



Green Audit Report
Government Degree College, Shahpura
Dist-Dindori (M.P.)
The Academic Year 2022-23



GREEN AUDIT REPORT



Government Degree College, Shapura

Post - Shahpura, District- Dindori

(M.P.) Pin-481990

PREPARED BY

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(2022-23)





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शासकीय स्नातक महाविद्यालय
शहपुरा जिला डिण्डोरी (म.प्र.)

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|---|---|---|
|  | Green Audit Report Government Degree College, Shahpura Dist-Dindori (M.P.) The Academic Year 2022-23 |  |
|---|---|---|

CONTENTS

| Sr. No. | Items | Page No. |
|-----------|--|----------|
| I | ACKNOWLEDGEMENT | 3 |
| II | The Audit Team | 4 |
| III | Green Monitoring Committee | 5 |
| IV | Executive Summary | 6 |
| Chapter-1 | Introduction | 8 |
| 1.1 | About College | 8 |
| 1.2 | About Green Auditing | 11 |
| 1.3 | Objectives of Green Audit | 11 |
| Chapter-2 | GREENCAMPUS and Audit | 12 |
| 2.1 | Green Audit | 12 |
| 2.2 | List of plants in college campus | 15 |
| Chapter-3 | CARBONFOOTPRINT | 19 |
| 3.1 | About Carbon Foot Print. | 19 |
| 3.2 | Methodology and Scope | 20 |
| 3.3 | Carbon Emission from Electricity | 21 |
| 3.4 | Solar Photovoltaic System | 21 |
| 3.5 | Carbon emission from DG sets | 23 |
| 3.6 | Biomass Calculation and CO ₂ Sequestration of the Trees | 24 |
| 3.7 | Other Emissions Excluded | 33 |
| Chapter-4 | WASTEMANAGEMENT | 34 |
| 4.1 | About Waste | 34 |
| 4.2 | Waste Management Practices Adopted by the College | 35 |
| 4.3 | Department and Building Waste Collection Points | 36 |
| 4.4 | Organic Waste Composting Machine | 37 |
| Chapter-5 | RECOMMENDATIONS AND SUGGESTIONS | 39 |
| 5.1 | QR Code System | 39 |
| 5.2 | Other Suggestions | 40 |

| | | |
|---|---|---|
|  | Green Audit Report Government Degree College, Shahpura Dist-Dindori (M.P.) The Academic Year 2022-23 |  |
|---|---|---|

ACKNOWLEDGEMENT



Empirical Exergy Private Limited (EEPL) in Indore, Madhya Pradesh, would like to take this opportunity to express our appreciation and gratitude to the management of **Government College, Shahpura, Post - Shahpura, District- Dindori (M.P.)**. We are grateful for granting us permission to conduct green audit for the college.

We are genuinely touched by the helpful attitudes and co-operation displayed by all the faculty members and technical staff involved in the study. Their valuable assistance and cooperation significantly contributed to the successful execution of the audit.

Rajesh Kumar Singadiya

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|  | Green Audit Report Government Degree College, Shahpura Dist-Dindori (M.P.) The Academic Year 2022-23 |  |
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TheAuditTeam

The study team constituted of the following senior technical executives from **Empirical Exergy Private Limited,**

- ✚ **Mr. Rakesh Pathak,** [Director &Electrical Expert]
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|  | <p>Green Audit Report Government Degree College, Shahpura Dist-Dindori (M.P.) The Academic Year 2022-23</p> |  |
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EXECUTIVE SUMMARY

Green Initiatives Taken by the College

Campaign of Plantation and Green Campus:

The college has approximately 1,129 trees on its campus. This proactive step taken by the management towards creating a green campus through the plantation campaign is commendable.

Areas for Improvement

5 Dustbin Systems:



It has been observed that the college currently employs a single dustbin system for all types of waste generated on the campus. It is recommended to implement a 5-dustbin system for the proper segregation of various types of waste.

QR Code System on Trees:

As the world increasingly embraces digital platforms and people have less time for extensive reading and information processing, the college could consider providing QR codes on trees. This innovative approach would offer quick access to information about the trees and leverage the growing QR code platform for a unique purpose.

Installation of Organic Waste Composting Machine:



The college holds potential for installing an organic waste composting machine. This machine could efficiently treat the organic waste originating from trees and the lawn area of the campus. The resulting output from this machine can serve as valuable manure for the gardens and plants within the campus.

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|  | <p>Green Audit Report Government Degree College, Shahpura Dist-Dindori (M.P.) The Academic Year 2022-23</p> |  |
|---|--|---|

OTHER SUGGESTIONS & RECOMMENDATIONS

Here are some essential suggestions:

- **Adopt the Proposed Environmentally Responsible Purchasing Policy:** The college should consider embracing the suggested policy to enhance its purchasing decisions and establish strategies for reducing environmental impact.
- **Enhance Recycling Education on Campus:** Efforts to educate the campus community about recycling should be intensified.
- **Promote Awareness of Environmentally Sustainable Development:** Increase awareness about environmentally sustainable practices within the college campus.
- **Practice Institutional Ecology:** The college can lead by example in environmental responsibility by implementing institutional ecology policies that encompass resource conservation, recycling, waste reduction, and environmentally sound operations.
- **Engage All Stakeholders:** Encourage participation from government bodies, foundations, and industries to support interdisciplinary research, education, policy formulation, and information sharing in environmentally sustainable development.
- **Promote Interdisciplinary Collaboration:** Develop interdisciplinary approaches across curricula, research initiatives, operations, and outreach endeavors to foster a sustainable future.
- **Expand Education on "Reduce, Reuse, and Recycle":** Increase educational efforts focused on the principles of reducing, reusing, and recycling on campus.
- **Establish a Butterfly Garden:** Create a butterfly garden to foster appreciation for the diversity of flora and fauna.

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|  | Green Audit Report Government Degree College, Shahpura Dist-Dindori (M.P.) The Academic Year 2022-23 |  |
|---|---|---|

- Label Trees and Plants: Assign common and scientific names (using Plant DNA barcodes) to all trees and plants for identification.
- Conduct Environmental Management and Nature Conservation Training: Organize training programs covering environmental management systems and nature conservation.
- Encourage Student and Teacher Involvement in Local Environmental Issues: Foster participation from students and teachers in addressing local environmental concerns.
- Minimize Plastic and Thermoacol Usage: Refrain from using plastic and thermoacol plates and cups during college or department-level functions.



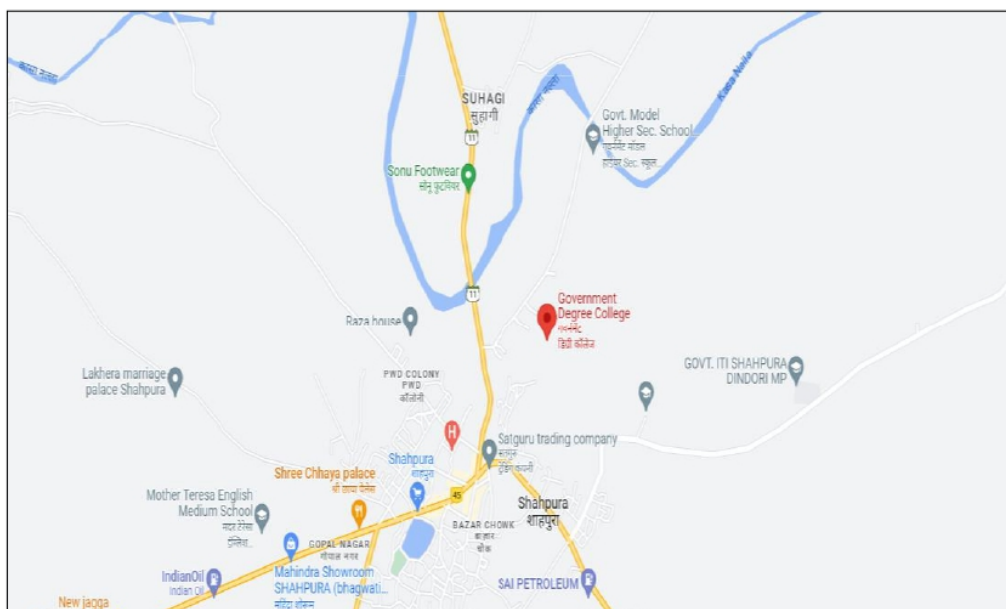
Green Audit Report
Government Degree College, Shahpura
Dist-Dindori (M.P.)
The Academic Year 2022-23





CHAPTER-1
INTRODUCTION

1.1 About the College

Government Degree College, Shahpura Is an affiliated College Established In 1983 In Dindori, Madhya Pradesh. Government Degree College, Shahpura Offers Various Programme Approved By University Grants Commission And Is Affiliated With Rani Durgavati Vishwavidyalaya, Jabalpur.



Source: Image of Government College Shahpura (M.P) from Google map

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|  | Green Audit Report Government Degree College, Shahpura Dist-Dindori (M.P.) The Academic Year 2022-23 |  |
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Vision

To empower the youth, especially belonging to the underprivileged sections of society, through quality education by inculcating philanthropic values and enabling them to meet the challenges of the contemporary knowledge society.

Mission

To translate the vision into reality the institution is committed to -

- Embrace in its fold students from all sections and categories especially addressing to the needs of the first generation learners.
- Expose the students (especially the under-privileged ones) to variety of activities, academic and extra-academic, aiming at their overall development.
- Inculcate humanistic and social values in the students to motivate them towards community services.

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|  | Green Audit Report Government Degree College, Shahpura Dist-Dindori (M.P.) The Academic Year 2022-23 |  |
|---|---|---|



Build-up area of the college

Details are the total build-up area given in the table

| Sr.No. | Description | Area(Sqm.) |
|--------|---------------------|------------|
| 1 | Total area | 80937 |
| 2 | Total build up area | |

College Population

| Sr. No. | College Staff/ Student | Population (No.) |
|---------|--------------------------|------------------|
| 1 | Total teaching staff | 6 |
| 2 | Total Non teaching staff | 7 |
| 3 | Total No. of student | 614 |

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|  | <p>Green Audit Report Government Degree College, Shahpura Dist-Dindori (M.P.) The Academic Year 2022-23</p> |  |
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1.2 About Green Auditing

The concept of the Eco Campus has been implemented in numerous educational institutions worldwide to foster sustainability, primarily due to their significant resource consumption and environmental impact through waste discharge.

Green auditing involves identifying opportunities for sustainable development practices, enhancing environmental quality, improving health and safety, reducing liabilities, and embodying values of virtue. It also establishes a foundation for calculating economic benefits from conservation projects by determining current resource usage rates and associated costs.

The green audit conducted for "Government Post Graduate College, Bistan Road, Khargone (M.P.)" aims to assess the institution's lifestyle, actions, and their environmental impact. This audit primarily focuses on green indicators such as the utilization of green energy (solar energy), optimal use of secondary energy sources (petrol and diesel), campus vegetation, and the carbon footprint. The objective of green auditing is to assist the institution in adopting sustainable development practices and setting examples for the community and students.

1.3 Objectives of Green Auditing

The overarching objective of green auditing is to compile a baseline report on the "Green Campus" and alternative energy sources (solar energy), along with proposing measures to curtail resource wastage and enhance sustainable practices.

The specific objectives encompass:

Instilling values of sustainable development practices through the green audit mechanism.

Establishing a database for corrective actions and future planning.

Identifying areas of improvement and offering recommendations to enhance the green campus status of the college.



Green Audit Report
Government Degree College, Shahpura
Dist-Dindori (M.P.)
The Academic Year 2022-23



CHAPTER- 2
GREEN CAMPUS

2.1 Green Audit

The survey has prioritized assessing the current condition of plants and trees within the college campus, as well as the conservation initiatives undertaken by the college authorities. The campus is surrounded by an estimated total of over 113 trees. Details are provided below:

Green Campus



| Sr. no. | Tree Name | Total |
|---------|------------|-------|
| 1 | Shisham | 4 |
| 2 | Gulmohar | 3 |
| 3 | Rajkumari | 2 |
| 4 | Peepal | 2 |
| 5 | Neem | 1 |
| 6 | Devltri | 3 |
| 7 | Gorichori | 6 |
| 8 | Kanji | 3 |
| 9 | Bargad | 2 |
| 10 | Aamla | 1 |
| 11 | Palm | 4 |
| 12 | Rajgiri | 1 |
| 13 | Gulachin | 2 |
| 14 | Brenia | 1 |
| 15 | Amrod | 5 |
| 16 | Jamun | 1 |
| 17 | Sindur | 2 |
| 18 | Jhagruva | 2 |
| 19 | Aam | 1 |
| 20 | Ashok | 2 |
| 21 | Agasti | 1 |
| 22 | Hohosi | 1 |
| 23 | Sami | 1 |
| 24 | Vaibranchi | 1 |
| 25 | Arlutri | 2 |
| 26 | Jason | 3 |
| 27 | Gulab | 5 |
| 28 | Croton | 5 |



Green Audit Report
Government Degree College, Shahpura
Dist-Dindori (M.P.)
The Academic Year 2022-23



| Sr. no. | Tree Name | Total |
|---------|-----------|-------|
| 29 | Naagped | 1 |
| 30 | Pigenped | 3 |
| 31 | Neem | 9 |
| 32 | Khajur | 3 |
| 33 | Palas | 7 |
| 34 | Ratan jot | 15 |
| 35 | Kanji | 5 |
| 36 | Mongra | 1 |
| 37 | Munga | 1 |
| 38 | Bel | 1 |
| Total | | 113 |

| | | |
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|  | <p style="text-align: center;">Green Audit Report Government Degree College, Shahpura Dist-Dindori (M.P.) The Academic Year 2022-23</p> |  |
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Glimpse of some appreciable initiative by theCollege



Green Audit Report
Government Degree College, Shahpura
Dist-Dindori (M.P.)
The Academic Year 2022-23



Chapter-03
Carbon Foot print

3.1 About Carbon Foot Print

Climate change stands as one of the most significant challenges confronting nations, governments, institutions, businesses, and humanity at large.



A carbon footprint measures the impact of your activities on the amount of carbon dioxide (CO₂) generated by the combustion of fossil fuels. This impact is expressed in terms of the weight of CO₂ emissions produced in tonnes. Our focus is on consumption within five primary categories: housing, travel, food, products, and services. Additionally, we estimate the portion of national emissions that lie beyond our direct control, including government purchases and capital investment.

For simplicity and clarity, all our calculations adhere to a single basic method. We multiply each footprint by an emissions factor derived from use inputs. All use inputs are calculated per individual and encompass variables such as fuel usage, travel distance, calorie intake, and expenditures. Determining these inputs involves estimating them from your home, travel, diet, and spending patterns.

While computing our inputs might require some investigation on your part, the more intricate aspect of carbon calculations is determining the appropriate emissions factor for your calculations. Whenever possible, it's advisable for this emissions factor to encompass as much of the relevant life cycle as feasible.

In reality, each one of us possesses a carbon footprint...



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|  | Green Audit Report Government Degree College, Shahpura Dist-Dindori (M.P.) The Academic Year 2022-23 |  |
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3.2 Methodology and Scope

The carbon footprint provides a comprehensive overview of the College's greenhouse gas emissions, converted into CO₂ equivalents. This data is based on reported information from both internal and external systems. The objectives of these carbon indicators are to measure the carbon intensity per unit of product and enhance environmental transparency for external stakeholders.

The carbon footprint reporting approach employed in this study adheres to the guidelines and principles established in the "Greenhouse Gas Protocol Corporate Accounting and Reporting Standard" (hereinafter referred to as the GHG Protocol). This standard is developed by the Greenhouse Gas Protocol Initiative and is an international standard for quantifying and reporting greenhouse gas emissions, as indicated by ISO 14064. This methodology is widely recognized and utilized for corporate carbon footprint assessments.

The study has evaluated carbon emissions from the College Campus. This encompasses the accounting and reporting of GHG emissions linked directly to activities for which the institution bears responsibility. The items quantified in this study align with the classifications outlined in the ISO 14064 standards. Specifically, the report computes greenhouse gas emissions from the College, including electricity consumption and emissions linked to diesel usage in College vehicles.

Emissions related to air travel, waste generation, administration, and marketing activities have been excluded from the present study. Emissions arising from business activities are generally categorized within scope 1, 2, or 3 areas as defined by the ISO 14064 standards.



3.3 Carbon emission from electricity

Direct emissions factors are widely available and indicate the emissions produced by power stations to generate an average kilowatt-hour within a specific grid region.

Unlike other energy sources, the carbon intensity of electricity varies significantly based on its production and transmission methods. For the majority of us, the electricity we consume is drawn from the grid and is generated through a diverse range of sources. While determining the carbon intensity of this mix can be complex, much of this work is generally conducted on our behalf.

The electricity utilized on the site is a substantial contributor to GHG emissions from the unit. Onsite electricity consumption represents the most direct and typically the most impactful element contributing to a unit's carbon footprint. As such, considering an average fuel mix for electricity generation, the carbon dioxide intensity of electricity for the national grid is assumed to be 0.9613 Kg CO₂ /KWh.

| Sr.No. | Year | Total Unit Consumption | Unit | Emission Factor kg CO ₂ e/kWh | Emission ton CO ₂ e/ year |
|--------|---------|------------------------|------|--|--------------------------------------|
| 1 | 2022-23 | 7,552 | kWh | 0.9613 | 7.55 |

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|  | <p>Green Audit Report Government Degree College, Shahpura Dist-Dindori (M.P.) The Academic Year 2022-23</p> |  |
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3.5 Carbon emission from DG set

The college has a single DG set installed on its campus, with an annual diesel consumption of 91 litres from July 2022 to June 2023.

For every litre of diesel fuel, there is approximately 720 grams of pure carbon. In an average liquid hydrocarbon-burning engine, it can be presumed that about 99% of the fuel undergoes oxidation (It is assumed that slightly less than 1% will not fully oxidize and will be emitted as particulate unburned hydrocarbons rather than CO₂).

Calculation of Total CO₂ =

- ❖ CO₂ Emissions from a Litre of diesel: 2689.56 grams CO₂/ litre.
- ❖ Diesel consumption Jul-2022 to Jun-2023= 91Litre
- ❖ 91 x 2689 =258197 gram. or 0.258Ton/year



Green Audit Report
Government Degree College, Shahpura
Dist-Dindori (M.P.)
The Academic Year 2022-23



3.6 Biomass Calculation and CO₂ Sequestration of the Trees

1. Estimation of above-ground biomass (AGB)

$$K = 34.4703 - 8.0671D + 0.6589 D^2$$

Where = K is above-ground biomass.

D is Breast height diameter in (cm)

- 1 Estimation of below ground biomass (BGB)

$$BGB = AGB \times 0.15$$

- 2 Total Biomass (TB)

$$TB = AGB + BGB$$

- 3 Calculation of carbon dioxide Weight sequestered in the tree in Kg.

$$C = W \times 0.50$$

- 4 Calculate the weight of CO₂ sequestered in the tree per year in Kg.

$$CO_2 = C \times 3.666$$

Where: -

AGB = Above ground biomass.

D = Diameter of tree breast height.

BGB = Below Ground Biomass.

C = Carbon

TB = Total Biomass.



Green Audit Report
Government Degree College, Shahpura
Dist-Dindori (M.P.)
The Academic Year 2022-23



Biomass Calculation of tree

| Sr. no. | Tree Name | Botanical and Family Name | Average Diameter CM (10 to 100) | AGB | BGB | Total | Carbon Storage | Amount of Co2 Sequestered | Total | Total Amount of Co2 Sequestered | Annually Co2 Sequestered amount (Ton/year) |
|---------|-----------|---------------------------|----------------------------------|--------|-------|--------|----------------|---------------------------|-------|---------------------------------|--|
| 1 | Shisham | Dalbergia sissoo | 10 | 21.7 | 3.3 | 24.9 | 12.5 | 45.7 | 4 | 183 | 0.00 |
| 2 | Gulmohar | Delonix regia | 40 | 798.0 | 119.7 | 917.7 | 458.9 | 1682.2 | 3 | 5047 | 0.07 |
| 3 | Rajkumari | Zanthoxylum armatum | 38 | 708.3 | 106.2 | 814.5 | 407.2 | 1493.0 | 2 | 2986 | 0.04 |
| 4 | Peepal | Ficus religiosa | 62 | 2144.0 | 321.6 | 2465.6 | 1232.8 | 4519.5 | 2 | 9039 | 0.12 |
| 5 | Neem | Azadirachta indica | 42 | 893.2 | 134.0 | 1027.2 | 513.6 | 1882.9 | 1 | 1883 | 0.03 |
| 6 | Devltri | Alstonia scholaris | 48 | 1211.4 | 181.7 | 1393.2 | 696.6 | 2553.7 | 3 | 7661 | 0.10 |
| 7 | Gorichori | | 16 | 79.2 | 11.9 | 91.1 | 45.5 | 166.9 | 6 | 1002 | 0.01 |
| 8 | Kanji | Peltophorum pterocarpum | 38 | 708.3 | 106.2 | 814.5 | 407.2 | 1493.0 | 3 | 4479 | 0.06 |
| 9 | Bargad | Banyan | 80 | 3734.1 | 560.1 | 4294.2 | 2147.1 | 7871.2 | 2 | 15742 | 0.21 |
| 10 | Aamla | Phyllanthus emblica | 16 | 79.2 | 11.9 | 91.1 | 45.5 | 166.9 | 1 | 167 | 0.00 |
| 11 | Palm | Arecaceae | 60 | 1994.5 | 299.2 | 2293.7 | 1146.8 | 4204.3 | 4 | 16817 | 0.23 |
| 12 | Rajgiri | Amaranthus cruentus | 26 | 283.7 | 42.5 | 326.2 | 163.1 | 598.0 | 1 | 598 | 0.01 |
| 13 | Gulachin | Pyllanthus emblica | 38 | 708.3 | 106.2 | 814.5 | 407.2 | 1493.0 | 2 | 2986 | 0.04 |
| 14 | Brenia | Breynia | 24 | 231.9 | 34.8 | 266.7 | 133.3 | 488.9 | 1 | 489 | 0.01 |
| 15 | Amrod | Guava | 34 | 545.0 | 81.8 | 626.8 | 313.4 | 1148.8 | 5 | 5744 | 0.08 |
| 16 | Jamun | Syzygium cumini | 36 | 623.9 | 93.6 | 717.5 | 358.7 | 1315.2 | 1 | 1315 | 0.02 |
| 17 | Sindur | Bixa orellana | 32 | 471.5 | 70.7 | 542.2 | 271.1 | 993.9 | 2 | 1988 | 0.03 |
| 18 | Jhagruva | | 30 | 403.5 | 60.5 | 464.0 | 232.0 | 850.5 | 2 | 1701 | 0.02 |
| 19 | Aam | Mangifera indica | 22 | 185.6 | 27.8 | 213.4 | 106.7 | 391.2 | 1 | 391 | 0.01 |



Green Audit Report
Government Degree College, Shahpura
Dist-Dindori (M.P.)
The Academic Year 2022-23





| Sr. no. | Tree Name | Botanical and Family Name | Average Diameter CM (10 to 100) | AGB | BGB | Total | Carbon Storage | Amount of Co2 Sequestered | Total | Total Amount of Co2 Sequestered | Annually Co2 Sequestered amount (Ton/year) |
|---------|------------|---------------------------|----------------------------------|--------|-------|--------|----------------|---------------------------|-------|---------------------------------|--|
| 20 | Ashok | Saraca indica | 30 | 403.5 | 60.5 | 464.0 | 232.0 | 850.5 | 2 | 1701 | 0.02 |
| 21 | Agasti | Sesbania grandiflora | 24 | 231.9 | 34.8 | 266.7 | 133.3 | 488.9 | 1 | 489 | 0.01 |
| 22 | Hohosi | Lagerstroemia speciosa | 28 | 340.9 | 51.1 | 392.0 | 196.0 | 718.5 | 1 | 718 | 0.01 |
| 23 | Sami | Acacia polyacantha Willd | 30 | 403.5 | 60.5 | 464.0 | 232.0 | 850.5 | 1 | 850 | 0.01 |
| 24 | Vaibranchi | Solanum virginianum | 40 | 798.0 | 119.7 | 917.7 | 458.9 | 1682.2 | 1 | 1682 | 0.02 |
| 25 | Arlutri | Phyllanthus emblica | 24 | 231.9 | 34.8 | 266.7 | 133.3 | 488.9 | 2 | 978 | 0.01 |
| 26 | Jason | Syzygium cumini | 26 | 283.7 | 42.5 | 326.2 | 163.1 | 598.0 | 3 | 1794 | 0.02 |
| 27 | Gulab | Rosa × centifolia | 10 | 21.7 | 3.3 | 24.9 | 12.5 | 45.7 | 5 | 229 | 0.00 |
| 28 | Croton | Euphorbiaceae. | 16 | 79.2 | 11.9 | 91.1 | 45.5 | 166.9 | 5 | 835 | 0.01 |
| 29 | Naagped | Mesua ferrea | 22 | 185.6 | 27.8 | 213.4 | 106.7 | 391.2 | 1 | 391 | 0.01 |
| 30 | Pigenped | Cajanus cajan | 24 | 231.9 | 34.8 | 266.7 | 133.3 | 488.9 | 3 | 1467 | 0.02 |
| 31 | Neem | Azadirachta indica | 42 | 893.2 | 134.0 | 1027.2 | 513.6 | 1882.9 | 9 | 16946 | 0.23 |
| 32 | Khajur | Phoenix dactylifera | 82 | 3937.9 | 590.7 | 4528.6 | 2264.3 | 8300.9 | 3 | 24903 | 0.34 |
| 33 | Palas | Butea monosperma | 12 | 35.4 | 5.3 | 40.7 | 20.4 | 74.7 | 7 | 523 | 0.01 |
| 34 | Ratan jot | Alkanna Tinctoria | 14 | 54.6 | 8.2 | 62.8 | 31.4 | 115.1 | 15 | 1726 | 0.02 |
| 35 | Kanji | Millettia pinnata | 16 | 79.2 | 11.9 | 91.1 | 45.5 | 166.9 | 5 | 835 | 0.01 |
| 36 | Mongra | Jasminum sambac | 14 | 54.6 | 8.2 | 62.8 | 31.4 | 115.1 | 1 | 115 | 0.00 |
| 37 | Munga | Vigna radiata | 24 | 231.9 | 34.8 | 266.7 | 133.3 | 488.9 | 1 | 489 | 0.01 |
| 38 | Bel | Aegele marmolas | 24 | 231.9 | 34.8 | 266.7 | 133.3 | 488.9 | 1 | 489 | 0.01 |
| Total | | | | | | | | | | | 1.87 |



**Green Audit Report
Government Degree College, Shahpura
Dist-Dindori (M.P.)
The Academic Year 2022-23**



The college has 113 trees on its campus. This initiative taken by the management for creating a green campus under the plantation campaign is commendable. It's truly appreciable. The total amount of CO₂ sequestered is 1.87tons per year. This is also highly commendable.

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|---|---|---|
|  | Green Audit Report Government Degree College, Shahpura Dist-Dindori (M.P.) The Academic Year 2022-23 |  |
|---|---|---|

Total CO₂ Emission by the College

| Sr. No. | CO ₂ Emission by | Total CO ₂ Emission ton/year |
|---|-----------------------------|---|
| 1 | Electricity | 7.55 |
| Total CO₂ Emission | | 7.55 |
| CO ₂ Emission Neutralized by | | |
| 1 | Trees | 1.87 |
| Total CO₂ Emission | | 5.68 |

3.7 Other Emissions Excluded

This study did not assess the carbon sequestration potential of existing factors such as staff commuting, food supply, official flights, paper products, water supply, and waste disposal and recycling. This limitation arises due to restricted data availability. The present study, however, highlights the areas where data monitoring, recording, and archiving need to be developed to expand the scope of mapping GHG emissions in the upcoming years.

Consequently, a set of tools and record-keeping procedures will be developed to enhance the quality of data collection for future carbon footprint studies.

CHAPTER- 4 WASTE MANAGEMENT

4.1 About Waste

Human activities generate waste, and the manner in which these wastes are handled, stored, collected, and disposed of can pose risks to both the environment and public health. Effective waste management is crucial for establishing an eco-friendly campus. In the college, various types of waste are produced, and their collection and management present significant challenges.

Solid waste can be categorized into three main types: biodegradable, non-biodegradable, and hazardous waste. Biodegradable waste includes items like food waste, canteen waste, and waste from toilets. Non-biodegradable waste consists of materials commonly discarded in households and schools, such as plastic, tins, and glass bottles. Hazardous waste encompasses materials that could pose threats to health or the environment, including cleaning chemicals, acids, and petrol.

Improper handling of these wastes, such as dumping them in pits or burning them, can lead to harmful contamination of soil and water sources. Additionally, burning waste can produce greenhouse gases that contribute to global climate change. Special attention should be directed toward the proper management of hazardous waste generated within the college.

Bio-degradable waste can be effectively utilized for energy generation through anaerobic digestion or converted into fertilizer using composting technology. Non-biodegradable waste can be managed through recycling and reuse practices. Thus, minimizing solid waste is essential for promoting sustainability within the college. The auditor assesses the existing waste disposal policies and proposes effective solutions to address the challenges.

Table 4.1 Different types of waste generated in the College Campus.

| Sr.No. | Types of Waste | Particulars |
|--------|-------------------|--|
| 1 | Solid wastes | Damaged furniture, paper waste, paper plates, food wastes etc. |
| 2 | Plastic waste | Pen, Refill, Plastic water bottles and other plastic containers, wrappers etc. |
| 3 | E-Waste | Computers, electrical and electronic parts etc. |
| 4 | Glass waste | Broken glass wares from the labs etc. |
| 5 | Chemical wastes | Laboratory waste etc. |
| 6 | Bio-medical Waste | Sanitary Napkin etc. |

4.2 Waste management Practices adopted by the College

The audit team visited various departments, classrooms, and other areas to identify waste generation points and waste collection areas for potential improvement. Detailed information is provided in the table.





Figure 4.2 Waste collection bin in college campus

Recommendation

It is recommended to adopt a 5-Bin Waste Collection System to efficiently collect different types of waste generated within the college premises.



Recommended 5 Dust Bin waste collection System

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|  | Green Audit Report Government Degree College, Shahpura Dist-Dindori (M.P.) The Academic Year 2022-23 |  |
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4.3 Waste Collection Points

The audit team visited various departments, classrooms, staffrooms, and laboratories to identify waste generation areas and waste collection points for potential improvements. Details are provided in the table.

Details of Waste collection Dust bin system

| Sr.no. | Location | No. of dustbins |
|--------|----------------|-----------------|
| 1 | Corridor | 1 |
| 2 | Office | 1 |
| 3 | Principal room | 1 |
| 4 | Chemistry lab | 1 |
| 5 | Classroom | 1 |
| 6 | Library | 1 |
| 7 | History dept. | 1 |
| 8 | Physics lab | 1 |
| Total | | 8 |

Observation:- The audit team had previously recommended a 5-dustbin system, while the college currently has 8 dustbins in place.

4.4 Organic Waste Composting Machine

The audit team visited various departments and the garden and engaged in discussions with the management regarding the waste collection process. Following the audit, we recommended the installation of an organic waste composting machine for the daily waste generated by the college.

An organic waste composting machine is a standalone unit designed to enhance the composting process and yield higher-quality compost. It takes waste as input and produces manure as output. Composting without the use of an organic waste composting machine would consume a significant amount of time.



Green Audit Report
Government Degree College, Shahpura
Dist-Dindori (M.P.)
The Academic Year 2022-23



About Composting Process

The highly compact composting machine utilizes special microorganisms to efficiently break down and decompose various types of organic waste into compost within 24 hours, resulting in a volume reduction of 85-90% when organic waste is introduced into the machine, the humidity sensor, heater, mixing blades, and exhaust system work in tandem to manage moisture levels effectively.

Recommendation: The college possesses significant potential for installing an organic waste composting machine.



CHAPTER- 5

RECOMMENDATIONS AND SUGGESTIONS



5.1 QR Code System

In a world increasingly embracing digital technologies, individuals often find themselves lacking the time to engage with books and fully absorb the information they offer. Therefore, the college could consider implementing QR codes on trees to offer relevant information. This innovative approach harnesses the rapidly expanding digital platform for a distinct purpose.



Fig: 6.1 QR Code System for plants

These codes can provide students with comprehensive information about the tree, ranging from its scientific name to its medicinal value. All they need to do is utilize their smart phones. QR codes simplify the process for everyone to access knowledge about plants or trees instantly. Any application capable of generating QR codes, available for free on online stores, can be employed to access tree-related information.

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✚ Eco-restoration programmes

Develop long-term eco-restoration programs aimed at replacing exotic Acacia plantations with indigenous trees. The need of the hour is to formulate a comprehensive campus development plan.



5.2 Other Suggestions

Here are the some suggestions,

- Adopt the proposed Environmentally Responsible Purchasing Policy and work towards creating and implementing a strategy to reduce the environmental impact of purchasing decisions.
- Increase recycling education on campus.
- Raise awareness of environmentally sustainable development on the college campus.
- Practice Institutional Ecology - Set an example of environmental responsibility by establishing institutional ecology policies and practices, including resource conservation, recycling, waste reduction, and environmentally sound operations.
- Involve all stakeholders - Encourage government, foundations, and industry participation in supporting interdisciplinary research, education, policy formation, and information exchange for environmentally sustainable development.
- Collaborate for Interdisciplinary Approaches - Develop interdisciplinary approaches to curricula, research initiatives, operations, and outreach activities that promote an environmentally sustainable future.
- Enhance education on reducing, reusing, and recycling on campus.
- Create a butterfly garden to foster appreciation for flora and fauna diversity.
- Label all trees and plants (Plant DNA barcodes) with their common and scientific names.

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- Organize training programs on environmental management systems and nature conservation.
- Renovate the cooking system in the canteen to save gas by installing a solar water heater system with a heat pump.
- Establish a procurement policy that prioritizes energy-saving and eco-friendly practices.

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END OF THE REPORT

THANKS




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