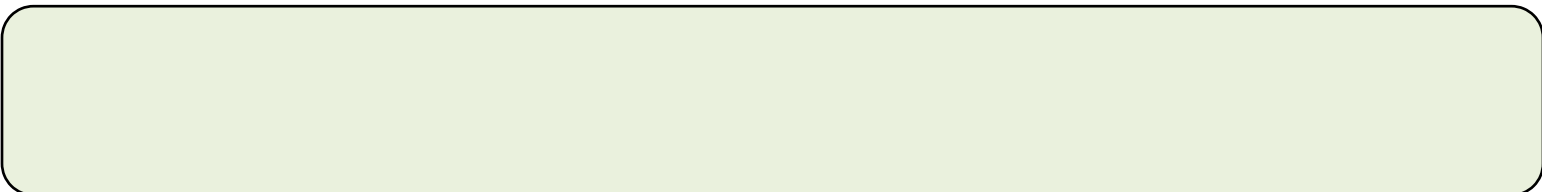
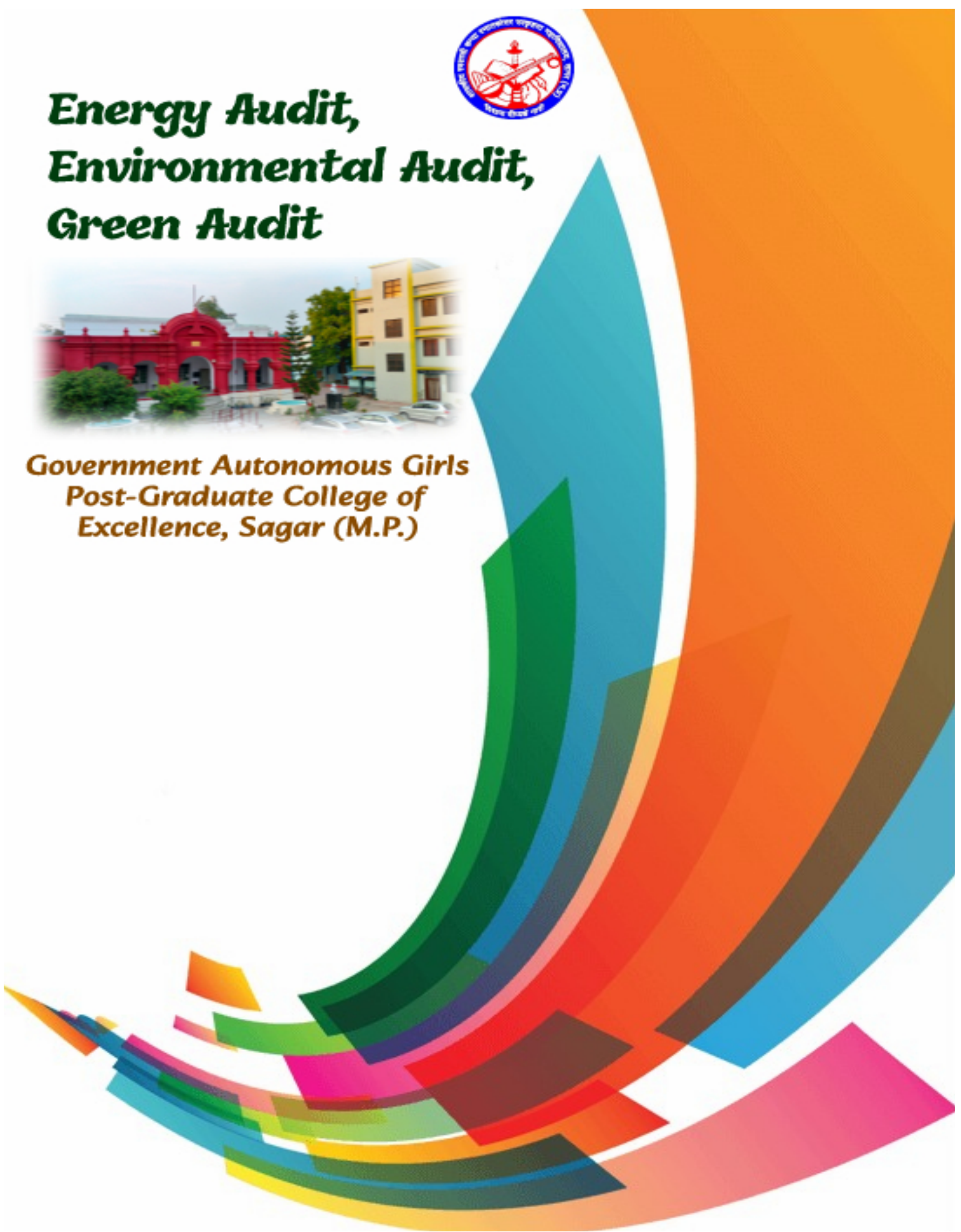




# **Energy Audit, Environmental Audit, Green Audit**



**Government Autonomous Girls  
Post-Graduate College of  
Excellence, Sagar (M.P.)**



# 1. INDEX

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*P. K. Sahu*

## 2. ACKNOWLEDGEMENTS

We Express Our Sincere Thanks to Dr. Anand Tiwari, Principal, Govt. Autonomous Girls Post Graduate College of Excellence, Sagar for his kind support and Giving us the assignment to contribute in their effort towards Green initiatives & efficient energy management in the college.

We are highly indebted to Dr. Renu Bala Sharma, IQAC Coordinator, Dr. Naveen Gideon And Dr. M.K. Mishra IQAC Members for their guidance, intellectual advice and his kind support in completing the project.

Our boundless gratitude to other teaching and non-teaching staff associated with this Energy Audit, Environment Audit & Green Audit study of Govt. Autonomous Girls Post Graduate College of Excellence, Sagar 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 their Greeninitiative towards creating awareness for healthy and sustainable environment.



### 3. DISCLAIMER

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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 the Govt. Autonomous Girls Post Graduate College of Excellence, Sagar personnel is true to their best of knowledge.



## 4. CERTIFICATE





# CERTIFICATE

This is to Certify that  
**Quality Management System**  
of  
**GOVERNMENT AUTONOMOUS GIRLS PG COLLEGE  
OF EXCELLENCE, SAGAR (M.P.)**  
DEPARTMENT OF HIGHER EDUCATION, GOVT. OF MADHYA PRADESH,  
BHOPAL, M.P. INDIA

has been independently assessed by DBS  
and is compliant with the requirement of:

**ISO 9001:2015**

For the following scope of activities:

**Provision of Teaching, Learning & Examination (UG - BA, BSc, BHSc, BCom, BBA, BCA,  
BLib, PG - MA, MSc, MHSc, MCom, MLib + Research Activities)**

**Certificate Number: Q-205224080504**

<b>Date of Certification:</b>	<b>5th August 2024</b>
<b>1<sup>st</sup> Surveillance Audit Due:</b>	<b>4th August 2025</b>
<b>2<sup>nd</sup> Surveillance Audit Due:</b>	<b>4th August 2026</b>
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# CERTIFICATE

This is to Certify that  
**Environmental Management System**  
of  
**GOVERNMENT AUTONOMOUS GIRLS PG COLLEGE  
OF EXCELLENCE, SAGAR (M.P.)**  
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**Certificate Number: E-205224080505**

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OF EXCELLENCE, SAGAR (M.P.)**  
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BLib, PG - MA, MSc, MHSc, MCom, MLib + Research Activities)**

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# CERTIFICATE

This is to Certify that  
**Energy Management Systems**  
of  
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OF EXCELLENCE, SAGAR (M.P.)**

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BCA, BLib, PG - MA, MSc, MHSc, MCom, MLib + Research Activities)*

**Certificate Number: 2024080508**

<b>Date of Certification:</b>	<b>5th August 2024</b>
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## **5.AUDITOR'S CERTIFICATE**

## 6. INTRODUCTION

Government Autonomous Girls Post-Graduate College of Excellence, Sagar (M.P.) India, is a leading higher education institution for girls in Bundelkhand Region. It is affiliated to Maharaja Chhatrashal Bundelkhand University (MCBU), Chhatarpur. The college has been conferred with the status of autonomy by UGC in 2003. The college was accredited with a grade 'A' by NAAC in the IInd cycle. In 2002 College has been recognized as 'College with Excellence by Department of Higher Education, Govt. of Madhya Pradesh.



*R. D. Saha*

1.	Name of Institution	Govt. Autonomous Girls Post Graduate College
----	---------------------	--

		of Excellence, Sagar (M.P.) 470001
2.	Address of the Institution	<b>Main Building (Old)</b> - Near Bus Stand, Krishna Ganj Ward, Sagar (M.P.) 470001 <b>New Building (Science)</b> - Near RTO Office, Rajghat Road, Tili, Sagar (M.P.) 470003
3.	University Affiliated to	Maharaja Chhatrashal Bundelkhand University (MCBU), Chhatarpur (M.P)
6.	Name of the Principal	Dr. Anand Tiwari
7.	Contact Number	07582 - 223573 91+ 7987648772
8.	E Mail ID	heggpgcsag@mp.gov.in

Table 2 : Details of Institution





## About College

The "Government Autonomous Girls PG College of Excellence, Sagar" was established in 1964 by the Municipal Corporation of Sagar. Earlier the College was called as "Girls Degree College, Sagar". On 11 January, 1978, it was taken over by the Government of Madhya Pradesh and it got the status of a government college. When it became a government college, it was named as "Government Girls Degree College, Sagar". It was affiliated to Dr. Harisingh Gour University and continued to be affiliated till 2014. After Dr. Harisingh Gour University became a Central University, a new university was established at Chhatarpur by the Government of Madhya Pradesh which is called as Maharaja Chhatrasal Bundelkhand University. So, today this college is affiliated to Maharaja Chhatrasal Bundelkhand University, Chhatarpur.

When this college became a government college in 1978, the number of girl students was 389, which has now grown to 13000. Initially there were only Arts and Home Science faculties in this college, and it was only up to UG level, but today there are Science and Commerce faculties also and classes up to PG level are being held. This college is registered research centre of the university. Previously it was registered research centre of Dr. Harisingh Gour University, Sagar.

In 1985, this college was registered under **2F** and in 1989, it was registered under **12B** of UGC act. Hence, this college is receiving grants from the UGC from the seventh Five Year Plan to the Twelfth Five Year Plan.

Acknowledging the progress and excellence of this college, the Government of Madhya Pradesh gave this college the status of College of Excellence in 2002, under which it has been receiving grants for excellence continuously for the last twelve years. In 2003, this college

was given Autonomous Status by UGC and in 2008, it was renewed. The college is receiving autonomous grants from UGC. Initially the autonomous grant was 6 lakh, then 12 lakh and now a days it has increased upto 20 lakh. In 2009, this college was accredited with B Grade by NAAC and in 20014, it it was re accredited with A grade. As a result of this Government of Madhya Pradesh granted 15 Lakh to this college for redevelopment.

In 2015, this college was selected under the Rashtriya Uchchar Shiksha Abhiyan (RUSA) and received a grant of Rupees Two Crore, from which one seminar hall, two smart classes, one computer lab, one e-library and five class rooms were built and various equipments and apparatus were purchased. In 2017, this college was selected under the World Bank Plan and a grant of Rupees 5.7 Crore was allotted to it.

This college has been granted 20 acres of land by the district administration of Sagar at Near New RTO, Rajghat Road, Tili Sagar. From Session 2023-24 the UG and PG Classes of Science Stream have been started at new Academic Building of tili Sagar.

The present campus (old) is situated at the heart of the city on 2 acer land. The oldest building of this campus is the Town Hall of the British period which was established in 1861 and there was a library in it. In 1964 this college was started in this building. The old Town Hall building is still in existence and many programs of the college are held here. Some departments of the college are also there in this building.

Science & Library Science	Arts, Social Science, & Commerce	Research
<b>PG Programmes</b>		
Botany	Commerce	Botany
Chemistry	Economics	Chemistry
Physics	English	Commerce
Zoology	Geography	Economics
Library and Information Science	Hindi	English
	History	Geography
	Political Science	Hindi
	Psychology	History
	Sociology	Home Science
<b>Only UG Programmes</b>		Library And Information Science
Computer Application	Dance	Physics
Mathematics	Management	Political Science
Microbiology	Music	Psychology
Biotechnology	Sanskrit	Sociology
		Zoology





Presently the college is one of the biggest Govt. Colleges in Madhya Pradesh, a Lead College of Sagar district that provides administrative and academic support and guidance to 83 (19 Govt. & 64 Private Colleges) colleges of the district. The college has student strength of More Than 11,000.0 in the current session 2023-24. It hold the unique opportunity of being a mixed bowl of urban and rural students, The college, since its commencement, is serving society in a significant way by providing higher education to first-generation Female learners, making this a distinctive feature of this institution.



The institution always cherished its location advantage for being situated close to Bus Stand.

*R. S. D. S.*



Govt. Autonomous Girls Post Graduate College of Excellence, Sagar has installed a Solar Power Plant of 10 KW capacity and a solar power plant of 20 KW is in pipeline.



	2022-23	2021-22	2020-21	2019-20	2018-19
<b>Number of students</b>	<b>13573</b>	<b>12866</b>	<b>11101</b>	<b>10760</b>	<b>11740</b>
<b>Teachers</b>	<b>62</b>	<b>62</b>	<b>51</b>	<b>51</b>	<b>51</b>
<b>Non- Teaching Staff</b>	41	41	40	40	40
<b>Total</b>	<b>13676</b>	<b>12969</b>	<b>11192</b>	<b>10851</b>	<b>11831</b>
<b>Number of Working days</b>	284	235	299	297	292

Table 3 : Total numbers of students, teachers & non teaching since last 5 years

### **Library**

The college library is fully automated with RFID facility and well equipped with books, journals, periodicals and reading rooms. The library has web-OPAC for providing remote access to its repositories of textual resources. Along with book bank facility for SC and ST students, library has specially designed furniture for divyang students and books in BRAILLE are also available for the visually challenged students.



## Career Counselling and Placement Cell

Career Counselling and Placement Cell monitors activities related to job notifications and opportunities, Interview preparation, development of entrepreneurial skills, organizing of campus Interviews besides ensuring maximum participation in campus recruitment and interviews. The cell works in coordination with all Head of departments to cater to diverse need of students. It is actively engaged in organizing Inspirational lectures by experts.

It aims at guiding students towards cracking Civil Service exams. The Cell also attempts at encouraging students by providing them opportunities to interact with young probation officers, senior civil servants, Defense Officers etc. who have already cracked the exams.

The college is moving forward with a multi-pronged strategy towards excellence with a view to come out as an institution of the future that prepares the students equipped with knowledge, skill, aptitude and social commitment.

### General issues:

➤ <b>Awareness of Environmental policy</b>	Yes
➤ <b>Environmental protection rules</b>	<ul style="list-style-type: none"><li>• Ban on single use plastic</li><li>• Proper disposal of discarded and unsafe materials of laboratories</li><li>• Periodic use of bicycles</li><li>• Controlled use of water</li></ul>
➤ <b>Housekeeping schedule</b>	<ul style="list-style-type: none"><li>• Regular dusting and mopping in class rooms, veranda and laboratory areas</li></ul>
➤ <b>Activities done for environmental cleanliness</b>	<ul style="list-style-type: none"><li>• Plantation</li><li>• Awareness campaigns</li></ul>
➤ <b>Celebration of Important days</b>	<ul style="list-style-type: none"><li>• World Environment Day, Earth Day, Ozone Day, National Pollution prevention Day, Vishwa Shaochalya Diwas etc.</li></ul>
➤ <b>Participation in Local and National Environmental protection movements</b>	<ul style="list-style-type: none"><li>• Participation in Swachh Bharat Movement</li><li>• Activities through NSS, YRC</li></ul>



## **VISION**

Being the leading Girls Autonomous College in the Sagar division, our vision encompasses.

***"Social Transformation through Women Empowerment and Education."***

Our objective is to evolve through collective leadership into a centre of academic excellence which, while retaining its regional roots, is able to surmount and objectify global concerns and their wide social perspective we tend to achieve a balance between academic practices, social empathy, cultural inclination and co-curricular activities so that we should gain our best in shaping young minds.

## **MISSION**

***"To Build True Citizens of Tomorrow."***

## **GOAL**

- 1) To facilitate budding ground for overall development to youth women belonging to different socioeconomic background.
- 2) To provide a wide range of subjects at under graduate level for structuring their future perspective.
- 3) To incorporate value added and vocational courses to ensure self-reliance in women of our area.
- 4) To constantly promote the extension activities and our reach groups for increased participation issues in the society.
- 5) As we are dealing with two major 'AMRIT STAMBH' of Viksit Bharat i.e. Yuva and Nari, our role is to empower and educate them is significant.

The college, since its commencement is serving society in a significant way by Providing higher education to first generation female learners of the Family, making this a distinctive features of this institution.



The Covid 19 brought in new challenges into the entire education system due to the sudden lockdown. Exams of the undergraduate classes and the teaching of the semester classes were suspended.



*Dr. Sakshi*



- The professors took the initiative of immediately opening the online teaching classes for the students. Video lectures, reading materials in the form of pdfs, audio lectures were uploaded to the college website for the benefit of the students.
- The students were also supported with their assignments and courses through Calls, Whatsapp groups, and U-tube lectures.
- The students of NSS, and NCC have supported the community during the lockdown by making and distributing masks, distributing sanitizers, explaining Social distancing in the markets and other public places

## तुलसी के पौधे लगे हुए गमले रासयोके स्वयंसेवियों को गोद दिए गए



सागर। पर्यावरण को संरक्षित रखने और हरियाली बढ़ाने में सिंधु संस्कार समिति अहम भूमिका निभा रही है। स्कूल व कॉलेज स्तर पर युवतियों को पेड़-पौधों का महत्व बताया जा रहा है, तभी वे पर्यावरण से प्रेम करने लगेंगे।

23 जून 2021 को शासकीय स्वशासी कन्या स्नातकोत्तर उत्कृष्टता महाविद्यालय सागर में प्राचार्य डॉ. बी.डी.अहिरवार के मार्गदर्शन में एवं राष्ट्रीय सेवा योजना के तत्वावधान में सिंधु संस्कार समिति द्वारा

तुलसी के पौधे लगे हुए गमले सहित राष्ट्रीय सेवा योजना के स्वयं सेवियों को गोद दिए गए कार्यक्रम का संचालन कार्यक्रम अधिकारी डॉ. अपर्णा चाचौंदिया ने किया एवं आभार कार्यक्रम अधिकारी डॉ. भावना रमैया ने माना इस अवसर पर महाविद्यालय परिवार से डॉक्टर संतोष गुप्ता एवं डॉ. संजय खरे उपस्थित रहे राष्ट्रीय सेवा योजना के स्वयंसेवियों में साक्षी गुप्ता, बाला जैन, साक्षी सोनी, विधि ठाकुर एवं रिया साहू ने पौधे लिए गोद लिए। इस मौके

पर प्राचार्य डॉ. बी.डी.अहिरवार ने कहा की सबसे पहले हम सिंधु संस्कार समिति के राजेश मनवानी को बधाई देते हैं कि उन्होंने हमें तुलसी के पौधे गमले सहित यहाँ अध्ययन कर रही युवतियों को दिए हिंदू धर्म में तुलसी के पौधे का बहुत महत्व है। तुलसी के पौधे को मां लक्ष्मी का प्रतीक माना जाता है। भारत के अधिकांश घरों में तुलसी के पौधे की पूजा की जाती है। हमारे ऋषियों को लाखों वर्ष पूर्व तुलसी के औषधीय गुणों का ज्ञान था इसलिए इसको दैनिक जीवन में प्रयोग हेतु इतनी प्रमुखता से स्थान दिया गया है। आयुर्वेद में भी तुलसी के फायदों का विस्तृत उल्लेख मिलता है। शिवसेना उपराज्य प्रमुख पप्पू तिवारी ने कहा की आज राजेश मनवानी ने जो तुलसी के पौधे दिए हैं वे बधाई के पात्र हैं तुलसी एक औषधीय पौधा है।

*RuSah*

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✓ **Auditing for Energy Management of the Govt.**

**Autonomous Girls Post Graduate College of Excellence for Environmental Consciousness and Sustainability.**

✓ **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 (Current year data)**





## 7. ENERGY MANAGEMENT

Energy Management is the strategy of adjusting and optimizing energy, using systems and procedures so as to reduce energy requirements per unit of output while holding constant or reducing total costs of producing the output from these systems”

### Principle of Energy Management

- ✓ Procure energy at lowest possible price
- ✓ Manage energy use at highest energy efficiency
- ✓ Reusing and recycling energy
- ✓ Select low investment technology to meet present requirement and environmentcondition
- ✓ Make use of wastes generated within the plant as sources of energy and reducingthe component of purchased fuels and bills

### 7.1 Energy Scenario

Electrical energy is supplied by Madhya Pradesh State Power Distribution Company Limited. There are total six energy meter catering the electrical demand of Govt. Autonomous Girls Post Graduate College of Excellence, Sagar One of the LT connection meter is only for hostel and other five LT connections are catering the electrical demand of college premises.

An off- grid solar power plant having 10 KW capacity is commissioned as use of renewable energy.



## 7.2 Electricity Bill Analysis

We have analyzed the electricity bills of all the connections of college premises and hostel.

Sl. No.	Name of Connections	IVRS Number	Service Number	Contract Demand in Watt	Tariff Category
1	The Pracharya Kanya mahavidyalay Degree College Sagar	N1405016080	1405016080	30000	LV2
2	Girls Degree College Suwatal Kaneradev Bamori	N1200019658	1200019658	55000	LV2
3	The Principal, Govt Degree Collage Krishan Ganj Ward Sagar	N1404030692	1404030692	33000	LV2
4	Princpal Govt Girls PG College Of Govt Girls P G College Of Excellence Sagar	N1404000548	1404000548	10010	LV2
5	The Supdt. Girls Hostel Digree College Sagar	N1404000246	1404000246	10280	LV2
6	The Superintendent Hostel Girls Digree College Sagar	N1404000304	1404000304	0 (2.9 KW) Maximum	LV2
	<b>Total</b>			<b>138290</b>	

Table 5 : Details of all service number and Contract Demand.

### Analysis of billings of meters of College premises

2021-22	S.C. No.	Contract Demand in KW	Maximum Demand in KW	Average Unit Per Month
	BP No. 1405016080	30.0	30	1906.16
BP No. 1200019658	55.0	6.84	308.33	
BP No. 1404030692	33.0	14.707	1268.21	
BP No. 1404000548	10.01	10.01	628.26	
<b>Total</b>	<b>128.01</b>	<b>61.557</b>	<b>4110.96</b>	
Total Average Annual Unit Consumption				

Table 6 : Analysis of billings of meters of College premise for the year 2021-22

*R. S. Sahas*

	<b>S.C. No.</b>	<b>Contract Demand in KW</b>	<b>Maximum Demand in KW</b>	<b>Average Unit Per Month</b>
<b>2022-23</b>	BP No. 1405016080	30.0	30	871.33
	BP No. 1200019658	55.0	6.84	1241.16
	BP No. 1404030692	33.0	14.707	1657.16
	BP No. 1404000548	10.01	10.01	493.83
	<b>Total</b>	<b>128.01</b>	<b>61.557</b>	<b>4263.48</b>
	Total Average Annual Unit Consumption			

Table 7 :Analysis of billings of meters of College premise for the year 2022-23

#### Analysis of billings of Hostel

Year	<b>S.C. No.</b>	<b>Contract Demand in KW</b>	<b>Maximum Demand in KW</b>	<b>Average UnitPer Month</b>
2021-22	BP No. 1404000246	10.28	10.28	1070.16
	BP No. 1404000304	0.0	2.9	14.5
	<b>Total</b>	<b>10.28</b>	<b>13.18</b>	<b>1084.66</b>
2022-23	BP No. 1404000246	10.28	10.28	1417.5
	BP No. 1404000304	0.0	2.9	23.16
	<b>Total</b>	<b>10.28</b>	<b>13.18</b>	<b>1440.66</b>

Table 8: Analysis of billings of Azad Hostel for the year of 2021-22 & 2022-23

*R. S. Dabhi*

**Graphical Representation of Service Consumer number, Contract Demand and maximum demand occurred in the year 2021-22 and 2022 - 2023**

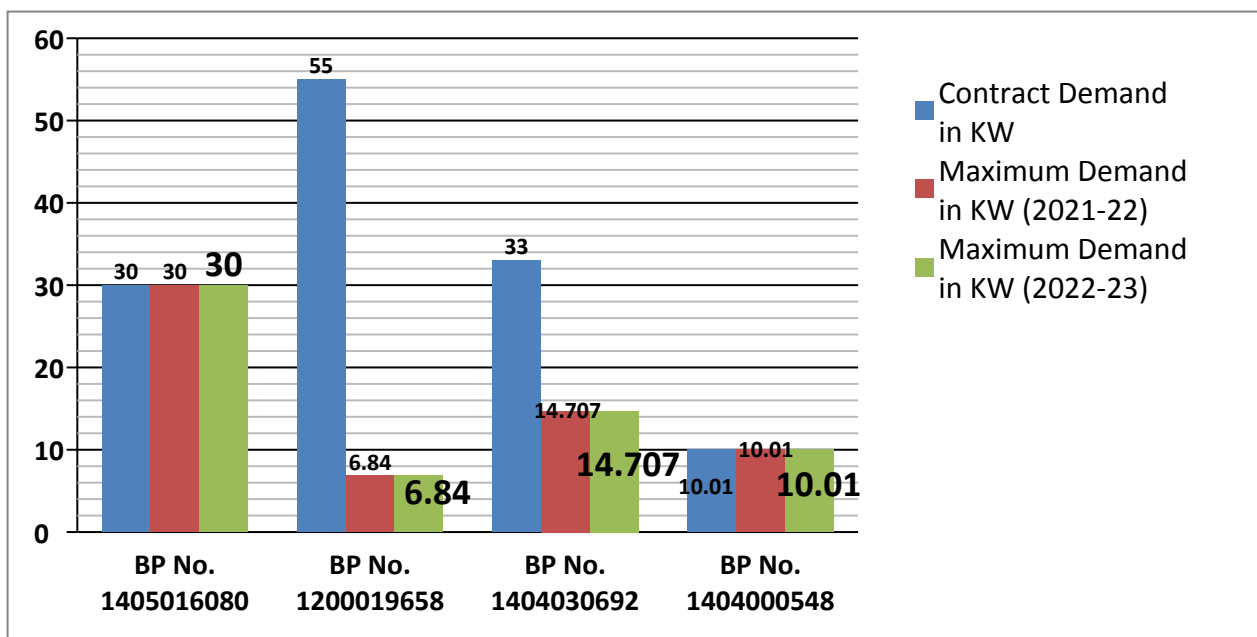


Figure 1: Graphical Representation of Service Consumer number, Contract Demand and maximum demand occurred in the year 2021-22 and 2022-23

**Graphical Representation of Service Consumer number with average unit consumption in the year 2021-2022 & 2022 - 2023.**

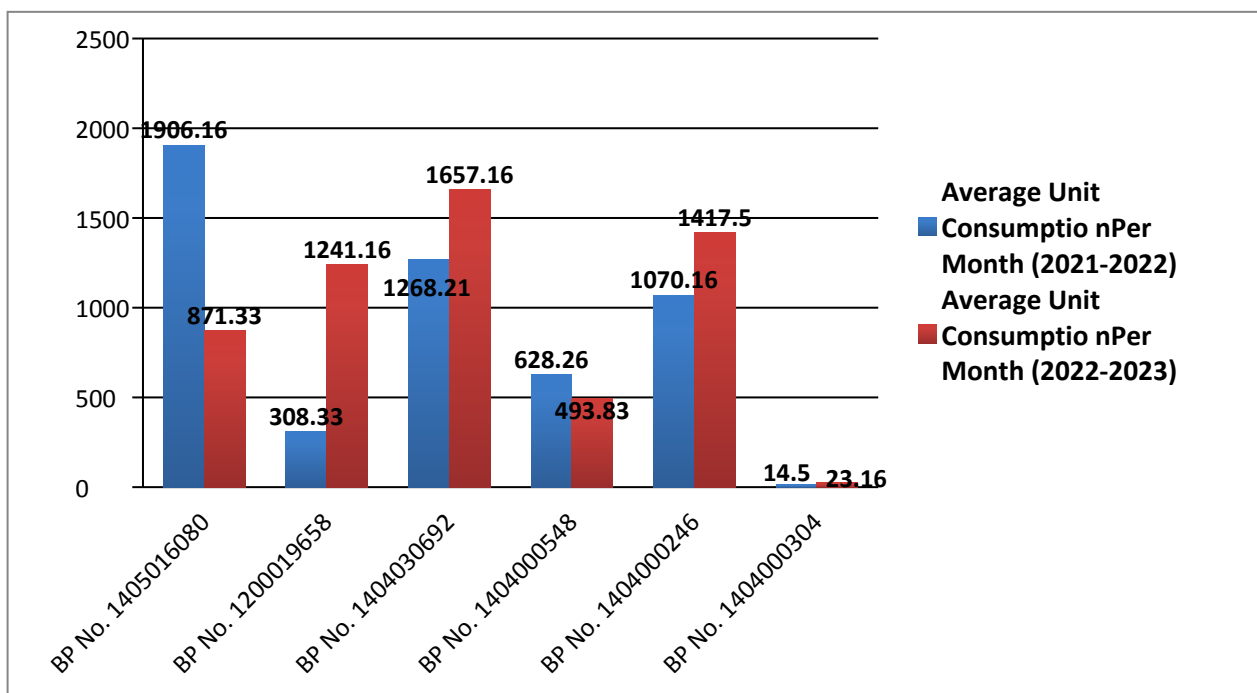


Figure 2: Graphical Representation of Service Consumer number with average unit consumption in the year 2021-22 & 2022 - 2023

### 7.3 Connected Load of College premises

Segment	Electrical Equipment	Wattage	Quantity	Total load in Watt
Lighting	LED TL	20	641	12820
	FTL TL	40	115	4600
	LED Bulb	20	63	1260
	LED Panel Light	12	2	24
	<b>Total Lighting Load</b>			
HVAC	Ceiling Fan	80	405	32400
	Wall Fan	70	5	350
	Cooler 18"	300	28	8400
	Exhaust Fan 12"	150	4	600
	Exhaust Fan 14"	200	3	600
	Exhaust Fan 18"	250	5	1250
	Air Conditioner 1 T	5	15	135
	Air Conditioner 1.5 T	27	6	162
	Air Conditioner 2 T	3	6	18
<b>Total HVAC Load</b>				<b>43915</b>
Office Equipment	Computer	100	83	8300
	Printer	55	5	275
	Photo Copy Machine	600	20	12000
	U.P.S.	220	9	1980
	<b>Total Office Equipment Load</b>			
Water Supply	Submersible pump	750	2	1500
	<b>Total Water Supply Load</b>			
Others	Water Cooler Small	300	4	1200
	Water Cooler Big	600	4	2400
	Smart Board	150	3	450
	Refrigerator Medium	500	1	500
	Inverter	350	9	3150
	Janretar	30000	2	60000
	Other			1500
	<b>Total Other Connected Load</b>			
<b>Total Connected Load in Watt</b>				<b>155874</b>
<b>Total Connected Load in Kilo Watt ( Say)</b>				<b>155.874(KW)</b>

Table 9 : Connected load of college

### 7.4 Segment wise connected load and their percentages

Segment	Total load in Kilo Watt	Load in Percentage
Lighting	18.704	11.99
HVAC	43.915	28.17
Water Supply	1.5	0.96
Office Equipments	22.555	14.47
Others	69.2	44.39

Table 10 : Segment wise connected load and their percentages

## Graphical Representation of Connected Load

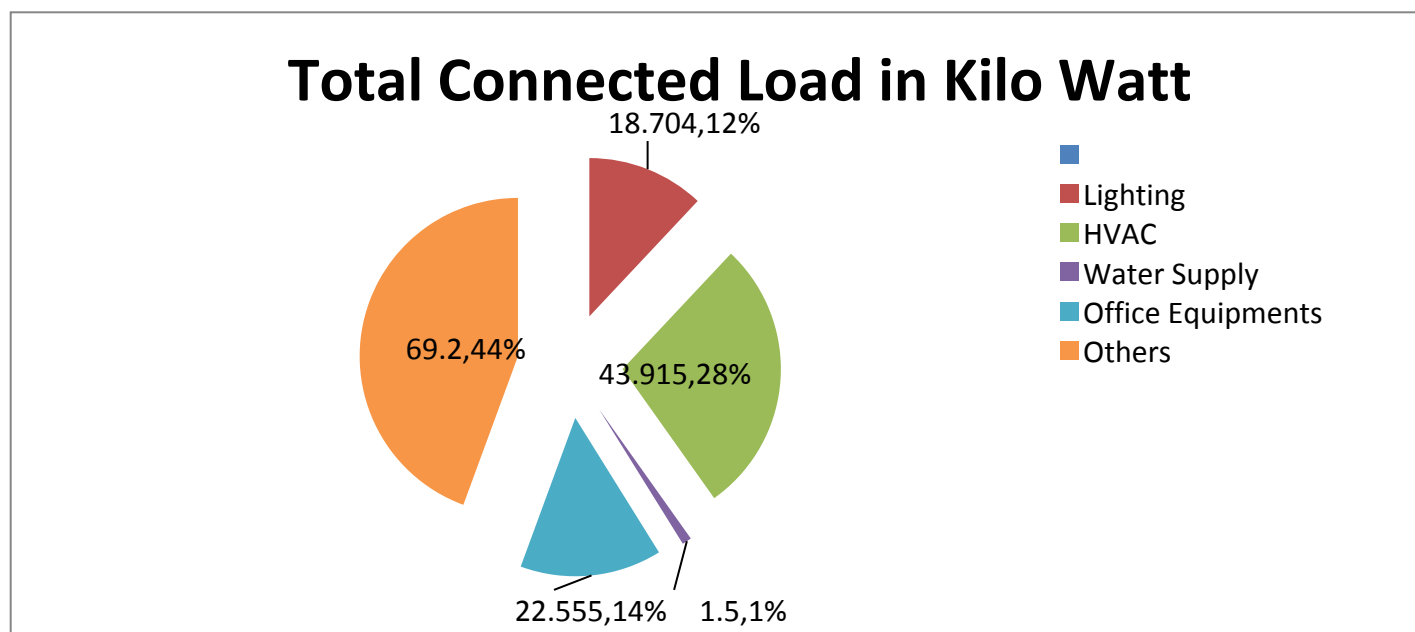


Figure 3 : Total Connected Load

### 7.5 Connected Load of Hostel

Segment	Electrical Equipment	Wattage	Quantity	Total
Lighting	FTL 40 watt	40	80	3200
	LED TL 20 Watt	20	80	1600
	LED Bulb	15	42	630
	LED Bulb	23	36	828
	LED Street Light	36	2	72
	LED Street Light	50	2	100
	<b>Total Lighting Load</b>			
HVAC	Ceiling fan	70	88	6150
	Water Cooler	300	1	300
	<b>Total HVAC Load</b>			
Others	Others			3200
<b>Total Connected Load in Watt</b>				<b>16080</b>
<b>Total Connected Load in Kilo Watt</b>				<b>16.08</b>

Table 11 : Connected load of Azad hostel

### Total Connected Load in College

Connected Load of Govt. Autonomous Girls Post Graduate College of Excellence,	155.874KW
Connected Load of Hostel	16.08 KW
<b>Total Connected Load of Govt. Autonomous Girls Post Graduate College including Hostel</b>	<b>171.954 KW</b>

Table 12: Total connected load in college

## 7.6 Electricity Consumption from Solar Power Plant

An off-grid solar system permits electricity to be harnessed by solar panels and stored inside a battery without direct connection to the utility grid, providing an independent power supply to your home or business.

Basically, an off-grid solar system is a novel innovation which provides you independent energy harnessed by the sun. An off-grid solar system is made up of the following components.

- solar panels
- charge controllers
- battery bank(s)
- inverters

College has installed an off grid solar power plant of 5 KW Capacity.



*R. S. Datta*



The ingenuity of an off-grid solar energy system is made-up of the efficiency of its components. A solar energy system's solar panels, charge controllers, battery bank, and inverters all work together to provide your laptop or refrigerator energy, and this is how.

Off-grid solar energy systems work by...

1. **Solar Panels (PV array).** Solar panels are set either on your rooftop or in an open yard or property space. The Sunlight is soaked up by the solar panels and transferred to the charge controllers.
2. **Charge Controllers.** The charge controller is the "delivery man" between the solarpanels, the inverters, and the battery bank. Charge controllers also act as a regulator, ensuring that the amount of power received through the solar panels does not overload the battery, instead keep the battery fully charged and top it off when needed. The charge controllers either deliver the energy directly as DC power to your lights or to the inverters to be converted into AC power for household appliances and all excess energy goes to the...

*RuSahib*



3. **Battery Bank.** With the charge controllers feeding energy to the batteries, the battery bank acts as the heart of the off-grid solar system, as it stores up excess energy for cloudy days and nights, when needed it pumps electricity to the...
4. **Inverters.** Lastly, inverters convert the DC (direct current) power into AC power which is passed on to be digested by college electrical appliances as DC power and allows student & staff of the college to switch on the light, fan or any other electrical equipment.

**Schematic Diagram of Off- grid Solar Power Plant**

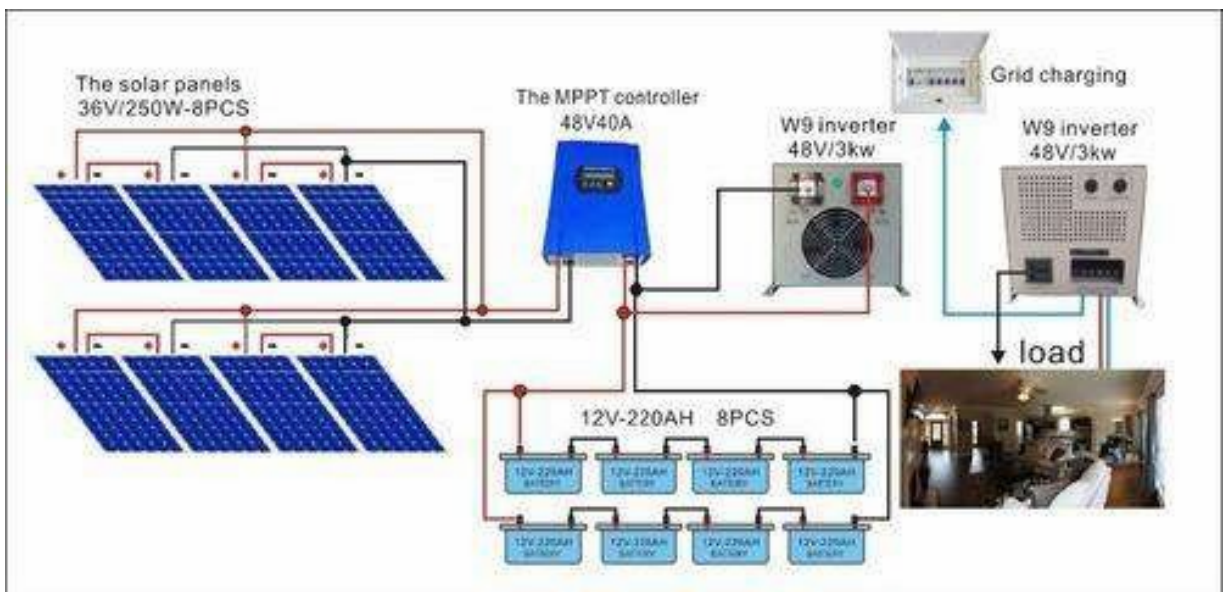
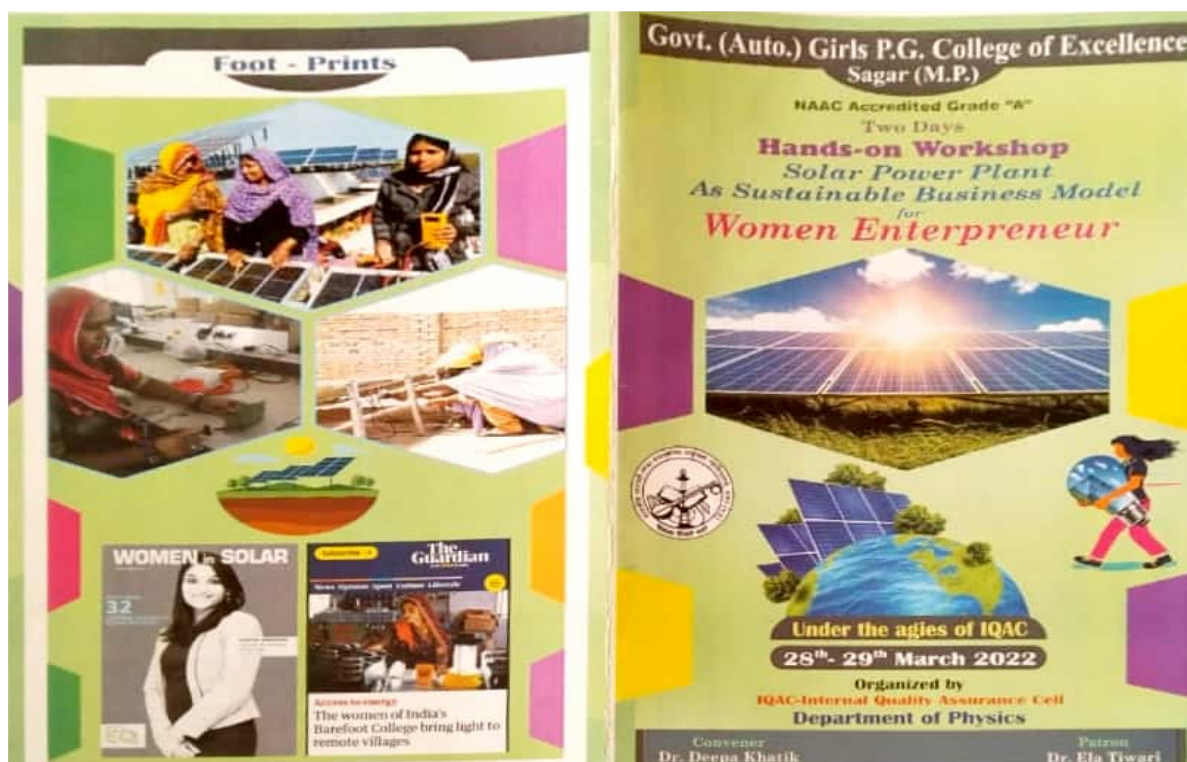


Figure 4: **Schematic Diagram of Off- grid Solar Power Plant**

*Dr. Dalal*

## 7.7 College Activities in Energy Management



*Dr. Sakshi*

### Objective

In most of the developing economies, women constitute 70-80% of the total agricultural work-force and they account for over 90% of food production. In the MSE sector world wide, women make up 35-33% of the total business work-force. In manufacturing they constitute 23% of the global work-force.

**Even when, women and girls also constitute 80% out of 75% of the world's poorest.**

Entrepreneurship of women ensures the vital component of social development, while gender equality and economic growth go side by side. This initiative disseminate renewable energy technology applications in households and also develop energy-based women entrepreneurship can prove positively consequential in contributing to community development.

By this workshop, college going students can become an green energy entrepreneur in the short-while.

### Schedule

**28<sup>th</sup> March 2022 / Time- 2:00pm- 5:00pm**

1. Inaugural Session
2. Introductory Session
3. Financial Feasibility Session
4. Technical Training Session
  - Set up Simulation Exercise
  - Engage in Exercise
  - Debrief and discuss next steps
  - Share resources and materials
5. Feedback Reporting
6. Closing of the day

**29<sup>th</sup> March 2022 / Time- 2:00pm- 5:00pm**

1. Business Development Strategy
2. Technical Training Session
  - Set up Simulation Exercise
  - Engage in Exercise
  - Debrief and discuss next steps
  - Share resources and materials
3. Exposure Visit
6. Learning Assessment by Sustainable community energy planning
7. Certificate & Medal Distribution

**Beginning of New Journey ....**

**Patron**  
**Dr. Ela tiwari**  
**Principal**  
Govt. (Auto.) Girls P.G. College of Excellence, Sagar (M.P.)

**Convener**  
**Dr. Deepa Khatik**  
**Head, Department of Physics**  
Govt. (Auto.) Girls P.G. College of Excellence, Sagar (M.P.)

**Chief Guest**  
**Dr. Neeraj Dubey**  
OSD - Higher Education Sagar

**Technical Expert**  
**Mayank Chouksey**  
**Rahul Yadav**

**Financial Feasibility Advisor**  
**Deepak Neekhra**  
SBI- Asst. General Manager, Sagar (M.P.)

**Business Development Advisor**  
**Deepak Goutam**  
CBI- Senior Manager, Sagar (M.P.)

**Startup Incubator**  
**Suphal Foundation**  
Dr. Deepak Singh

**Influencer**  
**Rotary Club of Sagar**  
Er. S. R. Singh

**Advisory Board**  
Dr. Renubala sharma, Dr. Naveen Gideon, Dr Anjana Nema  
Dr. A.H. Ansari, Dr. Sunita Singh, Dr. Pratima Khare

*Dr. Sakshi*

मेन्ट्री patrika.com 8  
सगर, मंगलवार 06 जून 2023

**विश्व पर्यावरण दिवस: शहर भर में हुए अनेकों आयोजन, पौधरोपण भी किया गया**

# पर्यावरण जब साफ स्वच्छ रहेगा तो हमारा शरीर भी स्वस्थ रहेगा: कलेक्टर

**कार्यालयों और घरों पर अनावश्यक बिजली का उपयोग न करें**

**दिलाई शपथ**

समस्त न्यून जेठकों ने राष्ट्रीय योजना के तत्वाधान में का पत्रिका ने शहर, सगर, मंगलवार 06 जून 2023 का आयोजन किया गया। इस अवसर पर प्रमुख अतिथि न्यून जेठकों ने पर्यावरण संरक्षण के लिए शपथ कही।



**पर्यावरण के साथ वैचारिक प्रदूषण को भी दूर करने की आवश्यकता: आनंद तिवारी**

**पर्यावरण संरक्षण की शपथ ली**

समस्त न्यून जेठकों ने राष्ट्रीय योजना के तत्वाधान में का पत्रिका ने शहर, सगर, मंगलवार 06 जून 2023 का आयोजन किया गया। इस अवसर पर प्रमुख अतिथि न्यून जेठकों ने पर्यावरण संरक्षण के लिए शपथ कही।

विद्युत का उपयोग न करने का आह्वान किया गया। इस अवसर पर प्रमुख अतिथि न्यून जेठकों ने पर्यावरण संरक्षण के लिए शपथ कही।

पर्यावरण संरक्षण के लिए शपथ ली। इस अवसर पर प्रमुख अतिथि न्यून जेठकों ने पर्यावरण संरक्षण के लिए शपथ कही।



## ऊर्जा संरक्षण पर कार्यशाला

नवभारत न्यूज  
सगर 24 मई. शासकीय स्वशासी कन्या स्नातकोत्तर उत्कृष्टता महाविद्यालय में रासेयो के तत्वाधान में पर्यावरण के लिए जीवन थीम के अंतर्गत ऊर्जा संरक्षण विषय पर कार्यशाला का आयोजन किया गया।

रासेयो के जिला संगठन डॉ. घनश्याम भारती, मुख्य वक्ता डॉ. प्रतिमा खरे तथा डॉ. आरएस वर्मा उपस्थित रहे। रासेयो ईकाई प्रथम की कार्यक्रम अधिकारी डॉ. सरिता जैन ने छात्राओं को सक्रिय

बने रहने हेतु प्रेरित किया। रासेयो ईकाई द्वितीय की कार्यक्रम अधिकारी अश्विनी सूर्यवंशी ने संचालन किया। आभार रासेयो ईकाई तृतीय की कार्यक्रम अधिकारी डॉ. रश्मि माथुर ने माना। डॉ. प्रतिमा खरे ने बताया कि ऊर्जा ऐप ऊर्जा साक्षरता के लिए एक सार्थक प्रयास है और छात्राओं को ऊर्जा साक्षरता से जुड़ने के लिए आवहान किया। डॉ. आरएस वर्मा ने पर्यावरण को हानि पहुँचाने वाले कारकों को समझाया व पर्यावरण को सुरक्षित रखने के उपायों से अवगत कराया।

*Dr. Dalal*

# Water Management

- **Auditing for Water Management of the institute for Environmental Consciousness and Sustainability**
- **Rain water harvesting structures and utilization in the campus**

*P. K. Datta*

## 8. 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.

Govt. Autonomous Girls Post Graduate College of Excellence, Sagar gets water from municipal Corporation, Sagar and one ground water bore well sources.

Two submersible pumps having rating of 5 HP & 3 HP are operated to lift water from Bore well and one submersible pump of 1 HP capacity is dedicatedly operated for gardening. College has presently 15 nos. Over head water storage tanks each having capacity of 1000 litre. Thus college have total 36000 litre of water storage capacity.



## College

Sl. No.	Water Tank Capacity	Numbers	Total Capacity
<b>Old Building</b>			
1	5000	4	20000
2	2000	2	4000
3	1000	4	4000
Total Consumption of water in Litre			28000
<b>New Building</b>			
4	2000	4	8000
Total Capacity in Litre			36000

Table 14 : Overhead water storage tank capacity in college

## Hostel

Sl. No.	Water Tank Capacity	Numbers	Total Capacity
1	1000	1	1000
2	1000	5	5000
3	2000	1	2000
Total Capacity in Litre			8000

Table 15 : Overhead water storage tank capacity in hostel

## Quantities of water taps and water coolers

Description	College	Hostel
Water Taps	321	79
Water Coolers	10	6

*R. S. Datta*

# Waste

- **Auditing for Waste Management of the institute for Environmental Consciousness and Sustainability.**
- **Waste Management steps including:**
- **Solid waste management**
- **Liquid waste management**
- **E-waste management**

*P. K. Dabhi*



## 9. WASTE MANAGEMENT

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

Waste is collected on a daily basis from various sources and is separated as **dry and wet waste**. Colour coded dustbins are used for different types of wastes. Green for wet and blue for solid waste.

Daily garbage is collected by housekeeping personnel and handed over to authorized personnel of Aistrict Municipal Corporation, Sagar for further processing.

### 9.1 Solid Waste management

Solid waste can be divided into two categories: general waste and hazardous waste. General waste includes what is usually thrown away in homes and College such as paper, plastics tins and glass bottles. Hazardous waste is waste that is likely to be a threat to one's health or the environment like cleaning chemicals and petrol. Small bucket and big buckets are used for solid waste.

Small Plastic bucket = 40

Nos. Big Plastic Bucket  
= 20

Nos.

Total Production of Solid Waste (Bio degradable) : 2-10 Kg

Total Production of Solid Waste (Non Bio degradable) : Less than 1

Kg

College also have two numbers of Napkins/Wending/Burning

Machine



### 9.1.1 Non Bio degradable Waste – Plastic Bottles / Waste Paper etc.

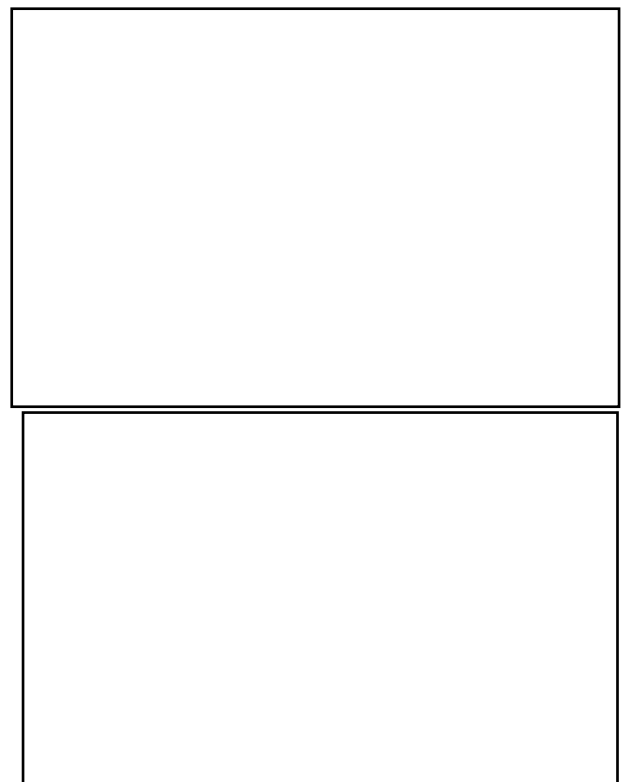
- Non-biodegradable are those waste, which cannot be decomposed by biological processes . These are of two types - Recyclable: waste having economic values but destined for disposal can be recovered and reused along with their energy value. e.g. Plastic, paper, old cloth etc. Non-recyclable: waste which 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.  
Waste material like plastic, papers etc. are collected and sold out to scrap vendor from time to time.
- College has also planned for compost pit to produce compost manure from the canteen solid waste and waste from other sources. Manure will be used for the purpose of botanical garden and for planted tree.

### 9.2 Liquid waste management:

The waste chemicals mixed water from laboratory should not be mixed with groundwater. Labs are bringing to adopt fully or to minimize hazardous chemical.

#### 9.2.1 Re-use of waste water

Waste water discharge from the canteen Is directed to a small tank (Oxidation pond) named Lotus tank. It is surrounded by a wiremesh. The tank contains a variety of eye catching aquatic plants. Water of this pond is used to irrigate the nearby



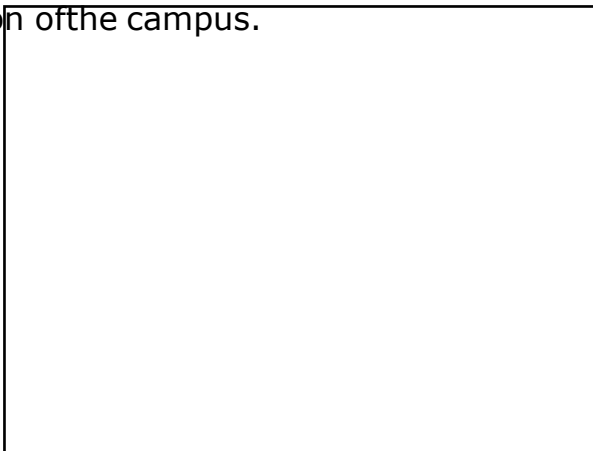
seasonal plantbeds.

**a.Re-use of waste water from surrounding area**

A temporary pond has been constructed beside the girls hostel to collect the water from Railway washing yard located near the college campus. The pond serve as a recharge point source for underground water as well as while some of it is used for on-site construction and irrigation of plants spread across the college campus.

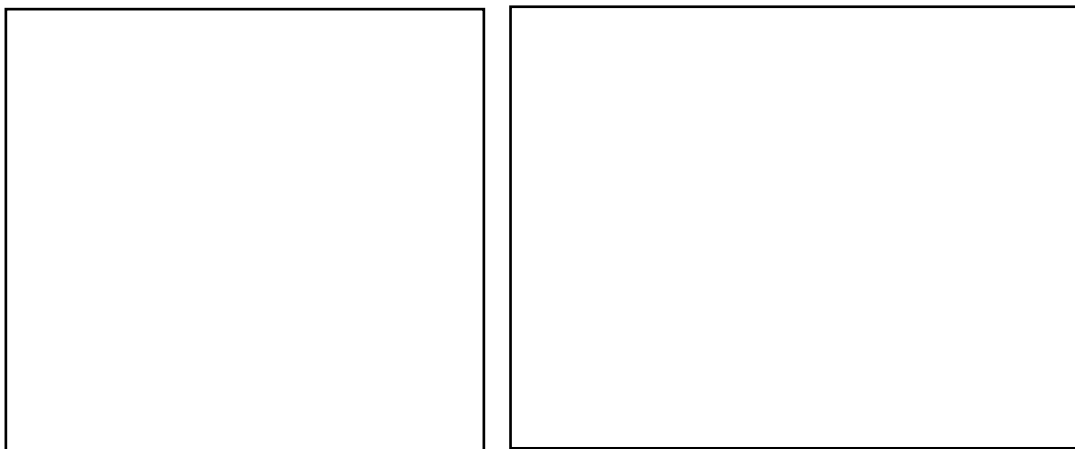
**b. Re-use of impure wastewater from water purifiers,**

Impure drinking water is one of the main sources of infection, even mild poisoning, in many cases. Hence, it is important to use water purifiers in college campus. About 09 water purifiers are installed at various sites throughout the college campus. Waste water from these purifier outlets is used to water various indoor and outdoor plants to ensure least water wastage and beautification of the campus.



**c. Re-use of waste water from Air Conditioners**

Potted plants have been placed below the outlets of Air Conditioners so that the water discharge from these outlets can be utilized properly.



### **9.3 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 solidwaste 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 Ewaste from offices and glass waste from labs is generated in College.

The E-waste collected is stored in store room and disposed every year by giving it to vendors .

### **9.4 Environment Management Policy: Leading the way to a cleaner andhealthier Environment**

- Reducing degradable and non-degradable waste in the campus
- Reducing pollution through gases, heat, odor, chemicals and hazardous microorganisms
- Reducing water consumption and wastage
- Appropriate training to staff and students for environmental awareness throughacademic programmes and campus awareness initiatives
- Facilitation of research in sustainability



## Identification And Evaluation of Environmental Aspects and Associated Impacts:

Activity	Aspect	Risk Levels*			Effect on reception				Impact
		P	D	A	EH	EA	EW	EL	
		<b>Department of Physics &amp; Computer Science</b>							
Running of electrical, electronic and heat radiating instruments	Electrical consumption, heat radiation, Generation of electronic waste	5	1	1	-	√	-	√	Air and Land Pollution
<b>Department of Chemistry</b>									
Experiments on Chemical reactions	Generation of fumes and chemical waste	5	5	5	√	√	√	√	Effect on health, Air, Water and Land pollution
Storage of strong chemicals and Acids	Leakage of gases and out flow of chemicals	5	3	1	√	√	-	-	Air pollution
LPG for burners in laboratories	Generation of heat	5	3	3	√	√	-	-	Air pollution
Use of Glass wares	Chances of breakage and generation of waste	5	3	1	√	-	-	√	Land pollution
Running of electrical, and heat, vibration and noise generating instruments	Electrical consumption, heat radiation, generation of noise	5	4	2	√	√	-	-	Air and Noise pollutin

*R. D. Datta*

<b>Department of Botany</b>										
Experiments on Plants	Generation of waste	4	2	1	-	-	√	√	Land pollution	
Use of Glass wares and plastic wares	Chances of breakage and generation of waste	5	3	1	√	-	-	√	Land pollution	
Use of chemicals and reagents during experiments	Generation of waste water with spent chemicals	5	3	3	-	-	√	√	Water and Land pollution	
<b>Department of Zoology</b>										
Experiments leading to staining and preservation of animal parts	Generation of waste water with spent chemicals	5	3	3	-	-	√	√	Water and Land pollution	
Experiments on animal cells like blood, fish scales, skin peelings, saliva etc.	Generation of liquid waste	5	3	1	-	-	√	√	Water and Land pollution	
<b>Department of Microbiology</b>										
Experiments on living Microorganisms	Generation of infectious propagules	5	3	3	√	√	√	√	Effect on health, Air, Water and Land pollution	
Use of strong chemicals, reagents and media ingredients for washing and disinfection	Generation of aerosol and release of liquid waste	3	2	2	√	√	√	√	Air, Water and Land pollution	
Preservation and maintenance of pure cultures of microorganisms	Generation of aerosol	3	2	1	√	√	-	-	Air pollution	

*R. S. Dabhi*

Use of Glass wares, plastic wares, cotton, aluminium foil and disposable tools	Chances of breakage and generation of solid waste	5	3	1	√	-	-	√	Land pollution
<b>Department of Biotechnology</b>									
Experiments on plants, animals and microorganisms	Generation of waste	3	1	1	-	-	-	√	Land pollution
Use of carcinogenic chemicals like ETBr, Silica gel, Glass wool for experiments	Generation of insecure waste	3	1	1	√	-	√	√	Effect on health and Land pollution
Use of Glass wares, plastic wares and disposable tools	Chances of breakage and generation of waste	5	3	1	√	-	-	√	Land pollution
Use of strong chemicals for washing and disinfection	Generation of aerosol	3	2	2	√	√	√	√	Air, Water and Land pollution
<b>Departments of Arts, Social Science, Commerce &amp; Mathematics</b>									
Maintenance of files and registers	Generation of Paper waste	1	1	1	-	-	-	√	Generation of degradable Solid Waste, Land Pollution
<b>Department of Library Science</b>									
Maintenance of reference books, Catalogues and files and registers; Footfall of students and staff	Generation of paper waste and dust aerosol	2	3	2	√	√	-	√	Air and land Pollution
<b>All departments including office</b>									
Use of computer, laptops and Wi-Fi, Running of refrigerators, Deep refrigerators and Air conditioners	Electrical consumption, Generation of electronic waste and Heat	4	2	2	√	√	√	√	Generation of e Waste causing Air and Land Pollution
<b>P – Probability of occurrence</b>				<b>EH – Effect on Human</b>					
<b>D – Duration of occurrence</b>				<b>EA – Effect on Air</b>					
<b>A – Area of influence</b>				<b>EW – Effect on Water</b>					
				<b>EL – Effect on Land</b>					

Table : 16 : Identification And Evaluation of Environmental Aspects and Associated Impacts  
**\*Risk levels: 1-5 Mild to Very High**



## 9.5. Corrective Measure Adopted by Departments & Offices

Department	Measures adopted	Impression
Physics	Use of energy conservation devises, Promotion of paper less work, Reduction in e-waste	Safety during experimentation, power saving, reduction in solid waste
Chemistry	Compulsion of lab coats, Installation of exhaust fans in laboratory, provision of fume hoods for sensitive experiments, Wooden and stone-based storagecabinets, annual maintenance of gas pipe lines and exhaust fans, diffusion of aerosols into liquid chambers to minimize the thresholds, regeneration of Silver from waste silver chloride collected during experiments	Safety during experimentation, rapid removal of troubling exhausts, limited spread of smokes, slowdown of metal corrosion, no leakage of gas, reduction in diffusion of unwanted undesirables
Botany	Timely disposal of spent materials, periodic cleaning and disinfection of tools, equipment and microscope,	Limited accumulation of waste, limited risk of health hazards
Zoology	Use of lab coats during experiments, land filling of animal waste and neutralization of strong chemicals before release in the environment disposal after use	Restricted accumulation of waste, limited risk of health hazards
Microbiology	Compulsion of Lab coats and hand gloves during experiments, use of biosafety cabinets during microbial transfer, Separate storage compartments for bacteria and fungi, Separate area for decontamination and washing, periodic cleaning and disinfection of working area, microscopes, deep refrigerators and incubators	Safety and protection during experimentation, Reduction of generation of microbial aerosol, less chances of cross contamination  during experiments, limited risk of health hazards
Biotechnology	Compulsion of Lab coats and hand gloves during experiments, use of biosafety cabinets during microbial transfer, Separate storage compartments for bacteria and fungi, well defined area for germplasm storage, Separate area for decontamination and washing, land filling of unsafe materials, periodic cleaning and disinfection of microscopes, deep refrigerators and incubators.	Safety during experimentation, Reduction of generation of microbial aerosol, less chances of cross contamination  during experiments, limited risk of health hazards
Arts,	Segregation of paper and disposable plastic waste in separate bins and daily	Reduction in the accumulated waste

Social science, Commerce & Mathematics	transfer to landfill area.	
Library Science	Continuous running of exhaust fans, consistent dusting and sweeping through vacuum cleaners, regular disposal of paper waste	Reduction of aerosol generation, reduced damage due to insect pests, limited risk of health hazard

Measures Adopted	Impression
<b>a) Organization of awareness campaigns and promotion of green attitude through physical displays, awareness lectures</b>	<b>a) Acquiring the knowledge and importance of environment, ensuing environmental protection rules, development of necessary environmental and health related skills, and values, understanding the concept of grey water and continuous education to focus Reduce, Reuse &amp; Recycle</b>
<b>b) Regular plantation, maintenance of plants having air purification properties are preferred near conference room and laboratories.</b>	<b>b) Sustenance of Green environment in the campus</b>
<b>C ) Introduction of uniform solid waste management system through segregation bins and landfills.</b>	<b>c) Reduction in the amount of solid waste generated and environmental waste burden in the campus</b>
<b>d) Provision of sanitary napkin dispensers in girl's common room and efficient disposal of waste through incinerators</b>	<b>d) No accumulation of waste</b>
<b>e) Regular monitoring of overhead water storage PVC tanks for leakage, accumulation of water nearby and proper closure of lid</b>	<b>e) Effective and efficient use of efflux water for gardening, washing and mopping. No entry and accumulation for litter and overflowed water near overhead water tanks and rarer possibility of mosquito breeding around the area</b>
<b>f) Rain water harvesting for judicious utilization of natural water resource through channelization of roof top rain water for ground water recharge.</b>	<b>f) 'Catch the rain where it falls' supporting ground water recharge in support of water recycling</b>

*R. D. Datta*

<p><b>g) Safe and systematic management of laboratory waste through neutralization of strong acids and alkali before draining, cooking out infectious proggules before disposing</b></p>	<p><b>g) Maintaining ecosystem balance</b></p>
<p><b>h) Collection of e-waste from departments and selling in the scrap market through proper channel. Periodic collection of valued answerbooks, student's practical files, home assignments and test papers and other paper waste from departments, writtenoff books from library and selling in scrap market</b></p>	<p><b>h) Selling paper waste and e-waste generate revenue for institution</b></p>

*R. S. Dabhi*

# Green Audit

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- ✓ **Green Campus Management and Carbon Footprint of the institute for Environmental Consciousness and Sustainability.**
- ✓ **Green Practices**
- ✓ **Students, staff using**
  - a) **Bicycles**
  - b) **Public Transport**
  - c) **Pedestrian friendly roads**
- ✓ **Plastic-free campus**
- ✓ **Paperless office**
- ✓ **Green landscaping with trees and plants**

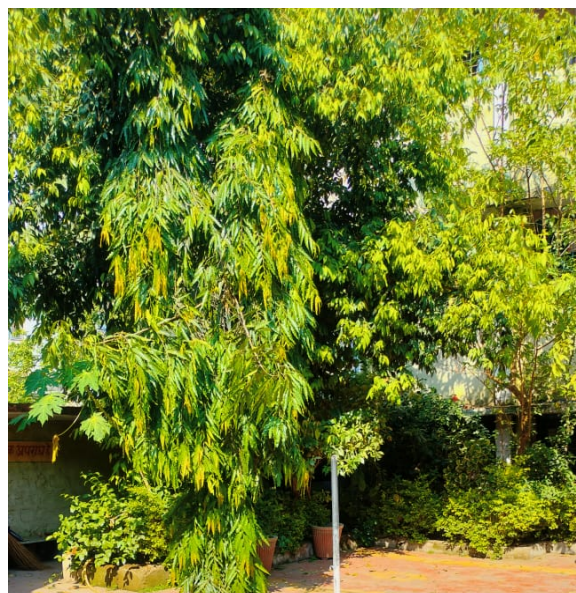


## 10. GREEN CAMPUS MANAGEMENT

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.

Area under green cover (in sq ft or in acre)	8.6 acre
Availability of Nursery on Campus (Yes / No)	Yes
Plant Protection Management	Yes
Number of plantations done in the year 2020-21	273
Extent of area (% of area) under tree cover	22%

Table 17 : Green Area management



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.



*Ru Dalal*



*Pratima Khare*



## 10.1 Green Audit

Green Audit defined as documented, verification process of specified environmental activities, events, conditions, management system. Green Audit can create awareness in college staff as well as students which are our responsibility too, to save our environment and also can find the ways to improve environmental issues which are increasing day by day. Environmental problems such as recycling of waste, water conservation and recycling, pollution control, plantation, biodiversity conservation etc. can solve through Green Auditing. Good growth come from good education as well as good mental and physical health if we protect our environment, we can also protect our health.

Green Audit means of assessing environmental performance. It is a systematic documented periodic, and objective review by regulated entities of facility operations and practices related to meeting environmental requirement. It is otherwise the systematic examination of the interactions between any operation and its surroundings. This includes all emissions to air, land and water, legal constraints, the effects on the neighbouring community, landscape and ecology, the public's perception of the operating company in the local area. Green audit does not stop all compliance with legislation. Nor is it a 'green washing' public relations exercise. Rather it is a total strategic approach to the organisation's activities.

### VISION

Being the leading Girls Autonomous College in the Sagar division, our vision encompasses.

*"Social Transformation through Women Empowerment and Education."*

Our objective is to evolve through collective leadership into a centre of academic excellence which, while retaining its regional roots, is able to surmount and objectify global concerns and their wide social perspective we tend to achieve a balance between academic practices, social empathy, cultural inclination and co-curricular activities so that we should gain our best in shaping young minds.

### MISSION

*"To Build True Citizens of Tomorrow."*



## GOAL

- 1) To facilitate budding ground for overall development to youth women belonging to different socioeconomic background.
- 2) To provide a wide range of subjects at under graduate level for structuring their future perspective.
- 3) To incorporate value added and vocational courses to ensure self-reliance in women of our area.
- 4) To constantly promote the extension activities and our reach groups for increased participation issues in the society.
- 5) As we are dealing with two major 'AMRIT STAMBH' of Viksit Bharat i.e. Yuva and Nari, our role is to empower and educate them is significant.

The college, since its commencement is serving society in a significant way by Providing higher education to first generation female learners of the Family, making this a distinctive features of this institution.

## College Green Committee

The college Green committee was established in the college with a proactive attitude towards conservation of the environment and objective of generating awareness and promoting environmental care at both individual and community level. The committee aims to create a permeating atmosphere facilitating conversation, action and feedback on environmental issues engaging faculty, students and the general public. The institution looks at the macro- environmental perspective in the college and the society and envisions nurturing the environment with a greener future.

### 10.2 Green Campus Policy of College

Government Autonomous Girls Post-Graduate College of Excellence, Sagar is committed to develop its campuses as places where education is combined with environmental friendly practices to promote Sustainable Development by o restricted entry of automobiles, promoting the use of Bicycles and provision of Pedestrian Friendly pathways e ban on use of disposable Plastics in line with the State Government Guidelines. creating awareness with stakeholders on the need for maintaining greenery in the campus for sustainable ambience.



Encouraging all stakeholders to support and participate in ensuring green cover in the campus. o preserving age old trees and protect them to have prolonged life. enhancement of green cover by landscaping with trees and plants. conduct of green audit at regular intervals and implement the suggestions towards creating green campus .The faculty, staff and students are encouraged to contribute collectively to develop an eco-friendly sustainable campus and disseminate the concept of eco friendly culture to the nearby community and wherever possible.

Government Autonomous Girls Post-Graduate College of Excellence, Sagar envisions a clean and green university campus where ecological friendly practices and education combine to encourage sustainable and eco- friendly systems in the campus and beyond the campus. The green campus offers the organization a prospect to take the lead in redefining its green culture through promoting environmental ethics among students and staff The Institute also promotes clean and green campus through adopting, practicing and promoting environmentally friendly practices among students and staff to generate Eco consciousness among them and in the world around them.

**Objectives of the policy :** To compose students by understanding the importance of environment and its problem areas Important function of the policy .

- To train students to create responsiveness amongst public.
- To encourage students to keep environment safe and clean.
- To encourage students to adopt environment friendly practices which include paper bags, save .
- To help the students to minimize the use of polluting product.

### **Why Green Audit**

The excessive environmental degradation is creating the “Environmental poverty”. Thus, academic leaders should initiate the knowledge and benefits of resources so that their institutions respond to environmental issues and

challenges. We believe that there is an urgent need to address these problems and reverse the trends of environment degradation.

### **OBJECTIVES -**

- ✓ To assess environmental performance
- ✓ To promote environmental awareness
- ✓ To improve health
- ✓ To conserve resources
- ✓ To reduce waste
- ✓ To improve environmental standards
- ✓ To sustainable use of natural resources
- ✓ To develop responsibility about environment
- ✓ To enhance college profile

### **PLANTATION -**

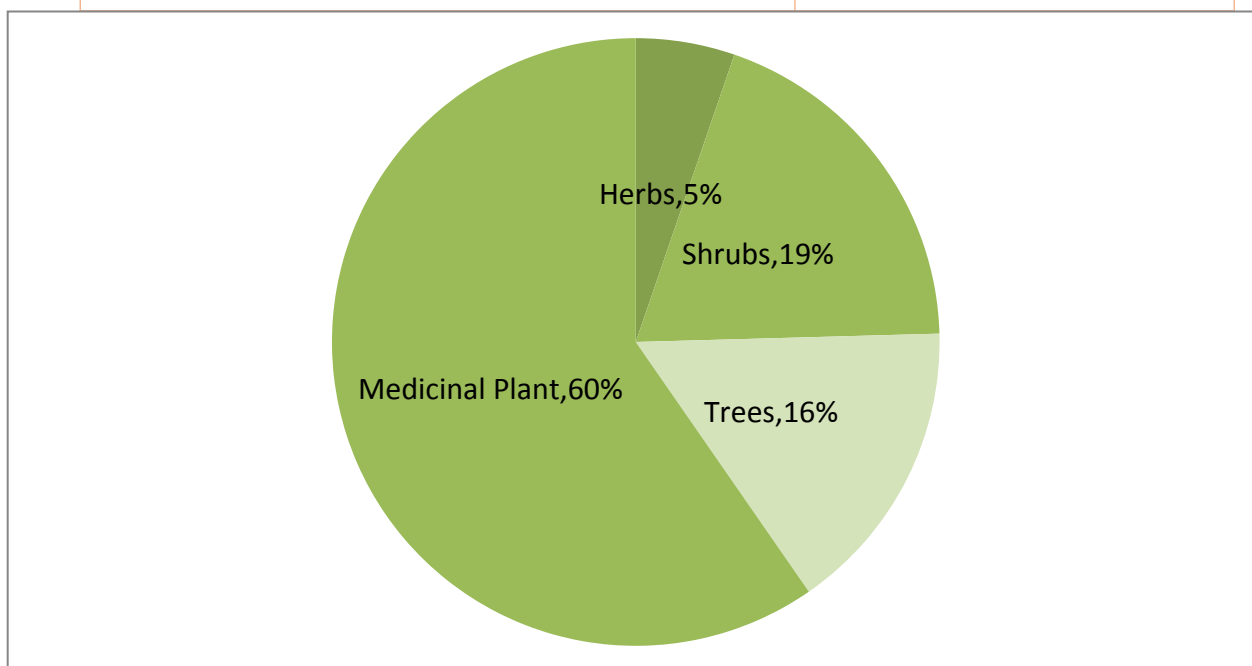
To create Environmental awareness at the college campus we organize plantation program with all the staffs and students of our college. We try to plant more trees. To keep the greeneries in the campus we maintain the garden by paid staff under the guidance of garden committee members.

To create- green cover, eco-friendly atmosphere, pure oxygen at the college campus, plantation program is organized every year with involving all students, principal, and all departments faculty members. In this session van mahotsav program was organized and about 100 ornamental, avenue,



medicinal plant with rare and exotic beautiful trees was planted in botanical garden and other parts of college campus. To keep the greeneries in the campus, we regularly maintain the gardens which are looked after by paid staff under the guidance of garden committee members. Moreover, every year we try to plant new trees. Seasonal flower garden is also a unique feature of this college. There are so many plants are present in our college campus categorized below-

Category	Numbers (Approx.)
<b>Herbs</b>	15
<b>Shrubs</b>	55
<b>Trees</b>	45
<b>Medicinal Plant</b>	170



### **IDENTIFICATION OF PLANT SPECIES:**

There are so many plant species are present at college campus. The faculty member of the botany department audited and identified of various plant species with the help of flora.

*R. S. Sahu*

### 10.3 List Of The Plants Audited

S.No.	Scientific Plant	Local Name	Family	Uses
1	<i>Acacia melanoxylon</i>	Australian acacia	Mimosaceae	Social Forestry
2	<i>Albizia lebeck</i>	Siris (Black)	Mimosaceae	Avenue Timber, Bronchitis, Tree, Skin,
3	<i>Alstoniascholaris</i>	Chhatim	Apocynaceae	Avenue Malaria, Tree,
4	<i>Anthocephalus cadamba</i>	Cadam	Rubiaceae	Avenue Aesthetic, Tree
5	<i>Azadiractaindica</i>	Neem	Meliaceae	Avenue Tree, Skin,
6	<i>Bauhanian variegata</i>	Kachnar	Ceasalpiniaceae	Avenue Ornamental Tree
7	<i>Bixa orellana</i>	Sinduri	Bixaceae	Industrial Food
8	<i>Cassia fistula</i>	Amaltas	Ceasalpiniaceae	Avenue Tree, Laxative
9	<i>Cassia siamea</i>	Chakundi	Ceasalpiniaceae	Avenue Tree, Ornamental
10	<i>Casuarina equisetifolia</i>	Jhau	Cauarinaceae	Social Forestry, Diarrhea
11	<i>Dalbergia sissoo</i>	Sheesham	Papilionaceae	Avenue Tree, Timber,
12	<i>Delonix regia</i>	Gulmohar	Caesalpiniaceae	Avenue Tree, Ornamental
13	<i>Emblica officinalis</i>	Amala	Euphorbiaceae	Triphla, Skin, Tannins
14	<i>Ficus bengalensis</i>	Bargad	Moraceae	Avenue Tree, Aesthetic
15	<i>Jacaranda mimosifolia</i>	Nila Gulmohar	Bignoniaceae	Ornamental
16	<i>Leucaena leucocephala</i>	Shubabul	Mimosaceae	Social Forestry, Fodder
17	<i>Mangifera indica</i>	Aam	Anacardiaceae	Avenue Tree, Fruit Edible, Timber
18	<i>Mimusops elengi</i>	Maulsiri	Sapotaceae	Avenue Tree, Ornamental
19	<i>Moringa oleifera</i>	Munaga	Moringaceae	Blood Pressure, Fruit Vegetable
20	<i>Nyctanthes arbor-tristis</i>	Harsingar	Oleaceae	Ornamental, Diabetic
21	<i>Peltophorum ferr</i>	Copper Pod	Caesalpiniaceae	Avenue Tree,

	<i>ugineum</i>			Ornamental, Social Forestry
22	<i>Pithecolobium dulce</i>	Ganga Emli	Mimosaceae	Hedge, Fruit Edible
23	<i>Plumeria alba</i>	Temple Tree (Champa)	Apocynaceae	Ornamental
24	<i>Polyanthia longifolia</i>	Ashok	Annonaceae	Avenue Tree, Ornamental
25	<i>Pongamiapinnata</i>	Karanj	Papilionaceae	Avenue, Insecticide, Skin
26	<i>Syzygiumcumini</i>	Jamun	Myrtaceae	Avenue, Diabetes, Fruit Edible, Timber
27	<i>Tabebuia rosea</i>	Trumpet Tree	Bignoniaceae	Ornamental
28	<i>Tabernaemontana coronaria</i>	Chandni	Apocynaceae	Ornamental
29	<i>Tamarindus indica</i>	Imli	Caesalpiniaceae	Avenue, Fruit Edible
30	<i>Tecoma stans</i>	Yellow Bell	Bignoniaceae	Ornamental
31	<i>Thevetia peruviana</i>	Pili Kaner	Apocynaceae	Ornamental, Aesthetic
32	<i>Zizyphus jujube</i>	Ber	Rhamnaceae	Fruit Edible, Fodder

### Medicinal Plants

S.No.	Scientific Name of Plant	Local Name	Family	Uses
1	<i>Adhatodavasia</i>	Adusa	Acanthaceae	Espectorent
2	<i>Aloe vera</i>	Ghee Kwar	Liliaceae	Fever, Constipation, Piles, Skin, Jaundice, Leprosy
3	<i>Andrographis paniculata</i>	Kirayat	Acanthaceae	Fever, Dysentery, Dyspepsia, Stomachic
4	<i>Asparagus racemosus</i>	Satawar	Liliaceae	Tonic, Dysentery, Leprosy, T.B., Night Blindness
5	<i>Catharanthes roseus</i>	SadaSuhagan	Apocynaceae	Leukemia, Diabetic
6	<i>Cymbopogon citrates</i>	Lemon Grass	Poaceae	Bronchitis, Fever, Rheumatism, Leprosy
7	<i>Gymnema sylvestre</i>	Gurmar	Asclepiadaceae	Diabetic, Ulcer, Bronchitis, Piles, Snake Bite

8	<i>Oscimum sanctum</i>	Tulsi	Lamiaceae	Asthma, Bronchitis, Vomiting, Malaria, Ring Worm
9	<i>Rauwolfia serpentine</i>	Sarpgandha	Apocynaceae	High Blood Pressure, Sebativ, Mental Disorder, Anti-Microbial
10	<i>Tinospora cordifolia</i>	Giloy	Menispermaceae	Diabetic, Tonic
11	<i>Vitis quadriangularis</i>	Harjod	Vitaceae	Joint and Bone Health
12	<i>Withania somnifera</i>	Ashwagandha	Solanaceae	Asthma Bronchitis Arthritis, Rheumatism, Leucoderma

Table : 18 : List of the plant audited.



## ऊर्जा संरक्षण पर कार्यशाला

नवभारत न्यूज सागर 24 मई. शासकीय स्वशासी कन्या स्नातकोत्तर उत्कृष्टता महाविद्यालय में रासेयो के तत्वाधान में पर्यावरण के लिए जीवन शीम के अंतर्गत ऊर्जा संरक्षण विषय पर कार्यशाला का आयोजन किया गया.

रासेयो के जिला संगठन डॉ. घनश्याम भारती, मुख्य वक्ता डॉ. प्रतिमा खरे तथा डॉ. आरएस वर्मा उपस्थित रहे. रासेयो ईकाई प्रथम की कार्यक्रम अधिकारी डॉ. सरिता जैन ने छात्राओं को सक्रिय

बने रहने हेतु प्रेरित किया. रासेयो ईकाई द्वितीय की कार्यक्रम अधिकारी अश्विनी सूर्यवंशी ने संचालन किया. आभार रासेयो ईकाई तृतीय की कार्यक्रम अधिकारी डॉ. रश्मि माथुर ने माना. डॉ. प्रतिमा खरे ने बताया कि ऊर्जा ऐप ऊर्जा साक्षरता के लिए एक सार्थक प्रयास है और छात्राओं को ऊर्जा साक्षरता से जुड़ने के लिए आवहान किया. डॉ. आरएस वर्मा ने पर्यावरण को हानि पहुँचाने वाले कारकों को समझाया व पर्यावरण को सुरक्षित रखने के उपायों से अवगत कराया.





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Additional Director

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Girls Degree College, Sagar

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## QR Codes for Scan



For Registration QR



Payment QR

## Account Details for Deposit Registration Fee

**Name :** Principal Govt. Autonomous Girls Degree College, Sagar (M.P.)

**A/c No.:** 50100247178903

**Bank Name:** HDFC Branch Sagar

**IFS Code :** HDFC0000449

## Important Links

**Online Registration Link**

<https://forms.gle/hiUHWVj6xfyiwHM76>



## National Seminar

# on ROLE OF GREEN AND CLEAN TECHNOLOGY IN PRESENT SCENARIO

28<sup>th</sup> February 2024



**Dr. Anand Tiwari**  
Patron/Principal

**Dr. Pratima Khare**  
Convener

**Dr. Deepa Khatik**  
Organizing Secretary

**Dr. Sunita Singh and Dr. M. K. Mishra**  
Academic Secretaries

**Dr. A. H. Ansari**  
Co-convener

**Dr. R. S. Verma**  
Joint Secretary

Organized by  
**Faculty of Science**  
Government Autonomous Girls  
P.G. College of Excellence, Sagar (M.P.)  
(NAAC Accredited Grade 'A')

## Welcome to Sagar: The City of Lake and Temples

Dear colleagues,

It is a matter of great pleasure and honour that Faculty of Science, Government Autonomous Girls PG College of excellence Sagar is organising a national seminar on "Role of Green and Clean Technology in Present Scenario". We cordially invite you to attend the seminar and facilitate it with your contribution of research papers for the occasion.

## About the College

The Government Autonomous Girls PG College of Excellence Sagar has a rich history dating back to 1964 when it was established by the Municipal Corporation of Sagar. In 1978, the Government of Madhya Pradesh took over and its status became Government Girls degree college Sagar. Throughout this transition the college remained affiliated with doctor Hari Singh Gaur university until 2014.

With the elevation of Dr. Hari Singh Gaur University to Central University status, a new institution named Maharaja Chhatrasal State Bundelkhand University was established by the Government of Madhya Pradesh and our college found its new affiliation.

Over the years, the college has witnessed remarkable growth. In 1978, it welcomed 389 girls students, a number that has now scored 14,700.



## Call for paper

We cordially invite scholars, academicians and participants to submit their original full length research paper with abstract in 150 words. A full paper within 2000 words typed in Ms word format, Times New Roman for English font- 12 margin, one inch line spacing, 1.5 inch all side. For Hindi, Krutidev 010 font 14. Only selected participants will be allowed to present their paper.

**Email for paper submission:**  
[departmentofbotanygdc@gmail.com](mailto:departmentofbotanygdc@gmail.com)

Presented paper will be published in the form of book with ISBN. Paper will be screened by editorial board, will be intimated separately they will have to pay ₹400 as publication fee.

**Last Date of Paper Submission : 07 Feb 2024**

## Theme of the seminar

Green and Clean Technology is the development and application of equipments and system used to conserve energy and natural resources. It consists of all those field and laboratory techniques which result in the fast development of plants. It encompasses several methods for reuse and recycling of materials and ultimately to sustainable use of natural resources.



## Sub Themes of the Seminar

The present seminar will focus on the following themes:

- Conservation of depleting natural resources.
- Solar, wind, hydro energy.
- Process for recycling of materials.
- Renewable energy resources.
- Vermiculture technology, biofertilizers and organic farming.
- Wasteland reclamation, social forestry and agro forestry.
- Bioinformatics/ Role of computer in modern technology.
- Horticulture practices.
- Net-house, net, Poly and greenhouse cultivation.
- Sustainable development.

## Poster/Model presentation

Special session will be arranged for Post Graduate, Graduate students and Research Scholars for the Poster/Model presentation based on the topics of seminar themes. The size of poster should not exceed taking 120 x 90 cm. Best of 3 will be awarded.

## Registration and fee

Professor/ Associate /Assistant	: ₹400
Guest faculty/ Lecturer	: ₹200
Research Scholar	: ₹200

सेमीनार

रोल ऑफ ग्रीन एंड क्लीन टेक्नोलॉजी इन प्रजेन्ट सेनेरियो विषय पर सेमीनार

# ग्रीन टेक्नोलॉजी पर राष्ट्रीय सेमीनार सम्पन्न

## आचरण संघदादा

सागर। शासकीय स्वरासी कन्या स्नातकोत्तर उत्कृष्टता महाविद्यालय सागर में विज्ञान संकाय द्वारा 'रोल ऑफ ग्रीन एंड क्लीन टेक्नोलॉजी इन प्रजेन्ट सेनेरियो' विषय पर एक दिवसीय राष्ट्रीय सेमीनार सम्पन्न हुआ। उद्घाटन समारोह के अवसर पर मुख्य अतिथि के रूप में डॉ. अनिल पारे रिटायर्ड जज इन्टीर, विशिष्ट अतिथि डॉ. ए.पी मिश्रा प्रोफेसर केंद्रीय वि.वि. सागर, वी.के. खोरेरिया एस.डी.एम सागर, विधायक प्रतिनिधि प्रामुक जैन, रानी अवंतीबाई लोधी वि.वि. की कुलसचिव डॉ. शक्ति जैन, रसायन विभागाध्यक्ष डॉ. ए.एच. अंसारी, मंचासीन थे। कार्यक्रम की अध्यक्षता महाविद्यालय के प्राचार्य डॉ. आनंद तिवारी के द्वारा की गई थी। कार्यक्रम का शुभारंभ दीप प्रज्वलन एवं सरस्वती चन्दन से हुआ। सेमीनार की संयोजक डॉ. प्रतिमा खरे ने स्वागत उद्घोषण दिया तथा ग्रीन टेक्नोलॉजी के बारे में विस्तार से प्रकाश डाला और कहा कि ग्रीन टेक्नोलॉजी पर्यावरण को समृद्ध रखते हुये विकास की तकनीक है। पौधे ही कार्बन डाइऑक्साइड को अवशोषित करके वातावरण को स्वच्छ में महत्वपूर्ण भूमिका अदा करते हैं, अतः हमारे स्वास्थ्य रक्षने के लिये हरियाली होना आवश्यक है। यही हरियाली सूर्य की ऊर्जा को अवशोषित कर हमें भोजन प्रदान करती है। अतः हमारे जीवन का अस्तित्व पेड़, पौधों से ही प्रतिपादित होता है। विशिष्ट अतिथि डॉ. ए.पी मिश्रा, प्राध्यापक, केंद्रीय वि.वि. सागर ने कहा कि आज का यह राष्ट्रीय सेमीनार महत्वपूर्ण दिवस पर आयोजित हो रहा है। आज के दिन ही प्रखरत वैज्ञानिक सी.वी. रमन को नोबल पुरस्कार मिला था। हमारा प्राचीन भारत वैज्ञानिक दृष्टिकोण से आज से भी ज्यादा सशक्त था। विशिष्ट अतिथि वी.के. खोरेरिया एस.डी.एम सागर ने कहा कि हम अपनी ऊर्जा का सही उपयोग करें तो परिणाम हमारे अनुकूल होंगे। कार्यक्रम की

अध्यक्षता करते हुये संस्था प्राचार्य डॉ. आनंद तिवारी ने कहा कि विज्ञान ऐसा ज्ञान है जो कारण और परिणाम के साथ आता है जो अवलोकन एवं अनुभव के आधार पर होता है। पंच तत्वों से जड़ और चेतन का उद्गम हुआ है। प्रकृति मौ एवं मनुष्य पुत्र है। वर्तमान में जल, जंगल, जमीन का ह्रास हो रहा है, अतः नये पौधों को लगाना आवश्यक है। जनभावोदारी अध्यक्ष प्रतिनिधि विनय मिश्रा ने अपने उद्घोषण में सभी प्रतिभागियों को शुभकामनायें दीं। मुख्य अतिथि डॉ. अनिल पारे ने कहा कि निरंतर प्रगति हेतु खुशहाली, हरित क्रांति एवं प्रत्येक चेहरे पर मुस्कान लाना आवश्यक है। दक्षता, कुशलता उतम कार्य करने से ही आती है। सही दिशा में भरपूर ज्ञान ही नये तकनीकों को जन्म देता है। आज अल्प ज्ञान से काम नहीं चल सकता अर्थात् भरपूर सटीक ज्ञान ही हमें विकास का मार्ग दिखा सकता है। रानी अवंतीबाई लोधी वि.वि. की कुलसचिव डॉ. शक्ति जैन ने कहा कि आज का विषय सभी के लिये आवश्यक है। यह सतत विकास एवं निरंतर चलने वाली प्रक्रिया है। आने वाली पीढ़ी के भविष्य का विचार कर हमें आज निर्णय लेने होंगे। कार्यक्रम का संचालन करते हुये सेमीनार की सचिव डॉ. दीपा खटीक ने कहा कि ग्रीन टेक्नोलॉजी का उपयोग मानव आदिकाल से करत चला आ रहा है इसके विकास हेतु ऐसी तकनीक का उपयोग आवश्यक है जिसका रीसाइकिल किया जा सके। उद्घाटन सत्र का आभार डॉ. आर.एस. वर्मा द्वारा व्यक्त किया गया। सेमीनार के विषय विशेषज्ञ हरिसिंह गौर विश्वविद्यालय सागर के वनस्पति शास्त्र प्राध्यापक डॉ. प्रमोद खरे ने हरित प्रौद्योगिकी की जरूरत एवं विश्व व्यापी मांग पर प्रकाश डाला एवं ग्लोबल वार्मिंग, ग्रीन हाउस, ओजोनिकीकरण जैसी समस्याओं पर भी चर्चा की। आपने हरित प्रौद्योगिकी के विभिन्न प्रकारों के बारे में विस्तार से चर्चा की। द्वितीय सत्र का संचालन डॉ. सुनील सिंह प्राध्यापक प्राणीशास्त्र ने किया। वक्ता के रूप में डॉ. नवीन कांगे, सूक्ष्मजीव

विज्ञान विभाग डॉ. हरीसिंह गौर वि.वि. सागर ने सूक्ष्म जीवविज्ञान, जीनोम, ट्रांसक्रिप्टोम की हरित प्रौद्योगिकी में उपयोगिता तथा सकारात्मक एवं नकारात्मक प्रभावों पर प्रकाश डाला। बुन्देलखंड वि.वि. झांसी के डॉ. प्रकाशचंद्र एवं डॉ. मानवेन्द्र सिंह सेंगर, कापनहट खान, प्रिण्का, नीलम रिच स्कॉलर तथा महाविद्यालय के अतिथि विद्वान डॉ. विकासचंद्र विघटी, सुजात नेमा पेंपर प्रस्तुत किये। सम्मान कार्यक्रम में मुख्य अतिथि डॉ. प्रमोद खरे, विशिष्ट अतिथि डॉ. जी.एल. दुबे, सेवानिवृत्त प्राचार्य एवं कार्यक्रम की अध्यक्षता संस्था प्राचार्य डॉ. आनंद तिवारी ने की। सह संयोजक डॉ. ए.एच. अंसारी ने प्रतिवेदन प्रस्तुत किया एवं कहा कि आज वातावरण को असली नुकसान ध्वनिकाक रसायनों से हो रहा है ग्रीन टेक्नोलॉजी में रसायनों का उपयोग कम से कम होना चाहिये। आभार सेमीनार की संयोजक डॉ. प्रतिमा खरे द्वारा दिया गया। इस सेमीनार में डॉ. सिद्धार्थ सिंह, श्रीमती राज शाक्यवर्मा, डॉ. अमित विरकर्म, शुभांजली रेकर, शिखा कोटी के निदेशन में 30 पोस्टर व 10 मॉडल की विषय से सम्बंधित प्रदर्शनी लगाई गई। जिसमें निर्माणक की भूमिका डॉ. इत तिवारी, से.नि. प्राचार्य, डॉ. अर्चना वर्मा, से.नि. प्राचार्य, प्राध्यापक जनक आहूरी ने निर्भाई गई। मॉडल मेकिंग में प्रथम स्थान मेघा पाण्डेय भौतिकी, द्वितीय स्थान पूजा चौबे रसायन एवं तृतीय स्थान शोभल गुप्त वनस्पति विभाग की छात्रा को प्राप्त हुआ। पोस्टर मेकिंग में प्रथम स्थान सविता पटेल भौतिकी, द्वितीय स्थान दीक्षा चौकसे रसायन एवं तृतीय स्थान निषा खान प्राणीशास्त्र विभाग की छात्रा को प्राप्त हुआ। पोस्टर व मॉडल में सम्मान राशि प्रथम 1500 द्वितीय 1000 व तृतीय स्थान को 500 रुपये है। कार्यक्रम में डॉ. नैनुबात शर्मा परीक्षा नियंत्रक सहित महाविद्यालय का समस्त शैक्षणिक एवं अशैक्षणिक स्टाफ तथा सभी उपस्थित थे।



*Ru Datta*

## 10.4 Carbon Footprint

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.



**A)** The following activity/utility is responsible for carbon emission:-

- ✓ Transportation
- ✓ Electricity purchased from Distribution companies.

*R. S. Sahu*

### 10.4.1 Carbon Emission by Transportation

Principal, Administrator, teaching & non-teaching staff and students comes to college either by two wheelers & fourwheelers. The two major fuels used by the transport sector are petrol and diesel. These fuels are carbon intensive as they contain 80-85% of carbon by weight.

Sl. No.	Fuel Used	Types of Transport	Persons	Numbers of Persons	A	B	C	D= C/B	E	F=E x D	G	H=G x F x A
					Nos. of Vehicle Used	mileage	Av. distance in KM	Fuel Consumed per Day per Vehicle in ltr	Total working days	Petrol Consumption Per Vehicle in a year	Emission factor	Total emission
1	No Fuel	Bicycle	Students	2500	2500							
			Non Teaching Staff	13	13							
2	Petrol	Two Wheeler	Students	600	500	40	20	0.5	176	88	2.67	140976
			Non Teaching Staff	75	75	40	30	0.75	176	132	2.67	26433
			Teaching Staff	40	40	40	20	0.5	176	88	2.67	9398
3	Petrol	Four Wheeler	Teaching Staff	65	65	15	20	1.33	176	234.1	2.67	40628
4	Diesel	Auto	Students	900	225	25	30	1.2	176	211.2	2.67	507514
			Students	860	50	6	40	6.67	176	1174	2.67	2695739
			Teaching Staff	5	2	6	60	10	176	1760	2.67	23496
<b>Total Co2 emission in Kg Co2 eq per Year</b>												<b>3444184</b>

Table 19: Carbon emission by transport

*Dr. Sahil*

Thus, total emission by the transport is 2,37.559 KG CO<sub>2</sub> eq. Per year

### 10.4.2 Carbon Emission by Electricity

Electricity is taken by grid which uses coal for generating electricity or DG set which uses diesel for electricity generation.

Parameter	Emission Factor ( A )	Unit in KWH (B)	Total emission (C= A x B)
Grid Electricity	0.82	159256	130590
<b>Total KgCO<sub>2</sub>Eq. Emission by Electricity</b>			<b>130590</b>

Table 20: Carbon Emission by Electricity

Thus, total emission by purchased electricity is 1,30,590 KgCO<sub>2</sub>Eq.

### Total Carbon dioxide emission at Govt. Autonomous Girls Post Graduate College of Excellence, Sagar

Area	CO <sub>2</sub> eq. emission in KG
Electricity	130,590
Transport	3444184
<b>Total</b>	<b>3,574,774</b>

Table 21 : Total Carbon dioxide emission at Govt. Autonomous Girls Post Graduate College of Excellence, Sagar

## 10.5 Reduction of Carbon Emission

**B)** The following installation /activity is responsible for reduction in carbon emission:-

- ✓ Off grid Solar Power Plant of 10 KW Capacity
- ✓ Composting
- ✓ Tree plantation

### 10.5.1 Reduction of Carbon Emission by Solar Power Plant

The solar power plant has generated 63,622 unit from renewable sources in the year 2019-2020. If it is not generated from solar then it would be purchased from electricity distribution companies which will produced from burning of coals in thermal power plant, which causes carbon dioxide emission.

Parameter	Emission Factor	Unit in KWH	Total reduction of
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			<b>emission</b>
Solar PowerPlant	0.82	4325	3547

Table 22 Reduction of Carbon Emission by Solar Power Plant



Thus, solar power plant has reduced 19,680 KG of CO<sub>2</sub>eq. Per year.

### 10.5.2 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	Carbon absorption by one tree Per year	Total Carbon Di Oxide in Kg
Full grown Tree	675	6.8	4590
Semi Grown Tree	250	3.4	850
Quarter grown plants	128	1.7	218
<b>Total Carbon dioxide absorption by trees</b>			<b>5658</b>

Table 23 : Carbon absorption by tree plantation.

### 10.5.3 Total Reduction in Carbon dioxide emission at Govt. Autonomous Girls Post Graduate College of Excellence, Sagar Campus

Area	Reduction in CO <sub>2</sub> eq. emission in KG
Solar	3547
Trees	5658
<b>Total</b>	<b>9205</b>

Table 24 : Total Reduction in Carbon dioxide emission

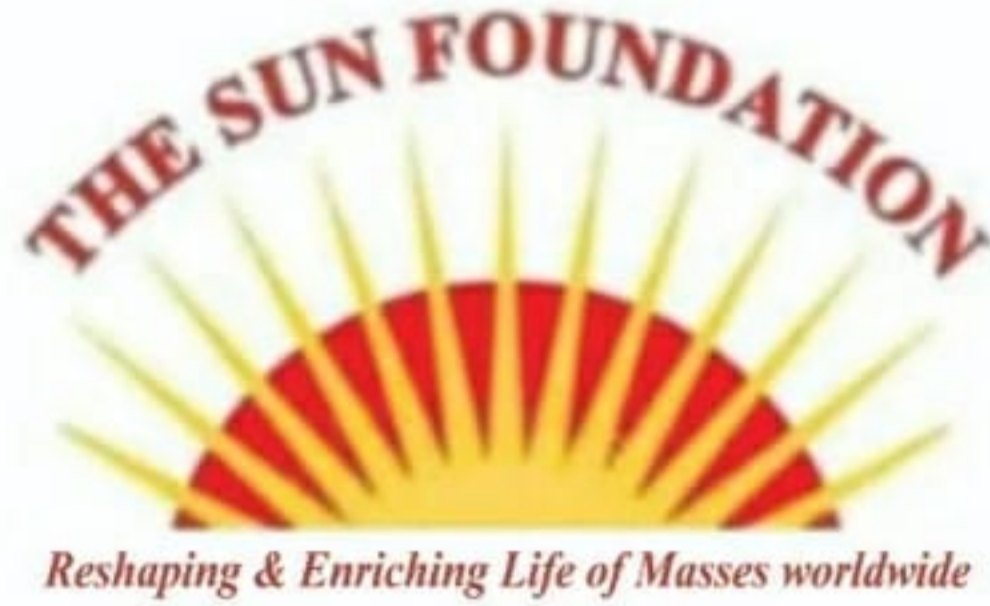


## 11. RECOMMENDATIONS

*P. S. Sahu*



Reg. No. 06/09/01/09343/12 Dated: 25/9/2012



## *Certificate of Appreciation*

*This is to certify that*

*Govt. Auto. Girls P.G. College of Excellence, Sagar (M.P.)  
has done an exemplary social service to senior citizen and  
differently able persons of Sagar during the year 2022-23.*

*Your contribution towards humanity is the highest in the field of  
social service. We appreciate your hard and selfless  
efforts to serve the nation.*



*Date: 31 March 2023*

*Dr. Rekha Rai  
President*

Address: H-54, Shanti Vihar Colony, Makroniya, Sagar 470 004  
Mob. 7000946553, e-mail : rai.rekha90@yahoo.in



# Awnnee Welfare Society

*Tress & Womankind are the Blessings to Humanity*

## *Memento of Recognition*

*We are glad to issue the  
**Green Campus Award***

*to*

**Government Autonomous Girls' P. G. College  
of Excellence, Sagar (M.P.)**

*For exemplary and continuous effort for maintaining  
the environment friendly practices in the  
college campus for the year 2022-2023*

*Mr. Vijay Gupta*  
**Founder**

*Dr. Smita Rashmi*  
**President**