

ENERGY, ENVIRONMENTAL AND GREEN AUDIT REPORT YEAR-2021-22



**Gulab Bai Yadav Smriti Shiksha Mahavidyalaya,
Vindya Vihar Borawan, Khargone (M.P.)**

CONDUCTED BY:



SABS ENERGY ENVIRO PVT.LTD



WE BUILDS A SOLID FOUNDATION FOR SAVING ENERGY

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5	Electrician	Mr. Rajesh Pal

Acknowledgement

SABS ENERGY ENVIRONMENT PVT LTD is thankful to the **GULAB BAI YADAV SMRITI SHIKSHA MAHAVIDYALAYA, BORAWAN** for their positive support in undertaking this intricate task of energy and environment and Green Audit. The field studies would not have been completed on time without their interaction and timely support. We are grateful for their co-operation during field studies and provision of data for the study. The field study of this audit was carried out on February 2022.

The officials of **GULAB BAI YADAV SMRITI SHIKSHA MAHAVIDYALAYA** coordinated and helped to the audit team during the field study and measurement. **SABS ENERGY ENVIRONMENT PVT LTD** expresses special thanks to the following persons of Gulab Bai Yadav Smiriti Shiksha Mahavidhyalaya.

1	Principal	Dr. Surendra Kumar Tiwari
2	Asst. Professor	Mr. Surmal Narve
3	Asst. Professor	Mr. Manoj Kaushle
4	Technician Advisor	Mr. Abhishek Yadav
5	Electrician	Mr. Rajesh Pal

And all other officers, technicians and staffs for the keen interest shown in this study and the courtesy extended.

We are thankful to the management for giving us the opportunity to be involved in this very interesting and challenging project.

We would be happy to provide any further clarifications, if required, to facilitate implementation of the recommendations.

SABS ENERGY ENVIRONMENT PVT LTD
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MR. SANJAY SINGH
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Certified Energy Auditor
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Certificate

This is to certify that **GULAB BAI YADAV SMRITI SHIKSHA MAHAVIDYALAYA, Khargone (M.P.)** has conducted Energy Audit, Environment Audit and Green Audit in the academic year 2021 - 2022 to assess the green initiative planning, efforts, activities, implemented in the college campus like Plantation, Waste Management, Rain Water Harvesting, Plastic ban, Conservation of Energy, Energy Management and various Environmental Awareness activities. Sabs Energy Enviro Pvt Ltd has verified campus data of **GULAB BAI YADAV SMRITI SHIKSHA MAHAVIDYALAYA Khargone (M.P.)** This Energy Audit, Environment Audit and Green Audit are also aimed to assess impact of green initiatives for maintenance of the campus eco-friendly.

Mr. Sanjay Singh

EA-1462

CERTIFIED ENERGY AUDITOR, BEE

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1 CHAPTER

ABOUT THE COLLEGE

1.1 Introduction

The main source of inspiration for the establishment of **Gulab Bai Yadav Smriti Trust, Borawan** is the dynamic personality, the principal trustee Late. honorable Shri Subhash yadav, Ex-Deputy Chief minister of M.P. Government has not only had special contribution in Agriculture, Horticulture, Co-operative Movement, Panchayati Raj, Education and social welfare Activities but also a high hand in all the fields of qualitative Educational developments. It is an efficient Educational Training College which is an institution of excellence.

Gulab Bai Yadav Shiksha Mahavidyalaya College of Education uses rigorous and intensive integrated teaching methods to prepare future teachers. We understand you are architects of the society. We are making efforts to provide congenial environment for our students to bloom. Our fondest hope is that the quality of your lives will be better than our own and us in most prayer is that our students will have all of our strengths and few of our weaknesses. In keeping with much valued cultural ethics and to maintain equanimity, a decent dress-code has been designed.

They are imparted qualitatively optimum education at minimum fees. A great deal of emphasis is laid on inculcating in them a sense of responsibility and ethical values. Moreover, the students are taught various skills which grooms up their entrepreneurial skills to shape them up as self-employed individuals eventually. In addition to academic pursuits the students are also inspired to participate in various co-curricular activities and interact with other sports clubs. Industrial visits are also conducted impart the desired exposure to them.

We want our students to have lives filled with friendships, love and high deeds. We want them to be eager to learn and be willing to confront challenges. We not only want our students to be grateful for what they receive from us but also to be proud of their own accomplishments. We want them to grow up with confidence in the future. We want them to have a love of adventure, a sense of justice and courage enough to act on that sense of justice.

In order to uplift the social stature of students, they are given empirical knowledge enabling them to understand the realistic approach towards all the challenges that they confront in their lives. It is quite evident that educating a girl is akin to educate the entire family. Keeping in view the fulfilment of the cherished ambition of students, the right kind of platform is created.

(A) Audit Framework

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institute which will lead for sustainable development. Green Audit is a planned identification, data analysis and reporting of mechanisms of environmental diversity. The “Green Audit” aims to analyze environmental practices within and outside the college campus, which will have an impact on the eco-friendly environment.

(B) Objective Of The Green Audit

The institute, with the advice of the External Quality Assessment Cell (IQAC) has set up an environmental quality assessment Team that aimed at performing the green audit of the College. The main objectives of the audit are:

- To fulfill the Institution's responsibility towards reducing carbon footprint and contribute to environmental protection.
- To promote Environmental Consciousness and Responsibility among students.
- To implement green practices consistently and effectively towards creating a sustainable campus.
- To monitor and evaluate the green practices, towards a sustainable campus
- To generate innovative green practices, promoting the spirit of eco-innovation among students.

(C) Methodology

The Green Audit taken up by GULAB BAI YADAV SMRITI MAHAVIDYALAY has been divided into

Three stages:

- Data/ /Observation
- Analysis of finding
- Recommendations

(D) Division of Audit

For better investigation and pinpoint observation our team has divided this work in 6 parts.



2 CHAPTER

GENERAL OVERVIEW OF THE CONCEPT OF LAND USE

2.1 Introduction

Land use refers to man's activities and the various uses which are carried on and derived from land. Viewing the earth from space, it is now very crucial in man's activities on natural resource. In situations of rapid changes in land use, observations of the Earth from space give the information of human activities and utilization of the landscape.

Remote sensing and GIS techniques are now providing new tools for advanced land use mapping and planning. The collection of remotely sensed data facilitates the synoptic analyses of earth system, functions, patterning, and change in the local, regional as well as at global scales over time. Satellite imagery particularly is a valuable tool for generating land use map.

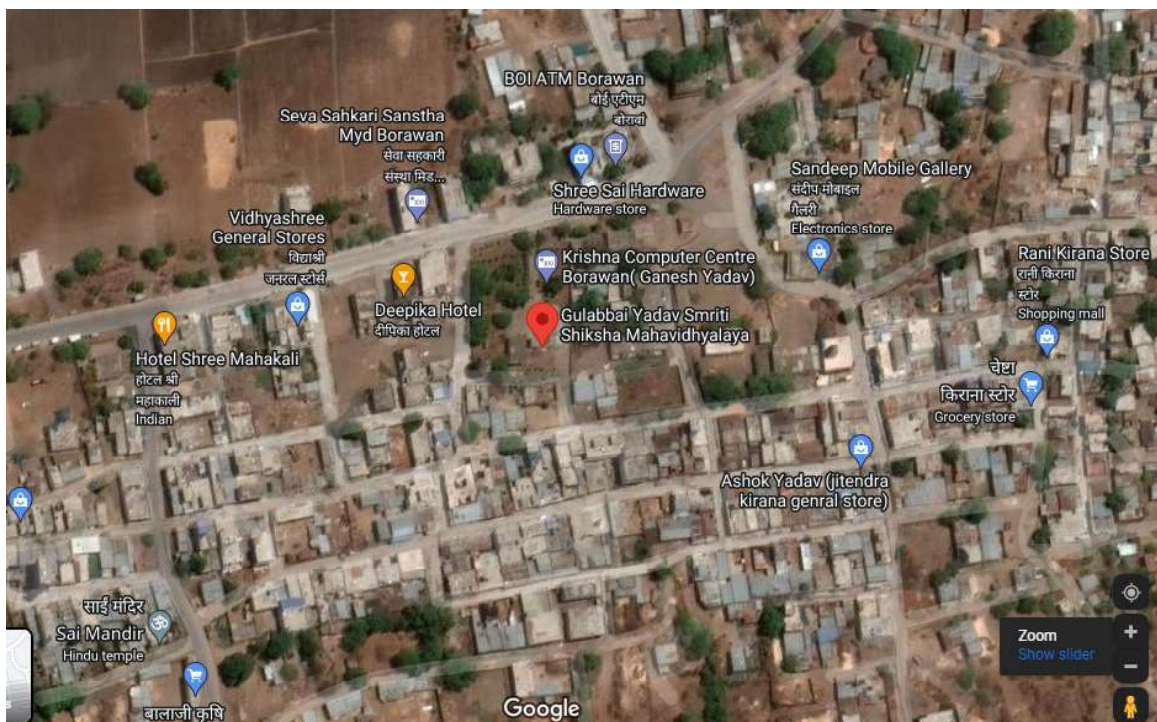


Figure 1: GULAB BAI YADAV SMRITI SHIKSHA MAHAVIDYALAYA Satellite View

2.2 Methodology Adopted for Land Use Mapping

Three types of data that are GPS points, field survey data and Google earth data for Geo referencing have been used in this study. Land use map of the study area have been prepared using the above three types of data with the help of ArcGIS Pro software.

2.3 Data Processing and Analysis

Land use map preparation is executed through the following steps:

Acquisition of data, Geo-coding and Geo referencing of satellite imageries by extracting the ground control points. Supervised classification was carried out with the aid of ground truth data collected during field survey. Scanning and digitization of maps and editing of all the Geo referenced maps were done using GIS. Data manipulation and analysis and linking the spatial data with the attribute data for creation of topology was carried out using GIS software. Creation of GIS output in the form of land use map showing various land use have been prepared.

Therefore, attempt has been made in this study to map land use for Geography Department of with a view to detect the land consumption in the built-up land area using both remote sensing and GIS techniques.

2.4 Geographical Location with Campus Map in Scale

The college has a **sprawling pollution-free campus spread over approx. 4 acres** of land in the Borawan of District Khargone MP . It has an ideal geographical location with the approximately to the important cities of the region. The college is located at 24 km from Khargone Bus Station and 148 km from Indore airport. Scaled image of college campus is shown. Green color in Map is representing green area. The Google aerial view of College Campus has been shown in figure.





Figure 2: GULAB BAI YADAV SMRITI SHIKSHA MAHAVIDYALAYA top View

3.CHAPTER

ENVIRONMENT AUDIT

3.A AIR QUALITY AUDIT

3.A.1 Data/Observations

Air quality in the academic college is very significant for creating good educational atmosphere as well as for the health of the students, faculty, staff and other stake holder of the institute. College is exposed to various atmospheric pollutants from vehicles as well as by other external means of urban areas, but mainly turn proves us that vehicles may contribute to high carbon dioxide emission.

Table 1 : Air Quality Data of The Location

Current Air Quality Index in Khargone, Madhya Pradesh 451001, India

O3	AQI 28 Good
PM2.5	AQI 86 Moderate
PM10	AQI 87 Satisfactory
Humidity	16.0 %
Barometric Pressure	1014.0 hPa
Wind Speed	8.34 m/s
Wind Direction	81.0 degrees

Source: SAFAR - India, Alandi Pune

Air Quality Alerts and Advices :

Satisfactory air quality index in **Khargone, Madhya Pradesh 451001, India.**

It may cause minor breathing discomfort to sensitive people. Healthy people may enjoy Air quality .

National ambient air quality standards		
Pollutant	Satisfactory level*	Time weighted average
Sulphur dioxide (SO ₂)	80 µg/m ³	24 hrs
Nitrogen dioxide (NO ₂)	80 µg/m ³	24 hrs
Ozone (O ₃)	100 µg/m ³	8 hrs
Carbon Monoxide (CO)	2 mg/m ³	8 hrs
Ammonia (NH ₃)	400 µg/m ³	24 hrs
Lead (Pb)	1 µg/m ³	24 hrs
PM2.5	60 µg/m ³	24 hrs
PM10	100 µg/m ³	24 hrs
Benzene (C ₆ H ₆)	5 µg/m ³	Annual
Benzo Pyrene	1 ng/m ³	Annual
Arsenic (As)	6 ng/m ³	Annual
Nickel (Ni)	20 ng/m ³	Annual

***Must comply at least 98% of the time**

2 21-09-2017 Air Pollution Monitoring in Cities, CDAC Bangalore

3.A.2 Finding

From the above study on air quality during these times air quality is Moderate most of the times, sometimes satisfactory and a few times good, which indicates medium pollution most of the times.

Study shows the changes in air quality due to regulatory parameters which includes Sulphur di oxide, nitrogen per oxide and particle matter.

PM10 & NH3 is more than standard value on some of the days. All other parameters were within permissible range air quality index inside and around the college campus was better than other parts of the city, mainly because of the greenery & also students prefer public transport to commute. Most students use public transport for commuting since the college is well connected by public transport services as local bus service, Use of Bicycles and public transport is encouraged by the institute amongst the students, faculty members, office staff residing nearby are encouraged to come by bicycles, or public transport which help in reduction of the release of carbon-dioxide in the campus.

3.A.3 Observations & Recommendation

College has campus covered with trees, number of garden and greenery in campus beautify the campus and automatically neutralize carbon footprint. College has already taken some steps like Plantation of local and common plant species, arranges special programs by inviting the eminent personalities for environmental consciousness of teaching and nonteaching staff in college as well as student, cleaning and beautification of our campus by various activities through various units. The college should plant different types of large number of trees in the campus, this greenery in campus helps to neutralize the carbon products generated. There should be ban on the entry of vehicles in college premises.

3.B WATER AUDIT

3.B.1 Introduction

Water is a natural resource, all living matters depend on water. While freely available in many natural environments, in human settlements potable (drinkable) water is less readily available. We need to use water wisely to ensure that drinkable water is available for all now and in the future. A small drip from a leaky tap can waste more than 180 liter of water in a day. It is therefore essential that any environmentally responsible institution should examine its water use practices. Water audit improves the knowledge and documentations of distribution system:

- It leads to reduce water losses.
- It improves financial performance.
- Efficient use of existing water.

The concerned auditor investigates the relevant method that can be adopted and improved to balance the demand and supply of water.

3.B.2 Observations:

Questioner for data collection

1) What are the uses of water in college?

Answer-Drinking, Washing, Toilet, Lab, Garden, Canteen, Hostel, Staff quarter.

2) What are the sources of water in college?

Answer-The main source of water is bore well and Municipality water.

3) No. of motors used for pumping water?

Answer- There are three pumps in college both are in working condition. First has the capacity 7.5 HP, second have 5 HP capacity and third one have 15 HP capacity.

4) Is there any water collection and recharge system?

Answer- No, there is no water collection and recharge system for waste water coming from water cooler and taps.

5) Is there any Wastage of water?

Answer-No, there is no major wastage of water, 1. No leakage from Taps, 2. No wastage from over flowed tanks 3. Some wastage from water cooler.

6) Is there any treatment plant for the lab water?

Answer-No there is no treatment plant for the lab water. As water drains out in a pit and goes to ground.

7) What is the Capacity of tank?

Answer- 10000 liters each approximately.

8) No. of tanks in the Campus?

Answer- There are 4 such tanks.

9) Any water used in agriculture purpose.

Answer-Yes in garden.

10) Does college harvest rain water?

Answer- No, there is no rain water harvesting system in Campus.

11) Is drip irrigation used to water plants outside?

Answer- No

12) Some idea for how your college could save more water.

Answer -a) Stop leakage of water from taps.

b) Use minimum water needed for daily needs.

c) Immediate turns off the, taps after washing hands.

d) Renew water ball for water tanks to 100% prevent the waste of water.

Saving water helps to preserve our environment. It reduces the energy required to process and deliver water, which helps in conserving resources.

3.B.3 Key findings: -

1. Main water uses in the campus.

- a) Garden
- b) Lab
- c) Cleaning
- d) Drinking
- e) Toilet
- g) Washing

2) No water treatment system in Place = 0

5) No. of water pump = 2

6) Municipal water connection - Yes

7) Using water from own well –Yes

8) No. of water tank for water storage = 4

9) Amount of water stored =10000 Liters each.

3.B.4 Reason for water wastage–

- 1) There is no water consumption monitoring system in the college campus.
- 2) The college does not have waste water treatment plant for waste water, generated from laboratories, canteen, hostel, Toilets.
- 3) There is no rain water harvesting system in building. Need of this system in every building of college.
- 4) Automatic switching system is not installed for pump sets used for overhead tank filling.

Rainwater harvesting details

Sr. no.	Location	Area in (m ²)	Average Annual Rainfall in (m)	Rain of coefficient	Annual Rain water Harvesting in (m ³)	Annual Rain water Harvesting in (Ltr)
1		1210				



Fig 2. Rainwater harvesting system installed in the campus

3.B.5 Recommendations-

- 1) Remove old taps and install sensitive taps if possible.
- 2) Drip irrigation for gardens and vegetable cultivation can be initiated.
- 3) Establish rain water harvesting system for each building.
- 4) Water treatment system should be installed for labs.
- 5) Awareness program on water conservation to be conducted.
- 6) Install display boards to control over exploitation of water.



3.C WASTE AUDIT

3.C.1 Solid waste

- **Fact –**

Waste is produced by all types of routine activities carried out in the college that includes waste papers, parts of trees, leaf, poly bags plastics, glass, food products, etc.

- **Finding-**

Reduce-Reuse-Recycle is the root of sustainable development and qualitative human life with green environment, college strongly believes in this philosophy.

Reuse: Reuse of waste materials and recycling of those

Recycle: Organic waste material like parts of trees, leaf litters collected & dump in compost pits. This compost pit is in Botany Dept. This waste convert is to compost & reuse as a manure in garden for campus.

The waste papers from college centrally collected answer sheets and question papers from Autonomous Dept. Practical records collected from science laboratory. Newspapers and magazines from library, etc. The Institute has outsourced a Vendor to dispose of all the Answer Sheets, News Papers and other Paper Material. The Vendor recycle the paper as per the agreed the vendor. All paper waste given to vendors for recycling at regular intervals.

The waste is separated at each level and source. Throwing the waste anywhere is strictly prohibited. Usage of plastic bags is discouraged within the premises of the College. Dustbins are provided throughout the campus. The administrator in each building confirms that the waste in each floor is collected at selected time to time. The staff in each floor collects, clean, segregates and compiles the waste in the Green & Blue dustbins provided at each floor. The floor dustbins are covered and easily portable. Dry garbage from college campus collected by hour keeping staff from different collection point (from different lab, office, hostel.) Indore Municipal Corporation has system to collect the garbage daily from the Institute campus solid waste. The primary goal of solid waste management is reducing and eliminating adverse impacts of waste materials on human health and environment to support economic development and superior quality of life. The entire campus is duly cleaned regularly by sweepers and cleansing works.

3.C.2 Liquid Waste

Well-constructed drainage system leading to the IMC constructed chambers is there in place within the campus. Liquid waste is duly discharged by means of underground well laid pipe lines.

The college does not have waste water treatment plant for waste water, generated from laboratories, canteen, hostel, Toilets.

- **Recommendations for Liquid Waste Management:** Water Treatment System should be Placed in college campus.

3.C.3E-waste

E-waste: The E-waste is collected separately than the other type of waste generated in the campus. Separated E-waste is deposited in the separate box provided for the same purpose.



Fig3. Vermicomposting done in the campus for waste management

4 CHAPTER

GREEN AUDIT

4.A TREE DIVERSITY OF COLLEGE CAMPUS

4.A.1 Objective—

The main objective of green audit is to enlist and enumerate the plant diversity of college campus. This is a continuous process and helps in maintenance and conservation of flora of campus.

This study was undertaken with following objectives –

- (a) To identify the plantspecies growing in the area.
- (b) To make a habit wise list along with their frequency.
- (c) To generate basic data for further reference.
- (d) To create awareness among students.

4.A.2Methodology

Photo diversity of campus wasstudied by the investigative team. It was divided into parts. Different team visited these areas and noted name and number of plant species. This data was then cumulated and tabled.




4.A.3Presentation of Data

The data was categorized on the basis of habits. There are various types of tress in the campus including neem, pipal, gulmohar,amla,aam,bargad. Grasses and sedges were innumerable so their names were mentioned. In addition to angiospermic plants, other groups were also represented for eg. algae (Diatoms, Oscillatoria, Spirogyra, Vaucheria), fungi, bryophytes (Riccia, Polytrichum, Cyathodium), Pteridophyta (Pteris), gymnosperms (Cycas, Juniperus, Araucaria,Thuja)

4.A.4 Result




This campusharbours a rich diversity of plants. It is an old institution \ and hence some members of natural vegetation are still present here. Some plants are introduced for avenue purpose and are combined to the road facing area.

Table 2: List of Trees

S.No	Plant Species	Specification
1	<i>Azadirachta indica A. Juss.</i>	
		<p>Family-Meliaceae Hindi name-Neem English name- The Margosa Tree No. of trees - 98</p>
2	<i>Polyalthia longifolia Thw</i>	
		<p>Family-Moraceae Hindi name-Pipal English name- Ficus religiosa No. of trees - 5</p>
3	<i>Delonix regia (Boj.) Rafin</i>	
		<p>Family-Caesalpiniaceae Hindi name-Gulmohar English name-Flamboyant tree No. of trees - 41</p>

4	<p><i>Emblica officinalis Gaertn.</i></p> <div data-bbox="290 291 907 716">  </div> <div data-bbox="915 291 1544 716"> <p>Family-Euphorbiaceae Hindi name-Aola, Amla English name-Emblic myrobolan No. of trees - 110</p> </div>
5	<p><i>Magnolia Champaca</i></p> <div data-bbox="290 789 907 1241">  </div> <div data-bbox="915 789 1544 1241"> <p>Family-Magnoliaceae Hindi name-Champa English Name- Dalbergia sissoo No. of trees - 50</p> </div>
6	<p><i>Citrous lemon</i></p> <div data-bbox="290 1346 907 1860">  </div> <div data-bbox="915 1346 1544 1860"> <p>Family- <i>Rutaceae</i> Hindi name-Nimbu English name- Lemon No. of trees - 10</p> </div>

7	<p><i>Ficus benghalensis L.</i></p> <div data-bbox="293 296 906 772">  </div> <div data-bbox="922 321 1544 772"> <p>Family-Moraceae Hindi name-Bargad, Barh English name- The Banyan No. of trees - 1</p> </div>
8	<p><i>Murraya koenigii L.</i></p> <div data-bbox="293 842 906 1289">  </div> <div data-bbox="922 842 1544 1289"> <p>Family-Rutaceae Hindi name-Meetha neem, Kadai patta English Name- No. of trees - 1</p> </div>
9	<p><i>Mangifera indica L.</i></p> <div data-bbox="293 1394 906 1831">  </div> <div data-bbox="922 1419 1544 1831"> <p>Family-Anacardiaceae Hindi name-Aam English name-Mango No. of trees -15</p> </div>

10	<p><i>Annona Swuamosa</i></p>  <p> Family-Annonaceae Hindi name-Seelafa English name-Custard apple No. of trees -14 </p>
11	<p><i>Eucalyptus Globulus</i></p>  <p> Family-Myrtaceae Hindi name- Nilgiri English name- Eucalyptus No. of trees - 12 </p>
12	<p><i>Murraya Paniculata</i></p>  <p> Family-Rutaceae Hindi name-Madhukamni English name- Orange Jasmine No. of trees - 2 </p>

Other than these there are other trees in the campus. The list of the trees are given below:

Table 3 : Various Types of Trees in College

S.No.	Scientific Name	Vernacular Name	Family	Number
1	Azadirachta Indica	Neem	Meliaceae	98
2	Ficus Religiosa	Pipal	Moraceae	5
3	Delonix Regia	Gulmohar	Leguminosae	41
4	Emblica Officinalis	Amla	Euphobiaceae	110
5	Magnolia Champaca	Champa	Magnoliaceae	50
6	Aegla Marmelos	Belpatra	Rutaceae	1
7	Pongamia Pinnata	Karanj	Fabaceae	1
8	Citrus limon	Nimbu	Rutaceae	10
9	Palmiste Gargoulette	Bottle Palm	Arecaceae	5
10	Alstonia Scholaris	Saptraparni	Apocynaceae	5
11	Ficus Benghalensis	Bargad	Moraceae	1
12	Eucalyptus Globulus	Nilgiri	Myrtaceae	12
13	Murraya Paniculata	Madhukamni	Rutaceae	2
14	Murraya Koenigii	Meetha Neem	Meliaceae	1

15	Prosopis Cineroria	Shami	Fabaceae	1
16	magnifera Indica	Aam	Anacardiaceae	15
17	Annona Swuamosa	seelafa	Annonaceae	61
TOTAL				419



Fig 4: Tree diversity in the college campus

Other than these trees the campus hosts a long list of shrubs, Grasses. Details of which are given in following tables respectively.

Table 4 : List of Shrubs and Climbers in college

S.No.	Scientific Name	Vernacular Name	Family	Number
1	Justica Adhatoda	Vasaka	Acanthaceae	18
2	Gymnema Sylvestre	Gurmar	Apocynaceae	2
3	Rauwolfia Serpentina	Sarpagandha	Apocynaceae	2
4	Calotropis Gigantea	Akao	Apocynaceae	15
5	Datura Metal	Dhatura	Solanaceae	28
6	Bougainvillea Spectabilis	Kagaj Ke Phool	Nyctaginaceae	80
7	Hibiscus rosa sinensis	Gudhal	Malvaceae	35
8	Cascabela thevetia	Kaner	Apocynaceae	30
TOTAL				210

Table 5: List of various types of herbs in college

S.No.	Scientific Name	Vernacular Name	Family	Number
1	Bumbusa Vulgans	Bomboo	Poaceae	30
2	Kalanchoe Pinnata	Pathar chatta	Crassulaceae	25
3	Asparagus Racemosus	Satavar	Asparagaceae	2
4	Cassia angustifolia	Sanay ki patti	Fabaceae	3
5	Aloe Barbadensis	Dhruvkumari	Liliaceae	20
6	playcladus Orintlis	vidhya	Cupressaceae	26
7	Ocimum Tentiflorum	tulsi	Lamiaceae	10
TOTAL				116

Table 6: List of various types of grasses and sedges in college

S.No.	Scientific Name	Vernacular Name	Family
1	Passer domestica	Goriaya	Passeridae
2	Psittacula Krameri	Tota	Psittacidae
3	Eudynamys Scolopaceus	Koel	Cuculidae
4	Pycnonotus Cafar	Bulbul	Pycnonotidae
5	Columba Livia	Kabootar	Columbidae
6	Acridotheres Tristis	Kabar	Strunidae
7	Corvus Culminatus	Kauwa	Corvidae
8	Ortygornis Pondicerianus	Teetar	Phasianidae
9	Coturnix Coromandetica	Bater	Phasianidae
10	Coracias Banghalensis	Neelkanth	Coraciidae
11	Molineria Capitulata	Palm Grass	Hypoxidaceae
12	Setaria Palmifolia	Palm Grass	Poaceae
13	Phalaris Arundinacea		Poaceae
14	Chasmanthium Latifolium	River Grass	Poaceae
15	Parthenium Hysterophorus	Gajar Ghas	Asteraceae
TOTAL			

Recommendations-

- Geo tagging of all trees should be done.
- Students should be assigned plants to take care for.
- Each and every tree should be well documented.

4.B FAUNA DIVERSITY

4.B.1 Introduction

Biodiversity is the part of the campus. A rich biodiversity not only provides the shelter to many species around the college but also take us closer to the nature and for a student it is very important to connect to nature at every level. Gulab Bai Yadav Smriti Shiksha Mahavidhyalay is home to many different species around the campus. It has a very rich biodiversity. It consists of the following different animals in the campus-

a) Family Bufonidae

- i. Common Toad (*Duttaphrynus Melanostictus*)

b) Family Dicroglossidae

- i. Common Bull Frog (*Hoplobatrachus Tigrinus*)
- ii. Common Skittering Frog (*Euphlyctis Cyanophlyctis*)
- iii. Burrowing Frog (*Sphaerotheca Braviceps*)

c) Family Rhacophoridae

- i. Common tree frog (*Polypedates maculatus*)

d) Lizard Family

- i. House wall lizard (*Hemiductylus flaviviridis*)
- ii. Common Bark Gecko (*Hemiductylus leschenaultii*)
- iii. Brahmini (*Lygosoma punctata*)
- iv. Many keeled grass skink (*Eutrophis carinata*)
- v. Goh or Goyra or Monitor lizard (*Varanus bengalensis*)
- vi. Girgit or Garden lizard (*Calotes versicolor*)

e) Reptiles Family

- i Indian Rat Snake – (*Ptyas Mucosa*)
- ii Cobra – (*Serpentis*)

f) Birds in the Campus

Various type of birds are also present in the campus. List of all the birds in the campus is given below:

Table 7: List of all the Birds in the campus

S. No.	Common name	Scientific name
1	Koel	Eudynamys
2	Parrot	Psittaciformes
3	Pigeon	Columbia livia
4	Sparrow	Passeridae
5	Wood Pecker	Picidae
6	Jungle Babbler	Turdoides striata
7	Crow	Corvus Corax
8	Owl	Strigiformes
9	Heron Bird (Bagula)	Ardeidae
10	Sandpiper	Scolopacidae
11	Myna	Acridotheres
12	Hawk	Accipitridae





4.B.2 Observations and Recommendations

- Biodiversity of the campus is very rich.
- Maximum possible animals should be identified.
- All the identified animals should be well documented.
- Students should be aware about the fauna diversity of the college.



Figure : Birds in the campus

some of the snakes in the campus Pictures of

Brahminy worm snake	
Slender worm snake	
Common trinket	
Indian Cobra	

5 CHAPTER ENERGY AUDIT

Energy Audit is an effective means of establishment present efficiency levels and identifying Potential areas of improvement in energy consumption.

Energy audit of utility systems largely helps, which are given below:

- Reducing the energy consumption with resultant reduction in electricity bills.
- Audit involves data collection, data verification and detailed analysis of the data.
- The analysis leads to recommendations, which are short term (with minimum investment), medium term (with moderate investment) and long term (with capital expenditure).

The cost benefit analysis of various energy conservation proposals enables managements to take decisions regarding implementation schedules.

Here we are concerned about alternate energy as well as present use of energy.

5.1 Data/Fact

Alternate Energy initiatives such as:

Power requirement of the Institution met by the renewable energy

Table 8: Savings by Solar System installed in campus

Month	Total units consumed	Total units supplied	Units generated by 8 KW solar	Energy charges	Total bill	Per unit energy charges	Saving
	KWH	KWH	KWH	Rs	Rs	Rs	Rs
Jan 21	257.1	478.4	735.5	0	1801	-	-
Feb 21	257.4	421.7	679.1	0	1783	-	-
Mar 21	353.7	171.8	525.5	620.8	2425	3.9	2052.73
Apr 21	523.8	122	401.8	960	5057	5.3	2116.57
May 21	531.6	117.5	414.1	960	2200	2.3	948.98
June 21	562.5	120.9	441.6	960	2165	2.3	995.90
July 21	557.9	227.8	330.1	960	2650	2.8	911.21
Aug 21	624.8	435.9	188.9	2714.24	3032	1.1	211.01
Sept 21	386.7	23.1	363.6	147.84	282	1.9	693.56
Oct 21	365.2	191.2	556.4	17.92	1217	67.9	37786.76
Nov 21	250.7	535.1	785.8	960	2174	2.3	1779.51
Dec 21	457.3	40.7	416.6	960	2396	2.5	1039.76

Jan 22	429.8	40.9	470.9	960	2154	2.2	1056.58
Total Units (KWH) generated by solar			6309.9		29336	Total savings in Rs	49592.58



Fig5: Solar PV Plant of 8 kw installed in the roof of building

5.2 Finding

Table 9 : Light and Fan Details

S.NO	Name of equipment	Qty.	Capacity in watt	Total watt	Total kw
1	Ceiling fan	89	80	7120	7.12
2	Tube light	93	40	3720	3.72
3	LED bulb	10	10	100	0.1
4	Water pump 5 HP 3 phase	1	3730	3730	3.73
5	Water pump 7.5 HP 3 phase	1	5593	5593	5.59
6	Water pump 15 HP 3 phase	1	11186	11186	11.186
Total				31449	31.446

Percentage lighting through LED bulbs	Percentage lighting through		Total lighting load	Total lighting load percentage
	Others sources			
3%	97%		3.82 KW	12.10%
Percentage Fan load by BLDC Fans	Percentage Fan through		Total Fan Load	Total Fan Load percentage
	Others type of Fans			
0%	100%		7.12 KW	22.60%
Percentage Pump load by 5 HP pump	Percentage AC load by 7.5 HP pump	Percentage AC load by 7.5 HP pump	Total pump load	Total pump load percentage
18%	27%	55.00%	20.50 KW	65.20%
		Total	31.44 KW	100%

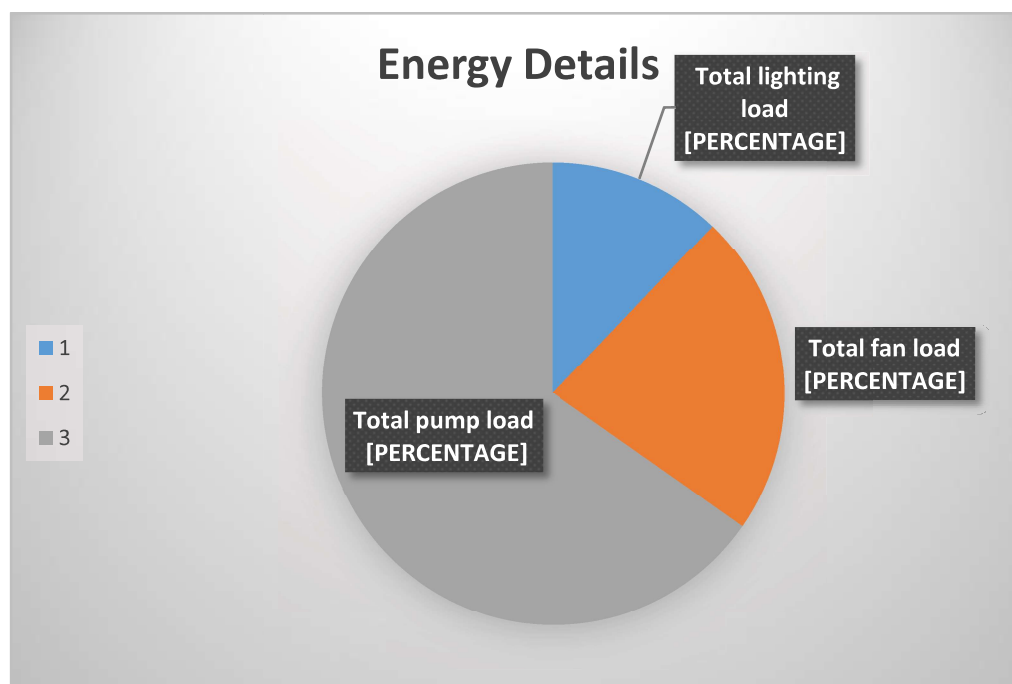


Fig6: Energy details in percentage

5.3 Finding and Recommendation

- **Solar PV plant is installed and renewable energy sources must be added in campus.**
- **LED lights is used in the campus and should be used at all places.**
- **BLDC Fans should be used instead of conventional ones.**
- **All room are well ventilated and good day light presents**


Note – We appreciate use of green power and LED lights at some places in the campus.



Certificate



This is to certify that **GULAB BAI YADAV SMRITI SHIKSHA MAHAVIDYALAYA, BORAWAN** is now Recognized as **Swachhta Action Plan Institution**. The Institution has successfully formed the Swachhta Action Plan Committee and constituted the working groups Post COVID-19 for **Sanitation & Hygiene, Waste Management, Water Management, Energy Management and Greenery** along with the observation of two environment related days to inculcate in faculty, students and community, the practices of Swachhta and Reduction, Reuse and Recycling of Resources.


Dr. W G Prasanna Kumar
Chairman

Mahatma Gandhi National Council of Rural Education
Department of Higher Education, Ministry of Education
Government of India

Cert:SAP/MGNCRE/MHED/0331/2198

The green initiative planning, efforts, activities, implemented in the college campus like Plantation, Waste Management, Rain Water Harvesting, Plastic ban, Conservation of Energy, Energy Management and various Environmental Awareness activities. Sabs Energy Enviro Pvt Ltd has verified campus data of **GULAB BAI YADAV SMRITI SHIKSHA MAHAVIDYALAYA Khargone (M.P.)** also maintenance of the campus eco-friendly.

Form-6
(See rule 19)

E-WASTE MANIFEST

No. 891

1.	Sender's name and mailing address (including Phone No.)	Gulab Bai Yadav Smriti Shiksha Mahavidyalaya Borawlen, Dist-Khargpur (M.P.) 491005
2.	Sender's authorisation No, if applicable	NA
3.	Manifest Document No.	891
4.	Transporter's name and address (including Phone No.)	Sender Transportation
5.	Type of vehicle	(Truck or Tanker or Special Vehicle)
6.	Transporter's Registration No.	NA
7.	Vehicle Registration No.	MP 10 T 0932
8.	Receiver's Name & Address :	Unique Eco Recycle Plot No. 26, Udyog Nagar, Pakda, Behind Reliance Petrol Pump, Indore (M.P.)
9.	Receiver's Authorisation No if applicable :	459/HOPCB/E-Waste/2018
10.	Description of E-waste (Item, Weight/Numbers)	ITEM 2 = 315.20 kg ITEM 12 = 1.2 kg Total = 316.40 kg
11.	Name and stamp of sender* (Manufacturer or Producer or Bulk Consumer or Collection Center or Refurbisher or Dismantler)	<p>Dr. S. K. Tiwari Principal Signature: Gulab Bai Yadav Smriti Shiksha Mahavidyalaya, Borawlen (Khargpur)</p> <p>DAY MONTH YEAR 2 8 0 2 2 0 2 2</p>
Transporter acknowledgment of receipt of E-Wastes		
<p>Dr. S. K. Tiwari Principal Signature: Gulab Bai Yadav Smriti Shiksha Mahavidyalaya, Borawlen (Khargpur)</p> <p>DAY MONTH YEAR 2 8 0 2 2 0 2 2</p>		
13.	Receiver* (Collection Center or Refurbisher or Dismantle or Recycler) certification of receipt of E-waste	<p>Signature: [Signature]</p> <p>DAY MONTH YEAR 2 8 1 2 2 0 2 2</p>

* As applicable

First Copy

to be retained by the sender after filling signature on it from the transporter and other three copies will be carried by transporter