GRIZZLY COLLEGE OF EDUCATION

Recognized by ERC, NCTE Bhubaneswar
(Affiliated to Vinoba Bhave University, Hazaribagh & JAC, Ranchi)
NAAC Accredited with 'B' Grade

Green Audit Report 2023-2024

Prepared by
AbuKonsultia International

TABLE OF CONTENTS

Acknowledgements

The completion of the Green Audit for **Grizzly College of Education (GCE)** for the academic session 2023-2024 is the result of the collaborative efforts of many individuals and groups. We extend our heartfelt gratitude to all those who contributed their time, expertise, and support in making this initiative a success.

We would like to express our sincere thanks to the **management and leadership of Grizzly College of Education** for their unwavering commitment to environmental sustainability and their support in facilitating the audit process. Our gratitude goes to the **faculty, staff, and students** of GCE, who actively participated in surveys, interviews, and data collection, providing valuable insights and demonstrating their dedication to promoting a greener campus.

We would like to express our special thanks to **Dr. Sanjeeta Kumari**, Deputy Director, Grizzly College of Education, for her invaluable guidance and support throughout the audit process.

We also acknowledge the efforts of the **audit team**, whose meticulous planning, detailed evaluation, and professional expertise ensured the accuracy and reliability of the audit findings. Their recommendations have provided a clear roadmap for GCE to further enhance its sustainability initiatives.

Special thanks are due to the **National Assessment and Accreditation Council (NAAC)** for providing guidelines that served as the foundation for this audit and for their emphasis on sustainability as a critical aspect of institutional excellence.

Finally, we extend our appreciation to all external stakeholders, community members, and environmental experts who supported this audit with their knowledge, feedback, and encouragement.

This report is the collective effort of everyone involved, and it reaffirms our shared commitment to environmental responsibility and sustainable development. We look forward to continued collaboration in advancing Grizzly College of Education as a model of environmental stewardship.

Disclaimer

The findings, recommendations, and data presented in this Green Audit Report are based on information collected during the assessment period for the academic session 2023-2024 at Grizzly College of Education (GCE). While every effort has been made to ensure the accuracy and reliability of the information, the conclusions drawn are subject to the limitations of the data provided and the scope of the audit.

This report is intended solely for the purpose of evaluating and improving the environmental practices and sustainability initiatives at GCE. It should not be considered as an exhaustive or definitive evaluation of all environmental aspects. The recommendations included in this document are advisory in nature and are provided to guide the institution in enhancing its sustainability efforts.

Grizzly College of Education and its stakeholders are encouraged to review, adapt, and implement the recommendations in accordance with their resources, priorities, and long-term goals. Neither the authors of this report nor the auditors shall be held liable for any actions taken or outcomes resulting from the use of this report.

This document is confidential and is intended for the exclusive use of Grizzly College of Education and authorized stakeholders. Unauthorized reproduction, distribution, or disclosure of this report, in part or in full, is prohibited without prior written consent.

MD

AbuKonsultia

Dr. Adil Sultan

Lead Auditor

AbuKonsultia

Green Audit Certificate

This is to certify that a comprehensive Green Audit was conducted at

Grizzly College of Education

for the academic session 2023-2024. The audit was carried out in accordance with standard environmental auditing practices and guidelines provided by the National Assessment and Accreditation Council (NAAC).

The Green Audit evaluated the institution's environmental practices and sustainability initiatives across key areas, including – Renewable energy utilization, Waste management & recycling, Water conservation practices, Biodiversity & green space management, Carbon footprint reduction initiatives, and Environmental education & awareness.

The audit findings reflect Grizzly College of Education's commitment to fostering an environmentally sustainable and resource-efficient campus. The institution has demonstrated significant progress in implementing green practices while identifying areas for further enhancement.

The audit team commends Grizzly College of Education for its proactive approach to environmental stewardship and its dedication to aligning institutional values with sustainability goals. Recommendations have been provided to guide future improvements and ensure continued progress toward a greener campus.

This certificate acknowledges the successful completion of the Green Audit and encourages Grizzly College of Education to maintain and enhance its sustainability initiatives, serving as a model institution for environmental responsibility.

Mr. Md. Asif Iqbal	**Mrs. Shamza Alam**	**Dr. Adil Sultan**
Auditor	Auditor	Lead Auditor

Executive Summary

Grizzly College of Education (GCE) undertook the Green Audit for the academic session 2023-2024 to evaluate its environmental practices, assess resource utilization, and enhance sustainability initiatives. This audit aligns with the institution's commitment to fostering a green campus and complying with the guidelines of the **National Assessment and Accreditation Council (NAAC)**, which emphasizes environmental consciousness and institutional sustainability.

KEY FINDINGS

ENERGY MANAGEMENT:

- Solar panels supply 30 percent of campus energy, reducing reliance on non-renewable sources.
- Energy-efficient systems such as LED lighting and smart meters are in place, contributing to a 10 percent reduction in overall energy consumption.

WATER CONSERVATION:

- Rainwater harvesting systems collect approximately 60,000 liters annually.
- Water-saving fixtures have reduced water usage by 20 percent.

WASTE MANAGEMENT:

- 70 percent of campus waste is segregated, with 50 percent being recycled.
- E-waste management practices are nascent, requiring stronger partnerships for responsible disposal.

CARBON FOOTPRINT REDUCTION:

- Tree plantation drives have resulted in 500 trees being planted, offsetting 5 metric tons of CO2 annually.
- Sustainable transportation initiatives include carpooling incentives, bike lanes, and electric vehicle charging stations, reducing transportation related emissions by 5 percent.

GREEN SPACES AND BIODIVERSITY:

- Over 1,000 square meters of green spaces are maintained, supporting 40 native plant species and enhancing biodiversity on campus.

Executive Summary

KEY FINDINGS

ENVIRONMENTAL EDUCATION AND AWARENESS:

- Sustainability workshops and seminars have engaged 80 percent of students, fostering eco-consciousness among the academic community.
- Sustainability modules are integrated into the curriculum, reinforcing environmental responsibility.

KEY STRENGTHS

- ✓ Strong renewable energy adoption through solar panels.
- ✓ Effective water conservation measures, including rainwater harvesting and efficient fixtures.
- ✓ Well-maintained green spaces and biodiversity conservation efforts.

AREAS FOR IMPROVEMENT

- ✓ Expand the use of renewable energy beyond solar panels, including wind and hybrid systems.
- ✓ Strengthen waste management practices, especially for hazardous and e-waste.
- ✓ Increase the scale and frequency of environmental education initiatives.

RECOMMENDATIONS

1. Renewable Energy: Scale up solar installations and explore additional renewable energy sources.
2. Waste Management: Implement a comprehensive recycling program and partner with local agencies for e-waste disposal.
3. Water Efficiency: Expand rainwater harvesting capacity and consider greywater recycling systems.
4. Carbon Offset: Organize larger-scale tree plantation drives and explore innovative offset programs.
5. Environmental Education: Incorporate sustainability modules across disciplines and encourage student-led green initiatives.

Executive Summary

The Green Audit demonstrates Grizzly College of Education's commendable efforts toward sustainability while highlighting areas for growth. By implementing the recommendations, GCE can further reduce its ecological footprint, enhance resource efficiency, and establish itself as a leader in green practices within the educational sector. The audit not only underscores GCE's commitment to environmental responsibility but also provides a roadmap for creating a greener, more sustainable campus.

This executive summary encapsulates the core findings and actionable strategies, setting the stage for continuous improvement and long-term sustainability.

1. Introduction

The Green Audit of Grizzly College of Education (GCE) for the academic year 2023-2024 provides a detailed examination of the institution's environmental practices, policies, and sustainability efforts. As environmental challenges escalate globally, educational institutions play a pivotal role in promoting eco-consciousness and fostering sustainable practices. Recognizing this responsibility, GCE has embarked on a comprehensive Green Audit to assess its environmental impact, optimize resource management, and enhance its commitment to sustainability.

The Green Audit is a systematic process of evaluating the environmental performance of the college across various parameters, including energy consumption, waste management, water conservation, carbon footprint, and green infrastructure development. This initiative is aligned with the National Assessment and Accreditation Council (NAAC) guidelines, which emphasize the integration of sustainability into institutional operations and decision-making processes.

Through this audit, GCE seeks to identify strengths, pinpoint areas for improvement, and develop actionable strategies to achieve its sustainability goals.

Key elements of the audit include analyzing the effectiveness of existing green practices, exploring opportunities for adopting innovative eco-friendly solutions, and engaging stakeholders to cultivate a culture of environmental stewardship within the campus community.

The audit underscores the institution's proactive approach to environmental responsibility, exemplified by initiatives such as renewable energy adoption, tree plantation drives, and waste management programs. It also highlights GCE's efforts to incorporate environmental education into its curriculum, fostering a deeper understanding of sustainability among students and staff.

The findings of this audit not only reflect the college's achievements but also serve as a roadmap for future initiatives. By addressing the recommendations provided in this report, Grizzly College of Education aims to set a benchmark for sustainability in the education sector, contributing to a greener and more resilient future for its community and beyond.

1.1 Concept and Background

1.1.1 Concept of Green Audit

Green Audit is a structured process of evaluating the environmental performance of an organization. It serves as a diagnostic tool to assess how effectively natural resources are managed, identify areas of improvement, and recommend actionable steps for achieving sustainability. The concept of Green Audits stems from the increasing global need to address environmental challenges, such as climate change, resource depletion, and pollution, by integrating eco-friendly practices into organizational frameworks. For educational institutions, a Green Audit is particularly significant as it not only enhances operational sustainability but also serves as a platform for environmental education and awareness.

Green Audits typically focus on several key areas, including energy efficiency, waste management, water conservation, biodiversity enhancement, carbon footprint reduction, and sustainable infrastructure development. By analyzing these dimensions, institutions can establish a baseline for their environmental impact, set measurable sustainability goals, and monitor progress over time.

Furthermore, a Green Audit aligns with national and international sustainability guidelines, including those of the National Assessment and Accreditation Council (NAAC) in India, reinforcing institutional accountability and transparency in environmental stewardship.

1.1.2 Background of the Green Audit

Grizzly College of Education (GCE) has consistently demonstrated a commitment to sustainability by incorporating eco-conscious practices into its operations and academic culture. Recognizing the critical role of educational institutions in addressing environmental challenges, GCE undertook the Green Audit for the academic year 2023-2024 as part of its strategic efforts to enhance sustainability and promote environmental responsibility.

This initiative reflects the college’s dedication to integrating sustainability into its core values, fostering a culture of environmental awareness among students, faculty, and staff. Over the years, GCE has implemented several green initiatives, including solar energy adoption, waste segregation programs, rainwater harvesting, and tree plantation drives.

These efforts have not only reduced the institution's ecological footprint but also contributed to a healthier and more sustainable campus environment.

The Green Audit of GCE is designed to provide a comprehensive evaluation of the college's environmental performance. It builds upon the foundation of existing sustainability efforts while identifying opportunities for innovation and improvement. The audit also aligns with the NAAC's emphasis on green practices as a critical aspect of institutional accreditation, further reinforcing GCE's commitment to excellence in sustainability.

In this context, the Green Audit serves as both a reflection of GCE's achievements and a blueprint for future progress. It emphasizes the importance of engaging all stakeholders—students, faculty, staff, and the broader community—in the collective journey toward sustainability. By addressing the findings and recommendations of the audit, GCE aspires to not only enhance its environmental performance but also to set a benchmark for other educational institutions aiming to integrate sustainability into their operations.

This focus on sustainability is not only timely but also essential, as it equips the institution and its stakeholders to contribute meaningfully to global efforts in mitigating environmental challenges and building a resilient future.

1.2 Overview of College

Grizzly College of Education (GCE) is a distinguished institution dedicated to fostering academic excellence, holistic development, and community engagement. Established with a vision to provide quality education and promote innovation, GCE has grown into a hub for aspiring educators, offering a robust platform for academic and professional development. With its state-of-the-art infrastructure, experienced faculty, and learner-centric approach, the college has consistently upheld its mission to nurture future leaders in education.

1.2.1 Vision

The institution becomes a knowledge hub where the next generation teachers would be equipped with a multidisciplinary perspective of knowledge; grounded with values rooted in Indian culture and history; empowered with twenty-first-century skills; and committed to professional excellence to produce manpower for the country as well as for the global world.

1.2.2 Mission

- To provide experience-based learning for multifaceted development
- To contribute to National development through teacher education
- To integrate pedagogy and technology for learning
- To promote self-learning and group learning
- To develop global competencies and life skills among students
- To acquire multilingual skills and demonstrate effective communication
- To relate knowledge with day-to-day experience
- To adopt technology to address the explosion of knowledge
- To imbibe constitutional and human values based on Indian culture
- To follow inclusive practices in all activities organized by the institution
- To identify the uniqueness of every learner and nurture him/her

1.2.3 Academic Excellence

The college offers a comprehensive curriculum designed to equip students with the theoretical knowledge and practical skills necessary for excelling in the education sector. The emphasis on experiential learning, research, and innovation ensures that graduates are prepared to address the evolving challenges of the modern educational landscape.

1.2.4 Commitment to Sustainability

Beyond academics, GCE stands out for its commitment to sustainability and environmental stewardship. Recognizing the critical role of educational institutions in shaping societal values, the college integrates green practices into its operations and fosters environmental consciousness among its stakeholders. Initiatives such as renewable energy adoption, waste management programs, biodiversity enhancement, and water conservation reflect GCE's dedication to creating a sustainable campus and inspiring eco-conscious behavior.

1.2.5 Infrastructure and Facilities

The campus is equipped with modern facilities that support both academic and extracurricular pursuits. From well-equipped classrooms and laboratories to green spaces and eco-friendly infrastructure, GCE provides an environment conducive to learning, innovation, and personal growth. The integration of green building practices and energy-efficient systems further highlights the college's forward-thinking approach to sustainable development.

1.2.6 Community Engagement

Grizzly College of Education actively engages with the local community through outreach programs, skill development initiatives, and collaborative projects. These efforts underscore the college's commitment to social responsibility and its role as a catalyst for positive change.

1.2.7 Achievements and Recognitions

Over the years, GCE has earned accolades for its academic achievements, innovative practices, and contributions to sustainability. Its efforts to integrate environmental education and green practices into the academic framework have positioned it as a role model for other educational institutions.

1.2.8 Future Aspirations

As GCE continues to evolve, it remains committed to expanding its impact through innovation, sustainability, and academic excellence. By addressing contemporary challenges and embracing opportunities for growth, the college aims to establish itself as a leader in education and environmental responsibility, setting benchmarks for institutions nationwide.

Through its comprehensive approach to education and sustainability, Grizzly College of Education exemplifies the potential of academic institutions to drive positive change, both within the campus and in the wider community.

Geo Location of GCE Campus

Geo Location

Geo Coordinates from Google Map

24.428173393074335, 85.50494392873561

Table 1.1 General Information about the College

General Information about the College		
S. No.	**Particulars**	**Fact**
1	Name of the College And code given by the NCTE	Grizzly College of Education APP/00799
2	College Address	Gumo Satpulia, P.O. Jhumri Telaiya Dist. Koderma, Jharkhand, PIN-825409
3	Whether the College is accredited by the NAAC	Yes Grade- B
4	Date, Month & Year of establishment	21st March, 2007
5	Current programs offered by the institution	D.El.Ed., B.Ed.
6	Whether there are other Courses offered in the same building	No

7.	**General Facilities of the College**				
S. No.	**Particulars**	**Total**	**S. No.**	**Particulars**	**Total**
i	Class Room	08	ii	Multi-purpose Hall	01
iii	Library cum Reading Area	01	iv	ICT Room	01
v	Arts & Craft Resource Centre Room	01	vi	Health & Physical Education Resource Centre	01
vii	Principal Office	01	viii	Administrative Office	04
ix	Girls Common Room	01	x	Boys Common Room	01
xi	Conference Room	01	xii	Canteen	01
xiii	Toilet (Male)	15	xiv	Toilet (Female)	10
xv	Urinal (Male)	19	xvi	Urinal (Female)	02
xvii	Pantry	01	xviii	H.O.D. D.El.Ed. Room	01
xix	Psychology Lab	01	xx	Biological Lab	01
xxi	Physical Lab	01	xxii	Mathematics Lab	01
xxiii	Computer Lab	01	xxiv	Curriculum Lab	01
xxv	Examination Hall	02	xxvi	Examination Cell	01
xxvii	Dance Room	01	xxviii	Deputy Director Room	01
xxix	Staff Room	01	xxx	Parking	01
xxxi	Store Room	09	xxxii	Care Room	01

1.3 Goals and Objectives

1.3.1 Goals of the Green Audit

The overarching goal of the Green Audit is to ensure that Grizzly College of Education (GCE) operates in an environmentally sustainable, resource-efficient, and ecologically responsible manner. By systematically assessing the institution's environmental performance, the Green Audit aims to embed sustainability into the college's operations, academic framework, and community engagement strategies.

The specific goals of the Green Audit include:

a) **Fostering Environmental Stewardship:** To cultivate a culture of environmental awareness and responsibility among students, faculty, staff, and stakeholders, encouraging active participation in sustainability initiatives.

b) **Achieving Resource Efficiency:** To optimize the use of energy, water, and other natural resources, reducing waste and conserving resources wherever possible.

c) **Promoting Sustainable Practices:** To integrate green initiatives such as renewable energy adoption, sustainable transportation, waste segregation, and biodiversity conservation into the college's operational framework.

d) **Enhancing Campus Sustainability:** To transform GCE into a model green campus by developing eco-friendly infrastructure, expanding green spaces, and implementing innovative sustainability solutions.

e) **Reducing Environmental Impact:** To minimize the college's ecological footprint by identifying and addressing sources of carbon emissions, waste, and inefficiencies in resource usage.

f) **Aligning with Environmental Standards:** To ensure compliance with national and international environmental guidelines, including those outlined by the National Assessment and Accreditation Council (NAAC), reinforcing the college's commitment to accountability and transparency.

g) **Building a Framework for Continuous Improvement:** To establish a system for regular monitoring, evaluation, and reporting of environmental performance, allowing the institution to set measurable sustainability goals and track progress.

h) **Positioning GCE as a Sustainability Leader:** To position the college as a benchmark institution in environmental sustainability within the education

sector, inspiring other institutions to adopt similar green practices.

By achieving these goals, the Green Audit aligns with GCE's vision of being an environmentally responsible institution that not only educates but also leads by example in promoting a sustainable future.

1.3.2 Objectives

The primary objective of the Green Audit is to evaluate and enhance the environmental performance of Grizzly College of Education (GCE), ensuring that the institution adheres to sustainable practices and minimizes its ecological footprint. By systematically analyzing the college's resource usage, waste management, and green initiatives, the Green Audit aims to identify strengths, uncover areas for improvement, and recommend actionable strategies for achieving sustainability goals.

Key objectives of the Green Audit include:

h) **Assessment of Environmental Practices:** Evaluate the college's existing environmental policies, practices, and infrastructure to determine their effectiveness in promoting sustainability.

i) **Resource Optimization:** Analyze the utilization of key resources such as energy, water, and raw materials to identify opportunities for conservation, efficiency improvements, and waste reduction.

c) **Waste Management Analysis:** Examine current waste management systems, including segregation, recycling, and disposal practices, to ensure compliance with sustainable waste management principles.

d) **Carbon Footprint Reduction:** Measure the college's carbon footprint and recommend strategies to offset emissions, such as expanding renewable energy usage, tree plantation drives, and adopting sustainable transportation methods.

e) **Biodiversity Enhancement:** Assess the status of campus green spaces and biodiversity, and provide recommendations for preserving and enhancing native flora and fauna.

f) **Sustainability Integration in Academic Programs:** Promote the integration of sustainability concepts into academic programs and extracurricular activities to raise awareness and encourage eco-conscious behavior among students and staff.

g) **Compliance with Environmental Standards:** Ensure that the institution aligns with local, national, and international environmental standards, including guidelines set by the National Assessment and Accreditation Council (NAAC).

h) **Stakeholder Engagement:** Encourage the active participation of students, faculty, and staff in sustainability initiatives, fostering a culture of environmental responsibility across the campus community.

i) **Continuous Improvement:** Establish a framework for regular monitoring and reporting of environmental performance, enabling the institution to set measurable goals and track progress over time.

j) **Benchmarking for Sustainability:** Position Grizzly College of Education as a leader in sustainability within the education sector by setting an example of best practices in environmental management.

By achieving these objectives, the Green Audit seeks to reinforce GCE's commitment to sustainability, inspire positive change within the academic community, and contribute to global efforts in addressing pressing environmental challenges.

1.4 Methodology of Green Audit

The Green Audit of Grizzly College of Education (GCE) is conducted systematically to align with the National Assessment and Accreditation Council (NAAC) guidelines, which emphasize environmental consciousness and sustainability as critical aspects of institutional performance. The methodology follows a structured approach to evaluate the college's environmental practices, identify areas for improvement, and recommend actionable strategies to enhance sustainability.

1.4.1 Key Steps in Methodology

Planning and Scoping

Objective Setting: Define the objectives and scope of the audit, focusing on key areas such as energy management, waste handling, water conservation, biodiversity, carbon footprint, and green initiatives.

Framework Design: Develop an audit framework based on NAAC guidelines, ensuring alignment with environmental indicators under Criteria 7: Institutional Values and Best Practices.

Data Collection

On-site Assessment: Conduct physical inspections of campus facilities, including classrooms, laboratories, green spaces, and infrastructure, to gather data on energy usage, water consumption, waste generation, and biodiversity.

Stakeholder Surveys: Use questionnaires and interviews with students, faculty, and staff to understand perceptions, practices, and involvement in sustainability initiatives.

- **Document Review:** Examine existing policies, operational records, maintenance logs, and reports related to energy bills, waste disposal contracts, water usage, and environmental programs.

Data Analysis

Resource Utilization Assessment: Analyze energy consumption patterns, water usage trends, and waste generation volumes to evaluate resource efficiency and identify areas of overuse or wastage.

Environmental Impact Evaluation: Measure the institution's carbon footprint, biodiversity levels, and the effectiveness of existing green initiatives using quantitative and qualitative metrics.

Compliance Review: Assess compliance with relevant environmental regulations and NAAC standards, focusing on criteria related to environmental consciousness and best practices.

Benchmarking and Best Practices

Comparison with Standards: Compare GCE's environmental performance against NAAC guidelines,

national sustainability benchmarks, and practices of peer institutions.

Identification of Best Practices: Highlight existing green initiatives that align with NAAC's emphasis on sustainability, such as renewable energy adoption, green campus development, and environmental education.

Reporting and Recommendations

Findings Summary: Prepare a detailed report summarizing the audit findings, including strengths, weaknesses, and opportunities for improvement.

Recommendations: Provide actionable recommendations for enhancing sustainability in areas such as resource management, waste reduction, biodiversity conservation, and environmental awareness.

Monitoring and Follow-Up

Implementation Support: Assist in integrating the recommendations into GCE's operational and strategic plans.

Progress Tracking: Establish key performance indicators (KPIs) to monitor ongoing environmental performance and progress toward sustainability goals.

Periodic Reviews: Conduct periodic reviews and follow-up audits to ensure continuous improvement and alignment with NAAC requirements.

1.4.2 Integration with NAAC Criteria

The Green Audit methodology is designed to directly address NAAC's **Criterion 7: Institutional Values and Best Practices,** which includes the following key indicators:

Environmental Consciousness and Sustainability:

- Energy efficiency measures and renewable energy use.
- Adoption of sustainable waste management practices.
- Initiatives for water conservation and biodiversity enhancement.

Best Practices

Documenting and promoting innovative green practices that set benchmarks for other institutions.

Institutional Distinctiveness

Demonstrating leadership in environmental stewardship through unique and impactful sustainability initiatives.

1.4.3 Outcomes of the Green Audit Methodology

By following this methodology, GCE ensures:

- Comprehensive evaluation of its environmental practices and impact.
- Enhanced compliance with NAAC's accreditation standards.

- Development of a clear roadmap for sustainability improvement.
- Engagement of the entire campus community in environmental consciousness.
- Establishment of GCE as a model institution for green practices in education.

This structured approach not only fulfills the requirements of NAAC but also reinforces GCE's commitment to creating a sustainable and environmentally responsible campus.

2. Green Audit Analysis

2.1 General Information

Table 2.1: General Information (Questionnaire Based Answers)

2.1.1: Was any Green Audit conducted earlier?			
Yes, (2022-23)			
2.1.2: What is total strength of the college			
Population	Male	Female	Total
Students	185	215	400
Teaching Staff	25	07	32
Non-teaching Staff	18	05	23
Total	228	227	455
2.1.3: What is total number of working days of your college in a year?			
There are two hundred fifty-two (252) working days in the college.			
2.1.4: Where is the college located?			
The campus is located at Gumo Path, Jhumri Telaiya, Jharkhand – 825409			
2.1.5: Which of the following area available in your college?			
• Garden area			✓ **YES**
• Play ground			✓ **YES**
• Kitchen			✓ **YES**
• Toilets			✓ **YES**
• Garbage or Waste Store Yard			✓ **YES**
• Laboratory			✓ **YES**
• Canteen			✓ **YES**
• Hostel Facility			✓ **YES**
• Guest House			✓ **YES**

2.2 Waste Management

Effective waste management is a cornerstone of environmental sustainability, particularly within educational institutions where diverse activities contribute to varied waste streams. At Grizzly College of Education, the commitment to environmental responsibility is exemplified through its structured approach to managing waste across the campus. This initiative not only minimizes the institution's ecological footprint but also fosters awareness of sustainable practices among students, faculty, and staff, creating a culture of environmental stewardship.

2.2.1 Significance of Waste Management in Educational Institutions

Educational institutions like Grizzly College of Education operate as dynamic ecosystems, producing waste from administrative, academic, residential, and extracurricular activities. Without effective management, improper waste disposal can lead to environmental degradation, health hazards, and the loss of recyclable resources. Conversely, a well-designed waste management system contributes to reducing the campus's carbon footprint, conserving natural resources, and enhancing public health and safety.

2.2.2 Types of Waste Generated at Grizzly College of Education

The institution generates a variety of waste types due to its multifaceted activities.

These include:

Paper Waste

- Discarded documents, notebooks, examination papers, and newspapers.
- Generated primarily from administrative offices, classrooms, and libraries.

Plastic Waste

- Single-use plastics such as disposable water bottles, food containers, and packaging materials.
- Originates from cafeterias, events, and day-to-day campus operations.

Food Waste

- Leftovers, food scraps, and expired food products.
- Produced in dining halls, cafeterias, and food preparation areas.

Electronic Waste (E-Waste)

- Obsolete or damaged electronic items like computers, printers, monitors, and peripherals.
- Requires specialized recycling and disposal procedures.

Metal Waste

- Aluminum cans, metal packaging, and scrap metals from various campus activities.
- A recyclable resource when properly managed.

2.2.4 Scientific Approach and Institutional Commitment Hazardous Waste

Grizzly College of Education adopts a scientific and systematic approach to waste management, starting with comprehensive waste audits to understand the types and volumes of waste generated. Sustainable practices such as vermicomposting, recycling, and responsible disposal through municipal and authorized agencies are integral to the process.

By prioritizing waste reduction, recycling, and responsible disposal, the institution sets an example of environmental leadership in the education sector. This commitment reflects Grizzly College of Education's vision of harmonizing academic excellence with ecological responsibility, paving the way for a greener and healthier campus.

Table 2.2 Scientific Approach and Institutional Commitment

2.2.1: Does your college generate any waste? If so, what are they?
Yes, the college generates the following types of waste: **Solid Waste:** Paper Waste: Includes old notebooks, used documents, and examination papers. Canteen Waste: Food leftovers, packaging materials, and disposable utensils. Plastic and Packaging Materials: Waste generated from packaging, stationery, and other campus activities. **Biodegradable Waste:** Organic waste from the campus, including fallen leaves, garden trimmings, and food waste from the canteen. **Non-Biodegradable Waste:** Materials such as plastics, metals, and glass items from daily campus activities. **E-Waste:** Obsolete or damaged electronic items like computers, printers, cables, and other gadgets. The college has robust waste management systems in place to address these types of waste responsibly and sustainably.

2.2.2: Approximate amount of waste generated.	
Solid Waste (approx.)	14.02 Kg/day
1. Biodegradable Waste	14.00 Kg/day
2. Non-biodegradable waste	0.2 Kg/day
E-Waste	0.002 Kg/day

2.2.3: How much solid waste recycled every day?

5 Kg

2.2.4: How much solid waste disposed-off every day?

9 Kg

2.2.5: How is the waste managed in the campus?

- **Paper Waste Management:**
  Paper waste generated within the campus is shredded and processed through vermicomposting. The resulting nutrient-rich compost is utilized for gardening and landscaping, promoting a green and sustainable environment. The paper waste generated through bi-annually
- **Biodegradable Waste Management:**
  Biodegradable waste from trees, plants, and food waste generated by the campus is collected and processed into organic manure through vermicomposting. This practice supports campus greenery and reduces reliance on chemical fertilizers.
- **Non-Biodegradable Waste:**
  Non-Biodegradable waste, such as plastics and metals, is segregated at source and responsibly managed. The college collaborates with the Municipal Corporation of Jhumri Telaiya for proper disposal and recycling of these materials, ensuring minimal environmental impact.
- **E-Waste Management:**
  Electronic waste (e-waste) generated on campus, such as outdated computers, printers, and other electronic equipment, is collected systematically. It is recycled or disposed of through authorized e-waste recycling vendors in compliance with environmental guidelines.
- **Awareness and Monitoring:**
  Regular awareness campaigns are conducted to educate students and staff on waste management practices, including segregation, recycling, and reducing waste generation. A waste management committee oversees and monitors adherence to sustainable practices.

2.2.6: How is the waste paper used in your college?

- **Vermicomposting:** Waste paper collected on the campus is shredded and processed through vermicomposting. This process transforms the paper into nutrient-rich compost, which is then utilized for gardening and landscaping purposes, promoting a sustainable and eco-friendly campus environment.
- **Recycling Practices:** Paper waste that is unsuitable for composting is segregated and sent to authorized recycling units to be repurposed into new paper products, minimizing environmental impact.
- **Reuse Initiatives:** Partially used paper, such as blank sheets from old notebooks, is repurposed for rough work, craft activities, or internal documentation, reducing overall paper wastage.
- **Awareness Drives:** Students and staff are encouraged to adopt practices like double-sided printing and using digital alternatives to minimize paper waste generation.
- **Collaboration with Government Institution:** Partnerships with local NGOs or recycling firms facilitate the efficient recycling of bulk paper waste while supporting community-based environmental initiatives.

2.2.7: How is the waste managed in the campus?

- **Paper Waste Management:** Paper waste is collected separately and processed through vermicomposting to create nutrient-rich compost, which is later utilized for gardening and landscaping purposes across the campus.
- **Segregation of Waste:** A comprehensive waste segregation system is in place, with separate bins for biodegradable, non-biodegradable, and recyclable waste, ensuring efficient waste processing.
- **Biodegradable Waste:** Food and organic waste from the campus canteen and gardens are composted using dedicated composting units, producing organic manure for campus greenery.
- **Non-Biodegradable Waste:** Non-biodegradable waste, including plastics, metals, and e-waste, is collected and handed over to authorized recycling agencies to ensure safe disposal.
- **E-Waste Management:** An e-waste collection point is maintained, and obsolete electronic items are disposed of responsibly through certified e-waste recyclers.
- **Awareness Drives:** Regular awareness campaigns educate students and staff on the importance of waste reduction, segregation, and recycling.

- **Reuse Initiatives:** Old stationery, books, and other reusable items are donated or repurposed for community outreach programs or internal campus use.
- **Monitoring Committee:** A waste management committee monitors practices and ensures adherence to sustainable waste management policies.

2.2.8: Method adopted for spread of "No Plastic Use" message in the campus.

- **Display Boards**: "Say No to Plastic" message prominently displayed on boards across the campus to raise awareness among students, staff, and visitors.
- **Awareness Seminars and Lectures**: Regular seminars, workshops, and guest lectures conducted on the harmful effects of plastic use and the importance of sustainable alternatives.
- **Ban on Non-Recycled Plastics**: Strict prohibition of the use of non-recycled plastics within the campus, with guidelines enforced for students and staff.
- **Eco-Friendly Alternatives Campaign**: Promotion of eco-friendly alternatives like cloth bags, paper bags, and reusable containers through awareness drives and distribution initiatives.
- **Student-Led Initiatives**: Formation of student clubs to monitor and encourage adherence to the "No Plastic" policy and organize competitions like poster-making, debates, and skits focused on environmental conservation.
- **Plastic-Free Event Policy**: Mandatory plastic-free policies implemented during all campus events, ensuring sustainable practices in catering and decoration.
- **Digital Campaigns**: Use of social media platforms and the campus website to amplify the "No Plastic" message, showcasing success stories and encouraging participation.

2.2.5 Recommendations for Effective Waste Management

To strengthen the waste management practices at Grizzly College of Education, the following recommendations are proposed:

1. Waste Reduction Strategies

- **Awareness Campaigns:** Conduct regular workshops and seminars to educate students and staff about waste minimization and sustainable practices.
- **Digitalization:** Transition administrative processes, academic submissions, and communication to digital platforms to reduce paper waste.
- **Reusable Alternatives:** Encourage the use of reusable items like water bottles, utensils, and cloth bags to minimize single-use plastics.

2. Segregation at Source

- **Color-Coded Bins:** Install separate, color-coded bins for biodegradable, recyclable, and hazardous waste across the campus to facilitate segregation.
- **Training Programs:** Provide training to students, staff, and housekeeping personnel on proper waste segregation practices.

3. Recycling and Resource Recovery

- **Paper Recycling:** Establish partnerships with recycling agencies to process paper waste into reusable products.
- **Plastic Recycling Initiatives:** Collaborate with local recycling units to ensure responsible disposal and recycling of plastic waste.
- **Metal and Glass Recycling:** Implement collection points for metal and glass waste to ensure they are directed to appropriate recycling facilities.

4. Organic Waste Management

- **Composting Units:** Expand vermicomposting facilities to handle organic waste from food, gardens, and biodegradable materials, producing nutrient-rich manure for campus landscaping.
- **Biogas Generation:** Explore the feasibility of biogas plants to convert food and organic waste into energy for campus utilities.

5. E-Waste Management

- **Authorized Vendors:** Partner with certified e-waste recyclers for the responsible disposal of obsolete electronic items.
- **Repair and Reuse:** Establish repair centers for electronics to extend

the lifecycle of devices and reduce e-waste generation.

2. Hazardous Waste Handling

- **Specialized Storage:** Create secure storage areas for hazardous waste, ensuring it does not contaminate the environment.
- **Licensed Disposal Agencies:** Engage with licensed agencies for the safe disposal of laboratory and chemical waste.

7 Infrastructure Improvements

- **Centralized Waste Collection Points:** Develop centralized collection points with proper infrastructure for waste storage and processing.
- **Rainwater Harvesting Systems:** Incorporate systems to manage runoff from waste storage areas, preventing contamination of water resources.

8 Sustainable Construction Practices

- **Waste Minimization in Construction:** Encourage the reuse of construction materials and recycling of demolition waste in new projects.
- **Green Building Initiatives:** Incorporate sustainable design principles to reduce waste generation during construction.

9. Monitoring and Evaluation

- **Regular Audits:** Conduct periodic waste audits to assess the efficiency of waste management systems and identify areas for improvement.
- **Data Collection:** Maintain a database of waste generation, segregation, and disposal patterns to track progress and measure impact.

10. Community Engagement

- **Collaboration with Municipal Bodies:** Strengthen ties with local municipal corporations for waste collection and disposal services.
- **Student-Led Initiatives:** Establish student-led clubs or committees to promote waste reduction and recycling initiatives on campus.
- **Outreach Programs:** Extend waste management education to nearby communities, demonstrating the institution's commitment to social responsibility.

Grizzly College of Education may improve its waste management and establish a sustainable standard for educational institutions by following these suggestions. These actions will enhance campus ecology and foster a lifetime commitment to environmental care.

2.3 Green Campus Initiatives and Sustainability Practices

Grizzly College of Education recognizes the importance of integrating environmental sustainability into its campus infrastructure and operations. As an educational institution, it is committed to fostering a green and eco-friendly environment that not only enhances the aesthetic and natural beauty of the campus but also plays a significant role in the ecological well-being of the surrounding community. This section highlights the college's ongoing efforts to maintain a green campus through various initiatives such as tree plantation drives, the development of gardens, and active student engagement in sustainability practices. By incorporating these initiatives, the college aims to create an educational space that promotes environmental awareness, encourages the preservation of natural resources, and provides students with the knowledge and hands-on experience necessary to become responsible stewards of the environment. Through its commitment to these green practices, Grizzly College of Education contributes to a sustainable future for both its campus and the local community.

2.3.1 Objectives for Green Campus Initiatives and Sustainability Practices

The primary objectives of the Green Campus section, in alignment with the NAAC (National Assessment and Accreditation Council) guidelines and Green Audit standards, are as follows:

1. **To Enhance Environmental Sustainability**:
   To develop and maintain a sustainable and eco-friendly campus by increasing the green cover, promoting biodiversity, and reducing the environmental footprint through effective management of natural resources.
2. **To Integrate Environmental Education and Awareness**:
   To incorporate environmental sustainability into the curriculum and encourage active student participation in environmental conservation activities such as tree plantation drives, gardening, and awareness programs, fostering a culture of responsibility towards the environment.
3. **To Achieve Carbon Neutrality**:
   To reduce the college's carbon footprint through initiatives like increasing tree plantations, enhancing green spaces, and adopting renewable energy solutions, aiming towards carbon neutrality in line with NAAC's criteria for sustainability and climate action.

4. **To Promote Resource Conservation**:
   To implement water and energy conservation measures across the campus, including the installation of rainwater harvesting systems, solar energy, and efficient waste management practices, thereby reducing the consumption of non-renewable resources.
5. **To Foster Community Engagement in Sustainability**:
   To extend the college's green initiatives beyond its campus by collaborating with local schools, community organizations, and neighborhoods through plant distribution programs, tree plantation drives, and environmental outreach, in line with NAAC's community engagement standards.
4. **To Monitor and Document Green Initiatives**:
   To systematically monitor, evaluate, and document all green campus initiatives, including tree plantation, waste management, and energy conservation efforts, ensuring regular reporting in line with Green Audit and NAAC requirements, demonstrating the college's commitment to continuous improvement in sustainability.
6. **To Align with National and International Environmental Standards**:
   To align the campus's green initiatives with national and international standards for environmental sustainability, including those set by the NAAC, and to adopt best practices in environmental conservation, energy efficiency, and resource management.

By pursuing these objectives, Grizzly College of Education will ensure that its green campus initiatives are in line with NAAC accreditation criteria and Green Audit requirements, contributing to the institution's commitment to environmental stewardship and sustainable development.

Table 2. 1 Green Campus: Questionnaire based Answers

2.3.1 Total green cover area in the campus
5040 sq. meter
2.3.2: Is there a garden in your institute?
Yes, Rose Garden, Herbal Garden, Seasonal Plants Garden and Kitchen Garden.
2.3.3: Do students spend time in the garden?
Yes
2.3.4: Total number of Trees, Plants and Shrubs in Campus?
1207
2.3.5: How many Trees, Plants and Shrubs added in current session?
142
2.3.6: Is the College campus having any plantation nursery?
Yes
2.3.7: How many Tree Plantation Drives organized by campus per annum?
Yes, 4-5 times
2.3.8: Is there any Plant Distribution Program for Students and Community?
Yes, Trees distributed to nearby areas.
2.3.9: Is there any Plantation drive?
Yes, Total 370 plants and trees have been planted in the vicinity of the college.
2.3.10: Total amount spends on Trees, Plants and Shrubs in current session.
Rs. 50,000/-

2.3.2 Total Green Cover Area on Campus

The total green cover area on the Grizzly College of Education campus spans 5,040 square meters. This space serves as a vital ecological asset for the institution, contributing to the absorption of carbon dioxide, reduction of urban heat, and the promotion of biodiversity. The lush greenery also acts as a natural air purifier and provides a serene and rejuvenating environment for students, faculty, and staff.

2.3.3 Garden Facilities at the College

The college boasts four garden areas: The **Rose Garden, Herbal Garden, Seasonal Plants Garden** and **Kitchen Garden**.

- The **Rose Garden** is home to a variety of rose species, contributing to the campus's vibrant colors and pleasant fragrance. This space also provides an opportunity for students to engage in horticultural activities and learn about plant care.

- The **Herbal Garden** includes variety of medicinal aromatic, and culinary plants. This garden in the college enhances biodiversity, fostering a balanced ecosystem by attracting pollinators such as bees and butterflies. Herbal Garden has variety of plant such as dalchini, aloevera, turmeric, elaichi, tulsi, ashvagandha, patharchatta, peepal etc.
- The **Seasonal Plants Garden** features an array of seasonal plants, providing educational opportunities for students to study plant cycles and growth patterns throughout the year. These gardens not only beautify the campus but also serve as living laboratories for environmental education.
- The **Kitchen Garden** includes variety of fruits, vegetables, herbs, and edible plants which provides organic food. Kitchen gardens enhance sustainability by reducing reliance on commercially purchased vegetables.

2.3.4 Student Engagement with Green Spaces

Students at Grizzly College of Education frequently spend time in the gardens. Educational, recreational, and mindfulness activities take place in the green places. Students may learn about environmental challenges and the necessity of conserving green areas by actively engaging with nature in the outdoors. Providing a break from academic life, the gardens encourage relaxation and mental health.

2.3.5 Total Number of Trees, Plants, and Shrubs on Campus

The college campus is home to a diverse collection of 1207 trees, plants, and shrubs. This wide variety of flora includes indigenous and non-indigenous species, each chosen for their environmental benefits, aesthetic appeal, and educational value. These plants contribute to the ecological health of the campus by providing habitats for birds and insects, improving air quality, and supporting local biodiversity. The lush greenery also helps to mitigate noise pollution and provide shade during hot months, enhancing the overall comfort and aesthetic quality of the campus.

2.3.6 Plantation Nursery at the College

Grizzly College of Education has well established nursery in which serves as a practical learning space for students, providing hands-on experience in plant propagation, soil management, and landscaping techniques. These nurseries often contribute to campus beautification and sustainability efforts, while also promoting environmental awareness among students and staff. Additionally, it supplies plants for campus use and local community plantation drive.

Rose Garden

Herbal Garden

Seasonal Garden

Kitchen Garden

2.3.7 Tree Plantation Drives Organized by the College

Grizzly College of Education actively engages in **4-5 tree plantation drives per annum**, aiming to expand green cover in the campus and vicinity area. It encourages environmental consciousness within and outside the campus. Each plantation drive involves the participation of students, faculty, and staff members who plant trees, assist with gardening, and learn about the importance of afforestation. The drives also serve to raise awareness about the role of trees in mitigating climate change and enhancing the quality of life on campus.

2.3.8 Plant Distribution Program for Students and the Community

Grizzly College of Education runs a Plant Distribution Program, in which trees are distributed to nearby schools and local communities. This initiative aims to extend the institution's environmental responsibility beyond the campus, contributing to greener, healthier neighborhoods. The college has distributed and planted 370 small trees and plants as part of community plantation program. Apart from this the college has also organized program for plantation awareness among the students and teachers.

Through its dedication to maintaining a green campus, Grizzly College of Education sets an example for environmental stewardship within the academic community. The integration of nature into the campus not only supports biodiversity and sustainability but also provides students with hands-on opportunities to engage with environmental issues, making it an essential part of their education.

College Nursery

2.3.10 Recommendations for Green Campus Initiatives and Sustainability Practices

1. **Expansion of Green Spaces:**

   While the college has made commendable strides in maintaining green cover, expanding the green spaces by increasing tree plantation drives and developing additional garden areas can further enhance the campus environment. Incorporating a variety of native species would support local biodiversity and help in sustaining the ecological balance.

2. **Integration of Sustainable Gardening Practices**:

   Introducing organic and sustainable gardening practices, such as the use of compost, rainwater harvesting for irrigation, and reducing chemical fertilizers, would further improve the environmental sustainability of the gardens. Offering workshops on sustainable gardening practices for students and faculty can promote broader awareness of these practices.

3. **Creation of Eco-Friendly Learning Spaces**:

   Developing outdoor classrooms or study areas within the gardens and green spaces would provide students with a deeper connection to nature while encouraging outdoor learning. These spaces can be used for both academic and recreational activities, promoting physical and mental well-being.

4. **Strengthening Tree Plantation Drives**:

   Although the college already conducts 4-5 tree plantation drives annually, increasing the frequency or involving more community members in these drives could make a significant impact. Engaging with local environmental organizations and involving neighboring schools in these drives would help expand the college's green footprint and create a greater sense of community ownership.

5. **Awareness Campaigns on the Importance of Green Spaces**:

   Regular campaigns, seminars, and awareness programs for students and faculty about the environmental benefits of green spaces, tree planting, and biodiversity conservation could help cultivate a deeper appreciation for nature. These initiatives could include lectures from environmental experts, hands-on gardening sessions, and participation in tree care programs.

6. **Incorporating Renewable Energy in Green Spaces**:

   The college could consider integrating solar panels in green areas to power outdoor lighting and other electrical needs. This would not only make the campus more energy-efficient but also demonstrate the college's commitment to renewable energy sources.

7. **Collaboration with Local Communities**:

   Building stronger partnerships with local communities and schools through plant distribution programs and environmental outreach would extend the impact of the college's green initiatives. Expanding the tree plantation and distribution programs to include neighboring towns could help in creating a more sustainable environment regionally.

8. **Monitoring and Reporting Green Campus Impact**:

   To evaluate the long-term impact of these green initiatives, the college should implement regular monitoring and reporting systems. This could include tracking the growth of trees, improvements in biodiversity, and reductions in carbon emissions due to the increase in green spaces. Sharing this data with students and stakeholders can increase transparency and motivate further participation.

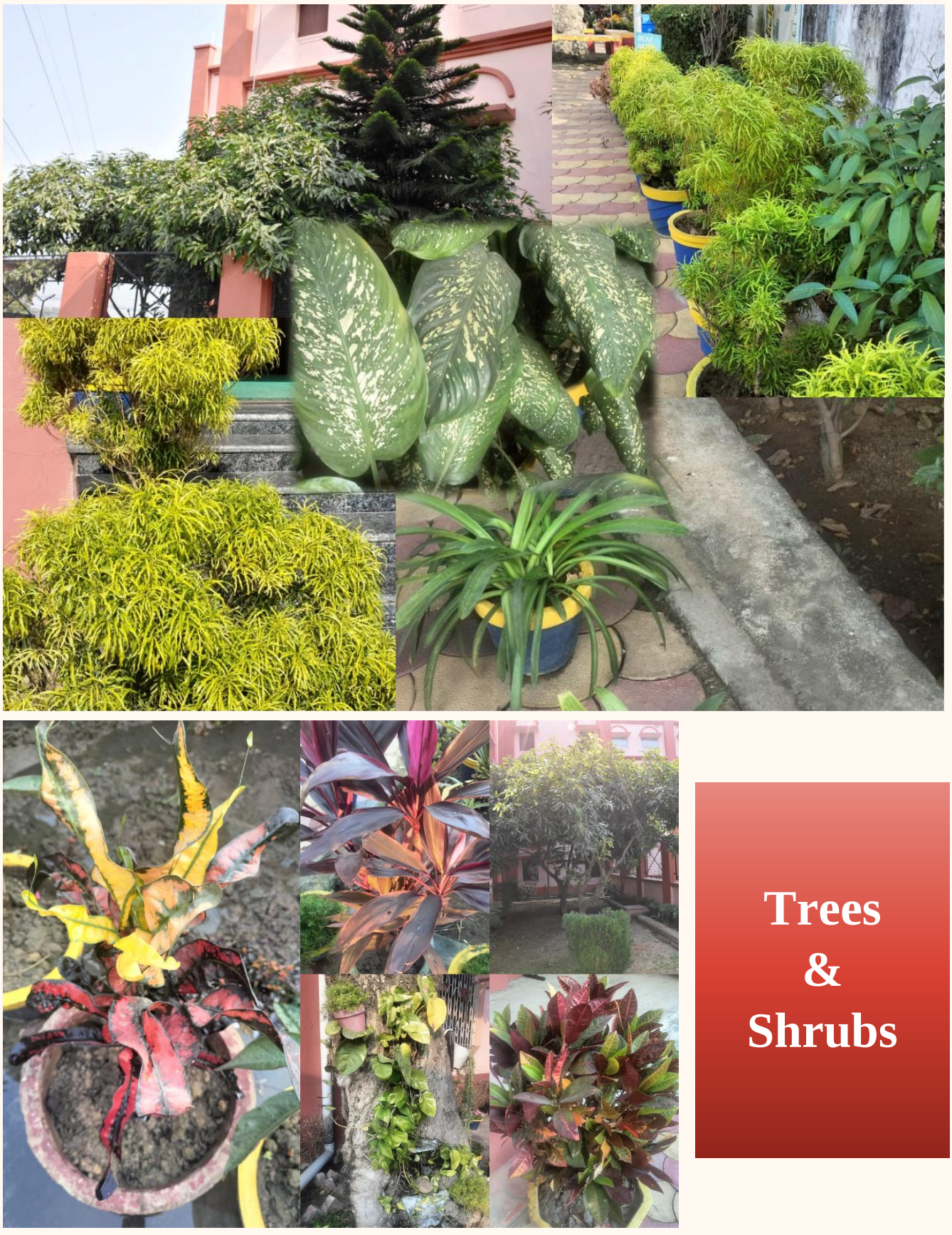
By adopting these recommendations, Grizzly College of Education can strengthen its commitment to environmental sustainability and further enhance the educational experience for students, while promoting long-term ecological responsibility.

Table 2.2 Green Campus: List of Trees

S. No.	Common Name	Scientific Name	Total Numbers
1	Ashok Tree	Saraca asoca	20
2	Kadam Tree	Neolamarckia cadamba	5
3	Jackfruit Tree	Artocarpus heterophyllus	2
4	Coconut Tree	Cocos nucifera	4
5	Mango Tree	Mangifera indica	18
6	Pomegranate Tree	Punica granatum	6
7	Sugar- Apple Tree	Annona squamosa L.	2
8	Papaya Tree	Carica papaya	3
9	Guava Tree	Psidium guajava	17
10	Bael Tree	Aegle marmelos	1
11	Neem Tree	Azadirachta indica	10
12	Sagwan Tree	Tectona grandis	1
13	Sakhua Tree	Shorea robusta	3
14	Lemon Tree	Citrus limon	3
15	Aamla Tree	Phyllanthus emblica	3
16	Chandan Tree	Santalum album	1
17	Blackberry Tree	Rubus fruticosus	7
18	Udhul Tree	Hibiscus rosa-sinensis L	73
19	Gambhar Tree	Gmelina arborea	2
20	Sheesham Tree	Dalbergia sissoo	5
21	Christmas Tree	Araucaria columnaris	6
22	Orange Tree	Citrus sinensis	1
23	Palmyra Palm	Borassus aethiopum	9
24	Khajoor Palm	Phoenix dactylifera	12
25	Tezz Patta	Cinnamomum tamala	1
26	Mayur Tree	Platycladus orientalis	9
27	Bargad Tree	Ficus benghalensis	2
28	Litchi Tree	Litchi chinensis	1
29	Pomelo		1
30	Chiku	Manilkara zapota	2
31	Baniyan (Bonsai)	Ficus benghalensis	3

S. No.	Common Name	Scientific Name	Total Numbers
32	Bougainvillea	Bougainvillea	7
33	Dal chini Tree	Cinnamomum verum	1
34	Rose Plant	Rosa	115
35	Raat Rani	Cestrum nocturnum	5
36	Genda Flower	Tagetes	134
37	Elaichi	Elettaria cardamomum	14
38	Euodia	Euodia daniellii	12
39	Aloe Vera	Aloe barbadensis miller	16
40	Haldi	Curcuma longa	14
41	Strawberry	Fragaria ananassa	12
42	Nagfani	Crataegus	1
43	Banana	Musa acuminata	41
44	Croton Plant	Codiaeum variegatum	29
45	Rajni Gandha	Polianthes tuberosa	4
46	Red Hedge	Buxus sempervirens	73
47	Green Hedge	Buxus sempervirens	380
48	Tulsi Plant	Ocimum tenuiflorum	11
49	Bottle Palm	Hyophorbe lagenicaulis	12
50	Foxtel Palm	Wodyetia bifurcate	10
51	Jhumko Lata (Rakhi)	Passiflora	11
52	Ficus	Ficus carica	8
53	Pinwheel Plant	Tabernaemontana divaricata	4
54	Rangon	Combretum indicum (L.) DeFilipps	8
55	Mini Rangon	Combretum indicum (L.) DeFilipps	4
56	Labongo Latika		5
57	Jungle Geranium	Ixora Coccinea	6
58	Poinsettia	Euphorbia Pulcherrima	5
59	Guldauwadi	Chrysanthemum	38
60	Dahlia	Dalhia Pinnata	45
61	Arica	Chrysalidocarpus lutescens	18

Trees & Shrubs



Trees & Shrubs

3. Water Usage and Wastewater Management

Water is one of the most vital resources on any campus, and effective management of water usage is integral to achieving sustainability goals. Grizzly College of Education is committed to preserving water resources through responsible usage, conservation, practices. This section of the Green Audit report outlines the college's current water management practices, including water storage, usage, and wastewater management techniques.

The college has implemented several strategies to optimize water use across campus facilities. From rainwater harvesting to wastewater recycling for gardening purposes, the college strives to minimize water wastage and ensure its efficient use in all areas of campus life, including drinking, landscaping, and sanitation. Moreover, the college aims to enhance water conservation awareness among students and staff through various initiatives and educational programs, ensuring the long-term sustainability of water resources.

Water management is not only essential for daily campus operations but is also a reflection of the college's commitment to environmental stewardship. By integrating water-saving technologies, monitoring usage patterns, and ensuring regular maintenance of water infrastructure, the college is actively working to reduce its environmental footprint and contribute to the global effort of water conservation.

3.1 Objectives: Water Usage and Wastewater Management

The primary objectives of water and wastewater management at Grizzly College of Education, in alignment with the Green Audit guidelines and sustainability goals, are as follows:

1. **Efficient Water Usage:** To ensure the efficient and sustainable use of water across the campus by monitoring water consumption patterns and implementing water-saving techniques.
2. **Water Conservation Awareness:** To raise awareness about the importance of water conservation among students, staff, and faculty through educational programs such as seminars, workshops, and poster campaigns.
3. **Rainwater Harvesting and Recycling:** To maximize the potential of rainwater harvesting and wastewater recycling for non-potable purposes, particularly for landscaping and gardening needs, thereby reducing the dependence on external water sources.

1. **Regular Maintenance of Water Infrastructure:** To maintain and regularly inspect all water storage systems, including overhead tanks and filtration units, ensuring the long-term sustainability and functionality of water resources.
2. **Implementation of Best Practices in Wastewater Management:** To promote the treatment and safe reuse of wastewater, particularly for non-potable uses, through systems such as the RO water purifier and wastewater recycling initiatives.
3. **Reduction of Water Wastage:** To implement strategies that prevent water wastage, including the use of efficient fixtures, monitoring systems, and awareness campaigns focused on the importance of turning off taps and maintaining proper water usage habits.

By achieving these objectives, the college seeks to manage its water resources responsibly and play an active role in promoting sustainability both on campus and in local community.

Water is one of the most critical resources on any educational campus, and its management plays a significant role in ensuring sustainability and minimizing environmental impact. Effective water management not only conserves a valuable resource but also contributes to reducing operational costs and enhancing the campus's environmental footprint. Grizzly College of Education is committed to implementing best practices for water conservation and wastewater management in accordance with NAAC guidelines and institutional policies.

Table 3. 1 Water Usage and Wastewater Management

S. No.	Particulars	Details
1	Total Water Storage Capacity	9000 liters
2	Water Harvesting Facility	Yes
3	Water Usage per Day	- Drinking: 800 liters - Gardening: 1500 liters - Toilet and other: 500 liters
4	Water Storage Method	Overhead tanks
5	Water Conservation Techniques	- Avoid overflow of water from tanks - Ensure taps are turned off after use - Water conservation awareness through seminars, lectures, posters, etc. - Wastewater from RO system used for gardening purposes - Regular maintenance of water tanks and coolers every 3 months
6	Rainwater Harvesting Facility	Yes
7	Wastewater Management	Wastewater from RO system used for gardening purposes
8	Water Conservation Awareness Programs	Seminars, lectures, poster-making activities to educate students and staff about water conservation
9	Water Infrastructure Maintenance	Regular inspection and maintenance of water tanks and systems every 3 months

3.2 Water and Wastewater Management in the Campus (questionnaire-based answers)

3.2.1 Total Water Storage Capacity in the Campus

The campus has 9,000 litres of water storage. This capacity meets campus water needs, maintaining an adequate supply during high consumption periods or emergencies and supporting water conservation initiatives.

3.2.2 Does the Campus Have Water Harvesting Facility?

Yes, the college has a water harvesting facility. The implementation of rainwater harvesting systems allows the campus to capture and store rainwater for later use, particularly for non-potable purposes like gardening and irrigation. This initiative significantly contributes to reducing dependency on external water sources and promoting water sustainability.

3.2.3 Water Usage in the Campus Per Day

The following outlines the distribution of water usage across various campus functions on a daily basis:

- **Drinking**: 800 liters
- **Gardening**: 1,500 liters
- **Toilet and Other Uses**: 500 liters

This breakdown reflects the college's commitment to managing water usage efficiently, ensuring that potable water is reserved for drinking and other essential needs, while non-potable water is used for landscaping and irrigation.

3.2.4 How Does the College Store Water?

Water on the campus is stored in **overhead tanks**, ensuring that the campus has a readily available supply of water. These tanks are strategically located across the campus to distribute water efficiently and minimize the risk of water shortages.

3.2.5 How Does the College Manage Water Resources (Water-Saving Techniques)?

Grizzly College of Education adopts a variety of strategies to conserve water and ensure efficient usage:

- **Overflow Prevention**: The college ensures that water does not overflow from the storage tanks through regular monitoring and maintenance of tank levels.
- **Responsible Water Usage**: College staffs and students are encouraged to turn off taps after use to avoid unnecessary wastage of water.
- **Water Conservation Awareness**: The college conducts seminars, lectures, and workshops to raise awareness about water conservation among students and staff. These programs emphasize the importance of water-saving practices and teach practical steps that can be taken both on campus and at home.
- **Wastewater Utilization**: The wastewater generated from the RO water purifier used for drinking is repurposed for gardening purposes, promoting a circular water use model.
- **Regular Maintenance**: All water tanks, water coolers, and RO systems are checked every three months to ensure proper functioning and prevent leaks or inefficiencies. The filters and components of the RO system are also regularly replaced to maintain water quality and conservation effectiveness.

3.2.6 Does the Campus Have Rainwater Harvesting Facility?

Yes, the college has a dedicated **rainwater harvesting facility**. This system captures rainwater runoff, which is stored and later used for various non-potable purposes, especially for gardening. By using rainwater, the college reduces its reliance on municipal water supplies and contributes to the broader goal of sustainable water management.

3.3 Recommendations for Water and Wastewater Management

1. **Increase Water Storage Capacity:** To enhance water availability, especially during dry spells, it is recommended to increase the total water storage capacity on campus by adding more overhead tanks or exploring alternative storage solutions, such as underground water tanks.

2. **Expand Rainwater Harvesting Systems:** While the college currently has a rainwater harvesting facility, it is suggested to expand this system to cover more areas of the campus. By installing additional rainwater harvesting systems, the college can further reduce its reliance on municipal water and improve sustainability.

3. **Implement Water-Efficient Fixtures:** The installation of water-efficient fixtures, such as low-flow faucets and dual-flush toilets can significantly reduce water consumption. This is particularly relevant for areas with high water usage, such as toilets and canteens.

4. **Improve Wastewater Management and Recycling:** Expanding the reuse of wastewater for non-potable purposes, such as landscaping and cleaning, can further reduce fresh water demand. The college could consider setting up a small-scale wastewater treatment plant or upgrading existing facilities for more effective water reuse.

5. **Increase Awareness and Engagement:** To further reduce water wastage, awareness campaigns on water conservation should be intensified. Organize workshops, seminars, and awareness drives to educate students, staff, and the local community about responsible water usage and the importance of conserving water resources.

6. **Monitoring Water Usage:** The college should implement water usage monitoring system to track water consumption across various departments and facilities. This would allow for better analysis, identification of excessive usage, and opportunities for improvement.
7. **Regular Maintenance and Audits:** A structured and periodic water audit should be conducted to evaluate water consumption and identify areas for improvement. Additionally, regular maintenance of water infrastructure, including pipes, tanks, and pumps, is essential to prevent leaks and inefficiencies.
8. **Engage in Partnerships for Water Conservation Projects:** The college could collaborate with local government bodies, NGOs, or environmental organizations to initiate large-scale water conservation projects, which could include the construction of water conservation structures such as check dams or ponds that can benefit both the college and the surrounding community.

By implementing these recommendations, Grizzly College of Education can strengthen its water management systems, reduce consumption, and further contribute to environmental sustainability.

4. Carban Footprint- Emission & Absorption

The issue of carbon emissions is central to sustainability efforts, particularly in educational institutions where energy consumption and transportation contribute significantly to the overall carbon footprint. Grizzly College of Education monitors and tracks its carbon emissions from various sources, with a focus on reducing its environmental impact and integrating energy-efficient practices in line with NAAC guidelines.

The concept of carbon footprint refers to the total amount of greenhouse gases, particularly carbon dioxide (CO_2), emitted into the atmosphere as a result of human activities. This section focuses on assessing the carbon emissions generated by various activities on campus, including electricity usage, transportation (petrol and diesel), and cooking (LPG). Understanding and quantifying the carbon footprint is crucial for the institution's sustainability efforts, as it provides valuable insights into the areas where energy consumption can be reduced, alternative energy sources can be implemented, and overall environmental impact can be minimized.

Reducing carbon emissions is an essential component of any institution’s commitment to environmental sustainability.

Grizzly College of Education has recognized the importance of evaluating its carbon footprint and is taking proactive steps towards decreasing its environmental impact. The college also integrates the use of renewable energy sources such as solar power, aiming to reduce dependency on non-renewable energy and contribute to the global effort to combat climate change.

4.1 Objectives:

iv. **To Assess Carbon Emissions:** To quantify the total CO2 emissions from various sources, including electricity consumption, petrol, diesel, and LPG usage on campus.

v. **To Identify Key Emission Sources:** To identify the primary sources of carbon emissions on campus, enabling the college to focus on specific areas for improvement and reduction.

vi. **To Monitor Energy Usage:** To evaluate the current energy consumption patterns and identify areas where energy efficiency can be enhanced, reducing the overall carbon footprint.

vii. **To Promote Renewable Energy Use:** To assess the role of renewable energy sources, such as solar panels, in reducing the carbon footprint and explore

opportunities to expand renewable energy use on campus.

viii. **To Support Sustainability Goals:** To contribute to the broader environmental sustainability goals of the institution by tracking and mitigating carbon emissions and promoting eco-friendly practices across the campus.

ix. **To Guide Future Carbon Reduction Initiatives:** To provide a data-driven foundation for future carbon reduction strategies, including adopting energy-efficient technologies and practices that align with both the college's sustainability policy and national climate goals.

4.2 Carban Footprint-Emission & Absorption (Questionnaire-based Answers)

4.2.1: Total CO2 Emission from Electricity

The total carbon dioxide (CO_2) emission from electricity consumption is calculated as follows:

- **Annual Electricity Consumption**: 24,335 KWh
- **Emission Factor**: 0.85 kg CO_2 per KWh

Thus, the total CO_2 emission from electricity is:

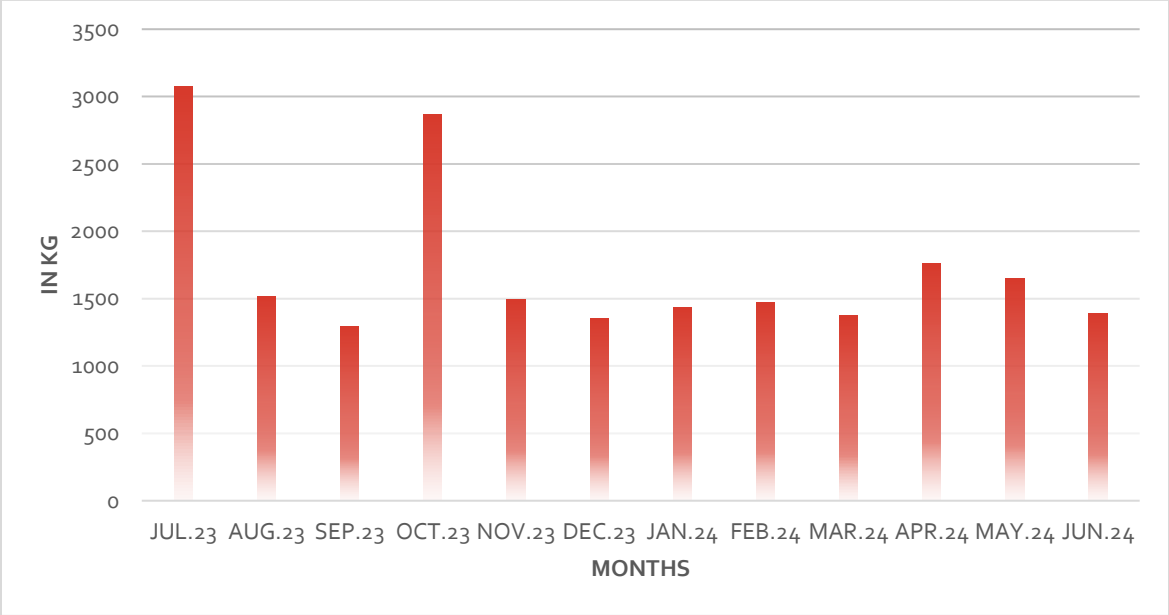
24335 KWh × 0.85= 20,684.75 Kg of CO_2

(or 20.36 tons per year)

Table 4. 1 Monthly CO_2 Emission from Electricity

Months	CO_2 Emission
July 2023	3072.75
August 2023	1518.1
September 2023	1292.85
October 2023	2868.75
November 2023	1496.85
December 2023	1350.65
January 2024	1435.65
February 2024	1472.2
March 2024	1377.85
April 2024	1760.35
May 2024	1647.3
June 2024	1391.45
Total	**20684.75 Kg (20.36 tons)**

Figure 4. 1 Monthly CO_2 Emission from Electricity



4.2.2 Total Emission of CO2 from Petrol

The college uses petrol for transportation and other operations, contributing to its carbon emissions. The total CO2 emission from petrol consumption is calculated as follows:

- **Annual Petrol Consumption:** 388.6 liters
- **Emission Factor:** 2.296 Kg CO2 per liter

Thus, the total CO2 emission from petrol is:

388.6 liters × 2.296 = 892.23 Kg of CO2 (0.88 tons per year)

4.2.3 Total Emission of CO_2 from Diesel

Similarly, the college uses diesel for specific campus operations. The total CO2 emission from diesel consumption is:

- **Annual Diesel Consumption**: 67.3 liters
- **Emission Factor**: 2.653 Kg CO_2 per liter

Thus, the total CO_2 emission from diesel is:

67.3 liters × 2.653 = 178.55 Kg of CO_2 (0.18 tons per year)

4.2.4 Total Emission of CO_2 from LPG

The use of liquefied petroleum gas (LPG) on campus contributes to carbon emissions, and the total CO_2 emission from LPG consumption is:

- **Annual LPG Consumption**: 85.2 kg
- **Emission Factor**: 2.983 kg CO_2 per kg

Thus, the total CO_2 emission from LPG is:

85.2 Kg × 2.983 = 254.15 Kg of CO_2 (0.28 tons per year)

4.2.5 Total CO_2 Emission on Campus

The total CO_2 emission from the campus is the sum of the emissions from electricity, petrol, diesel, and LPG (In Tons):

20.36 + 0.88 + 0.18 + 0.28 =
21.7 tons of CO_2 per year

4.2.6 Solar Panels Installed at the College

The college has seven solar panels in total, of which 6 solar panels with the capacity of 335 watts have been installed in the current academic session. The installation of additional solar panels is planned to enhance the college's renewable energy capacity and reduce its reliance on grid electricity, contributing to a reduction in carbon emissions and overall energy costs.

By focusing on water conservation, efficient energy usage, and reducing the carbon footprint, Grizzly College of Education is making strides towards achieving a more sustainable and environmentally responsible campus. These efforts not only align with NAAC guidelines but also reflect the college's broader commitment to fostering a greener future.

Table 4. 2 Carbon Footprint – Emission & Absorption Summary

S. No.	Particulars	Details
1	**Total CO_2 Emission from Electricity**	20.36 tons (20684.75 Kg)
2	**Monthly CO_2 Emission from Electricity**	
	- July 2023	3072.75 Kg CO_2
	- August 2023	1518.1 Kg CO_2
	- September 2023	1292.85 Kg CO_2
	- October 2023	2868.75 Kg CO_2
	- November 2023	1496.85 Kg CO_2
	- December 2023	1350.65 Kg CO_2
	- January 2024	1435.65 Kg CO_2
	- February 2024	1472.2 Kg CO_2
	- March 2024	1377.85 Kg CO_2
	- April 2024	1760.35 Kg CO_2
	- May 2024	1647.3 Kg CO_2
	- June 2024	1391.45 Kg CO_2
3	**Total CO_2 Emission from Petrol**	0.88 tons (892.23 Kg)
4	**Total CO_2 Emission from Diesel**	0.18 tons (178.55 Kg)
5	**Total CO_2 Emission from LPG**	0.28 tons (254.15 Kg)
6	**Total CO_2 Emission (from Electricity, Petrol, Diesel, and LPG)**	21.7 tons
7	**Solar Panel Installation**	Yes, 6 solar panels installed (335 watts added in the current academic session)

4.3 Recommendations for Carbon Footprint – Emission & Absorption

4.3.1 Enhance Energy Efficiency

- **Upgrade to Energy-Efficient Appliances:** Transition to more energy-efficient appliances, lighting, and cooling systems to reduce electricity consumption. Replacing traditional fluorescent lights with LED bulbs across the campus would lower energy usage by up to 75percent.
- **Conduct Energy Audits:** Regular energy audits should be conducted to identify inefficiencies and recommend solutions for energy conservation in academic and administrative buildings.

4.3.2 Increase Solar Power Installation

- **Expand Solar Panel Capacity:** The college should invest in expanding the solar panel installation to cover more areas of the campus. This will reduce reliance on conventional electricity and cut down on the carbon emissions from non-renewable energy sources.
- Implement Solar-Powered Lighting: Consider integrating solar-powered lighting for outdoor areas such as walkways, parking lots, and gardens, further reducing electricity consumption.

4.3.3 Promote Sustainable Practices for Transport

- **Carpooling and Public Transport:** Encourage carpooling among staff and students and facilitate the use of public transport through partnerships or incentives to reduce emissions from private vehicles.
- **Bicycle Use Incentives:** Develop infrastructure for bicycle use, such as bike racks and dedicated lanes, to promote cycling among students and staff.

4.3.4 Increase Awareness and Education:

- **Conduct Workshops and Seminars on Sustainability:** Organize regular workshops, seminars, and awareness campaigns on carbon footprint reduction, energy conservation, and the importance of adopting sustainable practices.

4.3.5 Monitor and Set Emission Reduction Targets

- **Set Annual Emission Reduction Goals:** Establish specific, measurable targets for reducing carbon emissions annually. Track progress and adjust strategies to ensure continuous improvement.

- **Implement a Carbon Offset Program:** Consider investing in carbon offset programs such as tree planting or renewable energy projects to compensate for unavoidable emissions.

4.3.6 Optimize Heating, Ventilation, and Air Conditioning (HVAC) Systems

- **Improve HVAC Efficiency:** Regular maintenance and upgrading of HVAC systems to more efficient models will help in reducing the energy demand for heating and cooling, thereby lowering emissions.
- **Utilize Smart Thermostats:** Install smart thermostats to control the temperature more efficiently based on occupancy, ensuring energy is not wasted when rooms are unoccupied.

By implementing these recommendations, Grizzly College of Education can make significant strides towards reducing its carbon footprint, improving energy efficiency, and contributing to a more sustainable future.

5. Green Initiatives

Green Initiatives section of the Green Audit Report for Grizzly College of Education (GCE) highlights the institution's commitment to environmental sustainability and responsible resource management. This section outlines the various measures and programs implemented by the college to reduce its ecological footprint, conserve natural resources, and foster a culture of environmental stewardship. These initiatives span across multiple domains, including renewable energy adoption, waste management, water conservation, sustainable transportation, and the promotion of green building practices. Each initiative reflects GCE's dedication to integrating sustainability into its academic and operational framework, aiming to create a positive environmental impact both on campus and within the surrounding community. Through these initiatives, GCE is not only enhancing its environmental performance but also setting a benchmark for educational institutions aspiring to contribute to a more sustainable and resilient future.

i. **Solar Energy Installation**

Grizzly College of Education (GCE) has demonstrated a commitment to sustainable energy by installing solar panels across its campus. This initiative not only contributes to the reduction of the institution’s carbon footprint but also serves as a model for the integration of renewable energy within the educational sector, fostering an environmentally responsible learning environment.

i. **Tree Plantation Drive:**

In line with its environmental conservation efforts, GCE has initiated tree plantation drives aimed at enhancing campus biodiversity. These initiatives contribute to ecological sustainability by improving air quality, supporting local wildlife, and fostering a healthier campus ecosystem.

ii. **Waste Management and Recycling Programs:**

The college has established comprehensive waste management and recycling programs, emphasizing the importance of waste segregation and resource recycling. These programs are designed to minimize environmental impact, promote responsible waste disposal practices, and cultivate a culture of sustainability among the entire campus community.

i. **Water Conservation Measures:**

Recognizing the importance of water conservation, GCE has implemented various initiatives, including rainwater harvesting systems and the installation of water-efficient fixtures. In addition, the college conducts awareness campaigns to promote responsible water usage, reduce waste, and encourage sustainable water management practices within the campus.

i. **Green Building Practices:**

GCE prioritizes the development of sustainable infrastructure through the adoption of green building practices. The integration of energy-efficient design elements, the use of sustainable construction materials, and eco-friendly landscaping efforts contribute to reducing the environmental footprint of campus facilities while ensuring that the built environment supports educational excellence.

ii. **Sustainable Transportation:**

To promote responsible commuting, GCE has introduced sustainable transportation options such as dedicated bike lanes, carpooling incentives, and partnerships with local public transportation services. These initiatives aim to reduce the campus's carbon emissions while encouraging the adoption of more sustainable mobility practices among students, faculty, and staff.

iii. **Environmental Education and Awareness Programs:**

As part of its broader sustainability goals, GCE has integrated environmental education into its academic curriculum. Through a variety of workshops, seminars, and awareness campaigns, the college engages the campus community on issues related to sustainability, climate change, and ecological preservation, fostering a greater understanding of environmental stewardship.

iv. **Biodiversity and Green Spaces:**

GCE's commitment to biodiversity conservation is reflected in its efforts to develop and maintain green spaces across the campus. The college emphasizes the importance of planting native flora, creating wildlife-friendly habitats, and maintaining gardens that promote ecological balance and contribute to the aesthetic value of the campus.

v. **Green Campus Development:**

With an eye toward the future, GCE is engaged in a comprehensive green campus development strategy. By incorporating sustainable practices in every aspect of campus planning and development, the college aims to create an environment that exemplifies environmental responsibility and serves as a model of sustainability for other educational institutions.

vi. **Energy Efficiency Upgrades:**

To enhance energy efficiency, GCE undertakes regular infrastructure upgrades to incorporate advanced energy-efficient technologies. These efforts reduce energy consumption, lower operational costs, and contribute to the college's broader objective of minimizing its carbon footprint.

vii. Green Audit and Reporting:

In alignment with its commitment to transparency and continuous improvement, GCE conducts regular green audits to assess its environmental performance. These audits provide valuable insights into the effectiveness of current sustainability initiatives, identify areas for improvement, and guide future efforts in environmental management. The results are documented in detailed reports, reinforcing the college's dedication to sustainable practices.

viii. Renewable Energy Expansion:

Building on its solar energy initiatives, GCE is exploring additional renewable energy sources, such as wind and biogas, to further diversify its energy portfolio. This expansion supports the institution's commitment to reducing reliance on non-renewable resources and advancing toward a fully sustainable energy model.

ix. Seminar, Lectures and Poster Making:

Environmental conservation and sustainability awareness is promoted via seminars, lectures, and poster-making. Seminars encourage meaningful discussion on eco-friendly habits, renewable energy, and climate action. Expert lectures enhance environmental awareness and encourage action. The college this year organized guest lecture on “Climate Change and Biodiversity: The Way Forward” by Dr. Birender Gupta, HOD, Department of Zoology, Vinob Bhave University, Hazaribagh. Poster-making stimulates creativity and spreading awareness visually, enabling individuals to communicate green ideals via art. The college also organized poster-making competition for the students to encourage awareness regarding environmental sustainability. These activities promote knowledge-sharing, innovation, and creating a greener future.

x. Sustainable Food Practices:

In support of sustainability, GCE has adopted practices aimed at reducing the environmental impact of its food services. These include sourcing locally grown produce, reducing food waste, and promoting plant-based meal options. These initiatives not only contribute to sustainability but also encourage healthy eating habits within the campus community.

Through the implementation of these comprehensive green initiatives, Grizzly College of Education reaffirms its dedication to environmental sustainability. These actions not only reduce the institution’s environmental footprint but also promote a culture of sustainability, environmental consciousness, and responsible citizenship among students, faculty, and staff. By fostering a sustainable campus, GCE is shaping the next generation of environmentally responsible leaders.

Table 5. 1 Key Green Initiatives for Grizzly College of Education

Green Initiative	Description	Recommendations
Solar Energy Installation	The college has installed solar panels to reduce its carbon footprint and promote renewable energy adoption.	Expand solar panel capacity to cover more areas and explore the integration of wind energy systems.
Tree Plantation Drive	The college has initiated tree plantation programs to enhance biodiversity and contribute to environmental conservation.	Increase the frequency and scale of tree plantation drives and consider adopting community participation.
Waste Management and Recycling	The college has established recycling programs, promoting waste segregation and reducing environmental impact.	Implement a comprehensive recycling program for all materials (plastics, metals) and partner with local e-waste management agencies.
Water Conservation Measures	Rainwater harvesting, water-saving fixtures, and awareness campaigns are being implemented to conserve water.	Introduce more efficient water-saving technologies, expand rainwater harvesting systems, and launch extensive awareness programs.
Green Building Practices	The college focuses on energy-efficient building designs, sustainable construction materials, and eco-friendly landscaping.	Continue to adopt green building practices, incorporating more energy-efficient technologies and sustainable materials.
Sustainable Transportation	Promotion of eco-friendly commuting options, including bike lanes, carpooling, and public transport partnerships.	Encourage the use of electric vehicles and provide more incentives for carpooling and cycling.
Environmental Education and Awareness	The college integrates environmental education into its curriculum and organizes workshops and campaigns to promote sustainability.	Incorporate more sustainability modules into the curriculum and increase the frequency of green workshops.
Biodiversity and Green Spaces	Development and preservation of green spaces, including gardens and native plant species, to support biodiversity and ecological balance.	Expand green spaces, plant more drought-tolerant native plants, and improve campus biodiversity management.
Green Campus Development	The college aims to create a model campus for environmental sustainability by integrating various green initiatives.	Expand green campus development initiatives to include additional renewable energy sources and sustainable infrastructure.
Energy Efficiency Upgrades	Regular upgrades of infrastructure to incorporate energy-efficient technologies and reduce energy consumption.	Focus on upgrading older infrastructure with more energy-efficient systems and technologies.
Green Audit and Reporting	The college conducts regular green audits to assess environmental performance and track progress.	Establish a dedicated green committee for regular audits and publish detailed reports to ensure transparency.

प्रभात खबर

ताजा खबर

2024 परिणाम : आया अंतिम चुनाव परिणाम, एक नजर में जानें

ग्रिजली कॉलेज में औषधीय एवं फलदार पौधे लगाये गये

पौधारोपण में शामिल प्रशिक्षु.

प्रतिनिधि, कोडरमा

ग्रिजली कॉलेज ऑफ एजुकेशन में आंतरिक गुणवत्ता आश्वासन प्रकोष्ठ एवं राष्ट्रीय सेवा योजना के संयुक्त तत्वावधान में विश्व पर्यावरण दिवस के अवसर पर महाविद्यालय परिसर में पौधरोपण कार्यक्रम का आयोजन किया गया. कार्यक्रम में महाविद्यालय की उप निदेशिका डॉ संजीता कुमारी सहित महाविद्यालय के सभी सहायक प्राध्यापक एवं बीएड सत्र 2022-24 के प्रशिक्षुओं ने आंवला, चीकू, एरिका पाम, शहतूत, पीपल, नीम, एलोविरा, मोरिंगा, स्पिरुलिना, बनियान आदि औषधीय एवं फलदार पौधे लगाये. डॉ संजीता कुमारी ने कहा कि हमें पर्यावरण पर विशेष ध्यान आकृष्ट करने की आवश्यकता है. डॉ मनीष कुमार पासवान ने पर्यावरण दिवस की महत्ता पर प्रकाश डाला. कार्यक्रम में डॉ रविकांत तिवारी, डॉ पूजा कुमारी, पवन कुमार, गौतम कुमार, पंकज कुमार पांडेय, अवधेश कुमार यादव, स्वर्ण सिंह, संजीत कुमार, अनिल दास, दीपक कुमार पांडेय, विवेक कुमार, उमेश कुमार दांगी, सोनू वर्णवाल, जितेंद्र कुमार यादव, सुरेश कुमार, शंकर पंडित, रंजीत कुमार दास, धनेश्वर कुमार दास, तुलसी साव, पम्मी वर्णवाल, सृष्टि कुमारी, आशा कुमारी आदि मौजूद थे. धन्यवाद ज्ञापन सहायक प्राध्यापक संजीत कुमार ने किया.

पृथ्वी को सुरक्षित रखना हम सभी की जिम्मेदारी - डॉ मृदुला

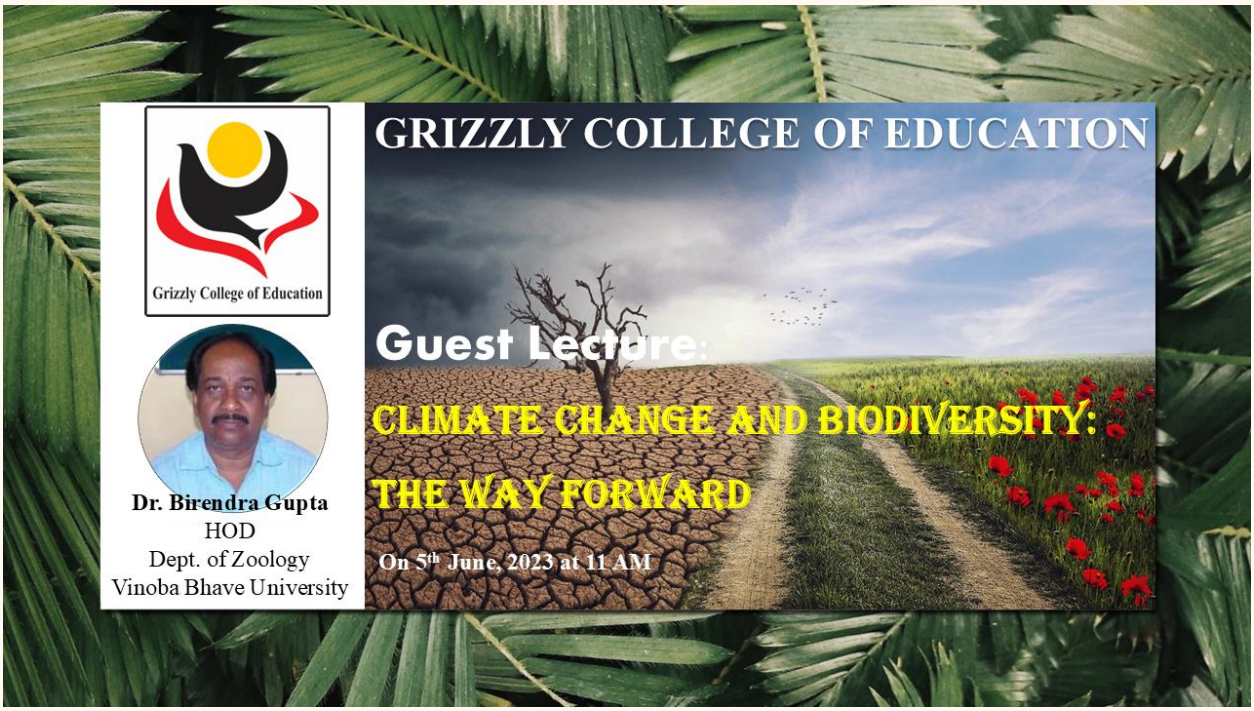
ग्रिजली कॉलेज ऑफ एजुकेशन में विश्व पृथ्वी दिवस के अवसर पर पोस्टर मेकिंग प्रतियोगिता का आयोजन

नव प्रदेश संवाददाता

कोडरमा। ग्रिजली कॉलेज ऑफ एजुकेशन में राष्ट्रीय सेवा योजना के तत्वाधान में विश्व पृथ्वी दिवस के अवसर पर पृथ्वी बचाओ विषय पर पोस्टर मेकिंग प्रतियोगिता का आयोजन किया गया। जिसमें महाविद्यालय के बी. एड. सत्र 2023 - 2025 के प्रशिक्षुओं के द्वारा अपनी कलात्मक कलाओं का शानदार प्रदर्शन करते हुए उक्त विषय पर पोस्टर बनाए गए। इस अवसर पर महाविद्यालय की उप निदेशिका डॉ. संजीता कुमारी ने अपने संबोधन में कहा कि आज हमारी पृथ्वी के वातावरण में बहुत अधिक परिवर्तन आ गया है। जिसके लिए हम सभी जिम्मेदार हैं। अतः हम सभी को अपनी पृथ्वी को सुरक्षित रखने का संकल्प लेना चाहिए। जिससे आने वाली पीढ़ी को किसी भी प्रकार की समस्या नहीं हो। इस अवसर पर महाविद्यालय के प्राचार्य डॉ मृदुला भगत ने कहा कि पृथ्वी को सुरक्षित रखना हम सभी की

कार्यक्रम पदाधिकारी सौरभ शर्मा ने अपने संबोधन में कहा कि विश्व पृथ्वी दिवस मनाने का उद्देश्य पृथ्वी के वायुमंडल में हो रहे विभिन्न प्रकार के परिवर्तनों के प्रति सभी को जागरूक करना है। जिससे सभी पृथ्वी के प्रति अपनी जिम्मेदारी को आवश्यक समझे। पोस्टर मेकिंग प्रतियोगिता में बी. एड. सत्र 2023- 2025 के प्रशिक्षु मनीषा, विनीता, पूनम, शिफा नूरी, समीउल्लाह, रिंकी कुमारी आदि ने प्रतिभा लिया। संपूर्ण कार्यक्रम सौरभ शर्मा की देखरेख में संपन्न हुआ।

Glimpses of Activities



Glimpses of Activities

6. Recommendations

The Green Audit Report for Grizzly College of Education provides a detailed assessment of the college's current environmental sustainability efforts and highlights areas where improvements can be made. In line with the institution's commitment to promoting eco-conscious practices, the recommendations presented here aim to strengthen its sustainability initiatives, enhance resource management, and further reduce its environmental footprint. These recommendations are based on a thorough analysis of the college's existing green practices, focusing on key areas such as renewable energy, waste management, water conservation, transportation, and infrastructure development.

By implementing these recommendations, Grizzly College of Education can build upon its successful green initiatives and take proactive steps towards achieving long-term environmental sustainability. The proposed actions are designed to not only address immediate concerns but also create a robust framework for continuous improvement in the years to come. These efforts will help the college set an example of environmental responsibility, inspire the campus community, and contribute to broader global sustainability goals.

Renewable Energy Usage

Current Practices: The college has installed solar panels to reduce its carbon footprint, showcasing a proactive approach toward renewable energy.

Recommendations:

- **Expand Solar Panel Installations:** Consider increasing the number of solar panels on campus to meet more of the college's energy needs, especially in areas with high electricity consumption.
- **Explore Wind Energy:** Investigate the feasibility of adding small-scale wind turbines to complement the solar panels and diversify renewable energy sources.

2. Waste Management and Recycling Programs

Current Practices: The college has a recycling program in place, but there may be gaps in managing certain types of waste.

Recommendations:

- **Comprehensive Recycling System:** Expand the recycling program to include plastics, metals, and other materials that are currently under-represented in the recycling bins.
- **E-Waste Recycling:** Partner with local organizations for the safe disposal and recycling of electronic waste, which is often a neglected waste category in educational institutions.
- **Waste Segregation Awareness:** Strengthen the awareness programs to encourage students and staff to segregate waste at the source to streamline recycling efforts.

3. Water Conservation Initiatives

Current Practices: Rainwater harvesting systems and water-saving fixtures have been implemented to minimize water consumption.

Recommendations:

- **Upgrade to Water-Saving Fixtures:** Consider the installation of more water-efficient faucets, low-flow toilets, and waterless urinals in all campus buildings.
- **Expand Rainwater Harvesting:** Increase the capacity of the rainwater harvesting system to cover more areas of the campus, especially the athletic fields and gardens.
- **Use Sprinkle System:** Use sprinkle system for landscaping and maintaining green spaces, gardening and other purposes.

Carbon Offset Programs

Current Practices: Tree plantation drives are being conducted to reduce CO_2 emissions. Tree distribution through college nursery is extensively practiced in the college.

Recommendations:

- **Expand Tree Plantation Drives:** Organize annual or semi-annual tree-planting campaigns to increase the number of trees on campus, thus absorbing more CO_2.
- **Adopt Other Carbon Offsetting Activities:** Explore other methods of carbon offsetting such as investing in carbon credits or supporting sustainable agriculture projects in the local community.

Sustainable Transportation

Current Practices: The college promotes eco-friendly commuting options like carpooling, biking, and public transportation.

Recommendations:

- **Encourage Carpooling and Biking:** Provide additional incentives for carpooling and biking, such as reserved parking spots for carpoolers and dedicated bike lanes.

- **Public Transport Partnerships:** Partner with local public transportation authorities to offer discounts or free passes to students and staff using public transport.

2. Green Building Practices

Current Practices: Sustainable construction materials and eco-friendly designs are being used for campus infrastructure.

Recommendations:

- **Retrofitting Existing Buildings:** Retrofit older buildings with energy-efficient technologies, such as LED lighting, insulation, and high-efficiency HVAC systems to further reduce energy consumption.
- **Eco-Friendly Landscaping:** Expand the use of native plants in campus landscaping to reduce water consumption and increase biodiversity.

7 Environmental Education and Awareness Programs

Current Practices: The college incorporates environmental education into its curriculum and hosts awareness programs.

Recommendations:

- **Incorporate Sustainability Across Disciplines:** Integrate sustainability and environmental responsibility into all academic programs, not just those focused on environmental sciences.
- **Offer Certification Programs:** Create short courses or workshops on sustainability for faculty, staff, and students to deepen their understanding of green practices and environmental challenges.
- **Student-Led Green Initiatives:** Empower students by encouraging them to lead sustainability initiatives on campus, such as waste reduction challenges or sustainability-themed events.

8 Green Campus Development

Current Practices: The college has started implementing green campus development strategies.

Recommendations:

- **Develop More Green Spaces:** Increase the number of green spaces, such as community gardens, to encourage outdoor activities while enhancing campus biodiversity.

- **Sustainable Campus Infrastructure:** Ensure that all new campus developments adhere to sustainable building practices and that older buildings are refurbished to align with green standards.
- **Eco-Friendly Campus Signage:** Use eco-friendly materials for campus signage and incorporate sustainability messages to keep the community engaged in green practices.

9. Energy Efficiency Upgrades

Current Practices: The college prioritizes energy-efficient designs and technologies in its infrastructure.

Recommendations:

- **Energy Audits:** Conduct regular energy audits of all campus buildings to identify opportunities for further energy savings.
- **Smart Energy Management Systems:** Implement smart building technologies such as energy management systems that monitor and adjust energy use based on real-time data.
- **Replace Outdated Equipment:** Gradually replace outdated equipment with energy-efficient alternatives, such as Energy Star-rated appliances and LED lighting.

10. Green Audit and Reporting

Current Practices: Regular green audits are conducted to assess environmental performance.

Recommendations:

- **Detailed Green Audits:** Ensure that future audits include specific, measurable data on energy consumption, water use, and waste generation to provide a clearer picture of the college's environmental footprint.
- **Publish Annual Sustainability Reports:** Publicly release an annual sustainability report that highlights the college's achievements, challenges, and future goals in environmental sustainability.
- **Establish Long-Term Sustainability Goals:** Set long-term sustainability goals and report progress annually, aligning with global initiatives such as the United Nations Sustainable Development Goals (SDGs).

Table 10. 1 Recommendations for Enhancing Green Initiatives at GCE

Area of Focus	Recommendation
Renewable Energy	Expand renewable energy usage by investing in additional solar panels and exploring wind energy options.
Waste Management	Implement a comprehensive recycling program for plastics, metals, and other materials. Partner with local organizations for e-waste management.
Water Conservation	Install more water-saving fixtures, expand rainwater harvesting systems, and launch extensive awareness campaigns on water usage.
Carbon Offset Programs	Develop tree plantation drives and other initiatives to offset carbon emissions and contribute to campus aesthetics.
Sustainable Transportation	Promote carpooling, cycling, and the use of electric vehicles. Offer incentives for using sustainable transportation methods.
Green Infrastructure Development	Continue maintaining and expanding green spaces. Use drought-tolerant plants and incorporate efficient irrigation systems.
Environmental Education and Awareness	Integrate sustainability modules into the curriculum and organize workshops, seminars, and guest lectures on environmental topics.
Regular Monitoring and Reporting	Establish a team to monitor environmental performance, set measurable targets, and report progress on green initiatives.
Stakeholder Engagement	Foster collaboration with alumni, local communities, and industry partners for shared resources, best practices, and innovation.
Continuous Improvement	Conduct regular reviews of green initiatives, seeking feedback from the campus community to identify areas for improvement.
Water Efficiency	Fix water leaks in plumbing, introduce greywater systems, and install automated touchless faucets to reduce water wastage.
Sustainability Policies	Develop and implement water conservation and sustainability guidelines for the college community to follow in daily operations.

The recommendations outlined for Grizzly College of Education are designed to elevate the institution's commitment to environmental sustainability and ensure its long-term success in reducing its ecological footprint. By expanding renewable energy initiatives, enhancing waste management systems, and adopting advanced water conservation measures, the college can create a more sustainable campus that sets a standard for environmental responsibility. Additionally, focusing on sustainable transportation options, green infrastructure development, and further integrating sustainability into the curriculum will reinforce the college's role as a leader in fostering eco-consciousness.

The continued dedication to energy efficiency, green campus development, and regular green audits will provide the necessary framework for ongoing improvement, ensuring that sustainability remains a central part of the college's mission.

Implementing these recommendations will not only reduce the college's environmental impact but also instill a culture of sustainability within the campus community, empowering students, faculty, and staff to be active participants in environmental stewardship.

In conclusion, these recommendations serve as a strategic pathway for Grizzly College of Education to build on its current green initiatives and achieve even greater sustainability outcomes. By taking these steps, the college will not only fulfill its environmental responsibilities but also inspire future generations to adopt sustainable practices that contribute to a greener, more sustainable future.

7. Conclusions

Green Audit Report for the academic session 2023-2024 provides a comprehensive evaluation of Grizzly College of Education's (GCE) environmental initiatives and practices, presenting both notable achievements and areas requiring further development. Throughout the audit period, GCE has made considerable strides in promoting sustainability and embedding environmental consciousness within its academic and operational frameworks. The college has taken proactive measures in key areas such as renewable energy adoption, waste management, water conservation, sustainable infrastructure, and carbon offset programs. These efforts reflect a clear commitment to reducing the institution's ecological footprint and fostering a culture of environmental stewardship among students, staff, and faculty members.

One of the most significant accomplishments highlighted in the report is GCE's effective use of solar energy, which demonstrates the college's forward-thinking approach to reducing its reliance on non-renewable energy sources. Similarly, the establishment of robust waste management systems, including recycling and waste segregation programs, has contributed to the overall reduction of campus waste. Furthermore, the incorporation of water conservation initiatives such as rainwater harvesting and the installation of water-saving fixtures are a testament to the college's commitment to resource efficiency and environmental responsibility.

Despite these commendable efforts, the audit reveals that there remain areas where GCE can enhance its environmental sustainability practices. Specifically, the report emphasizes the need for expanding the use of renewable energy beyond solar panels, improving waste management systems for more comprehensive recycling, and introducing sustainable transportation options that promote eco-friendly commuting. Additionally, the report highlights the importance of strengthening environmental education within the curriculum and continuing to engage the broader campus community in sustainability initiatives.

The recommendations provided in this report serve as a clear and actionable pathway for GCE to further strengthen its green initiatives. By focusing on expanding renewable energy usage, enhancing waste management practices, promoting green building standards, and increasing stakeholder engagement, the college can build on its successes and ensure that its environmental impact continues to diminish over time. Moreover, incorporating sustainability into the curriculum and fostering an ongoing dialogue about environmental responsibility will help solidify GCE's role as a leader in higher education's sustainability movement.

As GCE moves forward, it is essential that these recommendations be fully integrated into the institution's long-term strategic planning. The college must work collaboratively across all departments and stakeholders, fostering an atmosphere of innovation, continuous improvement, and shared responsibility for environmental stewardship. By doing so, GCE will not only align with national and international sustainability standards but also set a benchmark for educational institutions aspiring to make a positive impact on the environment.

In conclusion, the Green Audit Report underscores Grizzly College of Education's significant achievements in environmental sustainability while providing a roadmap for further progress. With the implementation of the outlined recommendations, the college will continue to lead by example, inspiring its community and peers to adopt more sustainable practices. Through these efforts, GCE is not only contributing to a greener campus but also to the larger global movement towards a more sustainable, resilient future for all.

Table 11. 1 The Key Aspects of the Green Audit for Grizzly College of Education

Area of Focus	Initiatives	Data/Findings	Key Performance
Renewable Energy	Solar energy installation	30percent of campus energy needs met through solar panels (estimated 50 kW capacity)	Reduced carbon footprint by 10percent
Waste Management	Recycling and waste segregation programs	70percent of campus waste is segregated; 50percent of recyclable waste is processed	Decreased landfill contribution by 25percent
Water Conservation	Rainwater harvesting and water-saving fixtures	60,000 liters of rainwater harvested annually; 20percent reduction in water usage due to conservation efforts	Water usage per capita reduced by 15percent
Carbon Offset	Tree plantation drives	500 trees planted on campus in the last year, offsetting approximately 5 metric tons of CO2 annually	Enhanced campus biodiversity and air quality

Sustainable Transportation	**Carpooling incentives, bike lanes, electric vehicle use**	**15percent of staff and students use carpooling or bicycles; 10 electric vehicle charging stations on campus**	**Reduced campus carbon emissions by 5percent**
Green Building Practices	Energy-efficient buildings and eco-friendly infrastructure	5 buildings with green building certifications (LEED); Use of sustainable construction materials	Energy savings of 20percent per building annually
Environmental Education	Incorporating sustainability in curriculum and awareness programs	80percent of students participated in workshops on sustainability, climate change, and eco-consciousness	Increased environmental awareness among 95percent of students
Biodiversity & Green Spaces	Native plant species and campus green spaces	1,000 sq. meters of green space maintained, with over 40 species of native plants	Increased biodiversity on campus, including 8 species of birds
Monitoring and Reporting	Regular environmental performance monitoring and reporting	Annual environmental audit completed; performance reports shared with stakeholders	Continuous improvement in key sustainability metrics

References

- **The Indian Electricity Rules, 1956**
- **Electrical Act 2003.**
- **Electrical Amendment Act 2006.**
- **Energy Conservation Act 2010.**
- **E-waste management rules 2016.**
- **Environmental Protection Act 1989.**
- **Environmental Protection Amendment Act 2005.**
- **The Air (Prevention & Control of Pollution) Rules – 1981.**
- **The Air [Prevention & Control of Pollution] Amendment Act – 1987.**
- **The Central Motor Vehicle Act, 1988.**
- **The Central Motor Vehicle Amendment Act, 2011.**
- **The Environment [Protection] Act – 1986.**
- **The Environment [Protection] Amendment Act – 1991.**
- **The Environment [Protection] Amended Act – 2010.**
- **The Gas Cylinder Rules – 1981.**
- **The Gas Cylinders Rules – 2016.**
- **The Petroleum Act – 1934.**
- **The Petroleum Rules – 2002.**
- **The Water [Prevention & Control of Pollution] Act – 1974.**
- **The Water (Prevention & Control of Pollution) Rules – 1975.**
- **The Water [Prevention & Control of Pollution] Amendment Act – 1988.**

Annexure

Well-ventilated building structure

Bio-Gas Plant

Well maintained Clean Campus

Solid waste collection

Water Management-Bore Well

Solar Energy System

Glimpses of Green Initiatives

Plantation Drive

Lush Green Environment

Community Involvement

Poster Making

Vermicompost

Waste Management

Glimpses of Green Initiatives

Save Energy Campaign

Save Water Campaign

Cleanliness Campaign

Swachh Bharat Campaign

Sustainable Environment Campaign

Plastic Free Campaign

Glimpses of Green Awareness

GRIZZLY COLLEGE OF EDUCATION

Grizzly College of Education

Green Audit Report- 2023-24

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