode of Conveyance used by Supporting Staff



The graph shows that maximum supporting staff use cycle for coming college, then followed by two -wheeler. 20% supporting staff come through walk. It's a good number in view of reducing Carbon footprint of the Institution.

Figure 9: Mode of conveyance used by supporting staff

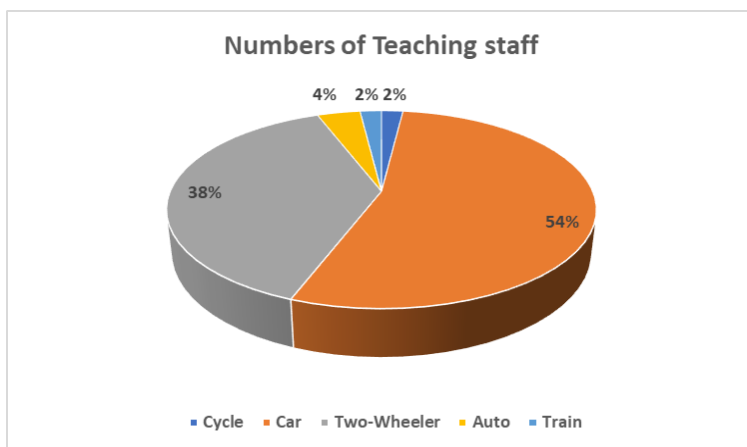
### Graphical representation of mode of Conveyance used by non-teaching staff



The graph shows that maximum non-teaching staff use two wheeler(74%) for coming college, then followed by car. 9% non- teaching staff come through walk.

Figure 10 : Mode of conveyance used by non-teaching staff

### Graphical representation of mode of Conveyance used by Teaching staff



The graph shows that maximum teaching staff use car (54%) for coming college, then followed by two-wheeler, which is 38%. And 2% teaching staff come through bicycle.

Figure 11: mode of Conveyance used by Teaching staff

### Per Capita CO<sub>2</sub> Emission

The category wise CO<sub>2</sub> emission and per capita CO<sub>2</sub> consumption is mentioned below :-



Particulars	Total Numbers	CO2 emission in Kg equivalent	Per capita CO2 Emission
Students	2430	2,59,182	107
Supporting Staff	15	1113	74
Non-Teaching Staff	21	5241	250
Teaching staff	51	13738	269

Table 18:- Category wise CO2 emission and per capita CO2 consumption

### Percentage share of annual CO2 emission in commuting

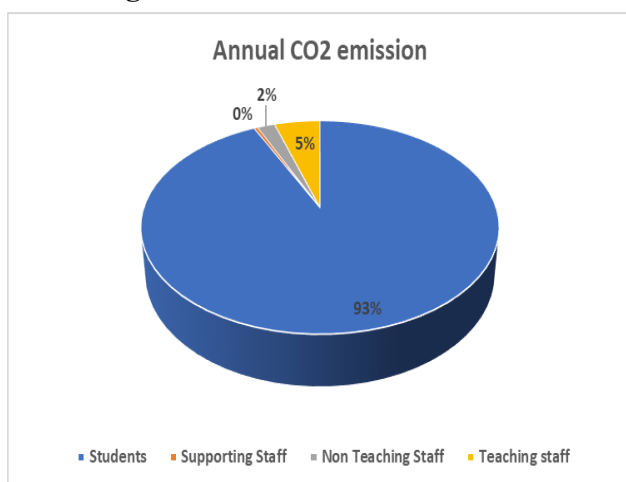


Figure 12: Annual CO2 emission in commuting

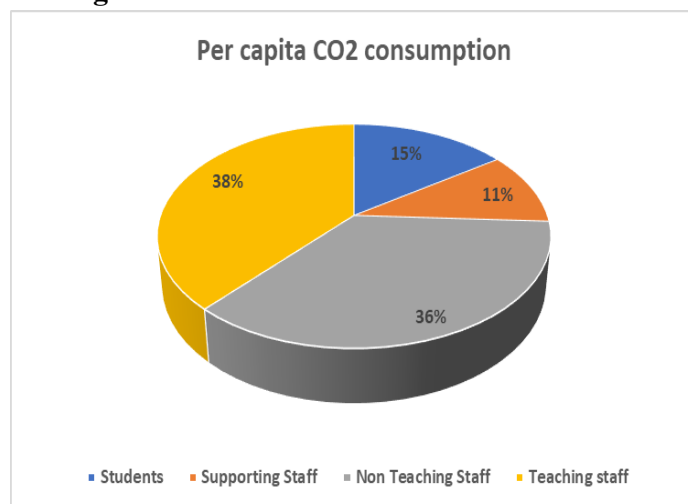


Figure 13: Per capita CO2 Emission in commuting

Though the absolute emissions indicate maximum commuting emissions from students, however the intensity calculations conclude that maximum emissions are done by the teachers (269 kgCO<sub>2</sub>e per teacher), which is 38%; followed by non-teaching staff (250 kgCO<sub>2</sub>e per non-teaching staff) and least by supporting staff (74 kgCO<sub>2</sub>e per supporting staff).

### 13.6 Total Annual Carbon emission by the college

Sr. No.	Classification of GHG Emission	GHG accounting activity	GHG emission in KgCO <sub>2</sub> eq.	Percentage Share
1.	Scope 1	Stationary Combustion	62	Very much less
2.	Scope 2	Purchased Electricity	25,025	8
3.	Scope 3	Students, Teaching, Non-teaching & Supporting staff Commuting	2,79,274	90
4.		Paper Consumption	6,664	2
<b>Total GHG emission</b>			<b>3,11,025</b>	

Table 19: Total Annual Carbon emission by the college

### Activity wise GHG Emission

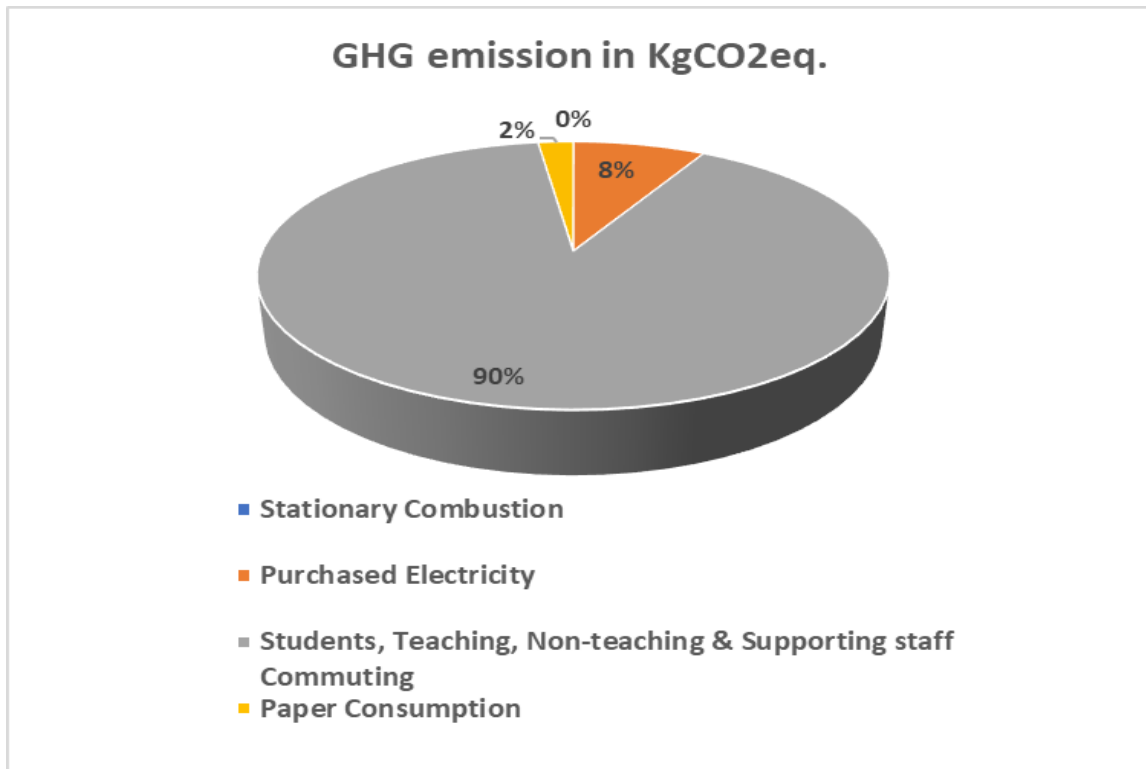


Figure 14: Activity wise total Annual Carbon emission by the college

Activity wise maximum percentage of total emission generated by Students, Teaching, Non-teaching & supporting staff commuting is about 90%

### Scope wise GHG Emission

Scope 3 has maximum share in total emission of the college, which is about 92%.

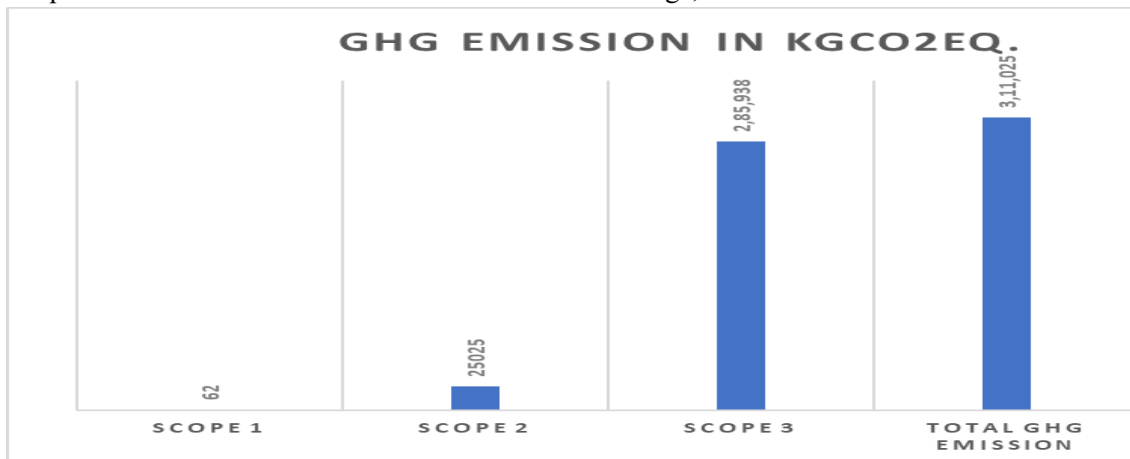


Figure 15 : Scope wise GHG Emission

### 13.7 Reduction of Carbon Emission due to absorption of CO<sub>2</sub> by Tree Plantation

Planting is a great way to help sequester carbon emissions. Through photosynthesis trees absorb carbon dioxide to produce oxygen, food and wood.

Particulars of Flora	Numbers (A)	Carbon absorption in Kg by one tree Per year (B)	Total Carbon Di Oxide in Kg (AxB)	Oxygen Production by one tree Per year (D)	Total Oxygen produced in Kg (AxD)
Full grown Tree	158	21	3,318	117.6	18,581
Semi Grown Tree	110	9	990	58.8	6,468
Quarter grown plants	430	3	1,290	29.4	12,642
Total			5598		37,691

Table 20: Carbon absorption and oxygen production by tree plantation.

### 13.8 Total Reduction in Carbon dioxide emission at Dr. W.W. Patankar Girls' PG College, Durg

Area	Reduction in CO <sub>2</sub> eq. emission in KG
Trees	5,598

Table 21: Total Reduction in Carbon dioxide emission

Total Reduction in Carbon dioxide emission at Dr. W.W. Patankar Girls' PG College Campus is Kg.

### 13.9 Recommendation

- 1) It is recommended to increase the Green Cover further to more area in coming years. A continuous practice of the same will help to conserve energy and natural resources in the campus.
- 2) It is suggested to display and follow Green Campus Policy / Environment Policy of the institute.
- 3) To reduce carbon footprint of the college, Solar Power plant should be installed

## 14. AWARENESS ACTIVITIES IN COLLEGE

### Circular for maintenance of Green Campus



Office of the Principal  
GOVT. DR. W.W. PATANKAR GIRLS' P.G. COLLEGE, DURG (C.G.)  
(Old Name: Govt. Girls PG College, Durg) Pincode-491001, Ph No. 2323773  
Email- [govtgirlspgcollege@gmail.com](mailto:govtgirlspgcollege@gmail.com) Website: [www.govtgirlspgcollegedurg.com](http://www.govtgirlspgcollegedurg.com)



10.08.2017

#### **CIRCULAR FOR MAINTENANCE OF GREEN CAMPUS**

In view of the recommendations by Green Audit Committee in the Internal Green Audit Report of College, the College has decided to implement several policy decisions for the upkeep and maintenance of greenery inside the College premises. The point-wise initiatives for maintenance of green campus are as follows:

1. Landscaping of College premises with trees and plants through regular plantation of saplings.
2. Plantation of saplings of medicinal importance and air purifying properties.
3. Formation of Green Army – a group of students dedicated towards clean and green campus initiatives.
4. Establishment of Green Zone, Oxy Zone, Plastic-free Zone inside the College campus.
5. Display of messages for environment protection, water conservation and saving trees.
6. Use of Plastic bags and other use & throw plastic items to be banned inside the College premises.
7. Outside traffic shall be completely restricted inside the College campus while the vehicles of outsiders / visitors to be allowed conditionally and occasionally.
8. Speed of more than 10 km/h for vehicles plying inside the College campus shall not be entertained.
9. Students and Staff to be encouraged for use of bicycles, zero/low emission vehicles and public transport.

#### **Green Campus Committee:**

Dr. Mukta Bakhla - Coordinator  
Dr. Seema Agrawal - Member  
Dr. Moniya Rakesh - Member  
Dr. M.L. Prasuna - Member  
Dr. Ritu Dubey - Member

  
(Dr. S.C. TIWARI)

PRINCIPAL  
GOVT. DR. W.W. PATANKAR  
GIRLS' PG COLLEGE, DURG

PRINCIPAL  
Govt. Dr. W.W. Patankar  
Girls PG. College, Durg (C.G.)



## Programme on Deshi Day

**शासकीय डॉ. वा.वा. पाटणकर कन्या स्नातकोत्तर महाविद्यालय दुर्ग**  
नेक से 'B++' ग्रेड एवं स्टार कॉलेज (डी.बी.टी.) की अधिमान्यता प्राप्त महाविद्यालय



# कैम्पस न्यूज

वर्ष - 5  
अंक - 7  
वर्ष - 2022

### देसी डे का आयोजन



## Ozone Layer Conservation Day

### कैम्पस न्यूज

#### विश्व ओजोन दिवस मनाया गया



महाविद्यालय में विश्व ओजोन दिवस मनाया गया। इस अवसर पर संगोष्ठी एवं विभिन्न प्रतियोगितायें आयोजित की गईं। प्रभारी प्राध्यापक डॉ. सुनीता गुप्ता ने बताया कि इस वर्ष संयुक्त राष्ट्र संघ द्वारा दी गई थीम "मॉड्यूल प्रोटोकॉल के 35 वर्ष पृथ्वी पर जीवन की सुरक्षा के लिए वैश्विक सहयोग" पर केन्द्रित आयोजन किये जा रहे हैं। उन्होंने ओजोन सतह का महत्व एवं सतह पर होने वाले क्षरण के कारणों पर अपने विचार प्रस्तुत किए।

इस अवसर पर महाविद्यालय के प्राचार्य डॉ. सुशील चन्द्र तिवारी ने छात्राओं को संबोधित करते हुए कहा कि वे अपने पर्यावरण संरक्षण के प्रति दायित्व को अपना कर्तव्य समझकर निष्ठापूर्वक योगदान दें। इस अवसर पर विभिन्न प्रतियोगितायें रखी गईं। पोस्टर प्रतियोगिता में 26 छात्राओं ने भाग लिया जिसमें प्रथम - गतिका,



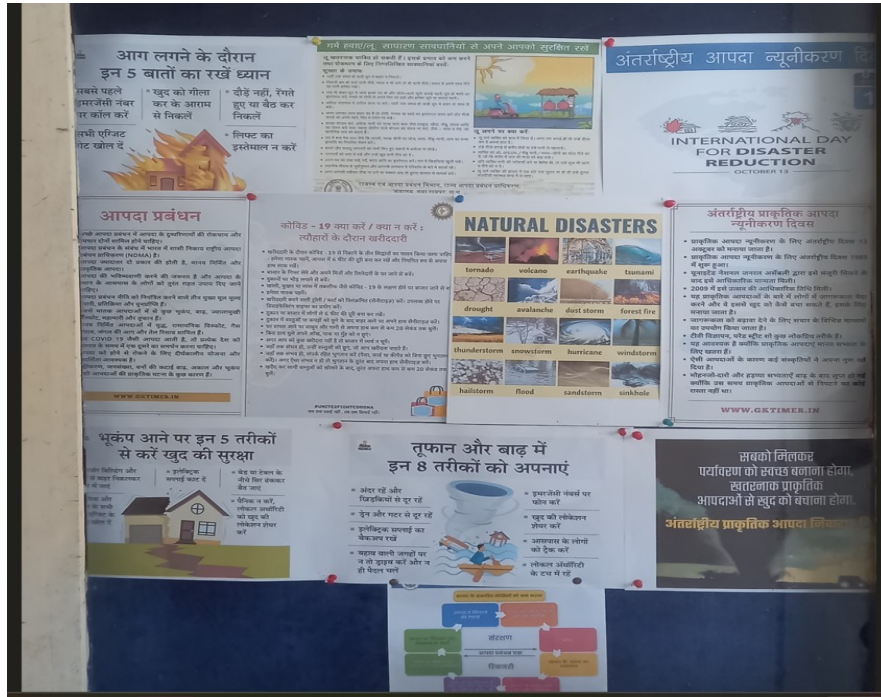
द्वितीय -जागृति ध्रुव एवं तृतीय सत्यभामा रहीं। सोमी सोनी एवं सुषमा विश्वकर्मा को सांत्वना पुरस्कार प्राप्त हुआ।

स्लोगन प्रतियोगिता में प्रथम - चंद्रमुखी, द्वितीय-डैमिन एवं तृतीय-नेहा यादव एवं सांत्वना पुरस्कार- श्रुति आदित्य, ज्योतिरता को मिला। वहीं भाषण प्रतियोगिता में प्रथम-तनु कटारिया, द्वितीय हर्षिता एवं तृतीय राधिका रहीं तथा प्रेरणा, लक्ष्मी को सांत्वना पुरस्कार प्राप्त हुआ। निबंध प्रतियोगिता में 25 छात्राओं ने भाग लिया जिसमें हिन्दी माध्यम में प्रथम-पायषी यादव, रोशनी साहू-द्वितीय एवं नेहा-तृतीय स्थान पर रहे तथा अंग्रेजी माध्यम में प्रथम-मानसी गुप्ता, सौम्या इडसेना-द्वितीय एवं प्रेरणा शर्मा-तृतीय स्थान पर रही।

निर्णायक के रूप में डॉ. आरती गुप्ता, डॉ. ऋचा ठाकुर, डॉ. मीरा गुप्ता, डॉ. यशेश्वरी ध्रुव तथा डॉ. लता मेश्राम ने इस प्रतियोगिताओं में निर्णय प्रदान किया।

### स्त्री गेग पर त्यागदान आगेरुचित

## Safety Awareness



## Energy Efficient equipments are used in college campus.



## 15. Annexure

As Dr W.W. Patankar Government Girls College Durg has an Green Army of college students.

### **(A) Role of the Green Army Members**

1. Seek views of all the Stakeholders to make the Green Campus initiative functional throughout the year
2. Conduct the Campus' environmental impacts to identify the targets for improvements.
3. Establish a Green Campus Environmental Ethic Awareness campaigns.
4. Set forth a Green Campus Mission and a Statement of Principles.
5. Link Green-Campus activities to Academics in the Institute.
6. Organize Awareness Programs for the students, faculty and society
7. Chart out a yearly planner for the Institute, local community, and Stakeholders like preparation of Green Calendar
8. Develop a strategic plan and create student teams to carry out specific tasks of the strategic plan.  
For instance, a plan of save energy at the institute level with time bound plan to use renewable energy in any form, if feasible.
9. Conduct an Annual Green, Environment and Energy Audit.
10. Purchase only Energy Efficient Computers viz: “ENERGYSTAR” or any other equivalent.

### **(B). Promotion of “Save Energy Tips” in and outside the Institute:**

- Activate power management features on your computer and monitor so that it will go into a low power “sleep” mode when you are not working on it.
- Turn off your monitor when you leave your Table.
- Activate power management features on your laser printer.
- Whenever possible, shut down rather than logging off.
- Turn off unnecessary lights and use daylight instead.
- Avoid the use of decorative lighting.
- Use LED lights only
- Keep lights off in conference rooms, classrooms, lecture halls when they are not in use.
- Use the fans only when they are needed.
- Unplug appliances not plugged into power strips (like TVs, Refrigerators, ACs, tea/coffeepots, printers, faxes, and chargers etc.)

**(C) Waste Water Management/ Rain water harvesting:**

The Institute has to work in the direction of waste water management particularly in student's hostels. Water flow restrictors on bathroom faucets and showers, low water flow toilets and automated urinal flushers should be used to cut down campus water use. The Institute will take all necessary measures to implement waste water management /rain water harvesting.

The roof area of the hostel and remaining roof area of college building should also be used for rain water harvesting system.

**(D) Major Green Campus Initiatives:**

- Installation of Solar Power Station
- Waste water Management/ Rainwater harvesting
- Development of Sewage Water Treatment Plant
- Use of Micro-scale techniques
  - Sensor based energy conservation
- Displayed poster on E-waste Management
- Maintenance of water bodies and distribution system in the campus
- MIS to make paperless administration
- Plastic free Campus
  - Tree Plantation Drive
  - Cleanliness Drive
  - Landscaping and gardens
  - Use of LEDs only
- Digital Library/ E-Learning Centre
  - Organization of sensitization programmes for the stakeholders
- Establishment of Enviro-Club
- Green, Environment and Energy Audit conducted
- Restricted entry of automobiles



## GOVT. DR. W.W. PATANKAR GIRLS PG COLLEGE, DURG (C.G.)

### छात्रा आवागमन संबंधी जानकारी (Students Conveyance Information)

छात्रा का नाम (Student Name) \*

Shweta sahu

कक्षा (Class) \*

1st year

निवास स्थान का पता (Address) \*

Gram kotni nagpura

निवास क्षेत्र (Area) \*

ग्रामीण (Rural)

शहरी (Urban)

निवास की महाविद्यालय से दूरी (Distance from College) K.M. \*

10km

महाविद्यालय आने का साधन (Mode of Conveyance) \*

पैदल (Walk)

साईकल (Cycle)

दोपहिया वाहन (Two Wheeler)

कार (Car)

बस (Bus)

आटो (Auto)

टेम्पो (Tempo)

रेल (Train)

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## GOVT. DR. W.W. PATANKAR GIRLS PG COLLEGE, DURG (C.G.)

### छात्रा आवागमन संबंधी जानकारी (Students Conveyance Information)

छात्रा का नाम (Student Name) \*

Sejal bafna

कक्षा (Class) \*

Bcom 2nd year

निवास स्थान का पता (Address) \*

Suryoday nagar near khandelwal

निवास क्षेत्र (Area) \*

ग्रामीण (Rural)

शहरी (Urban)

निवास की महाविद्यालय से दूरी (Distance from College) K.M. \*

3 km

महाविद्यालय आने का साधन (Mode of Conveyance) \*

पैदल (Walk)

साईकल (Cycle)

दोपहिया वाहन (Two Wheeler)

कार (Car)

बस (Bus)

आटो (Auto)

टेम्पो (Tempo)

रेल (Train)

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## GOVT. DR. W.W. PATANKAR GIRLS PG COLLEGE, DURG (C.G.)

### छात्रा आवागमन संबंधी जानकारी (Students Conveyance Information)

छात्रा का नाम (Student Name) \*

Reena chandraker

कक्षा (Class) \*

B.a fainal year

निवास स्थान का पता (Address) \*

Kuthrel durg

निवास क्षेत्र (Area) \*

ग्रामीण (Rural)

शहरी (Urban)

निवास की महाविद्यालय से दूरी (Distance from College) K.M. \*

13km

महाविद्यालय आने का साधन (Mode of Conveyance) \*

पैदल (Walk)

साईकल (Cycle)

दोपहिया वाहन (Two Wheeler)

कार (Car)

बस (Bus)

आटो (Auto)

टेम्पो (Tempo)

रेल (Train)

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## GOVT. DR. W.W. PATANKAR GIRLS PG COLLEGE, DURG (C.G.)

### छात्रा आवागमन संबंधी जानकारी (Students Conveyance Information)

छात्रा का नाम (Student Name) \*

Bhumika

कक्षा (Class) \*

Bsc 3rd year

निवास स्थान का पता (Address) \*

Devri

निवास क्षेत्र (Area) \*

ग्रामीण (Rural)

शहरी (Urban)

निवास की महाविद्यालय से दूरी (Distance from College) K.M. \*

25

महाविद्यालय आने का साधन (Mode of Conveyance) \*

पैदल (Walk)

साईकल (Cycle)

दोपहिया वाहन (Two Wheeler)

कार (Car)

बस (Bus)

आटो (Auto)

टेम्पो (Tempo)

रेल (Train)

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