CRITERION 7- Institutional Values and Best Practices

Key Indicator- 7.1 Institutional Values and Social Responsibilities

7.1.3 Quality audits on environment and energy regularly undertaken by the Institution

SHISHURAM DAS COLLEGE

Bhusna (Near Sarisha), South 24 Parganas, West Bengal- 743368

Principal
Shishuram Das College
Bhusna, Kamarpole, S. 24 Pgs.

GENDER AUDIT REPORT

2018-2019

Sishuram Das College

Bhusna, South 24 Parganas

Performed by: Nayabad Integrated Social and Environmental Welfare Society, Kolkata

CONTENT

Section I

Gender Audit

1. Gender audit

A. Introduction to gender audit

In 1983, the Australian parliament made a landmark decision regarding gender equality. This initiative originated from "femocrats" within the Labor Party of Australia, which was the ruling party at the time. They passed a resolution to examine the potential impact of the national budget on the status of women in the country. A year later, this resolution was put into action, and the national budget was presented to the Australian parliament along with the first Women's Budget Statement. This Statement was a comprehensive report outlining the effects of the proposed budget on Australian women and girls. Since then, approximately 40 countries have incorporated gender considerations into their planning documents.

B. Definition of gender audit

A gender audit is an assessment process designed to evaluate institutional gender equality by examining policies, programs, projects, service provisions, structures, proceedings, and budgets. It helps identify gender patterns in the organization's composition, structures, processes, culture, and human resource management, as well as in the design and delivery of policies and services. The gender audit has two dimensions:

i. **Internal audit:** This focuses on how well an organization promotes gender equality within its own structures and internal operations. It monitors and evaluates progress in gender mainstreaming and contributes to capacity building.

ii. **External audit:** This measures how effectively an organization incorporates gender considerations into its policies, programs, projects, and services in terms of content, delivery, and evaluation. External gender audits assess the level of gender integration, ensuring that both women and men benefit from the organization's initiatives.

C. Aims and objectives of gender audit

Aims of gender audit

i. **Assess Gender Equality**: Evaluate the extent to which gender equality is integrated into organizational policies, practices, and culture.

ii. **Identify Gaps**: Detect disparities between genders in various aspects of organizational operations, such as pay, promotions, and opportunities.

iii. **Promote Accountability**: Enhance transparency and accountability by providing evidence-based recommendations for improving gender equity.

iv. **Support Strategic Planning**: Aid in the development of targeted strategies and interventions to address identified gender imbalances.

Objectives of gender audit

i. **Review Policies**: Examine existing policies and procedures to determine their impact on gender equality.
ii. **Analyze Data**: Collect and analyze gender-disaggregated data to understand trends and issues related to gender.
iii. **Evaluate Practices**: Assess organizational practices and their effectiveness in promoting gender equity.
iv. **Gather Feedback**: Obtain input from employees and stakeholders on their experiences and perceptions regarding gender-related issues.
v. **Develop Recommendations**: Formulate actionable recommendations based on findings to improve gender balance and inclusivity.
vi. **Monitor Progress**: Establish benchmarks and indicators to track progress in implementing gender equality initiatives.

D. Importance of gender audit

i. **Promotes Gender Equality**: Gender audits help assess how well an organization is integrating gender equality into its policies and practices, ensuring that both women and men have equal opportunities and resources.
ii. **Identifies Gaps and Disparities**: By examining various aspects of organizational operations, gender audits reveal existing gender imbalances and areas where improvements are needed.
iii. **Enhances Policy Development**: The insights gained from a gender audit can guide the creation of more effective, gender-responsive policies and programs.
iv. **Strengthens Accountability**: Gender audits provide a framework for tracking progress and holding organizations accountable for their commitments to gender equality.
v. **Encourages Inclusive Practices**: The audit process highlights successful mechanisms and practices, offering valuable lessons for fostering a more inclusive organizational culture.
vi. **Optimizes Resource Allocation**: It evaluates how resources are allocated for gender equality initiatives, helping ensure that investments are effectively targeted.
vii. **Improves Human Resources Policies**: Gender audits assess the sensitivity of HR policies to gender issues, facilitating the development of more equitable employment practices.
viii. **Supports Strategic Planning**: By identifying areas for improvement, gender audits help organizations develop targeted strategies and action plans for enhancing gender equality.
ix. **Tracks Progress**: Regular audits measure the effectiveness of gender mainstreaming efforts and inform necessary adjustments to action plans.

E. Methodology of gender audit

i. **Define Scope and Objectives**: Establish the goals, scope, and specific objectives of the gender audit to guide the process and ensure clarity.

ii. **Develop Audit Framework**: Create a framework outlining key areas for assessment, including policies, practices, and data collection methods.

iii. **Collect Data**: Gather relevant data through various methods such as surveys, interviews, focus groups, and document reviews to understand gender-related issues.

iv. **Analyze Data**: Examine the collected data to identify patterns, disparities, and gaps in gender equality within the organization.

v. **Review Policies and Practices**: Evaluate existing policies, procedures, and organizational practices to assess their impact on gender equality and identify areas for improvement.

vi. **Engage Stakeholders**: Involve employees, managers, and other stakeholders in the audit process to gain diverse perspectives and insights.

vii. **Assess Resources**: Evaluate the allocation of resources dedicated to gender equality initiatives and their effectiveness.

viii. **Document Findings**: Compile and organize the findings from the data analysis and policy review into a comprehensive report.

ix. **Develop Recommendations**: Formulate actionable recommendations based on the audit findings to address identified issues and improve gender equality.

x. **Present Results**: Share the audit results and recommendations with relevant stakeholders, including organizational leadership, to facilitate informed decision-making.

xi. **Monitor and Evaluate**: Establish mechanisms for tracking the implementation of recommendations and assess progress over time to ensure continuous improvement.

Section II

Gender Auditing in the College

2. Gender auditing in the college

A. College details

The Government of West Bengal's Department of Higher Education sanctioned the establishment of Shishuram Das College, a General Degree College located in Bhusna, Kamarpole, Diamond Harbour Sub-division, in the district of South 24 Parganas, starting from the 2010–2011 academic session. In 2010, Shishuram Das College began its operations in the Sarisha High School building, marking the start of its role as a hub for higher education. This initiative met the educational needs of local residents, especially students from economically disadvantaged and middle-class families who could not travel long distances for higher education.

Table 1: Brief about the college

Name of the College	**Shishuram Das College**
Name of the Principal	Dr. Nilesh Ranjan Maity
Latitude	22.25288
Longitude	88.18078
Address	Bhusna, P.O. - Kamarpole, P.S. – Parulia Coastal, District - South 24 Parganas, Pin- 743368, West Bengal
Contact Details	8918979749, shishuramdascollege@yahoo.co.in
No. of Departments (UG)	9
No. of Students	618
No. of Teachers	29
No. Non-teaching Staff	9

The college's creation was made possible thanks to the generosity of the late Pranapati Das, an educationist and philanthropist, who contributed Rs. 11 lakhs and 0.54 acres of land in honor of his father, Shishuram Das. Sri Rishi Kumar Halder, former MLA and college president, provided substantial support for the college's foundation. The Diamond Harbour Sarisha Janakalyan Sanstha also played a crucial role in establishing the college, which now occupies a substantial 5.08-acre site. The foundation stone of the new college building was laid on August 16, 2010, by Dr. Suranjan Das, then Vice-Chancellor of the University of Calcutta, and Dr. Subimal Sen, then Chairman of the West Bengal State Council of Higher Education, with Sri Rishi Kumar Halder, Dr. Haraprasad Samaddar, and others in attendance. Since its inception, the college has grown both structurally and academically, gaining a reputation for its excellent academic environment. Facilities include general classrooms, smart classrooms, a library, a canteen, common rooms for students, and a playground for sports and recreational activities.

B. Purpose of conducting the audit

Gender auditing is conducted to ensure that gender equality is effectively integrated into all aspects of the institution's operations. By evaluating policies, practices, and organizational culture, gender audits help to identify disparities and imbalances in academic and administrative areas. This process

reveals how well the college supports equitable opportunities for all genders, from admissions and faculty appointments to resource allocation and career development. Addressing these disparities is crucial for creating an inclusive environment that promotes fairness and equal opportunity for students and staff alike.

Additionally, gender audits provide valuable insights that inform strategic planning and decision-making. By assessing the impact of current practices and gathering feedback from stakeholders, colleges can develop targeted strategies to address identified gender imbalances. These audits not only enhance institutional accountability by providing evidence-based recommendations but also help colleges align their goals with broader commitments to gender equality and social justice. Ultimately, gender auditing contributes to fostering a supportive and equitable academic community where everyone has the opportunity to thrive.

C. Methodology of conducting the audit

Figure 1: Methodology of the Gender Audit

The methodology followed for the gender audit has been shown in Figure 1.

Section III

Gender Audit Report of the College

3. Gender audit report of the college

A. Understanding gender balance

Gender balance refers to an equitable representation and participation of all genders within an institution, often measured through the gender ratio. In a college setting, achieving gender balance means ensuring that the gender ratio of students, faculty, and staff reflects equal opportunities, rights, and responsibilities for all genders. Gender balance goes beyond numerical equality; it involves fostering an inclusive environment where everyone, regardless of gender, can thrive academically, professionally, and personally. This requires addressing biases, implementing fair policies, and promoting a culture of respect and equality.

B. Importance of maintaining gender balance in a college

Maintaining a balanced gender ratio in a college is crucial for several reasons. Firstly, it creates an inclusive and diverse academic environment, enhancing learning outcomes and fostering innovation. A balanced gender ratio brings diverse perspectives to discussions, broadening viewpoints and leading to a more comprehensive understanding of subjects. Secondly, a balanced gender ratio ensures fairness and equity, allowing all students and staff to access opportunities equally, which can improve morale and satisfaction. Additionally, it prepares students for the real world by promoting respect and collaboration across genders, essential skills in today's global workforce. Lastly, colleges that prioritize a balanced gender ratio are more likely to attract and retain talented individuals, contributing to the institution's overall success and reputation.

C. Gender balance in the Shishuram Das College

The Gender audit team carried out a comprehensive evaluation of the operational environment at Shishuram Das College. The analysis indicated that the college provides equal access to all necessary facilities for everyone, regardless of gender.

Table 2 depicts the gender-wise distribution of all stakeholders associated with the Shishuram Das College.

Table 2: Gender-wise Distribution of All Stakeholders

All Stakeholders	Male	Female	Transgender	Total
Students	195	423	0	618
Teachers	16	13	0	29
Non-teaching Staff	8	1	0	9

Out of the total 618 registered students, an overwhelming 68.44% (423) were females while only 31.55% (195) were males. This was testimony to the gender-inclusiveness of the college. Of the total 29 teachers, 55.17% (16) were males while 44.82% (13) were females. This distribution was more or less even. As far as the non-teaching staff was concerned, the distribution was found to

be skewed in favour of the males with 88.89% (8) of the total 9 staff being male while only 1(11.11%) being female (Figure 2).

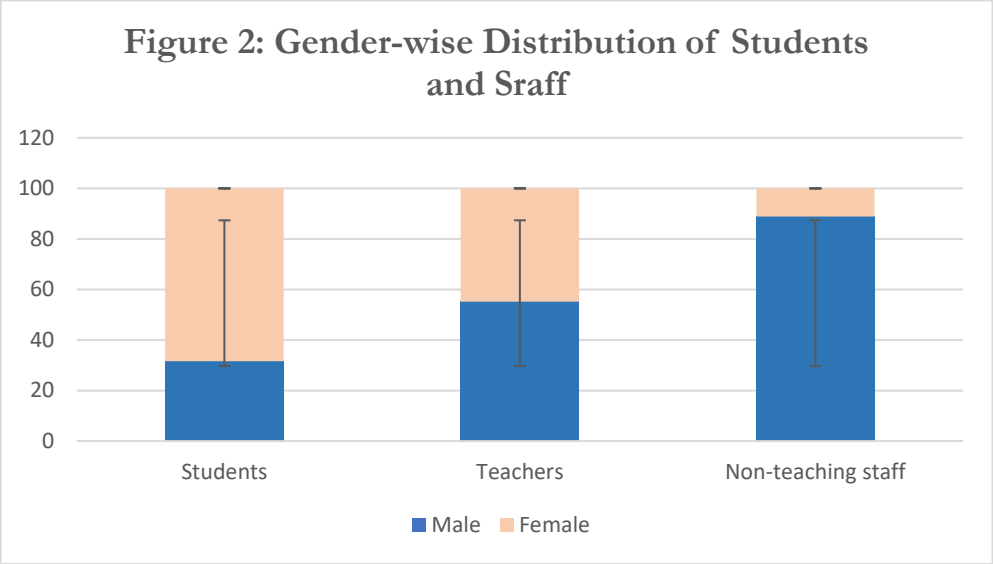
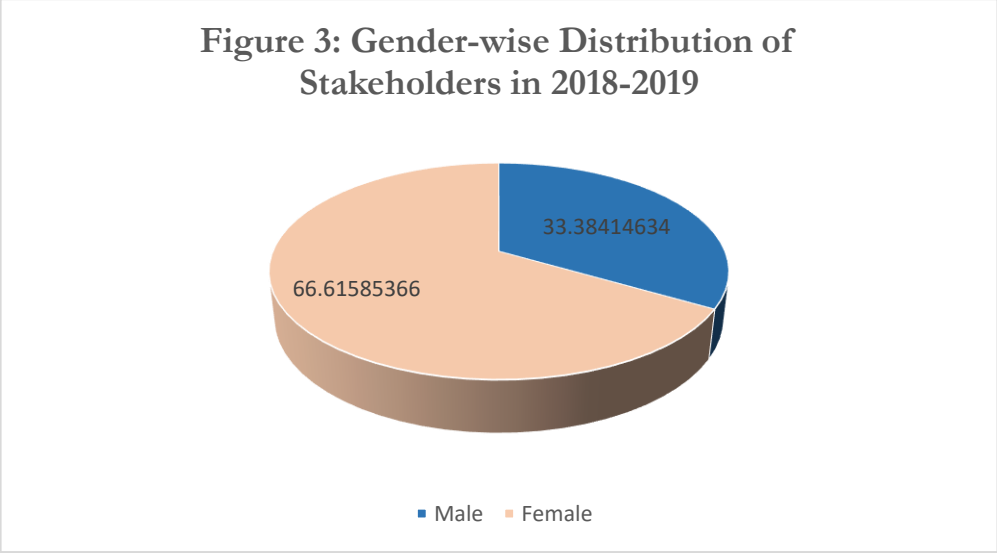


Figure 3 depicts the gender balance of all stakeholders associated with the college. This indicates that the male-female ratio of all stakeholders in the college is in favour of females, because of the significantly high percentage of female students. This is commendable and proof of the safe and secure environment that the institution provides to women. Notably, no person belonging to the third gender were found.

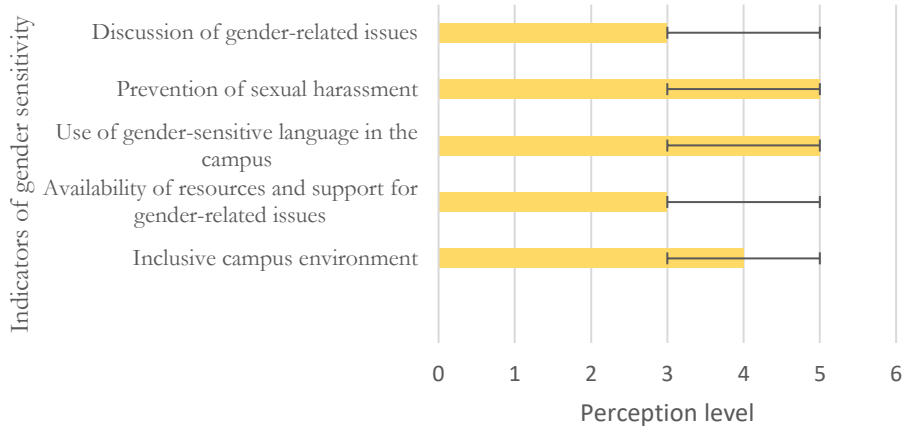


D. Gender sensitization in the college

The Shishuram Das College is dedicated towards promoting an atmosphere of gender equity in its campus. Gender-segregated facilities like toilets and restrooms were observed during the survey. Facilities for both males and females were observed to be in good condition, indicating equitable care for all gender groups in the college. Also, CCTV surveillance and security guards at the gate ensure proper security for all individuals on the campus. Extra-curricular activities were observed to promote gender diversity and inclusion. Moreover, the support faculty, staff, and

students were found to balance caregiving responsibilities with academic or professional pursuits in a suitable manner. Figure 4 indicates the level of perception of the gender audit team regarding some basic indicators of gender inclusivity and sensitivity inside the college campus. This perception was based on information collected from the college staff and students. No instances of sexual harassment or abuse were reported during the academic year in which the audit was performed. This indicated that the campus was safe for women.

Figure 4: Level of Gender Inclusivity and Sensitivity in the Campus



Section IV

Summary and Recommendations

4. Summary and Recommendations

A. Summary

The Shishuram Das College nurtures an environment conducive to the overall development of all its students and staff. Gender inclusivity and sensitivity guide the daily workings of the college. Even so, the audit team observed areas where both these aspects could be improved. For instance, the extremely low proportion of female non-teaching staff was a concern. Also, 3 out of 10 (30%) members of the governing body were found to be women. There was scope for more inclusion in this regard. The lack of any specific policy on gender also was a significant setback to the otherwise gender-friendly environment of the college. However, the college authorities are aware of these shortcomings and willing to take all necessary steps to address them. After observing every detail thoroughly, the gender audit team has assigned a score of **6.5** out of 10 according to its perception to the Shishuram Das College.

B. Recommendations

The following recommendations may help the college to promote a holistic gender-based development inside its campus.

i. A specific policy on gender must be drafted and implemented immediately.
ii. An IQAC cell and a Woman Development Cell must be immediately established.
iii. Awareness programmes and workshops on gender inclusivity, sensitivity, and security must be conducted
iv. Gender-based courses may be introduced in the curriculum.
v. More females must be hired in the non-teaching category
vi. Persons belonging to the third gender must be hired in both the teaching and non-teaching categories, and eventually included in the governing body of the college.
vii. More females must be included in the governing body of the college.

Certificate

Nayabad Integrated Social and Environmental Welfare Society

Certificate

Nayabad Integrated Social and Environmental Welfare Society is a non-profit and voluntary organization registered under the West Bengal Societies Registration Act XXVI of 1961 (Reg. No. No. S0005896 of 2019-2020).

This is to certify that the 'Nayabad Integrated Social and Environmental Welfare Society' (NISEWS), Kolkata 700099 has conducted a brief and precise 'Gender Audit' for the 'Shishuram Das College', during the assessment year 2018 to 2019. The Gender Audit was performed in accordance with the NAAC guidelines.

NAYABAD INTEGRATED SOCIAL AND ENVIRONMENTAL WELFARE SOCIETY ★ Kolkata 700099

Dr. Malancha Dey
(President, NISEWS)
Date: 24.06.2019

GREEN AUDIT REPORT

2018-2019

Sishuram Das College

Bhusna, South 24 Parganas

Performed by: Nayabad Integrated Social and Environmental Welfare Society, Kolkata

Table of Contents

1.1 Introduction to Green Audit

I. Basis of Green Audit

The term "Green" refers to being eco-friendly and not harming the environment. It can be acronymically expanded to "Global Readiness in Ensuring Ecological Neutrality" (GREEN). Green Audit is the systematic identification, quantification, recording, reporting, and analysis of environmental diversity components. Also known as Environmental Auditing, Green Audit examines environmental practices within and outside a college campus to enhance eco-friendly conditions. It assesses how organizational activities affect health and the environment, guiding improvements. Educational institutions, with both negative and positive environmental impacts, can lead in sustainable solutions. Green Audit helps colleges identify energy, water, or resource use and waste types and volumes, informing resource-saving and waste minimization strategies. It promotes health consciousness, environmental awareness, values, and ethics, offering staff and students insight into the campus's environmental impact.

II. Objectives of Green Audit

Green Audit regulates all such practices and checks whether our processes are consuming more than the required resources and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion, it is necessary to verify the processes and convert them into green and clean ones. The Green Audit provides an approach to it. It also increases overall consciousness among the people working in institutions toward an environment. The various components of the Green Audit such as:

i. To map the geographical location of the college and its surroundings
ii. To record the meteorological parameter where the college is situated
iii. To document the quality of drinking water
iv. To document the waste disposal system

III. Benefits of Green Audit

There are many advantages of a Green Audit for an educational institute

- It would help to defend the environment in and around the campus
- Recognize the cost-saving methods through waste minimization and management
- Point out the prevailing and fourth-coming impacts on the environment
- Improve social and environmental awareness for the institute and students
- Authorize the organization to frame a better environmental performance
- Improvement of environmental ethics and values and stewardship towards responsible environment management
- Finally, it will help to build a positive impression through green initiatives during the upcoming NAAC visit.

1.2. Details of the Audited Institution

The Department of Higher Education, Government of West Bengal approved the establishment of General Degree College named 'Shishuram Das College' at Bhusna, P.O. - Kamapole, P.S. - Diamond Harbour, Dist. - South 24 Parganas with effect from 2010 – 2011 academic session. Accordingly, in 2010, as a 'Destination of Higher Education' Shishuram Das College started its journey in the first year at Sarisha High School building. Thus the aspiration for higher education of the local people, particularly the students belonging to the poor and middle-class families who cannot afford to go far off places for meeting the demand of higher education, was fulfilled. The establishment of the College was possible for the educationist and philanthropist Late Pranapati Das who donated Rs. 11 Lakhs and 0.54 acre of land for the college in the name of his father Late Shishuram Das. Sri Rishi Kumar Halder (Ex-MLA and former President of the college) supported wholeheartedly towards the foundation of the College. Diamond Harbour Sarisha Janakalyan Sanstha played an important role in the foundation of the college. The college owes its huge premises (an area of 5.08 acres) to the society. The foundation stone of the present college building was laid on 16th August 2010 by Dr. Suranjan Das, the then Vice-Chancellor of the University of Calcutta and Dr. Subimal Sen, the then Chairman of West Bengal State Council of Higher Education in the presence of Sri Rishi Kumar Halder, Dr. Haraprasad Samaddar and others. Since then, the college has expanded structurally and academically, thus earning the reputation of having an excellent academic environment. Apart from general classrooms, smart classroom and library the college also has canteen and common rooms for students and a playground for sports and other outdoor activities.

Table 1: Brief about the College

Name of the College	Sishuram das college
Name of the Principal	Dr. Nilesh Ranjan Maity
Latitude	22°14´58´´N
Longitude	88°18´07´´E
Total Campus Area	5.08 acre
Address	Bhusna, P.O. - Kamapole, P.S. - Diamond Harbour, Dist. - South 24 Parganas, West Bengal, Pin- 743368
Contact Details	8918979749, shishuramdascollege@yahoo.co.in
No. of Departments (UG)	10
No. of Students	618
No. of Teachers	29
No. of Non-teaching Staff	9

1.3. Vision and Mission Statement of the College

Vision:

The College aims at the upliftment of the people of the locality, particularly the poor and middle classes, through spreading higher education which will lead to enlightenment and employment. Since its establishment the college has aimed at propagating quality education among the students. Being located in the rural area of South 24 Parganas the college has evolved as a seat of academic excellence in the region and has significantly contributed in the fields of sports, physical education, socio-cultural activities and public awareness. Since its inception the college is committed to impart higher education to the aspiring youth.

Mission:

- To offer suitable undergraduate courses and to make the young students fit for educational and administrative services.
- To help every student in realizing his/her abilities and also to inspire him/her to know each and every scope of self-employment and entrepreneurship that can bring success in his/her future life.
- To offer value-based and value-added education to groom the students as capable, sensible and responsible citizens of the country.
- To provide quality education to the students irrespective of caste, creed, religion and diverse socio-economic status.
- To motivate the students to achieve academic distinction and excellence in every sphere of culture and administration.
- To inculcate values in the students and harbour a strong personality in each of them so that they can become the responsible citizens of modern India in the near future.

1.4. Methods of Auditing

The audit process was carried out in three phases from July 2018 to June 2019. At first, all the secondary data required for the study was collected from various key information sources and concerned departments. A broad reference work and literature review were carried out to clear the idea of green auditing. Different case studies and methodologies were studied, and the following methodology was adopted for the present audit. The methodology of the present study is based on onsite visits, personal observations, and questionnaire survey tools. Baseline data for Green Audit report preparation was collected by questionnaire survey method. Questionnaires prepared to conduct the Green Audit on the college campuses are based on the guidelines, rules, acts and, formats prepared by the Ministry of Environment, Forest and Climate Change, New Delhi, Central Pollution Control Board and, other statutory organizations. After the onsite visit and stakeholders' interview, the questionnaires were filled out. The generated data is subsequently gathered and used for further analysis. From the outcome of the overall study, a final report is prepared.

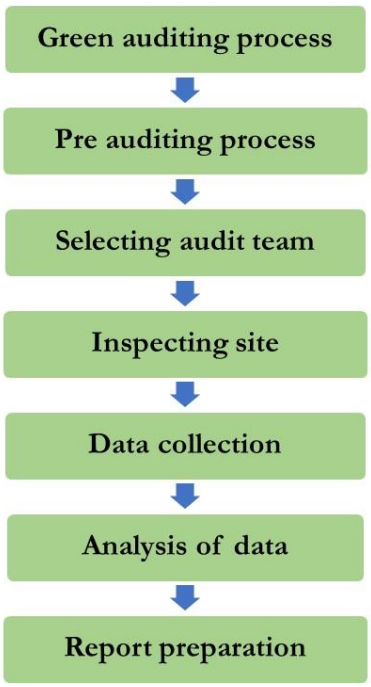


Fig. 2. Process of green audit

1.5. Scope of green audit

The scope of a green audit covers multiple facets of environmental management and sustainability practices. Key components include:

i. **Water usage:** Reviewing water consumption to find areas for reduction, implementing water-saving technologies, and ensuring proper wastewater treatment processes are in place.

ii. **Energy conservation:** Evaluating energy usage patterns, identifying inefficiencies, and recommending measures to reduce energy consumption and improve efficiency.

iii. **Waste management:** Assessing waste generation, segregation, and disposal practices. The audit identifies ways to minimize waste, promote recycling, and manage hazardous waste safely.

iv. **Pollution control:** Monitoring and controlling air, water, and soil pollution. The audit examines emissions, effluents, and practices that impact the environment, recommending strategies for pollution prevention and mitigation.

v. **Resource efficiency:** Analyzing the use of natural resources, such as raw materials and fuels, to ensure they are used efficiently and sustainably.

vi. **Compliance with environmental policies:** Ensuring that the organization adheres to local, national, and international environmental regulations and standards. This includes compliance with laws related to emissions, waste disposal, and resource use.

vii. **Sustainable practices:** Promoting the adoption of sustainable practices, such as using renewable energy sources, eco-friendly materials, and green technologies. The audit assesses the organization's overall sustainability strategy and its implementation.

viii. **Biodiversity conservation:** Evaluating the organization's impact on local ecosystems and biodiversity. This includes assessing land use practices, habitat protection efforts, and initiatives to preserve and enhance biodiversity. The audit identifies potential risks to wildlife and natural habitats and recommends actions to mitigate these impacts.

SECTION 2
WATER RESOURCE MANAGEMENET

2. Water Resource Management

I. Importance of water resource management

Water is one of the six essential nutrients, alongside carbohydrates, protein, fat, vitamins, and minerals. Approximately 60% of the human body is composed of water, and humans can survive only three to five days without fluids. Water plays critical roles in bodily functions, including waste removal, temperature regulation, and nutrient transport, which are vital for digestion.

A. Increasing Demand for Freshwater

The demand for freshwater is rising due to increasing living standards, industrialization, and urbanization. In response to this growing need, the Government of India launched the national mission on water conservation known as 'Jal Shakti Abhiyan.' This initiative urges all citizens to collaborate in addressing water scarcity by conserving every drop of water and suggests that water audits be conducted across all sectors of water use.

B. Water Auditing

A water audit is a systematic process designed to obtain a comprehensive water balance. It involves measuring the flow of water from the point of withdrawal or treatment through the distribution system, and into areas where it is used, eventually to its discharge. Water auditing is a cost-effective method for identifying and reducing water losses, optimizing water usage across multiple applications, and achieving significant water savings in sectors such as irrigation, domestic use, power generation, and industry.

C. Recommendations for Water Conservation

To address the increasing demand for freshwater, it is essential to reduce water consumption and enhance the reuse and recycling of treated wastewater. Implementing water audits can help identify inefficiencies and areas for improvement, thereby promoting sustainable water management practices. Given the vital importance of water for human survival and the growing pressures on freshwater resources, it is imperative to adopt comprehensive water conservation strategies. By conducting water audits and promoting the reuse and recycling of water, significant strides can be made towards sustainable water management, ensuring the availability of this essential resource for future generations.

D. Importance of Water Audit

i. When problems are identified, it is easier to work on solutions

ii. The process is more systematic

iii. It is possible to implement a tracking system

Climate, culture, diet habits, employment and working conditions, degree and type of development, and physiology are all thought to play a role in determining the amount of water required. According to the Southeast Asia Regional Office of the World Health Organization's (WHO) standards Administration requires 50 l per person per day (staff accommodation not included), Staff housing needs 30 l per person per day, and sanitation is dependent on technology, schools require 2 l per student; 10-15 l per student if water-flushed toilets are used.

Table 2: Yardstick of water requirements by institutions

Purpose	Requirements
Administration (excluding staff accommodation)	50 lit/day/person
Staff Housing	30 lit/day/person
School	2 lit / student
Water-flushed toilets	10-15 lit/student

II) Water quality

Table 2 provides a detailed overview of essential water quality parameters, meticulously measured following established standard protocols to ensure accuracy and reliability. WHO produces a series of water quality guidelines, including on drinking-water, safe use of wastewater, and safe recreational water environments. These guidelines are based on managing risks, and since 2004 the Guidelines for drinking-water quality promote the Framework for Safe Drinking-water. The findings reveal that nearly all parameters across various water sources meet the acceptable limits set by Indian standards, demonstrating the overall safety and quality of the water. However, an exception is noted in the levels of iron (Fe), which are marginally higher in raw water sources compared to the prescribed limits. This discrepancy highlights a specific area for improvement in the water treatment process. Despite this, the comprehensive assessment underscores the college's dedication to effective water management and conservation practices. Such diligence not only ensures compliance with regulatory standards but also promotes a sustainable and safe environment for all members of the campus community, reflecting the institution's proactive approach to maintaining high water quality standards.

Table 3 : Water quality assessment

Parameters	Water Purifier(Staff room)	Water Purifier(Ground floor)	Tube well	Tank Water
TDS(mg/l)	69	90	666	1006

III) Water storage system

The campus is equipped with three overhead tanks, each with a capacity of 1,000 liters, contributing to a total volume of 3,000 liters. These tanks play a crucial role in maintaining the water supply for various campus activities, ensuring that there is sufficient storage to meet daily demands. The uniformity in tank size simplifies maintenance and management, allowing for a consistent and reliable distribution of water across the college's facilities.

Table 3: Categories of the water reservoir and its water holding capacity

Type	Number	Volume (l)	Total Volume (l)
Overhead	1	1000	1000
Overhead	1	1000	1000
Overhead	1	1000	1000
			3000

IV) Per capita water allocation and per capita usage

The water usage on the college campus involves multiple sources and activities. Pondwater is primarily used for gardening, with a total of 4000 liters used per day over 210 days, amounting to 840,000 liters annually and accounting for 18.45% of the total water usage. Groundwater is used for drinking and other purposes. Drinking water usage includes 396 liters per day for 618 students, 58 liters for 29 permanent teachers, and 18 liters for 9 permanent non-teaching staff, totaling 100,584 liters annually and making up 2.21% of the total usage. Groundwater for toilet use is significantly higher, with 8910 liters daily for students, 1305 liters for teachers, and 405 liters for non-teaching staff, resulting in an annual consumption of 2,263,140 liters, which is 49.72% of the total water usage. Additionally, 1023 liters per day are used for washing hands and faces by all students and staff, totaling 259,842 liters annually, representing 5.71% of the total. Lastly, mopping the college's built-up area requires 2500 liters daily, amounting to 635,000 liters annually, or 13.95% of the total water usage.

Table 5: Different categories of water usage

Water Source	Activity	Category	Days	No. of Users	Water usage/day/person	Total water usage/day	Annual water usage	% of water used
Pondwater	Gardening		210	College Campus	4000	4000	840000	18.45257578
Groundwater	Drinking	Students	254	618	2	396	100584	2.209564146
		Permanent Teacher	254	29	2	58	14732	0.323623031
		Permanent NTS	254	9	2	18	4572	0.100434734
Groundwater	Toilet	Students	254	618	45	8910	2263140	49.71519328
		Permanent Teacher	254	29	45	1305	331470	7.281518208
		Permanent NTS	254	9	45	405	102870	2.259781513
	Washing hands and face	All students & staff	254	2046	0.5	1023	259842	5.70804071
Groundwater	Mopping Floor		254	College Built-up Area	2500	2500	635000	13.9492686

V) Utilization and wastewater generation

The college's annual water consumption data reveals significant utilization across various essential activities, reflecting its operational priorities and commitment to maintaining a functional and sustainable environment. Groundwater specifically allocated for gardening purposes amounts to 73,200 liters, supporting the campus's green spaces and landscaping efforts. Drinking water, vital for the health and wellbeing of students, faculty, and staff, totals 295148 liters, ensuring access to safe and potable water. The largest share of water consumption is for toilet purposes, with a substantial 6640830 liters used, underscoring the importance of sanitation facilities. Cleaning the college campus requires 635000 liters of water, contributing to the upkeep and hygiene of the campus environment. Washing hands and faces, a crucial aspect of personal hygiene, accounts for 259842 liters.

VI) Rainwater harvesting, usage, ground water recharge, waste water recycling / reuse.

Pond harvesting is a significant aspect of the water management strategy on our college campus. The harvested pond water is primarily used for gardening, promoting sustainable practices and reducing dependency on external water sources. Spanning a total area of 5.08 acres, the campus has a unique layout where only the building area is concreted, while the remaining land is natural ground. This design not only

supports the aesthetic and ecological value of the campus but also plays a crucial role in enhancing groundwater recharge. The natural ground facilitates the infiltration of rainwater, effectively replenishing the groundwater table. Despite these efforts in pond harvesting, the campus currently does not implement wastewater recycling or reuse, highlighting an area for potential future development to further improve water sustainability on campus.

VII) Accessibility to water resources

The accessibility of water resources on our college campus is commendable, ensuring that all students and staff, regardless of gender, have equal and convenient access to clean water. Strategically placed water points throughout the campus facilitate ease of access, minimizing any barriers to obtaining water for drinking, sanitation, and other daily needs. This infrastructure supports the college's commitment to inclusivity, ensuring that everyone can equally benefit from the available resources. The campus design takes into consideration the needs of all genders, providing safe and private facilities that promote comfort and dignity. By prioritizing accessibility, the college not only enhances the quality of life for its community members but also fosters an environment of equality and respect. This approach reflects a broader commitment to sustainable and equitable resource management, recognizing water as a fundamental right for all individuals on campus.

SECTION 3
ENERGY RESOURCE MANAGEMENT

3. Energy Resource Management

I. Significance of Energy Resource Management

Energy conservation is a crucial component of campus sustainability, intricately linked to reducing the overall carbon footprint. Effective energy management practices not only contribute to environmental stewardship but also enhance the economic efficiency of the institution. Energy auditing involves a thorough evaluation of energy consumption patterns and the identification of strategies to minimize energy use and its associated environmental impacts. The process includes:

A. Assessment of energy use

i. **Preliminary assessment:** Gathering basic information about the facility, including its size, usage patterns, energy bills, and existing energy systems and scheduling an initial meeting with key stakeholders to outline the audit's scope and objectives.

ii. **Data collection:** Collecting detailed data on energy consumption through utility bills, meter readings, and energy management systems and documenting all energy-consuming equipment, including lighting, HVAC systems, machinery, and appliances.

iii. **Site inspection:** Conducting a thorough on-site inspection to assess the condition and performance of energy systems and identifying any obvious inefficiencies, such as outdated equipment, poor insulation, or leaks.

iv. **Benchmarking:** Analyzing the collected data to determine energy consumption patterns and identify areas of significant energy use and benchmarking to compare the facility's energy performance against similar facilities.

B. Analysis of Energy Efficiency

i. **Performance evaluation:** Utilizing key performance indicators (KPIs) to assess energy efficiency and detect inefficiencies.

ii. **Technology review:** Assessing the effectiveness of current technologies and systems, and exploring potential upgrades or replacements with more energy-efficient alternatives.

C. Development of conservation strategies

i. **Behavioral changes:** Encouraging energy-saving behaviors among students, faculty, and staff through awareness initiatives and training.

ii. **Operational improvements:** Implementing strategies like optimizing HVAC systems, improving insulation, and deploying energy management systems (EMS) to enhance efficiency.

iii. **Renewable energy integration:** Incorporating renewable sources like solar panels, wind turbines, and geothermal systems to reduce reliance on fossil fuels.

iv. **Energy storage solutions:** Implementing advanced systems for storing and optimizing the use of renewable energy.

II) Importance of the electricity and energy resource management

From a general point of view, an energy audit provides enormous benefits in different areas

i. **Identifying cost savings**: Energy audits help in identifying opportunities for reducing energy consumption and operational costs through efficiency improvements and better management practices.
ii. **Enhancing environmental sustainability**: By optimizing energy use, audits contribute to reducing carbon footprint and environmental impact, aligning with sustainability goals.
iii. **Improving operational efficiency**: Audits reveal inefficiencies in energy systems, enabling facilities to operate equipment more effectively and extend equipment lifespan.
iv. **Compliance and risk mitigation**: Audits ensure compliance with energy regulations and standards, audits mitigate risks associated with energy supply disruptions and regulatory non-compliance.
v. **Promoting organizational responsibility**: Conducting audits demonstrates commitment to responsible resource management, fostering a culture of sustainability within the organization.
vi. **Supporting strategic decision-making**: Insights from audits inform strategic decisions on capital investments in energy-efficient technologies and renewable energy integration.
vii. **Enhancing indoor environmental quality**: Efficient energy use often correlates with improved indoor air quality and comfort for occupants, benefiting overall health and productivity.
viii. **Securing funding and grants**: Audit findings can support applications for funding or grants aimed at implementing energy-saving initiatives and renewable energy projects.
ix. **Monitoring and continuous improvement**: Post-audit monitoring ensures sustained energy efficiency gains and identifies further optimization opportunities over time.

III. Total consumption in whole campus as well different sections

A. Electrical Energy

The sustainability of the campus community is significantly influenced by its energy use, sources, management, lighting systems, and various appliances. A comprehensive assessment of these factors is crucial for formulating effective energy conservation strategies. The primary areas of energy consumption within the campus include the office, canteen, and laboratory, each serving different functions and thus having varied energy demands. Table 6 presents the energy consumption pattern of the college over one year. The calculation method used to determine energy consumption is as follows:

Energy Consumption (kWh/year) =Power (W)×Hours×Number of Units×Days

The energy consumption analysis of the college highlights the usage and impact of various appliances on campus. Air conditioners, with a total of four units each using 1.5 kW, consume a significant amount of

energy, totaling 12,192 kWh annually, as they operate for 8 hours a day over 254 days. CCTV cameras, despite their large number (13 units), have a minimal energy footprint due to their low power usage of 0.002 kW per unit, resulting in a consumption of just 52.832 kWh. The single refrigerator, operating continuously for 24 hours a day throughout the year, uses 4,876.8 kWh. Fans, which are quite numerous with 71 units, contribute 7,952 kWh to the total consumption, albeit used for a shorter period of 20 days annually. Tube lights, totaling 69 units, have a substantial energy draw of 28,041.6 kWh, given their daily usage of 8 hours across 254 days. Computers, with 7 units operating for 7 hours daily, account for 2,489.2 kWh. The projector, used for a shorter span of 200 days for 5 hours each day, consumes 120 kWh. Lastly, printers, with three units each using 0.15 kW, contribute 571.5 kWh to the total energy consumption. This comprehensive overview underscores the importance of efficient energy management and the potential benefits of adopting energy-saving technologies on campus.

Table 6. Electrical equipment and their electricity consumption in college per year

Sl No.	Appliances	No of appliances	Power used(kW)/appliance	No of days	Usage per day(hour)	Average of energy usage per year
1	Air conditioner (1.5 tonne)	4	1.5	254	8	12192
2	CCTV	13	0.002	254	8	52.832
3	Refrigerator (220 L)	1	0.8	254	24	4876.8
4	Fan	71	0.8	20	7	7952
5	Tube light	69	0.2	254	8	28041.6
6	Computer	7	0.2	254	7	2489.2
7	Projector	1	0.12	200	5	120
8	Printer	3	0.15	254	5	571.5

IV) Wiring and set-up conditions

The electrical infrastructure across the college campus has been found to be in good condition, as evidenced by a thorough survey conducted recently. The wiring of the electricity circuits is meticulously maintained, ensuring a high standard of safety and functionality. During the survey period, no instances of open wires or open circuits were detected, which is a testament to the diligent upkeep and regular inspections performed by the campus maintenance team. This level of attention to electrical safety minimizes the risk of electrical hazards, such as short circuits or electrical fires, thus safeguarding students, staff, and facilities. The well-maintained electrical system also contributes to the efficient operation of various campus facilities, ensuring that classrooms, laboratories, and administrative offices can function without interruption. Overall, the impeccable condition of the campus's electrical wiring underscores the college's commitment to providing a secure and conducive learning environment.

V. Renewable energy use

In response to growing concerns about carbon emissions and climate change, the college has embarked on several significant initiatives to transition towards renewable energy sources. Recognizing the importance of reducing its carbon footprint and promoting sustainability, the college has invested in the installation of solar panels in the parking area of the campus. The college ensures the efficiency and longevity of the solar energy system through regular maintenance. The maintenance team of the college is responsible for the routine cleaning of the solar panels. This cleaning process is crucial because it removes dust, debris, and other particulate matter that can accumulate on the panels, which can significantly reduce their efficiency and energy output. By keeping the panels clean, the maintenance team helps to maximize their performance and ensure consistent energy production. These proactive measures not only demonstrate the college's commitment to sustainability and environmental stewardship but also serve as an educational model for students and the community. By investing in renewable energy and maintaining these systems meticulously, the college contributes to the broader effort to combat climate change and fosters a culture of sustainability on campus.

VI. Energy wise-use – Day light usage

Optimizing daylight usage in a college setting for efficient electrical energy management involves several technical strategies. Primarily, the integration of advanced daylight harvesting systems, which utilize sensors to adjust artificial lighting based on natural light availability, can significantly reduce energy consumption. Architectural designs incorporating large windows, skylights, and light shelves enhance natural light penetration, minimizing the need for electrical illumination during daytime hours. Additionally, implementing energy-efficient lighting fixtures with dimmable controls allows for dynamic adjustment of light levels in response to varying daylight conditions. Automated shading devices can prevent glare and excessive heat gain, maintaining a comfortable indoor environment while maximizing natural light usage. By leveraging these technologies and design principles, colleges can achieve substantial reductions in electrical energy consumption, promote sustainability, and enhance the overall learning environment.

SECTION 4
WASTE MANAGEMENT

4. Waste management

I. Solid waste collection and disposal system

The college has implemented a robust solid waste collection and disposal system to manage its waste effectively and promote environmental sustainability. The system encompasses a comprehensive approach, starting with the segregation of waste at the source. Separate bins for recyclable, nonrecyclable, and organic waste are strategically placed across the campus, ensuring that students, faculty, and staff can easily dispose of their waste appropriately. The waste is then collected regularly by the campus maintenance team, who ensure that each type of waste is handled correctly. Recyclable materials are sent to designated recycling centers, organic waste is composted on-site or transported to local composting facilities, and non-recyclable waste is disposed of following municipal guidelines. The college also conducts regular awareness campaigns to educate the campus community about the importance of waste segregation and recycling. This meticulous system not only helps in reducing the overall waste sent to landfills but also fosters a culture of environmental responsibility among the college community.

Sl. No.	Types of waste	Disposal method
1	Solid waste collection and disposal system	The daily waste of college is segregated and disposed of at nearby garbage by college swiper
2	Waste water collection and disposal system	Not present
3	Toxic (Lab etc) and e-waste collection and disposal system	Not present

II. Waste water collection and disposal system

The regular wastewater generated from toilets, basins, kitchens, and garden runoff on the college campus is disposed of through the existing drainage system. However, it was noted that there is no dedicated wastewater disposal or treatment plant present on the campus. This lack of specific treatment infrastructure means that the wastewater is not treated before being discharged, which could have implications for environmental compliance and sustainability practices. The absence of a treatment plant highlights an area for potential improvement in the college's waste management strategy to ensure that wastewater is handled in an environmentally responsible manner.

IV. Per capita municipal waste generated annually

The college employs a comprehensive waste management system to handle various types of waste generated on campus. E-waste, totaling 306.6 kg, is managed through repair and recycling processes, ensuring that electronic items are either refurbished for further use or properly recycled to recover valuable materials. Plastic waste, amounting to 1,390 kg, and solid waste, totaling 1,600 kg, are both collected by the municipal services, ensuring appropriate disposal and recycling where possible. Chemical waste, which sums up to 120 kg, is carefully disposed of in a reserved soak pit designed to neutralize and safely contain these hazardous substances. Paper waste, weighing 1,855 kg, is managed through a combination of dumping and recycling efforts, minimizing environmental impact and promoting resource recovery. Garden waste, totaling 510 kg, is incinerated, providing a safe way to dispose of organic materials. Altogether, the college manages 5,781.6 kg of waste through these various methods, reflecting its commitment to effective and sustainable waste management practices.

SECTION 5
AMBIENT AIR & NOISE QUALITY

5.1. Ambient Air Quality

I. Ambient Air quality in the campus

Daily vehicular traffic on the college premises includes approximately 10 two-wheelers and 5 four wheelers, reflecting a significant amount of movement within the campus. Despite this, there is currently no system in place to monitor Pollution Under Control (PUC) certificates, vehicle exhaust gas analysis, or the noise and vibration pollution caused by these vehicles. This lack of monitoring means that the college is not currently assessing or managing the potential environmental impact and health implications associated with vehicular emissions and noise pollution. Implementing such a system could help in reducing the environmental footprint of the campus traffic, ensuring compliance with environmental standards, and promoting a healthier campus environment.

II. Ventilation system

The college premises are adequately aired, with classrooms designed to be well-ventilated, ensuring a continuous flow of fresh air. This thoughtful architectural feature creates a comfortable and healthy learning environment for students and faculty alike. Additionally, the abundant flora on the college grounds plays a crucial role in enhancing air quality. The plants and trees not only beautify the campus but also act as natural air purifiers by absorbing carbon dioxide and other gases, thus contributing to a cleaner and more sustainable atmosphere. This combination of good ventilation and strategic landscaping underscores the college's commitment to providing a healthy and conducive environment for education.

III. Source of air pollution

The primary sources of air pollution at the college stem from vehicle exhausts associated with traffic accessing the campus. Despite the college's location being relatively distant from the main road, which mitigates direct exposure to roadway emissions, vehicular pollutants still pose a significant concern. The absence of major industrial facilities within a 500-meter perimeter of the college further underscores that vehicle emissions are the predominant contributors to local air quality degradation.

SECTION 6
BIODIVERSITY

6. Biodiversity

I. Biodiversity assessment report

Major tree species

The college campus hosts a diverse array of tree species, contributing to its rich biodiversity and ecological balance. Among the major species observed is the Indian Jujube (Ziziphus mauritiana), belonging to the Rhamnaceae family, with a quantity of eight trees and an IUCN Red List status of "Least Concern" (LC). The Arecaceae family is well-represented with 15 Wild Date Palms (Phoenix sylvestris) and 10 Senegal Date Palms (Phoenix reclinata), the latter also listed as LC. The Fabaceae family includes 24 Cassie trees (Vachellia sarnesiana) and eight Cow Tamarind trees (Samanea saman), both of which are vital to the campus environment. The Meliaceae family contributes with seven Neem trees (Azadirachta indica), classified as LC, and 13 Cuban Mahogany trees (Swietenia mahagoni), which are noted as "Near Threatened" (NT). The Coconut Palm (Cocos nucifera) is the most numerous, with 30 individuals, alongside an equal number of Banana Trees (Musa paradisiaca linn) from the Musaceae family. Additionally, the Poaceae family is represented by seven Wamin Bamboo (Bambusa vulgaris), adding to the campus's botanical variety. These species not only enhance the aesthetic appeal of the campus but also play a crucial role in supporting the local ecosystem.

Table 11: List of major tree species observed in the college campus

List of major tree species observed in the college campus					
Sl No.	**Family**	**Common name**	**Scientific name**	**IUCN red list status**	**Quantity**
1	Rhamnaceae	Indian Jujube	*Ziziphus mauritiana*	LC	8
2	Arecaceae	Wild date Palm	*Phoenix sylvestris*		15
3	Fabaceae	Cassie	*Vachellia sarnesiana*		24
4	Meliacear	Neem	*Azadirachta indica*	LC	7
5	Arecaceae	Senegal Dat palm	*Phoenix reclinata*	LC	10
6	Aeracaceae	Coconut Plam	*Cocos nucifera*		30
7	Poaceae	Wamin Bamboo	*Bambusa vulgaris*		7
8	Meliaceae	Cuban Mahogany	*Swietenia mahagoni*	NT	13
9	Fabaceae	Cow Tamarind	*Samanea saman*	LC	8
10	Musaceae	Banana Tree	*Musa paradisiaca linn*		30

The college campus is home to a diverse collection of plant species, enhancing its ecological diversity and aesthetic value. The Rubiaceae family is represented by a single Gardenia (Gardenia jasminoides), classified as "Least Concern" (LC) on the IUCN Red List. The Apocynaceae family contributes six Periwinkle plants (Catharanthus roseus), while the Solanaceae family includes one Night Jasmine (Cestrum nocturnum), also listed as LC. Among the Garryaceae family, the Japanese Aucuba, or Gold Dust Plant (Aucuba japonica), is present in a single specimen. The Arecaceae family includes two Areca Palms (Dypsis lutescens), noted as "Near Threatened" (NT). The Asparagaceae family is represented by one Lily (Cordyline fruticosa) and four Aloe Vera plants (Aloe officinalis Forssk). The Araceae family is marked by one Pothos (Epipremnum pinnatum), while the Araliaceae family includes one Geranium-Leaf Aralia (Polyscias guilfoylei), with an LC status. The Agavaceae family adds four Song-of-India plants (Dracaena reflexa Lam), and the Fabaceae family has one Lam Licorice (Glycyrrhiza glabra). The Lamiaceae family contributes two Holy Basil plants (Ocimum tenuiflorum), while the Rutaceae family has one Curry Leaf Plant (Bergera koenigii), classified as LC. Additionally, the Crassulaceae family includes three Cathedral Bells (Kalanchoe pinnata), and the Molluginaceae family has one Green Carpetweed (Mollugo verticillata). These species not only add to the campus's visual appeal but also support its ecological balance.

Table 12: List of some medicinal plants observed in the college campus

Sl No.	Family	Common name	Scientific name	IUCN red list status	Quantity
1	Rubiaceae	Gardenia	*Gardenia Jasminoides*	LC	1
2	Apocynaceae	Periwinkle	*Catharanthus Roseus*		6
3	Solanaceae	Night Jasmine	*Cestrum Nocturnum*	LC	1
4	Garryaceae	Japanese Aucuba, Gold Dust Plant	*Aucuba Japonica*		1
5	Arecaceae	Areca Palm, Golden Cane Palm	*Dypsis Lutescen*	NT	2
6	Asparagaceae	Lily	*Cordyline Fruticosa*	LC	1
7	Asparagaceae	Aloe Vera	*Aloe Officinalis Forssk*		4
8	Araceae	Pothos, Devil's Ivy	*Epipremnum Pinnatum*		1
9	Araliaceae	Geranium-Leaf Aralia	*Polyscias Guilfoylei*	LC	1
10	Agavaceae	Song-of-India, Pleomele	*Dracaena Reflexa Lam*		4
11	Fabaceae	Lam Licorice, Licorice	*Glycyrrhiza Glabra*		1
12	Lamiaceae	Tulasi, Holy Basil	*Ocimum Tenuiflorum*		2
13	Rutaceae	Currybush, Curry Leaf Plant	*Bergera Koenigii*	LC	1
14	Crassulaceae	Cathedral Bells, Air Plant	*Kalanchoe Pinnata*		3
15	Molluginaceae	Green Carpetweed, Indian Chickweed	*Mollugo Verticillata*		1

II) In-house, gardening and tree management

The Eco-Club of Shishuram Das College takes pride in organizing an annual plantation program that significantly contributes to the campus's greenery and environmental sustainability. Each year, this initiative brings together students, faculty, and community members in a collaborative effort to plant and nurture a variety of plant species. Despite not having a professional gardener on staff, the Eco-Club manages all aspects of gardening and maintenance with dedication and enthusiasm. This hands-on approach not only fosters a sense of responsibility and environmental stewardship among participants but also enhances their understanding of horticulture and ecological conservation. The plantation program is a testament to the club's commitment to promoting green practices and creating a more sustainable campus environment. Through these efforts, the Eco-Club continues to inspire and educate the college community about the importance of preserving and enhancing natural spaces.

III) Any wetland / grove / rare tree etc in the campus?

Shishuram Das College has established and maintained a diverse collection of medicinal plants on its campus, reflecting its commitment to promoting traditional knowledge and sustainable practices. This carefully curated selection of plants serves not only as a living repository of valuable botanical resources but also as a dynamic educational tool for students and faculty alike. The medicinal garden includes a variety of species known for their therapeutic properties, offering insights into their historical and contemporary uses in herbal medicine. By preserving these plants, the college provides opportunities for research and learning about the healing potential of nature, while also contributing to the conservation of plant biodiversity. The garden is an integral part of the campus, fostering an environment that encourages exploration and appreciation of natural remedies. This initiative underscores the college's dedication to integrating ecological awareness with academic growth, ultimately enriching the educational experience and promoting health and wellness within the community.

SECTION 7
GENERAL AWARENESS

7. General Awareness

I. Environmental Awareness of staff, teachers and students

The college staffs demonstrate a strong awareness and appreciation for the environment, particularly regarding the floral diversity present on campus. Recognizing the importance of sustainability, the college authority has taken proactive measures such as installing rainwater harvesting systems across the college rooftops. These systems play a crucial role in replenishing the groundwater table, contributing to water conservation efforts. Additionally, the college actively promotes biodiversity by regularly planting various types of medicinal plants, which are meticulously maintained by a dedicated gardener. This commitment to green practices extends to encouraging eco-friendly transportation methods, evidenced by the provision of a bicycle stand for students, further emphasizing the institution's dedication to fostering a sustainable and environmentally conscious campus community.

II. Environmental awareness campaign

The college consistently observes World Environment Day annually, marking the occasion with various activities and initiatives aimed at raising awareness about environmental conservation and sustainability. Beyond this special event, the college organizes a wide range of environment awareness programs throughout the year. These programs encompass diverse activities such as workshops, seminars, tree plantation drives, clean-up campaigns, and educational sessions on topics like waste management, renewable energy, and biodiversity conservation. By engaging the campus community in these ongoing efforts, the college instills a sense of responsibility and stewardship towards the environment, fostering a culture of environmental awareness and activism among students, faculty, and staff. This sustained commitment to environmental education and advocacy underscores the college's dedication to promoting a greener and more sustainable future.

III. Awareness communication

During the survey period, no environmental awareness-related communication in terms of banners, posters, or wall writings was observed on the college premises. This absence of visual messaging highlights a potential opportunity for the college to enhance its efforts in promoting environmental awareness and sustainability among the campus community. Implementing visible and informative signage can serve as a valuable tool for raising consciousness about environmental issues, encouraging eco-friendly behaviors, and fostering a culture of environmental stewardship. By incorporating such communication strategies, the college can effectively engage students, faculty, and staff in environmental initiatives and inspire collective action towards a greener and more sustainable campus environment.

SECTION 8
ENVIRONMENTAL COMPLIANCES

8. Environmental Compliances

I. Cleanliness in sanitation units

The cleanliness of the sanitation units within the college was notably prominent. Throughout the premises, the sanitation facilities, including restrooms and washrooms, were well-maintained and tidy, reflecting the college's commitment to providing a hygienic and comfortable environment for its students, faculty, and staff. The evident attention to cleanliness not only ensures the health and well-being of the campus community but also fosters a positive and conducive atmosphere for learning and working. This emphasis on sanitation underscores the college's dedication to upholding high standards of hygiene and promoting a pleasant experience for all individuals on campus.

II. Safety in Laboratory

Safety within the college laboratories is diligently maintained, ensuring a secure environment for students and faculty engaging in various scientific endeavors. Each laboratory is equipped with essential safety features such as exhaust systems and fire extinguishers, demonstrating the college's commitment to prioritizing the well-being of its occupants. These safety measures not only mitigate potential hazards but also adhere to industry standards and regulations, providing a conducive space for experimentation and research. By upholding stringent safety protocols and ensuring the availability of necessary safety equipment, the college fosters a culture of responsible laboratory practices, promoting both academic excellence and the protection of individuals within the laboratory setting.

III. Segregation of waste at source

While waste segregation measures are implemented within the college, and municipal waste collectors regularly visit to collect the waste, the campus was observed to have accumulated plastic waste during the survey period. Additionally, heaps of different types of waste were found in the backyard of the college. Despite these observations, the college actively participates in waste segregation efforts by regularly separating paper and electrical wastes for recycling purposes. This commitment to waste management reflects the college's recognition of the importance of environmental sustainability and its dedication to minimizing its ecological footprint. However, addressing the issues observed during the survey, such as the accumulation of plastic waste and unattended heaps of waste, presents an opportunity for the college to further enhance its waste management practices and foster a cleaner and greener campus environment.

IV. Air pollution management and preparedness (Smoke dousing, dust precipitating, window cover etc)

The college lacks dedicated air pollution monitoring units and has not implemented specific measures for mitigating air pollution. However, all windows across the campus are properly covered.

VI. Water wastage reduction vigilance

The college has established a comprehensive Water Wastage Reduction Vigilance Program to promote sustainable water use and mitigate unnecessary consumption. This initiative includes the installation of water-efficient fixtures such as low-flow faucets, dual-flush toilets throughout campus facilities to ensure optimal water usage. A robust maintenance protocol is in place to promptly address leaks and plumbing issues, preventing water loss. The program also encompasses educational campaigns designed to raise awareness among students, faculty, and staff about the critical importance of water conservation and to encourage responsible water use practices. To further support these efforts, the college has implemented rainwater harvesting systems, which collect and utilize rainwater for irrigation and other non-potable applications, thereby reducing the reliance on municipal water supplies. Through these measures, the college demonstrates a strong commitment to environmental stewardship and resource conservation.

SECTION 9
RECOMMENDATIONS

9. Recommendations

The current assessment aimed to comprehensively evaluate the water, wastewater, waste management, and biodiversity conditions at Sishuram Das College. Each section of the assessment delineates the specific methodologies employed and systematically presents the findings. Subsequently, recommendations are provided for each aspect to enhance the existing energy and biological components of the college campus. . The primary activities, approaches, and innovations undertaken by the college towards establishing a green campus are as follows:

1. Waste minimization should be introduced within the college campus along with proper waste segregation is required.
2. Provision of installation of garbage units should be introduced where the multilevel segregation of various wastes such as paper, construction, glass, metal scrap, and food waste should be done. Further various waste recycling plans for different types of waste should be introduced.
3. The college can make arrangements for regular air quality monitoring or can implement a mandatory system for checking PUC certificates for all vehicles entering the campus.
5. Can replace existing high energy-consuming electrical appliances with environmentally friendly and energy-efficient alternatives.

Nayabad Integrated Social and Environmental Welfare Society

Certificate

Nayabad Integrated Social and Environmental Welfare Society is a non-profit and voluntary organization registered under the West Bengal Societies Registration Act XXVI of 1961 (Reg. No. No.S0005896 of 2019-2020).

This is to certify that the 'Nayabad Integrated Social and Environmental Welfare Society' (NISEWS), Kolkata 700099 has conducted a brief and precise 'Green Audit' for the 'Shishuram Das College', during the assessment year 2018 to 2019. The Green Audit was performed in accordance with the applicable standards prescribed by the Central Pollution Control Board and Ministry of Environment, Forests and Climate Change, Government of India, and following NAAC guidelines. The audit involves energy, water, waste, and biological inventories and gives recommendations that the institute can follow to improve the energy, water, waste, and environmental scenarios of the said institute.

Malancha Dey

Dr. Malancha Dey
(President, NISEWS)
Date: 24.06.2019

GENDER AUDIT REPORT

2019-2020

Sishuram Das College

Bhusna, South 24 Parganas

Performed by: Nayabad Integrated Social and Environmental Welfare Society, Kolkata

CONTENT

Section I

Gender Audit

1. Gender audit

A. Introduction to gender audit

In 1983, the Australian parliament made a landmark decision regarding gender equality. This initiative originated from "femocrats" within the Labor Party of Australia, which was the ruling party at the time. They passed a resolution to examine the potential impact of the national budget on the status of women in the country. A year later, this resolution was put into action, and the national budget was presented to the Australian parliament along with the first Women's Budget Statement. This Statement was a comprehensive report outlining the effects of the proposed budget on Australian women and girls. Since then, approximately 40 countries have incorporated gender considerations into their planning documents.

B. Definition of gender audit

A gender audit is an assessment process designed to evaluate institutional gender equality by examining policies, programs, projects, service provisions, structures, proceedings, and budgets. It helps identify gender patterns in the organization's composition, structures, processes, culture, and human resource management, as well as in the design and delivery of policies and services. The gender audit has two dimensions:

i. **Internal audit:** This focuses on how well an organization promotes gender equality within its own structures and internal operations. It monitors and evaluates progress in gender mainstreaming and contributes to capacity building.

ii. **External audit:** This measures how effectively an organization incorporates gender considerations into its policies, programs, projects, and services in terms of content, delivery, and evaluation. External gender audits assess the level of gender integration, ensuring that both women and men benefit from the organization's initiatives.

C. Aims and objectives of gender audit

Aims of gender audit

i. **Assess Gender Equality**: Evaluate the extent to which gender equality is integrated into organizational policies, practices, and culture.

ii. **Identify Gaps**: Detect disparities between genders in various aspects of organizational operations, such as pay, promotions, and opportunities.

iii. **Promote Accountability**: Enhance transparency and accountability by providing evidence-based recommendations for improving gender equity.

iv. **Support Strategic Planning**: Aid in the development of targeted strategies and interventions to address identified gender imbalances.

Objectives of gender audit

i. **Review Policies**: Examine existing policies and procedures to determine their impact on gender equality.
ii. **Analyze Data**: Collect and analyze gender-disaggregated data to understand trends and issues related to gender.
iii. **Evaluate Practices**: Assess organizational practices and their effectiveness in promoting gender equity.
iv. **Gather Feedback**: Obtain input from employees and stakeholders on their experiences and perceptions regarding gender-related issues.
v. **Develop Recommendations**: Formulate actionable recommendations based on findings to improve gender balance and inclusivity.
vi. **Monitor Progress**: Establish benchmarks and indicators to track progress in implementing gender equality initiatives.

D. Importance of gender audit

i. **Promotes Gender Equality**: Gender audits help assess how well an organization is integrating gender equality into its policies and practices, ensuring that both women and men have equal opportunities and resources.
ii. **Identifies Gaps and Disparities**: By examining various aspects of organizational operations, gender audits reveal existing gender imbalances and areas where improvements are needed.
iii. **Enhances Policy Development**: The insights gained from a gender audit can guide the creation of more effective, gender-responsive policies and programs.
iv. **Strengthens Accountability**: Gender audits provide a framework for tracking progress and holding organizations accountable for their commitments to gender equality.
v. **Encourages Inclusive Practices**: The audit process highlights successful mechanisms and practices, offering valuable lessons for fostering a more inclusive organizational culture.
vi. **Optimizes Resource Allocation**: It evaluates how resources are allocated for gender equality initiatives, helping ensure that investments are effectively targeted.
vii. **Improves Human Resources Policies**: Gender audits assess the sensitivity of HR policies to gender issues, facilitating the development of more equitable employment practices.
viii. **Supports Strategic Planning**: By identifying areas for improvement, gender audits help organizations develop targeted strategies and action plans for enhancing gender equality.
ix. **Tracks Progress**: Regular audits measure the effectiveness of gender mainstreaming efforts and inform necessary adjustments to action plans.

E. Methodology of gender audit

i. **Define Scope and Objectives**: Establish the goals, scope, and specific objectives of the gender audit to guide the process and ensure clarity.

ii. **Develop Audit Framework**: Create a framework outlining key areas for assessment, including policies, practices, and data collection methods.

iii. **Collect Data**: Gather relevant data through various methods such as surveys, interviews, focus groups, and document reviews to understand gender-related issues.

iv. **Analyze Data**: Examine the collected data to identify patterns, disparities, and gaps in gender equality within the organization.

v. **Review Policies and Practices**: Evaluate existing policies, procedures, and organizational practices to assess their impact on gender equality and identify areas for improvement.

vi. **Engage Stakeholders**: Involve employees, managers, and other stakeholders in the audit process to gain diverse perspectives and insights.

vii. **Assess Resources**: Evaluate the allocation of resources dedicated to gender equality initiatives and their effectiveness.

viii. **Document Findings**: Compile and organize the findings from the data analysis and policy review into a comprehensive report.

ix. **Develop Recommendations**: Formulate actionable recommendations based on the audit findings to address identified issues and improve gender equality.

x. **Present Results**: Share the audit results and recommendations with relevant stakeholders, including organizational leadership, to facilitate informed decision-making.

xi. **Monitor and Evaluate**: Establish mechanisms for tracking the implementation of recommendations and assess progress over time to ensure continuous improvement.

Section II

Gender Auditing in the College

2. Gender auditing in the college

A. College details

The Government of West Bengal's Department of Higher Education sanctioned the establishment of Shishuram Das College, a General Degree College located in Bhusna, Kamarpole, Diamond Harbour Sub-division, in the district of South 24 Parganas, starting from the 2010–2011 academic session. In 2010, Shishuram Das College began its operations in the Sarisha High School building, marking the start of its role as a hub for higher education. This initiative met the educational needs of local residents, especially students from economically disadvantaged and middle-class families who could not travel long distances for higher education.

Table 1: Brief about the college

Name of the College	**Shishuram Das College**
Name of the Principal	Dr. Nilesh Ranjan Maity
Latitude	22°14´58´´N
Longitude	88°18´07´´E
Address	Bhusna, P.O. - Kamarpole, P.S. – Parulia Coastal, District - South 24 Parganas, Pin- 743368, West Bengal
Contact Details	8918979749, shishuramdascollege@yahoo.co.in
No. of Departments (UG)	9
No. of Students	198
No. of Teachers	29
No. Non-teaching Staff	9

The college's creation was made possible thanks to the generosity of the late Pranapati Das, an educationist and philanthropist, who contributed Rs. 11 lakhs and 0.54 acres of land in honor of his father, Shishuram Das. Sri Rishi Kumar Halder, former MLA and college president, provided substantial support for the college's foundation. The Diamond Harbour Sarisha Janakalyan Sanstha also played a crucial role in establishing the college, which now occupies a substantial 5.08-acre site. The foundation stone of the new college building was laid on August 16, 2010, by Dr. Suranjan Das, then Vice-Chancellor of the University of Calcutta, and Dr. Subimal Sen, then Chairman of the West Bengal State Council of Higher Education, with Sri Rishi Kumar Halder, Dr. Haraprasad Samaddar, and others in attendance. Since its inception, the college has grown both structurally and academically, gaining a reputation for its excellent academic environment. Facilities include general classrooms, smart classrooms, a library, a canteen, common rooms for students, and a playground for sports and recreational activities.

B. Purpose of conducting the audit

Gender auditing is conducted to ensure that gender equality is effectively integrated into all aspects of the institution's operations. By evaluating policies, practices, and organizational culture, gender audits help to identify disparities and imbalances in academic and administrative areas. This process

reveals how well the college supports equitable opportunities for all genders, from admissions and faculty appointments to resource allocation and career development. Addressing these disparities is crucial for creating an inclusive environment that promotes fairness and equal opportunity for students and staff alike.

Additionally, gender audits provide valuable insights that inform strategic planning and decision-making. By assessing the impact of current practices and gathering feedback from stakeholders, colleges can develop targeted strategies to address identified gender imbalances. These audits not only enhance institutional accountability by providing evidence-based recommendations but also help colleges align their goals with broader commitments to gender equality and social justice. Ultimately, gender auditing contributes to fostering a supportive and equitable academic community where everyone has the opportunity to thrive.

C. Methodology of conducting the audit

Figure 1: Methodology of Gender Audit

The methodology followed for the gender audit has been shown in Figure 1.

Section III

Gender Audit Report of the College

3. Gender audit report of the college

A. Understanding gender balance

Gender balance refers to an equitable representation and participation of all genders within an institution, often measured through the gender ratio. In a college setting, achieving gender balance means ensuring that the gender ratio of students, faculty, and staff reflects equal opportunities, rights, and responsibilities for all genders. Gender balance goes beyond numerical equality; it involves fostering an inclusive environment where everyone, regardless of gender, can thrive academically, professionally, and personally. This requires addressing biases, implementing fair policies, and promoting a culture of respect and equality.

B. Importance of maintaining gender balance in a college

Maintaining a balanced gender ratio in a college is crucial for several reasons. Firstly, it creates an inclusive and diverse academic environment, enhancing learning outcomes and fostering innovation. A balanced gender ratio brings diverse perspectives to discussions, broadening viewpoints and leading to a more comprehensive understanding of subjects. Secondly, a balanced gender ratio ensures fairness and equity, allowing all students and staff to access opportunities equally, which can improve morale and satisfaction. Additionally, it prepares students for the real world by promoting respect and collaboration across genders, essential skills in today's global workforce. Lastly, colleges that prioritize a balanced gender ratio are more likely to attract and retain talented individuals, contributing to the institution's overall success and reputation.

C. Gender balance in the Shishuram Das College

The Gender audit team carried out a comprehensive evaluation of the operational environment at Shishuram Das College. The analysis indicated that the college provides equal access to all necessary facilities for everyone, regardless of gender.

Table 2 depicts the gender-wise distribution of all stakeholders associated with the Shishuram Das College.

Table 2: Gender-wise Distribution of All Stakeholders

All Stakeholders	Male	Female	Transgender	Total
Students	178	387	0	565
Teachers	16	14	0	30
Non-teaching Staff	8	1	0	9

Out of the total 565 registered students, 68.49% (387) were females while only 31.50% (178) were males. This was testimony to the gender-inclusiveness of the college. Of the total 30 teachers, 53.33% (16) were males while 46.67% (14) were females. One additional female teacher was joined this year. This distribution was more or less even. As far as the non-teaching staff was

concerned, the distribution remained unchanged and was skewed in favour of the males with 88.89% (8) of the total 9 staff being male while only 1(11.11%) being female (Figure 2).

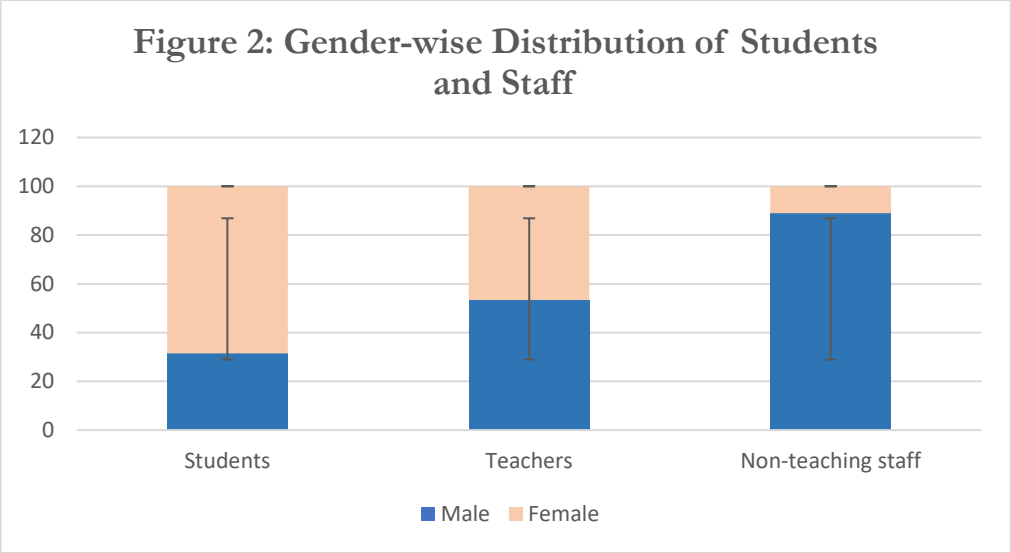
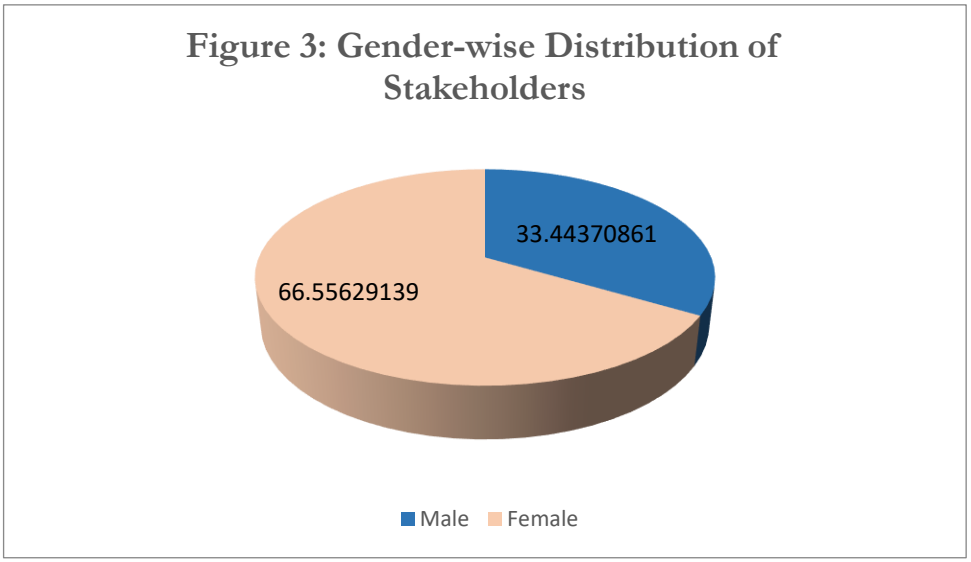


Figure 3 depicts the gender balance of all stakeholders associated with the college. This indicates that the male-female ratio of all stakeholders in the college is in favour of females, because of the significantly high percentage of female students. This is commendable and proof of the safe and secure environment that the institution provides to women. Notably, no person belonging to the third gender were found.



D. Gender sensitization in the college

The Shishuram Das College is dedicated towards promoting an atmosphere of gender equity in its campus. Gender-segregated facilities like toilets and restrooms were observed during the survey. Facilities for both males and females were observed to be in good condition, indicating equitable care for all gender groups in the college. Also, CCTV surveillance and security guards at the gate ensure proper security for all individuals on the campus. Extra-curricular activities were

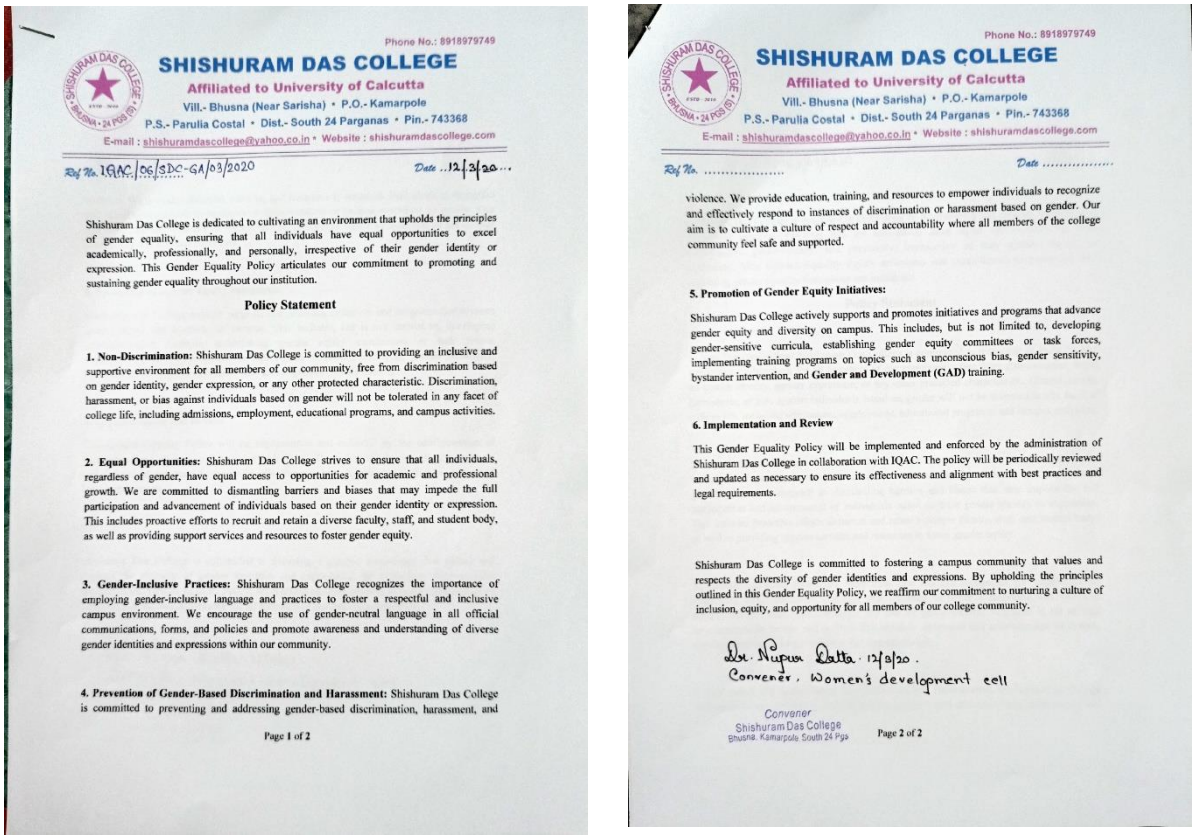
observed to promote gender diversity and inclusion. Moreover, the support faculty, staff, and students were found to balance caregiving responsibilities with academic or professional pursuits in a suitable manner.

The most significant improvement relating to gender development made by the college during this academic year was the formulation and implementation of a policy of gender equality. As per this policy, the college was committed to non-discrimination on the grounds of gender, provision of equal opportunities to all, promotion of gender-inclusive practices such as the use of gender-neutral language in all official communications, forms, and policies, and the promotion of awareness regarding diverse gender identities, prevention of gender-based discrimination and harassment, promotion of gender equity initiatives such as committees, implementing training programmes, and Gender and Development (GAD) training.

The college also vouched to implement this policy and review it periodically in collaboration with the IQAC cell. The IQAC cell was formed in the same academic year with 6 members, out of which 2 (33.33%) were females. The Women Development Cell was also established in the same year with Ms. Nupur Datta as the convenor, and 2 other female members. 3 out of 5 members were female (60%) which indicated a healthy gender balance. This Women Development Cell collaborated with the Anti-ragging Cell to organise an anti-ragging awareness programme. Furthermore, the Department of History in collaboration with the Women Development Cell organized a free certificate course on 'Textile Craft in India' with four main objectives:

i. To enable the exploration of a range of textile craft techniques and practices
ii. To experiment and develop craft-based skills
iii. To develop knowledge of historical and contemporary textile craft practices and practitioners
iv. To introduce the concept and value of a research methodology.

A total of 31 students, out of which 20 were females completed the course successfully. This could offer them the chance to work in industries related to fashion, home furnishings, and technical textiles after their education.



Phone No.: 8918979749

SHISHURAM DAS COLLEGE

Affiliated to University of Calcutta

Vill.- Bhusna (Near Sarisha) • P.O.- Kamarpole

P.S.- Parulia Costal • Dist.- South 24 Parganas • Pin.- 743368

E-mail : shishuramdascollege@yahoo.co.in • Website : shishuramdascollege.com

Ref No. IQAC/06/SDC-GA/03/2020 Date ..12/3/20...

Shishuram Das College is dedicated to cultivating an environment that upholds the principles of gender equality, ensuring that all individuals have equal opportunities to excel academically, professionally, and personally, irrespective of their gender identity or expression. This Gender Equality Policy articulates our commitment to promoting and sustaining gender equality throughout our institution.

Policy Statement

1. Non-Discrimination: Shishuram Das College is committed to providing an inclusive and supportive environment for all members of our community, free from discrimination based on gender identity, gender expression, or any other protected characteristic. Discrimination, harassment, or bias against individuals based on gender will not be tolerated in any facet of college life, including admissions, employment, educational programs, and campus activities.

2. Equal Opportunities: Shishuram Das College strives to ensure that all individuals, regardless of gender, have equal access to opportunities for academic and professional growth. We are committed to dismantling barriers and biases that may impede the full participation and advancement of individuals based on their gender identity or expression. This includes proactive efforts to recruit and retain a diverse faculty, staff, and student body, as well as providing support services and resources to foster gender equity.

3. Gender-Inclusive Practices: Shishuram Das College recognizes the importance of employing gender-inclusive language and practices to foster a respectful and inclusive campus environment. We encourage the use of gender-neutral language in all official communications, forms, and policies and promote awareness and understanding of diverse gender identities and expressions within our community.

4. Prevention of Gender-Based Discrimination and Harassment: Shishuram Das College is committed to preventing and addressing gender-based discrimination, harassment, and

Page 1 of 2

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Ref No. ..... Date .....

violence. We provide education, training, and resources to empower individuals to recognize and effectively respond to instances of discrimination or harassment based on gender. Our aim is to cultivate a culture of respect and accountability where all members of the college community feel safe and supported.

5. Promotion of Gender Equity Initiatives:

Shishuram Das College actively supports and promotes initiatives and programs that advance gender equity and diversity on campus. This includes, but is not limited to, developing gender-sensitive curricula, establishing gender equity committees or task forces, implementing training programs on topics such as unconscious bias, gender sensitivity, bystander intervention, and **Gender and Development (GAD)** training.

6. Implementation and Review

This Gender Equality Policy will be implemented and enforced by the administration of Shishuram Das College in collaboration with IQAC. The policy will be periodically reviewed and updated as necessary to ensure its effectiveness and alignment with best practices and legal requirements.

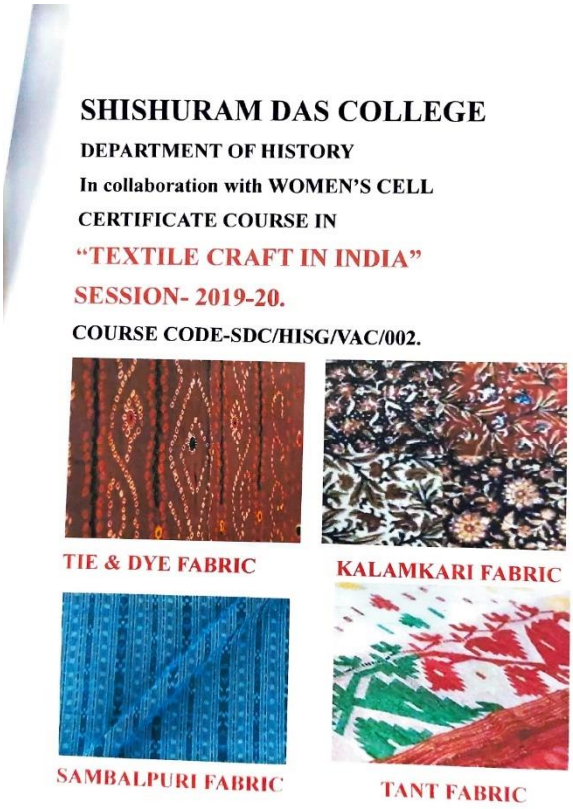
Shishuram Das College is committed to fostering a campus community that values and respects the diversity of gender identities and expressions. By upholding the principles outlined in this Gender Equality Policy, we reaffirm our commitment to nurturing a culture of inclusion, equity, and opportunity for all members of our college community.

Dr. Nupur Datta 12/3/20.
Convener, Women's development cell

Convener
Shishuram Das College
Bhusna, Kamarpole South 24 Pgs

Page 2 of 2

Photograph 1: Gender Policy Statement of the Shishuram Das College

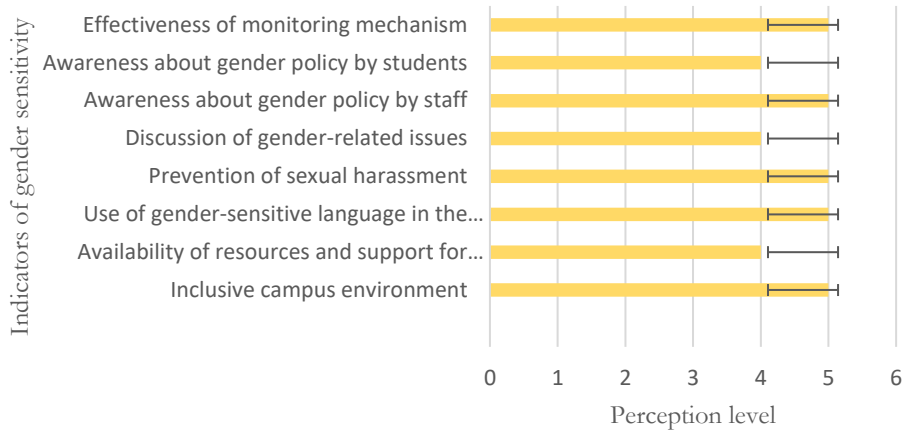


Photograph 2: Certificate Course on 'Textile Craft in India' in Collaboration with the Women Development Cell

Photograph 3: Anti-ragging Awareness Programme in Collaboration with the Women Development Cell

Figure 4 indicates the level of perception of the gender audit team regarding some basic indicators of gender inclusivity and sensitivity inside the college campus. This perception was based on information collected from the college staff and students. No instances of sexual harassment or abuse were reported during the academic year in which the audit was performed. This indicated that the campus was safe for women.

Figure 4: Level of Gender Inclusivity and Sensitivity in the Campus



Section IV

Summary and Recommendations

4. Summary and Recommendations

A. Summary

The Shishuram Das College nurtures an environment conducive to the overall development of all its students and staff. Gender inclusivity and sensitivity guide the daily workings of the college. The authorities had proactively followed some of the recommendations made by the audit team during the last academic year, indicating their genuine dedication towards maintaining gender parity in the college. Even so, the audit team observed areas where both these aspects could be improved. For instance, the extremely low proportion of female non-teaching staff was still a concern. No increase in the number of women was observed in the governing body either. There was scope for more inclusion in this regard. After observing every detail thoroughly, the gender audit team has assigned a score of **8** out of 10 according to its perception of the gender-related conditions prevailing in the Shishuram Das College.

B. Recommendations

The following recommendations may help the college to promote a holistic gender-based development inside its campus.

i. Awareness programmes and workshops on gender inclusivity, sensitivity, and security must be conducted
ii. Gender-based courses may be introduced in the curriculum.
iii. More females must be hired in the non-teaching category
iv. Persons belonging to the third gender must be hired in both the teaching and non-teaching categories, and eventually included in the governing body of the college.
v. More females must be included in the governing body of the college.

Certificate

Nayabad Integrated Social and Environmental Welfare Society

Certificate

Nayabad Integrated Social and Environmental Welfare Society is a non-profit and voluntary organization registered under the West Bengal Societies Registration Act XXVI of 1961 (Reg. No. No.S0005896 of 2019-2020).

This is to certify that the 'Nayabad Integrated Social and Environmental Welfare Society' (NISEWS), Kolkata 700099 has conducted a brief and precise 'Gender Audit' for the 'Shishuram Das College', during the assessment year 2019 to 2020. The Gender Audit was performed in accordance with the NAAC guidelines.

Dr. Malancha Dey
(President, NISEWS)
Date: 24.06.2020

GREEN AUDIT REPORT

2019-2020

Sishuramdas College

Bhusna, South 24 Parganas

Performed by: Nayabad Integrated Social and Environmental Welfare Society, Kolkata

Table of Contents

1.1 Introduction to Green Audit

I. Basis of Green Audit

The term "Green" refers to being eco-friendly and not harming the environment. It can be acronymically expanded to "Global Readiness in Ensuring Ecological Neutrality" (GREEN). Green Audit is the systematic identification, quantification, recording, reporting, and analysis of environmental diversity components. Also known as Environmental Auditing, Green Audit examines environmental practices within and outside a college campus to enhance eco-friendly conditions. It assesses how organizational activities affect health and the environment, guiding improvements. Educational institutions, with both negative and positive environmental impacts, can lead in sustainable solutions. Green Audit helps colleges identify energy, water, or resource use and waste types and volumes, informing resource-saving and waste minimization strategies. It promotes health consciousness, environmental awareness, values, and ethics, offering staff and students insight into the campus's environmental impact.

II. Objectives of Green Audit

Green Audit regulates all such practices and checks whether our processes are consuming more than the required resources and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion, it is necessary to verify the processes and convert them into green and clean ones. The Green Audit provides an approach to it. It also increases overall consciousness among the people working in institutions toward an environment. The various components of the Green Audit such as:

i. To map the geographical location of the college and its surroundings
ii. To record the meteorological parameter where the college is situated
iii. To document the quality of drinking water
iv. To document the waste disposal system

III. Benefits of Green Audit

There are many advantages of a Green Audit for an educational institute

- It would help to defend the environment in and around the campus
- Recognize the cost-saving methods through waste minimization and management
- Point out the prevailing and fourth-coming impacts on the environment
- Improve social and environmental awareness for the institute and students
- Authorize the organization to frame a better environmental performance
- Improvement of environmental ethics and values and stewardship towards responsible environment management
- Finally, it will help to build a positive impression through green initiatives during the upcoming NAAC visit.

1.2. Details of the Audited Institution

The Department of Higher Education, Government of West Bengal approved the establishment of General Degree College named 'Shishuram Das College' at Bhusna, P.O. - Kamapole, P.S. - Diamond Harbour, Dist. - South 24 Parganas with effect from 2010 – 2011 academic session. Accordingly, in 2010, as a 'Destination of Higher Education' Shishuram Das College started its journey in the first year at Sarisha High School building. Thus the aspiration for higher education of the local people, particularly the students belonging to the poor and middle-class families who cannot afford to go far off places for meeting the demand of higher education, was fulfilled. The establishment of the College was possible for the educationist and philanthropist Late Pranapati Das who donated Rs. 11 Lakhs and 0.54 acre of land for the college in the name of his father Late Shishuram Das. Sri Rishi Kumar Halder (Ex-MLA and former President of the college) supported wholeheartedly towards the foundation of the College. Diamond Harbour Sarisha Janakalyan Sanstha played an important role in the foundation of the college. The college owes its huge premises (an area of 5.08 acres) to the society. The foundation stone of the present college building was laid on 16th August 2010 by Dr. Suranjan Das, the then Vice-Chancellor of the University of Calcutta and Dr. Subimal Sen, the then Chairman of West Bengal State Council of Higher Education in the presence of Sri Rishi Kumar Halder, Dr. Haraprasad Samaddar and others. Since then, the college has expanded structurally and academically, thus earning the reputation of having an excellent academic environment. This number is expected to increase in the future. Apart from general classrooms, smart classroom and library the college also has canteen and common rooms for students and a playground for sports and other outdoor activities.

Table 1: Brief about the College

Name of the College	Sishuram Das college
Name of the Principal	Dr. Nilesh Ranjan Maity
Latitude	22°14´58´´N
Longitude	88°18´07´´E
Total Campus Area	5.08 acre
Address	Bhusna, P.O. - Kamapole, P.S. - Diamond Harbour, Dist. - South 24 Parganas, West Bengal, Pin- 743368
Contact Details	8918979749, shishuramdascollege@yahoo.co.in
No. of Departments (UG)	10
No. of Students	565
No. of Teachers	30
No. of Non-teaching Staff	9

1.3. Vision and Mission Statement of the College

Vision:

The College aims at the upliftment of the people of the locality, particularly the poor and middle classes, through spreading higher education which will lead to enlightenment and employment. Since its establishment the college has aimed at propagating quality education among the students. Being located in the rural area of South 24 Parganas the college has evolved as a seat of academic excellence in the region and has significantly contributed in the fields of sports, physical education, socio-cultural activities and public awareness. Since its inception the college is committed to impart higher education to the aspiring youth.

Mission:

- To offer suitable undergraduate courses and to make the young students fit for educational and administrative services.
- To help every student in realizing his/her abilities and also to inspire him/her to know each and every scope of self-employment and entrepreneurship that can bring success in his/her future life.
- To offer value-based and value-added education to groom the students as capable, sensible and responsible citizens of the country.
- To provide quality education to the students irrespective of caste, creed, religion and diverse socio-economic status.
- To motivate the students to achieve academic distinction and excellence in every sphere of culture and administration.
- To inculcate values in the students and harbour a strong personality in each of them so that they can become the responsible citizens of modern India in the near future.

1.4. Methods of Auditing

The audit process was carried out in three phases from July 2018 to June 2019. At first, all the secondary data required for the study was collected from various key information sources and concerned departments. A broad reference work and literature review were carried out to clear the idea of green auditing. Different case studies and methodologies were studied, and the following methodology was adopted for the present audit. The methodology of the present study is based on onsite visits, personal observations, and questionnaire survey tools. Baseline data for Green Audit report preparation was collected by questionnaire survey method. Questionnaires prepared to conduct the Green Audit on the college campuses are based on the guidelines, rules, acts and, formats prepared by the Ministry of Environment, Forest and Climate Change, New Delhi, Central Pollution Control Board and, other statutory organizations. After the onsite visit and stakeholders' interview, the questionnaires were filled out. The generated data is subsequently gathered and used for further analysis. From the outcome of the overall study, a final report is prepared.

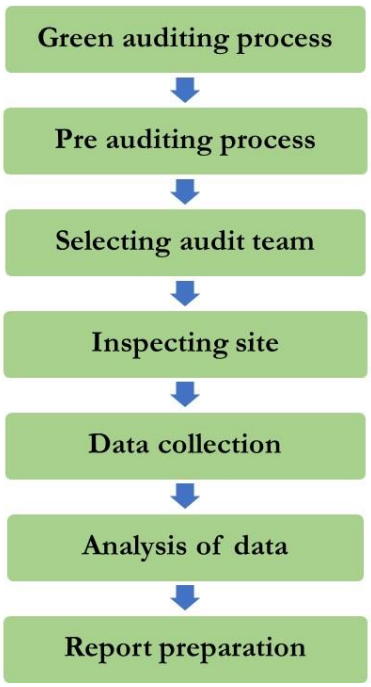


Fig. 2. Process of green audit

1.5. Scope of green audit

The scope of a green audit covers multiple facets of environmental management and sustainability practices. Key components include:

i. **Water usage:** Reviewing water consumption to find areas for reduction, implementing water-saving technologies, and ensuring proper wastewater treatment processes are in place.

ii. **Energy conservation:** Evaluating energy usage patterns, identifying inefficiencies, and recommending measures to reduce energy consumption and improve efficiency.

iii. **Waste management:** Assessing waste generation, segregation, and disposal practices. The audit identifies ways to minimize waste, promote recycling, and manage hazardous waste safely.

iv. **Pollution control:** Monitoring and controlling air, water, and soil pollution. The audit examines emissions, effluents, and practices that impact the environment, recommending strategies for pollution prevention and mitigation.

v. **Resource efficiency:** Analyzing the use of natural resources, such as raw materials and fuels, to ensure they are used efficiently and sustainably.

vi. **Compliance with environmental policies:** Ensuring that the organization adheres to local, national, and international environmental regulations and standards. This includes compliance with laws related to emissions, waste disposal, and resource use.

vii. **Sustainable practices:** Promoting the adoption of sustainable practices, such as using renewable energy sources, eco-friendly materials, and green technologies. The audit assesses the organization's overall sustainability strategy and its implementation.

viii. **Biodiversity conservation:** Evaluating the organization's impact on local ecosystems and biodiversity. This includes assessing land use practices, habitat protection efforts, and initiatives to preserve and enhance biodiversity. The audit identifies potential risks to wildlife and natural habitats and recommends actions to mitigate these impacts.

SECTION 2
WATER RESOURCE MANAGEMENET

2. Water Resource Management

I. Importance of water resource management

Water is one of the six essential nutrients, alongside carbohydrates, protein, fat, vitamins, and minerals. Approximately 60% of the human body is composed of water, and humans can survive only three to five days without fluids. Water plays critical roles in bodily functions, including waste removal, temperature regulation, and nutrient transport, which are vital for digestion.

A. Increasing Demand for Freshwater

The demand for freshwater is rising due to increasing living standards, industrialization, and urbanization. In response to this growing need, the Government of India launched the national mission on water conservation known as 'Jal Shakti Abhiyan.' This initiative urges all citizens to collaborate in addressing water scarcity by conserving every drop of water and suggests that water audits be conducted across all sectors of water use.

B. Water Auditing

A water audit is a systematic process designed to obtain a comprehensive water balance. It involves measuring the flow of water from the point of withdrawal or treatment through the distribution system, and into areas where it is used, eventually to its discharge. Water auditing is a cost-effective method for identifying and reducing water losses, optimizing water usage across multiple applications, and achieving significant water savings in sectors such as irrigation, domestic use, power generation, and industry.

C. Recommendations for Water Conservation

To address the increasing demand for freshwater, it is essential to reduce water consumption and enhance the reuse and recycling of treated wastewater. Implementing water audits can help identify inefficiencies and areas for improvement, thereby promoting sustainable water management practices. Given the vital importance of water for human survival and the growing pressures on freshwater resources, it is imperative to adopt comprehensive water conservation strategies. By conducting water audits and promoting the reuse and recycling of water, significant strides can be made towards sustainable water management, ensuring the availability of this essential resource for future generations.

D. Importance of Water Audit

i. When problems are identified, it is easier to work on solutions

ii. The process is more systematic

iii. It is possible to implement a tracking system

Climate, culture, diet habits, employment and working conditions, degree and type of development, and physiology are all thought to play a role in determining the amount of water required. According to the Southeast Asia Regional Office of the World Health Organization's (WHO) standards Administration requires 50 l per person per day (staff accommodation not included), Staff housing needs 30 l per person per day, and sanitation is dependent on technology, schools require 2 l per student; 10-15 l per student if water-flushed toilets are used.

Table 2: Yardstick of water requirements by institutions

Purpose	Requirements
Administration (excluding staff accommodation)	50 lit/day/person
Staff Housing	30 lit/day/person
School	2 lit / student
Water-flushed toilets	10-15 lit/student

II) Water quality

Table 2 provides a detailed overview of essential water quality parameters, meticulously measured following established standard protocols to ensure accuracy and reliability. WHO produces a series of water quality guidelines, including on drinking-water, safe use of wastewater, and safe recreational water environments. These guidelines are based on managing risks, and since 2004 the Guidelines for drinking-water quality promote the Framework for Safe Drinking-water. The findings reveal that nearly all parameters across various water sources meet the acceptable limits set by Indian standards, demonstrating the overall safety and quality of the water. However, an exception is noted in the levels of iron (Fe), which are marginally higher in raw water sources compared to the prescribed limits. This discrepancy highlights a specific area for improvement in the water treatment process. Despite this, the comprehensive assessment underscores the college's dedication to effective water management and conservation practices. Such diligence not only ensures compliance with regulatory standards but also promotes a sustainable and safe environment for all members of the campus community, reflecting the institution's proactive approach to maintaining high water quality standards.

Table 3 : Water quality assessment

Parameters	Water Purifier(Staff room)	Water Purifier(Ground floor)	Tube well	Tank Water
TDS(mg/l)	69	90	666	1006

III) Water storage system

The campus is equipped with three overhead tanks, each with a capacity of 1,000 liters, contributing to a total volume of 3,000 liters. These tanks play a crucial role in maintaining the water supply for various campus activities, ensuring that there is sufficient storage to meet daily demands. The uniformity in tank size simplifies maintenance and management, allowing for a consistent and reliable distribution of water across the college's facilities.

Table 3: Categories of the water reservoir and its water holding capacity

Type	Number	Volume (l)	Total Volume (l)
Overhead	1	1000	1000
Overhead	1	1000	1000
Overhead	1	1000	1000
			3000

IV) Per capita water allocation and per capita usage

The college campus utilizes various water sources for different activities throughout the year, resulting in a total annual water usage of 8,826,014 liters. Pondwater is used for gardening, with 4000 liters consumed daily over 210 days, totaling 840,000 liters annually. For drinking, groundwater supplies 1110 liters per day for 565students, 60 liters for 30 permanent teachers, and 18 liters for 9 permanent non-teaching staff, resulting in an annual consumption of 281,940 liters, 15,240 liters, and 4,572 liters, respectively. Groundwater use for toilets is substantial, with daily usage of 24,975 liters for students, 1,350 liters for teachers, and 405 liters for non-teaching staff, amounting to annual totals of 6,343,650 liters, 342,900 liters, and 102,870 liters, respectively. Additionally, 1023 liters are used daily for washing hands and faces by all students and staff, totaling 259,842 liters annually. Finally, mopping the college's built-up area requires 2500 liters per day, resulting in an annual usage of 635,000 liters.

Table 5: Different categories of water usage

Water Source	Activity	Category	Days	No. of Users	Water usage/day/person	Total water usage/day	Annual water usage
Pondwater	Gardening		210	College Campus	4000	4000	840000
Groundwater	Drinking	Students	254	565	2	1110	281940
		Permanent Teacher	254	30	2	60	15240
		Permanent NTS	254	9	2	18	4572
Groundwater	Toilet	Students	254	565	45	24975	6343650
		Permanent Teacher	254	30	45	1350	342900
		Permanent NTS	254	9	45	405	102870
	Washing hands and face	All students & staff	254	2046	0.5	1023	259842
Groundwater	Mopping Floor		254	College Built-up Area	2500	2500	635000
Total Water Usage						**35441**	**8826014**

V) Utilization and wastewater generation

The college's annual water consumption data reveals significant utilization across various essential activities, reflecting its operational priorities and commitment to maintaining a functional and sustainable environment. Groundwater specifically allocated for gardening purposes amounts to 840000 liters, supporting the campus's green spaces and landscaping efforts. Drinking water, vital for the health and wellbeing of students, faculty, and staff, totals 301752 liters, ensuring access to safe and potable water. The largest share of water consumption is for toilet purposes, with a substantial 6789420 liters used, underscoring the importance of sanitation facilities. Cleaning the college campus requires 635000 liters of water, contributing to the upkeep and hygiene of the campus environment. Washing hands and faces, a crucial aspect of personal hygiene, accounts for 259842 liters.

VI) Rainwater harvesting, usage, ground water recharge, waste water recycling / reuse.

Pond harvesting is a significant aspect of the water management strategy on our college campus. The harvested pond water is primarily used for gardening, promoting sustainable practices and reducing

dependency on external water sources. Spanning a total area of 5.08 acres, the campus has a unique layout where only the building area is concreted, while the remaining land is natural ground. This design not only supports the aesthetic and ecological value of the campus but also plays a crucial role in enhancing groundwater recharge. The natural ground facilitates the infiltration of rainwater, effectively replenishing the groundwater table. Despite these efforts in pond harvesting, the campus currently does not implement wastewater recycling or reuse, highlighting an area for potential future development to further improve water sustainability on campus.

VII) Accessibility to water resources

The accessibility of water resources on our college campus is commendable, ensuring that all students and staff, regardless of gender, have equal and convenient access to clean water. Strategically placed water points throughout the campus facilitate ease of access, minimizing any barriers to obtaining water for drinking, sanitation, and other daily needs. This infrastructure supports the college's commitment to inclusivity, ensuring that everyone can equally benefit from the available resources. The campus design takes into consideration the needs of all genders, providing safe and private facilities that promote comfort and dignity. By prioritizing accessibility, the college not only enhances the quality of life for its community members but also fosters an environment of equality and respect. This approach reflects a broader commitment to sustainable and equitable resource management, recognizing water as a fundamental right for all individuals on campus.

SECTION 3
ENERGY RESOURCE MANAGEMENT

3. Energy Resource Management

I. Significance of Energy Resource Management

Energy conservation is a crucial component of campus sustainability, intricately linked to reducing the overall carbon footprint. Effective energy management practices not only contribute to environmental stewardship but also enhance the economic efficiency of the institution. Energy auditing involves a thorough evaluation of energy consumption patterns and the identification of strategies to minimize energy use and its associated environmental impacts. The process includes:

A. Assessment of energy use

i. **Preliminary assessment:** Gathering basic information about the facility, including its size, usage patterns, energy bills, and existing energy systems and scheduling an initial meeting with key stakeholders to outline the audit's scope and objectives.

ii. **Data collection:** Collecting detailed data on energy consumption through utility bills, meter readings, and energy management systems and documenting all energy-consuming equipment, including lighting, HVAC systems, machinery, and appliances.

iii. **Site inspection:** Conducting a thorough on-site inspection to assess the condition and performance of energy systems and identifying any obvious inefficiencies, such as outdated equipment, poor insulation, or leaks.

iv. **Benchmarking:** Analyzing the collected data to determine energy consumption patterns and identify areas of significant energy use and benchmarking to compare the facility's energy performance against similar facilities.

B. Analysis of Energy Efficiency

i. **Performance evaluation:** Utilizing key performance indicators (KPIs) to assess energy efficiency and detect inefficiencies.

ii. **Technology review:** Assessing the effectiveness of current technologies and systems, and exploring potential upgrades or replacements with more energy-efficient alternatives.

C. Development of conservation strategies

i. **Behavioral changes:** Encouraging energy-saving behaviors among students, faculty, and staff through awareness initiatives and training.

ii. **Operational improvements:** Implementing strategies like optimizing HVAC systems, improving insulation, and deploying energy management systems (EMS) to enhance efficiency.

iii. **Renewable energy integration:** Incorporating renewable sources like solar panels, wind turbines, and geothermal systems to reduce reliance on fossil fuels.

iv. **Energy storage solutions:** Implementing advanced systems for storing and optimizing the use of renewable energy.

II) Importance of the electricity and energy resource management

From a general point of view, an energy audit provides enormous benefits in different areas

i. **Identifying cost savings**: Energy audits help in identifying opportunities for reducing energy consumption and operational costs through efficiency improvements and better management practices.
ii. **Enhancing environmental sustainability**: By optimizing energy use, audits contribute to reducing carbon footprint and environmental impact, aligning with sustainability goals.
iii. **Improving operational efficiency**: Audits reveal inefficiencies in energy systems, enabling facilities to operate equipment more effectively and extend equipment lifespan.
iv. **Compliance and risk mitigation**: Audits ensure compliance with energy regulations and standards, audits mitigate risks associated with energy supply disruptions and regulatory non-compliance.
v. **Promoting organizational responsibility**: Conducting audits demonstrates commitment to responsible resource management, fostering a culture of sustainability within the organization.
vi. **Supporting strategic decision-making**: Insights from audits inform strategic decisions on capital investments in energy-efficient technologies and renewable energy integration.
vii. **Enhancing indoor environmental quality**: Efficient energy use often correlates with improved indoor air quality and comfort for occupants, benefiting overall health and productivity.
viii. **Securing funding and grants**: Audit findings can support applications for funding or grants aimed at implementing energy-saving initiatives and renewable energy projects.
ix. **Monitoring and continuous improvement**: Post-audit monitoring ensures sustained energy efficiency gains and identifies further optimization opportunities over time.

III. Total consumption in whole campus as well different sections

A. Electrical Energy

The sustainability of the campus community is significantly influenced by its energy use, sources, management, lighting systems, and various appliances. A comprehensive assessment of these factors is crucial for formulating effective energy conservation strategies. The primary areas of energy consumption within the campus include the office, canteen, and laboratory, each serving different functions and thus having varied energy demands. Table 6 presents the energy consumption pattern of the college over one year. The calculation method used to determine energy consumption is as follows:

Energy Consumption (kWh/year) =Power (W)×Hours×Number of Units×Days

The energy consumption analysis of the college highlights the usage and impact of various appliances on campus. Air conditioners, with a total of four units each using 1.5 kW, consume a significant amount of

energy, totaling 12,192 kWh annually, as they operate for 8 hours a day over 254 days. CCTV cameras, despite their large number (13 units), have a minimal energy footprint due to their low power usage of 0.002 kW per unit, resulting in a consumption of just 52.832 kWh. The single refrigerator, operating continuously for 24 hours a day throughout the year, uses 4,876.8 kWh. Fans, which are quite numerous with 71 units, contribute 7,952 kWh to the total consumption, albeit used for a shorter period of 20 days annually. Tube lights, totaling 69 units, have a substantial energy draw of 28,041.6 kWh, given their daily usage of 8 hours across 254 days. Computers, with 7 units operating for 7 hours daily, account for 2,489.2 kWh. The projector, used for a shorter span of 200 days for 5 hours each day, consumes 120 kWh. Lastly, printers, with three units each using 0.15 kW, contribute 571.5 kWh to the total energy consumption. This comprehensive overview underscores the importance of efficient energy management and the potential benefits of adopting energy-saving technologies on campus.

Table 6. Electrical equipment and their electricity consumption in college per year

Sl No.	Appliances	No of appliances	Power used(kW)/appliance	No of days	Usage per day(hour)	Average of energy usage per year
1	Air conditioner (1.5 tonne)	4	1.5	254	8	12192
2	CCTV	13	0.002	254	8	52.832
3	Refrigerator (220 L)	1	0.8	254	24	4876.8
4	Fan	71	0.8	20	7	7952
5	Tube light	69	0.2	254	8	28041.6
6	Computer	7	0.2	254	7	2489.2
7	Projector	1	0.12	200	5	120
8	Printer	3	0.15	254	5	571.5

IV) Wiring and set-up conditions

The electrical infrastructure across the college campus has been found to be in good condition, as evidenced by a thorough survey conducted recently. The wiring of the electricity circuits is meticulously maintained, ensuring a high standard of safety and functionality. During the survey period, no instances of open wires or open circuits were detected, which is a testament to the diligent upkeep and regular inspections performed by the campus maintenance team. This level of attention to electrical safety minimizes the risk of electrical hazards, such as short circuits or electrical fires, thus safeguarding students, staff, and facilities. The well-maintained electrical system also contributes to the efficient operation of various campus facilities, ensuring that classrooms, laboratories, and administrative offices can function without interruption. Overall, the impeccable condition of the campus's electrical wiring underscores the college's commitment to providing a secure and conducive learning environment.

Figure 1: Wiring and setup condition in the college campus

V. Renewable energy use

In response to growing concerns about carbon emissions and climate change, the college has embarked on several significant initiatives to transition towards renewable energy sources. Recognizing the importance of reducing its carbon footprint and promoting sustainability, the college has invested in the installation of solar panels in the parking area of the campus. The college ensures the efficiency and longevity of the solar

energy system through regular maintenance. The maintenance team of the college is responsible for the routine cleaning of the solar panels. This cleaning process is crucial because it removes dust, debris, and other particulate matter that can accumulate on the panels, which can significantly reduce their efficiency and energy output. By keeping the panels clean, the maintenance team helps to maximize their performance and ensure consistent energy production. These proactive measures not only demonstrate the college's commitment to sustainability and environmental stewardship but also serve as an educational model for students and the community. By investing in renewable energy and maintaining these systems meticulously, the college contributes to the broader effort to combat climate change and fosters a culture of sustainability on campus.

VI. Energy wise-use – Day light usage

Optimizing daylight usage in a college setting for efficient electrical energy management involves several technical strategies. Primarily, the integration of advanced daylight harvesting systems, which utilize sensors to adjust artificial lighting based on natural light availability, can significantly reduce energy consumption. Architectural designs incorporating large windows, skylights, and light shelves enhance natural light penetration, minimizing the need for electrical illumination during daytime hours. Additionally, implementing energy-efficient lighting fixtures with dimmable controls allows for dynamic adjustment of light levels in response to varying daylight conditions. Automated shading devices can prevent glare and excessive heat gain, maintaining a comfortable indoor environment while maximizing natural light usage. By leveraging these technologies and design principles, colleges can achieve substantial reductions in electrical energy consumption, promote sustainability, and enhance the overall learning environment.

Figure 2: Natural light in the college lobby

SECTION 4
WASTE MANAGEMENT

4. Waste management

I. Solid waste collection and disposal system

The college has implemented a robust solid waste collection and disposal system to manage its waste effectively and promote environmental sustainability. The system encompasses a comprehensive approach, starting with the segregation of waste at the source. Separate bins for recyclable, nonrecyclable, and organic waste are strategically placed across the campus, ensuring that students, faculty, and staff can easily dispose of their waste appropriately. The waste is then collected regularly by the campus maintenance team, who ensure that each type of waste is handled correctly. Recyclable materials are sent to designated recycling centers, organic waste is composted on-site or transported to local composting facilities, and non-recyclable waste is disposed of following municipal guidelines. The college also conducts regular awareness campaigns to educate the campus community about the importance of waste segregation and recycling. This meticulous system not only helps in reducing the overall waste sent to landfills but also fosters a culture of environmental responsibility among the college community.

Different types of waste generated in the college campus and their disposal/ recycling

Sl. No.	Types of waste	Disposal method
1	Solid waste collection and disposal system	The daily waste of college is segregated and disposed of at nearby garbage by college swiper
2	Waste water collection and disposal system	Not present
3	Toxic (Lab etc) and e-waste collection and disposal system	Not present

II. Waste water collection and disposal system

The regular wastewater generated from toilets, basins, kitchens, and garden runoff on the college campus is disposed of through the existing drainage system. However, it was noted that there is no dedicated wastewater disposal or treatment plant present on the campus. This lack of specific treatment infrastructure means that the wastewater is not treated before being discharged, which could have implications for environmental compliance and sustainability practices. The absence of a treatment plant highlights an area for potential improvement in the college's waste management strategy to ensure that wastewater is handled in an environmentally responsible manner.

IV. Per capita municipal waste generated annually

The college has implemented a comprehensive waste management system to handle the diverse waste produced on campus. E-waste, totaling 311.6 kg, is handled through repair and recycling processes, ensuring that electronic items are either refurbished for further use or properly recycled to recover valuable materials. Plastic waste, amounting to 1,395 kg, and solid waste, totaling 1,605 kg, are both collected by the municipal services, ensuring appropriate disposal and recycling where possible. Paper waste, weighing 1,860 kg, is managed through a combination of dumping and recycling efforts, minimizing environmental impact and promoting resource recovery. Garden waste, totaling 515 kg, is incinerated, providing a safe way to dispose of organic materials. Altogether, the college manages 5,806.6 kg of waste through these various methods, reflecting its commitment to effective and sustainable waste management practices.

SECTION 5
AMBIENT AIR & NOISE QUALITY

5.1. Ambient Air Quality

I. Ambient Air quality in the campus

Daily vehicular traffic on the college premises includes approximately 10 two-wheelers and 5 four wheelers, reflecting a significant amount of movement within the campus. Despite this, there is currently no system in place to monitor Pollution Under Control (PUC) certificates, vehicle exhaust gas analysis, or the noise and vibration pollution caused by these vehicles. This lack of monitoring means that the college is not currently assessing or managing the potential environmental impact and health implications associated with vehicular emissions and noise pollution. Implementing such a system could help in reducing the environmental footprint of the campus traffic, ensuring compliance with environmental standards, and promoting a healthier campus environment.

II. Ventilation system

The college premises are adequately aired, with classrooms designed to be well-ventilated, ensuring a continuous flow of fresh air. This thoughtful architectural feature creates a comfortable and healthy learning environment for students and faculty alike. Additionally, the abundant flora on the college grounds plays a crucial role in enhancing air quality. The plants and trees not only beautify the campus but also act as natural air purifiers by absorbing carbon dioxide and other gases, thus contributing to a cleaner and more sustainable atmosphere. This combination of good ventilation and strategic landscaping underscores the college's commitment to providing a healthy and conducive environment for education.

III. Source of air pollution

The primary sources of air pollution at the college stem from vehicle exhausts associated with traffic accessing the campus. Despite the college's location being relatively distant from the main road, which mitigates direct exposure to roadway emissions, vehicular pollutants still pose a significant concern. The absence of major industrial facilities within a 500-meter perimeter of the college further underscores that vehicle emissions are the predominant contributors to local air quality degradation.

SECTION 6
BIODIVERSITY

6. Biodiversity

I. Biodiversity assessment report

Major tree species

The college campus hosts a diverse array of tree species, contributing to its rich biodiversity and ecological balance. Among the major species observed is the Indian Jujube (Ziziphus mauritiana), belonging to the Rhamnaceae family, with a quantity of eight trees and an IUCN Red List status of "Least Concern" (LC). The Arecaceae family is well-represented with 15 Wild Date Palms (Phoenix sylvestris) and 10 Senegal Date Palms (Phoenix reclinata), the latter also listed as LC. The Fabaceae family includes 24 Cassie trees (Vachellia sarnesiana) and eight Cow Tamarind trees (Samanea saman), both of which are vital to the campus environment. The Meliaceae family contributes with seven Neem trees (Azadirachta indica), classified as LC, and 13 Cuban Mahogany trees (Swietenia mahagoni), which are noted as "Near Threatened" (NT). The Coconut Palm (Cocos nucifera) is the most numerous, with 30 individuals, alongside an equal number of Banana Trees (Musa paradisiaca linn) from the Musaceae family. Additionally, the Poaceae family is represented by seven Wamin Bamboo (Bambusa vulgaris), adding to the campus's botanical variety. These species not only enhance the aesthetic appeal of the campus but also play a crucial role in supporting the local ecosystem.

Table 11: List of major tree species observed in the college campus

List of major tree species observed in the college campus					
Sl No.	**Family**	**Common name**	**Scientific name**	**IUCN red list status**	**Quantity**
1	Rhamnaceae	Indian Jujube	*Ziziphus mauritiana*	LC	8
2	Arecaceae	Wild date Palm	*Phoenix sylvestris*		15
3	Fabaceae	Cassie	*Vachellia sarnesiana*		24
4	Meliacear	Neem	*Azadirachta indica*	LC	7
5	Arecaceae	Senegal Dat palm	*Phoenix reclinata*	LC	10
6	Aeracaceae	Coconut Plam	*Cocos nucifera*		30
7	Poaceae	Wamin Bamboo	*Bambusa vulgaris*		7
8	Meliaceae	Cuban Mahogany	*Swietenia mahagoni*	NT	13
9	Fabaceae	Cow Tamarind	*Samanea saman*	LC	8
10	Musaceae	Banana Tree	*Musa paradisiaca linn*		30

The college campus is home to a diverse collection of plant species, enhancing its ecological diversity and aesthetic value. The Rubiaceae family is represented by a single Gardenia (Gardenia jasminoides), classified as "Least Concern" (LC) on the IUCN Red List. The Apocynaceae family contributes six Periwinkle plants (Catharanthus roseus), while the Solanaceae family includes one Night Jasmine (Cestrum nocturnum), also listed as LC. Among the Garryaceae family, the Japanese Aucuba, or Gold Dust Plant (Aucuba japonica), is present in a single specimen. The Arecaceae family includes two Areca Palms (Dypsis lutescens), noted as "Near Threatened" (NT). The Asparagaceae family is represented by one Lily (Cordyline fruticosa) and four Aloe Vera plants (Aloe officinalis Forssk). The Araceae family is marked by one Pothos (Epipremnum pinnatum), while the Araliaceae family includes one Geranium-Leaf Aralia (Polyscias guilfoylei), with an LC status. The Agavaceae family adds four Song-of-India plants (Dracaena reflexa Lam), and the Fabaceae family has one Lam Licorice (Glycyrrhiza glabra). The Lamiaceae family contributes two Holy Basil plants (Ocimum tenuiflorum), while the Rutaceae family has one Curry Leaf Plant (Bergera koenigii), classified as LC. Additionally, the Crassulaceae family includes three Cathedral Bells (Kalanchoe pinnata), and the Molluginaceae family has one Green Carpetweed (Mollugo verticillata). These species not only add to the campus's visual appeal but also support its ecological balance.

Table 12: List of some medicinal plants observed in the college campus

Sl No.	Family	Common name	Scientific name	IUCN red list status	Quantity
1	Rubiaceae	Gardenia	*Gardenia Jasminoides*	LC	1
2	Apocynaceae	Periwinkle	*Catharanthus Roseus*		6
3	Solanaceae	Night Jasmine	*Cestrum Nocturnum*	LC	1
4	Garryaceae	Japanese Aucuba, Gold Dust Plant	*Aucuba Japonica*		1
5	Arecaceae	Areca Palm, Golden Cane Palm	*Dypsis Lutescen*	NT	2
6	Asparagaceae	Lily	*Cordyline Fruticosa*	LC	1
7	Asparagaceae	Aloe Vera	*Aloe Officinalis Forssk*		4
8	Araceae	Pothos, Devil's Ivy	*Epipremnum Pinnatum*		1
9	Araliaceae	Geranium-Leaf Aralia	*Polyscias Guilfoylei*	LC	1
10	Agavaceae	Song-of-India, Pleomele	*Dracaena Reflexa Lam*		4
11	Fabaceae	Lam Licorice, Licorice	*Glycyrrhiza Glabra*		1
12	Lamiaceae	Tulasi, Holy Basil	*Ocimum Tenuiflorum*		2
13	Rutaceae	Currybush, Curry Leaf Plant	*Bergera Koenigii*	LC	1
14	Crassulaceae	Cathedral Bells, Air Plant	*Kalanchoe Pinnata*		3
15	Molluginaceae	Green Carpetweed, Indian Chickweed	*Mollugo Verticillata*		1

II) In-house, gardening and tree management

The Eco-Club of Shishuram Das College takes pride in organizing an annual plantation program that significantly contributes to the campus's greenery and environmental sustainability. Each year, this initiative brings together students, faculty, and community members in a collaborative effort to plant and nurture a variety of plant species. Despite not having a professional gardener on staff, the Eco-Club manages all aspects of gardening and maintenance with dedication and enthusiasm. This hands-on approach not only fosters a sense of responsibility and environmental stewardship among participants but also enhances their understanding of horticulture and ecological conservation. The plantation program is a testament to the club's commitment to promoting green practices and creating a more sustainable campus environment. Through these efforts, the Eco-Club continues to inspire and educate the college community about the importance of preserving and enhancing natural spaces.

III) Any wetland / grove / rare tree etc in the campus?

Shishuram Das College has established and maintained a diverse collection of medicinal plants on its campus, reflecting its commitment to promoting traditional knowledge and sustainable practices. This carefully curated selection of plants serves not only as a living repository of valuable botanical resources but also as a dynamic educational tool for students and faculty alike. The medicinal garden includes a variety of species known for their therapeutic properties, offering insights into their historical and contemporary uses in herbal medicine. By preserving these plants, the college provides opportunities for research and learning about the healing potential of nature, while also contributing to the conservation of plant biodiversity. The garden is an integral part of the campus, fostering an environment that encourages exploration and appreciation of natural remedies. This initiative underscores the college's dedication to integrating ecological awareness with academic growth, ultimately enriching the educational experience and promoting health and wellness within the community.

SECTION 7
GENERAL AWARENESS

7. General Awareness

I. Environmental Awareness of staff, teachers and students

The college staffs demonstrate a strong awareness and appreciation for the environment, particularly regarding the floral diversity present on campus. Recognizing the importance of sustainability, the college authority has taken proactive measures such as installing rainwater harvesting systems across the college rooftops. These systems play a crucial role in replenishing the groundwater table, contributing to water conservation efforts. Additionally, the college actively promotes biodiversity by regularly planting various types of medicinal plants, which are meticulously maintained by a dedicated gardener. This commitment to green practices extends to encouraging eco-friendly transportation methods, evidenced by the provision of a bicycle stand for students, further emphasizing the institution's dedication to fostering a sustainable and environmentally conscious campus community.

II. Environmental awareness campaign

The college consistently observes World Environment Day annually, marking the occasion with various activities and initiatives aimed at raising awareness about environmental conservation and sustainability. Beyond this special event, the college organizes a wide range of environment awareness programs throughout the year. These programs encompass diverse activities such as workshops, seminars, tree plantation drives, clean-up campaigns, and educational sessions on topics like waste management, renewable energy, and biodiversity conservation. By engaging the campus community in these ongoing efforts, the college instills a sense of responsibility and stewardship towards the environment, fostering a culture of environmental awareness and activism among students, faculty, and staff. This sustained commitment to environmental education and advocacy underscores the college's dedication to promoting a greener and more sustainable future.

III. Awareness communication

During the survey period, no environmental awareness-related communication in terms of banners, posters, or wall writings was observed on the college premises. This absence of visual messaging highlights a potential opportunity for the college to enhance its efforts in promoting environmental awareness and sustainability among the campus community. Implementing visible and informative signage can serve as a valuable tool for raising consciousness about environmental issues, encouraging eco-friendly behaviors, and fostering a culture of environmental stewardship. By incorporating such communication strategies, the college can effectively engage students, faculty, and staff in environmental initiatives and inspire collective action towards a greener and more sustainable campus environment.

SECTION 8
ENVIRONMENTAL COMPLIANCES

8. Environmental Compliances

I. Cleanliness in sanitation units

The cleanliness of the sanitation units within the college was notably prominent. Throughout the premises, the sanitation facilities, including restrooms and washrooms, were well-maintained and tidy, reflecting the college's commitment to providing a hygienic and comfortable environment for its students, faculty, and staff. The evident attention to cleanliness not only ensures the health and well-being of the campus community but also fosters a positive and conducive atmosphere for learning and working. This emphasis on sanitation underscores the college's dedication to upholding high standards of hygiene and promoting a pleasant experience for all individuals on campus.

II. Safety in Laboratory

Safety within the college laboratories is diligently maintained, ensuring a secure environment for students and faculty engaging in various scientific endeavors. Each laboratory is equipped with essential safety features such as exhaust systems and fire extinguishers, demonstrating the college's commitment to prioritizing the well-being of its occupants. These safety measures not only mitigate potential hazards but also adhere to industry standards and regulations, providing a conducive space for experimentation and research. By upholding stringent safety protocols and ensuring the availability of necessary safety equipment, the college fosters a culture of responsible laboratory practices, promoting both academic excellence and the protection of individuals within the laboratory setting.

III. Segregation of waste at source

While waste segregation measures are implemented within the college, and municipal waste collectors regularly visit to collect the waste, the campus was observed to have accumulated plastic waste during the survey period. Additionally, heaps of different types of waste were found in the backyard of the college. Despite these observations, the college actively participates in waste segregation efforts by regularly separating paper and electrical wastes for recycling purposes. This commitment to waste management reflects the college's recognition of the importance of environmental sustainability and its dedication to minimizing its ecological footprint. However, addressing the issues observed during the survey, such as the accumulation of plastic waste and unattended heaps of waste, presents an opportunity for the college to further enhance its waste management practices and foster a cleaner and greener campus environment.

IV. Air pollution management and preparedness (Smoke dousing, dust precipitating, window cover etc)

The college lacks dedicated air pollution monitoring units and has not implemented specific measures for mitigating air pollution. However, all windows across the campus are properly covered.

VI. Water wastage reduction vigilance

The college has established a comprehensive Water Wastage Reduction Vigilance Program to promote sustainable water use and mitigate unnecessary consumption. This initiative includes the installation of water-efficient fixtures such as low-flow faucets, dual-flush toilets throughout campus facilities to ensure optimal water usage. A robust maintenance protocol is in place to promptly address leaks and plumbing issues, preventing water loss. The program also encompasses educational campaigns designed to raise awareness among students, faculty, and staff about the critical importance of water conservation and to encourage responsible water use practices. To further support these efforts, the college has implemented rainwater harvesting systems, which collect and utilize rainwater for irrigation and other non-potable applications, thereby reducing the reliance on municipal water supplies. Through these measures, the college demonstrates a strong commitment to environmental stewardship and resource conservation.

SECTION 9
RECOMMENDATIONS

9. Recommendations

The current assessment aimed to comprehensively evaluate the water, wastewater, waste management, and biodiversity conditions at Sishuram Das College. Each section of the assessment delineates the specific methodologies employed and systematically presents the findings. Subsequently, recommendations are provided for each aspect to enhance the existing energy and biological components of the college campus. . The primary activities, approaches, and innovations undertaken by the college towards establishing a green campus are as follows:

1. Waste minimization should be introduced within the college campus along with proper waste segregation is required.
2. Provision of installation of garbage units should be introduced where the multilevel segregation of various wastes such as paper, construction, glass, metal scrap, and food waste should be done. Further various waste recycling plans for different types of waste should be introduced.
3. The college can make arrangements for regular air quality monitoring or can implement a mandatory system for checking PUC certificates for all vehicles entering the campus.
5. Can replace existing high energy-consuming electrical appliances with environmentally friendly and energy-efficient alternatives.

Nayabad Integrated Social and Environmental Welfare Society

Certificate

Nayabad Integrated Social and Environmental Welfare Society is a non-profit and voluntary organization registered under the West Bengal Societies Registration Act XXVI of 1961 (Reg. No. No.S0005896 of 2019-2020).

This is to certify that the 'Nayabad Integrated Social and Environmental Welfare Society' (NISEWS), Kolkata 700099 has conducted a brief and precise 'Green Audit' for the 'Shishuram Das College', during the assessment year 2019 to 2020. The Green Audit was performed in accordance with the applicable standards prescribed by the Central Pollution Control Board and Ministry of Environment, Forests and Climate Change, Government of India, and following NAAC guidelines. The audit involves energy, water, waste, and biological inventories and gives recommendations that the institute can follow to improve the energy, water, waste, and environmental scenarios of the said institute.

Malancha Dey

Dr. Malancha Dey
(President, NISEWS)
Date: 24.06.2020

GENDER AUDIT REPORT

2020-2021

Sishuram Das College

Bhusna, South 24 Parganas

Performed by: Nayabad Integrated Social and Environmental Welfare Society, Kolkata

CONTENT

Section I

Gender Audit

1. Gender audit

A. Introduction to gender audit

In 1983, the Australian parliament made a landmark decision regarding gender equality. This initiative originated from "femocrats" within the Labor Party of Australia, which was the ruling party at the time. They passed a resolution to examine the potential impact of the national budget on the status of women in the country. A year later, this resolution was put into action, and the national budget was presented to the Australian parliament along with the first Women's Budget Statement. This Statement was a comprehensive report outlining the effects of the proposed budget on Australian women and girls. Since then, approximately 40 countries have incorporated gender considerations into their planning documents.

B. Definition of gender audit

A gender audit is an assessment process designed to evaluate institutional gender equality by examining policies, programs, projects, service provisions, structures, proceedings, and budgets. It helps identify gender patterns in the organization's composition, structures, processes, culture, and human resource management, as well as in the design and delivery of policies and services. The gender audit has two dimensions:

i. **Internal audit:** This focuses on how well an organization promotes gender equality within its own structures and internal operations. It monitors and evaluates progress in gender mainstreaming and contributes to capacity building.

ii. **External audit:** This measures how effectively an organization incorporates gender considerations into its policies, programs, projects, and services in terms of content, delivery, and evaluation. External gender audits assess the level of gender integration, ensuring that both women and men benefit from the organization's initiatives.

C. Aims and objectives of gender audit

Aims of gender audit

i. **Assess Gender Equality**: Evaluate the extent to which gender equality is integrated into organizational policies, practices, and culture.

ii. **Identify Gaps**: Detect disparities between genders in various aspects of organizational operations, such as pay, promotions, and opportunities.

iii. **Promote Accountability**: Enhance transparency and accountability by providing evidence-based recommendations for improving gender equity.

iv. **Support Strategic Planning**: Aid in the development of targeted strategies and interventions to address identified gender imbalances.

Objectives of gender audit

i. **Review Policies**: Examine existing policies and procedures to determine their impact on gender equality.
ii. **Analyze Data**: Collect and analyze gender-disaggregated data to understand trends and issues related to gender.
iii. **Evaluate Practices**: Assess organizational practices and their effectiveness in promoting gender equity.
iv. **Gather Feedback**: Obtain input from employees and stakeholders on their experiences and perceptions regarding gender-related issues.
v. **Develop Recommendations**: Formulate actionable recommendations based on findings to improve gender balance and inclusivity.
vi. **Monitor Progress**: Establish benchmarks and indicators to track progress in implementing gender equality initiatives.

D. Importance of gender audit

i. **Promotes Gender Equality**: Gender audits help assess how well an organization is integrating gender equality into its policies and practices, ensuring that both women and men have equal opportunities and resources.
ii. **Identifies Gaps and Disparities**: By examining various aspects of organizational operations, gender audits reveal existing gender imbalances and areas where improvements are needed.
iii. **Enhances Policy Development**: The insights gained from a gender audit can guide the creation of more effective, gender-responsive policies and programs.
iv. **Strengthens Accountability**: Gender audits provide a framework for tracking progress and holding organizations accountable for their commitments to gender equality.
v. **Encourages Inclusive Practices**: The audit process highlights successful mechanisms and practices, offering valuable lessons for fostering a more inclusive organizational culture.
vi. **Optimizes Resource Allocation**: It evaluates how resources are allocated for gender equality initiatives, helping ensure that investments are effectively targeted.
vii. **Improves Human Resources Policies**: Gender audits assess the sensitivity of HR policies to gender issues, facilitating the development of more equitable employment practices.
viii. **Supports Strategic Planning**: By identifying areas for improvement, gender audits help organizations develop targeted strategies and action plans for enhancing gender equality.
ix. **Tracks Progress**: Regular audits measure the effectiveness of gender mainstreaming efforts and inform necessary adjustments to action plans.

E. Methodology of gender audit

i. **Define Scope and Objectives**: Establish the goals, scope, and specific objectives of the gender audit to guide the process and ensure clarity.

ii. **Develop Audit Framework**: Create a framework outlining key areas for assessment, including policies, practices, and data collection methods.

iii. **Collect Data**: Gather relevant data through various methods such as surveys, interviews, focus groups, and document reviews to understand gender-related issues.

iv. **Analyze Data**: Examine the collected data to identify patterns, disparities, and gaps in gender equality within the organization.

v. **Review Policies and Practices**: Evaluate existing policies, procedures, and organizational practices to assess their impact on gender equality and identify areas for improvement.

vi. **Engage Stakeholders**: Involve employees, managers, and other stakeholders in the audit process to gain diverse perspectives and insights.

vii. **Assess Resources**: Evaluate the allocation of resources dedicated to gender equality initiatives and their effectiveness.

viii. **Document Findings**: Compile and organize the findings from the data analysis and policy review into a comprehensive report.

ix. **Develop Recommendations**: Formulate actionable recommendations based on the audit findings to address identified issues and improve gender equality.

x. **Present Results**: Share the audit results and recommendations with relevant stakeholders, including organizational leadership, to facilitate informed decision-making.

xi. **Monitor and Evaluate**: Establish mechanisms for tracking the implementation of recommendations and assess progress over time to ensure continuous improvement.

Section II

Gender Auditing in the College

2. Gender auditing in the college

A. College details

The Government of West Bengal's Department of Higher Education sanctioned the establishment of Shishuram Das College, a General Degree College located in Bhusna, Kamarpole, Diamond Harbour Sub-division, in the district of South 24 Parganas, starting from the 2010–2011 academic session. In 2010, Shishuram Das College began its operations in the Sarisha High School building, marking the start of its role as a hub for higher education. This initiative met the educational needs of local residents, especially students from economically disadvantaged and middle-class families who could not travel long distances for higher education.

Table 1: Brief about the college

Name of the College	**Shishuram Das College**
Name of the Principal	Dr. Nilesh Ranjan Maity
Latitude	22°14´58´´N
Longitude	88°18´07´´E
Address	Bhusna, P.O. - Kamarpole, P.S. – Parulia Coastal, District - South 24 Parganas, Pin- 743368, West Bengal
Contact Details	8918979749, shishuramdascollege@yahoo.co.in
No. of Departments (UG)	9
No. of Students	198
No. of Teachers	29
No. Non-teaching Staff	9

The college's creation was made possible thanks to the generosity of the late Pranapati Das, an educationist and philanthropist, who contributed Rs. 11 lakhs and 0.54 acres of land in honor of his father, Shishuram Das. Sri Rishi Kumar Halder, former MLA and college president, provided substantial support for the college's foundation. The Diamond Harbour Sarisha Janakalyan Sanstha also played a crucial role in establishing the college, which now occupies a substantial 5.08-acre site. The foundation stone of the new college building was laid on August 16, 2010, by Dr. Suranjan Das, then Vice-Chancellor of the University of Calcutta, and Dr. Subimal Sen, then Chairman of the West Bengal State Council of Higher Education, with Sri Rishi Kumar Halder, Dr. Haraprasad Samaddar, and others in attendance. Since its inception, the college has grown both structurally and academically, gaining a reputation for its excellent academic environment. Facilities include general classrooms, smart classrooms, a library, a canteen, common rooms for students, and a playground for sports and recreational activities.

B. Purpose of conducting the audit

Gender auditing is conducted to ensure that gender equality is effectively integrated into all aspects of the institution's operations. By evaluating policies, practices, and organizational culture, gender audits help to identify disparities and imbalances in academic and administrative areas. This process

reveals how well the college supports equitable opportunities for all genders, from admissions and faculty appointments to resource allocation and career development. Addressing these disparities is crucial for creating an inclusive environment that promotes fairness and equal opportunity for students and staff alike.

Additionally, gender audits provide valuable insights that inform strategic planning and decision-making. By assessing the impact of current practices and gathering feedback from stakeholders, colleges can develop targeted strategies to address identified gender imbalances. These audits not only enhance institutional accountability by providing evidence-based recommendations but also help colleges align their goals with broader commitments to gender equality and social justice. Ultimately, gender auditing contributes to fostering a supportive and equitable academic community where everyone has the opportunity to thrive.

C. Methodology of conducting the audit

Figure 1: Methodology of Gender Audit

Figure 1 depicts the methodology followed for the gender audit.

Section III

Gender Audit Report of the College

3. Gender audit report of the college

A. Understanding gender balance

Gender balance refers to an equitable representation and participation of all genders within an institution, often measured through the gender ratio. In a college setting, achieving gender balance means ensuring that the gender ratio of students, faculty, and staff reflects equal opportunities, rights, and responsibilities for all genders. Gender balance goes beyond numerical equality; it involves fostering an inclusive environment where everyone, regardless of gender, can thrive academically, professionally, and personally. This requires addressing biases, implementing fair policies, and promoting a culture of respect and equality.

B. Importance of maintaining gender balance in a college

Maintaining a balanced gender ratio in a college is crucial for several reasons. Firstly, it creates an inclusive and diverse academic environment, enhancing learning outcomes and fostering innovation. A balanced gender ratio brings diverse perspectives to discussions, broadening viewpoints and leading to a more comprehensive understanding of subjects. Secondly, a balanced gender ratio ensures fairness and equity, allowing all students and staff to access opportunities equally, which can improve morale and satisfaction. Additionally, it prepares students for the real world by promoting respect and collaboration across genders, essential skills in today's global workforce. Lastly, colleges that prioritize a balanced gender ratio are more likely to attract and retain talented individuals, contributing to the institution's overall success and reputation.

C. Gender balance in the Shishuram Das College

The Gender audit team carried out a comprehensive evaluation of the operational environment at Shishuram Das College. The analysis indicated that the college provides equal access to all necessary facilities for everyone, regardless of gender.

The Physical Education Department stood out for its contributions to the overall development of all students including the female ones. Female students were found to be equally involved in the programmes of the Physical education Department as the males. This department offers a conducive environment that promotes their growth in multiple dimensions.

Table 2 depicts the gender-wise distribution of all stakeholders associated with the Shishuram Das College.

Table 2: Gender-wise Distribution of All Stakeholders

All Stakeholders	Male	Female	Transgender	Total
Students	190	379	0	569
Teachers	16	14	0	30
Non-teaching Staff	8	1	0	9

Out of the total 569 registered students, 66.60% (379) were females while only 33.39% (190) were males. Therefore, a similar gender-inclusive pattern was still followed by the college. Of the total 30 teachers, 53.33% (16) were males while 46.67% (14) were females. As far as the non-teaching staff was concerned, the distribution remained skewed in favour of the males with 88.89% (8) of the total 9 staff being male while only 1(11.11%) being female (Figure 2). Both the teaching and non-teaching categories had remained the same with respect to their numbers and distribution as in the previous academic year.

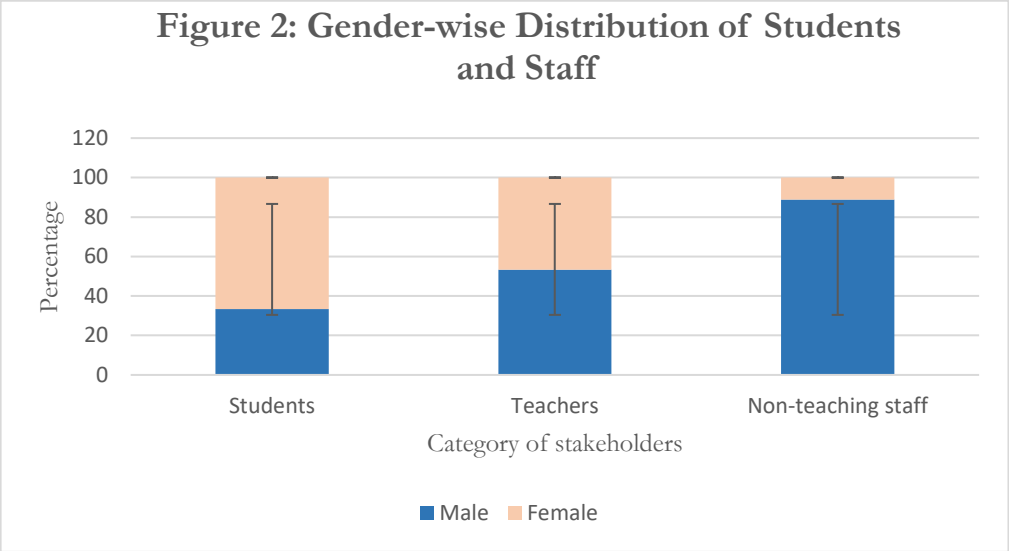
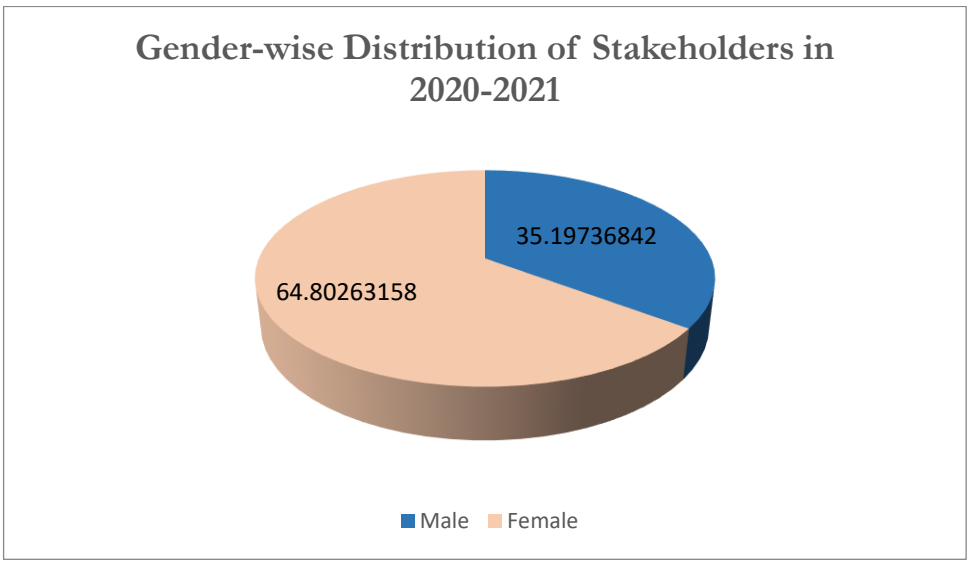


Figure 3 depicts the gender balance of all stakeholders associated with the college. This indicates that the male-female ratio of all stakeholders in the college is in favour of females, because of the significantly high percentage of female students. This is commendable and proof of the safe and secure environment that the institution provides to women. Notably, no person belonging to the third gender were found.



D. Gender sensitization in the college

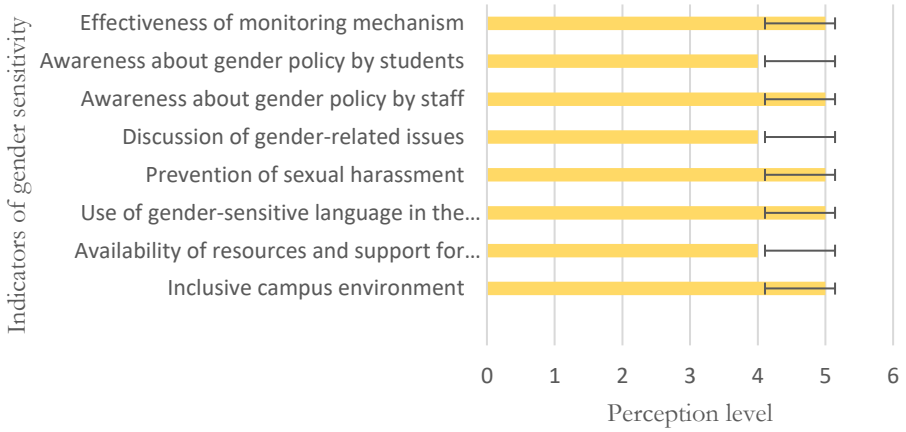
The Shishuram Das College is dedicated towards promoting an atmosphere of gender equity in its campus. Gender-segregated facilities like toilets and restrooms were observed during the survey. Facilities for both males and females were observed to be in good condition, indicating equitable care for all gender groups in the college. Also, CCTV surveillance and security guards at the gate ensure proper security for all individuals on the campus. Extra-curricular activities were observed to promote gender diversity and inclusion. Moreover, the support faculty, staff, and students were found to balance caregiving responsibilities with academic or professional pursuits in a suitable manner.

The college had a comprehensive gender policy guiding its activities. As per this policy, the college was committed to non-discrimination on the grounds of gender, provision of equal opportunities to all, promotion of gender-inclusive practices such as the use of gender-neutral language in all official communications, forms, and policies, and the promotion of awareness regarding diverse gender identities, prevention of gender-based discrimination and harassment, promotion of gender equity initiatives such as committees, implementing training programmes, and Gender and Development (GAD) training.

The college also vouched to implement this policy and review it periodically in collaboration with the IQAC cell. The IQAC cell had been formed in the previous academic year with 6 members, out of which 2 (33.33%) were females. It still remained the same in composition. The Women Development Cell also established in the previous academic year carried out its functions diligently under the convenorship of Ms. Nupur Datta, and 2 other female members. With 60% of the members being female, and 40% male, a healthy gender balance was maintained in the cell.

Figure 4 indicates the level of perception of the gender audit team regarding some basic indicators of gender inclusivity and sensitivity inside the college campus. This perception was based on information collected from the college staff and students. No instances of sexual harassment or abuse were reported during the academic year in which the audit was performed. This indicated that the campus was safe for women.

Figure 4: Level of Gender Inclusivity and Sensitivity in the Campus



Section IV

Summary and Recommendations

4. Summary and Recommendations

A. Summary

The Shishuram Das College nurtures an environment conducive to the overall development of all its students and staff. Gender inclusivity and sensitivity guide the daily workings of the college. The authorities had implemented the gender policy with vigour and showed commitment towards promoting gender development by continuing to organize programmes for the benefit of women. No gender-related events could be organized this year due to the lockdown for the prevailing Covid-19 pandemic. After observing every detail thoroughly, the gender audit team has assigned a score of **8.5** out of 10 according to its perception of the gender-related conditions prevailing in the Shishuram Das College.

B. Recommendations

The following recommendations may help the college to promote a holistic gender-based development inside its campus.

i. Awareness programmes and workshops on gender inclusivity, sensitivity, and security may be conducted
ii. Gender-based courses may be continuously introduced in the curriculum.
iii. More females must be hired in the non-teaching category
iv. Persons belonging to the third gender must be hired in both the teaching and non-teaching categories, and eventually included in the governing body of the college.
v. More females must be included in the governing body of the college.

Certificate

Nayabad Integrated Social and Environmental Welfare Society

Certificate

Nayabad Integrated Social and Environmental Welfare Society is a non-profit and voluntary organization registered under the West Bengal Societies Registration Act XXVI of 1961 (Reg. No. No. S0005896 of 2019-2020).

This is to certify that the 'Nayabad Integrated Social and Environmental Welfare Society' (NISEWS), Kolkata 700099 has conducted a brief and precise 'Gender Audit' for the 'Shishuram Das College', during the assessment year 2020 to 2021. The Gender Audit was performed in accordance with the NAAC guidelines.

NAYABAD INTEGRATED SOCIAL AND ENVIRONMENTAL WELFARE SOCIETY ★ Kolkata 700099

Dr. Malancha Dey
(President, NISEWS)
Date: 24.06.2021

GREEN AUDIT REPORT

2020-2021

Sishuramdas College, Bhusna, South 24 Parganas

Performed by: Nayabad Integrated Social and Environmental Welfare Society, Kolkata

Table of Contents

1.1 Introduction to Green Audit

I. Basis of Green Audit

The term "Green" refers to being eco-friendly and not harming the environment. It can be acronymically expanded to "Global Readiness in Ensuring Ecological Neutrality" (GREEN). Green Audit is the systematic identification, quantification, recording, reporting, and analysis of environmental diversity components. Also known as Environmental Auditing, Green Audit examines environmental practices within and outside a college campus to enhance eco-friendly conditions. It assesses how organizational activities affect health and the environment, guiding improvements. Educational institutions, with both negative and positive environmental impacts, can lead in sustainable solutions. Green Audit helps colleges identify energy, water, or resource use and waste types and volumes, informing resource-saving and waste minimization strategies. It promotes health consciousness, environmental awareness, values, and ethics, offering staff and students insight into the campus's environmental impact.

II. Objectives of Green Audit

Green Audit regulates all such practices and checks whether our processes are consuming more than the required resources and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion, it is necessary to verify the processes and convert them into green and clean ones. The Green Audit provides an approach to it. It also increases overall consciousness among the people working in institutions toward an environment. The various components of the Green Audit such as:

i. To map the geographical location of the college and its surroundings
ii. To record the meteorological parameter where the college is situated
iii. To document the quality of drinking water
iv. To document the waste disposal system

III. Benefits of Green Audit

There are many advantages of a Green Audit for an educational institute

- It would help to defend the environment in and around the campus
- Recognize the cost-saving methods through waste minimization and management
- Point out the prevailing and fourth-coming impacts on the environment
- Improve social and environmental awareness for the institute and students
- Authorize the organization to frame a better environmental performance
- Improvement of environmental ethics and values and stewardship towards responsible environment management
- Finally, it will help to build a positive impression through green initiatives during the upcoming NAAC visit.

1.2. Details of the Audited Institution

The Department of Higher Education, Government of West Bengal approved the establishment of General Degree College named 'Shishuram Das College' at Bhusna, P.O. - Kamapole, P.S. - Diamond Harbour, Dist. - South 24 Parganas with effect from 2010 – 2011 academic session. Accordingly, in 2010, as a 'Destination of Higher Education' Shishuram Das College started its journey in the first year at Sarisha High School building. Thus the aspiration for higher education of the local people, particularly the students belonging to the poor and middle-class families who cannot afford to go far off places for meeting the demand of higher education, was fulfilled. The establishment of the College was possible for the educationist and philanthropist Late Pranapati Das who donated Rs. 11 Lakhs and 0.54 acre of land for the college in the name of his father Late Shishuram Das. Sri Rishi Kumar Halder (Ex-MLA and former President of the college) supported wholeheartedly towards the foundation of the College. Diamond Harbour Sarisha Janakalyan Sanstha played an important role in the foundation of the college. The college owes its huge premises (an area of 5.08 acres) to the society. The foundation stone of the present college building was laid on 16th August 2010 by Dr. Suranjan Das, the then Vice-Chancellor of the University of Calcutta and Dr. Subimal Sen, the then Chairman of West Bengal State Council of Higher Education in the presence of Sri Rishi Kumar Halder, Dr. Haraprasad Samaddar and others. Since then, the college has expanded structurally and academically, thus earning the reputation of having an excellent academic environment. This number is expected to increase in the future. Apart from general classrooms, smart classroom and library the college also has canteen and common rooms for students and a playground for sports and other outdoor activities.

Table 1: Brief about the College

Name of the College	Sishuram Das college
Name of the Principal	Dr. Nilesh Ranjan Maity
Latitude	22°14´58´´N
Longitude	88°18´07´´E
Total Campus Area	5.08 acre
Address	Bhusna, P.O. - Kamapole, P.S. - Diamond Harbour, Dist. - South 24 Parganas, West Bengal, Pin- 743368
Contact Details	8918979749, shishuramdascollege@yahoo.co.in
No. of Departments (UG)	10
No. of Students	569
No. of Teachers	30
No. of Non-teaching Staff	9

1.3. Vision and Mission Statement of the College

Vision:

The College aims at the upliftment of the people of the locality, particularly the poor and middle classes, through spreading higher education which will lead to enlightenment and employment. Since its establishment the college has aimed at propagating quality education among the students. Being located in the rural area of South 24 Parganas the college has evolved as a seat of academic excellence in the region and has significantly contributed in the fields of sports, physical education, socio-cultural activities and public awareness. Since its inception the college is committed to impart higher education to the aspiring youth.

Mission:

- To offer suitable undergraduate courses and to make the young students fit for educational and administrative services.
- To help every student in realizing his/her abilities and also to inspire him/her to know each and every scope of self-employment and entrepreneurship that can bring success in his/her future life.
- To offer value-based and value-added education to groom the students as capable, sensible and responsible citizens of the country.
- To provide quality education to the students irrespective of caste, creed, religion and diverse socio-economic status.
- To motivate the students to achieve academic distinction and excellence in every sphere of culture and administration.
- To inculcate values in the students and harbour a strong personality in each of them so that they can become the responsible citizens of modern India in the near future.

1.4. Methods of Auditing

The audit process was carried out in three phases from July 2018 to June 2019. At first, all the secondary data required for the study was collected from various key information sources and concerned departments. A broad reference work and literature review were carried out to clear the idea of green auditing. Different case studies and methodologies were studied, and the following methodology was adopted for the present audit. The methodology of the present study is based on onsite visits, personal observations, and questionnaire survey tools. Baseline data for Green Audit report preparation was collected by questionnaire survey method. Questionnaires prepared to conduct the Green Audit on the college campuses are based on the guidelines, rules, acts and, formats prepared by the Ministry of Environment, Forest and Climate Change, New Delhi, Central Pollution Control Board and, other statutory organizations. After the onsite visit and stakeholders' interview, the questionnaires were filled out. The generated data is subsequently gathered and used for further analysis. From the outcome of the overall study, a final report is prepared.

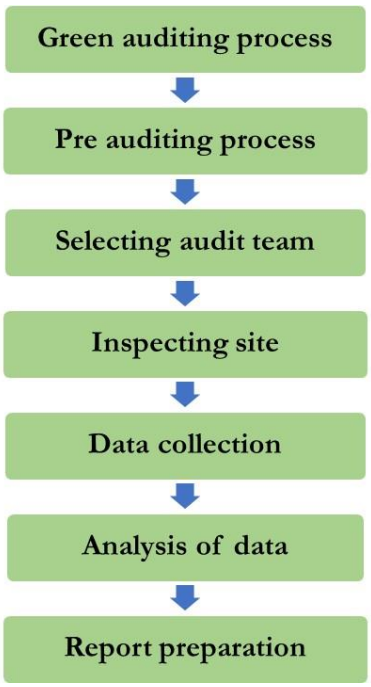


Fig. 2. Process of green audit

1.5. Scope of green audit

The scope of a green audit covers multiple facets of environmental management and sustainability practices. Key components include:

i. **Water usage:** Reviewing water consumption to find areas for reduction, implementing water-saving technologies, and ensuring proper wastewater treatment processes are in place.

ii. **Energy conservation:** Evaluating energy usage patterns, identifying inefficiencies, and recommending measures to reduce energy consumption and improve efficiency.

iii. **Waste management:** Assessing waste generation, segregation, and disposal practices. The audit identifies ways to minimize waste, promote recycling, and manage hazardous waste safely.

iv. **Pollution control:** Monitoring and controlling air, water, and soil pollution. The audit examines emissions, effluents, and practices that impact the environment, recommending strategies for pollution prevention and mitigation.

v. **Resource efficiency:** Analyzing the use of natural resources, such as raw materials and fuels, to ensure they are used efficiently and sustainably.

vi. **Compliance with environmental policies:** Ensuring that the organization adheres to local, national, and international environmental regulations and standards. This includes compliance with laws related to emissions, waste disposal, and resource use.

vii. **Sustainable practices:** Promoting the adoption of sustainable practices, such as using renewable energy sources, eco-friendly materials, and green technologies. The audit assesses the organization's overall sustainability strategy and its implementation.

viii. **Biodiversity conservation:** Evaluating the organization's impact on local ecosystems and biodiversity. This includes assessing land use practices, habitat protection efforts, and initiatives to preserve and enhance biodiversity. The audit identifies potential risks to wildlife and natural habitats and recommends actions to mitigate these impacts.

SECTION 2
WATER RESOURCE MANAGEMENET

2. Water Resource Management

I. Importance of water resource management

Water is one of the six essential nutrients, alongside carbohydrates, protein, fat, vitamins, and minerals. Approximately 60% of the human body is composed of water, and humans can survive only three to five days without fluids. Water plays critical roles in bodily functions, including waste removal, temperature regulation, and nutrient transport, which are vital for digestion.

A. Increasing Demand for Freshwater

The demand for freshwater is rising due to increasing living standards, industrialization, and urbanization. In response to this growing need, the Government of India launched the national mission on water conservation known as 'Jal Shakti Abhiyan.' This initiative urges all citizens to collaborate in addressing water scarcity by conserving every drop of water and suggests that water audits be conducted across all sectors of water use.

B. Water Auditing

A water audit is a systematic process designed to obtain a comprehensive water balance. It involves measuring the flow of water from the point of withdrawal or treatment through the distribution system, and into areas where it is used, eventually to its discharge. Water auditing is a cost-effective method for identifying and reducing water losses, optimizing water usage across multiple applications, and achieving significant water savings in sectors such as irrigation, domestic use, power generation, and industry.

C. Recommendations for Water Conservation

To address the increasing demand for freshwater, it is essential to reduce water consumption and enhance the reuse and recycling of treated wastewater. Implementing water audits can help identify inefficiencies and areas for improvement, thereby promoting sustainable water management practices. Given the vital importance of water for human survival and the growing pressures on freshwater resources, it is imperative to adopt comprehensive water conservation strategies. By conducting water audits and promoting the reuse and recycling of water, significant strides can be made towards sustainable water management, ensuring the availability of this essential resource for future generations.

D. Importance of Water Audit

i. When problems are identified, it is easier to work on solutions

ii. The process is more systematic

iii. It is possible to implement a tracking system

Climate, culture, diet habits, employment and working conditions, degree and type of development, and physiology are all thought to play a role in determining the amount of water required. According to the Southeast Asia Regional Office of the World Health Organization's (WHO) standards Administration requires 50 l per person per day (staff accommodation not included), Staff housing needs 30 l per person per day, and sanitation is dependent on technology, schools require 2 l per student; 10-15 l per student if water-flushed toilets are used.

Table 2: Yardstick of water requirements by institutions

Purpose	Requirements
Administration (excluding staff accommodation)	50 lit/day/person
Staff Housing	30 lit/day/person
School	2 lit / student
Water-flushed toilets	10-15 lit/student

II) Water usage decreased due to Covid 19 lockdown

During the COVID-19 pandemic in 2020, colleges in West Bengal, like many across the country, remained closed for offline activities for most of the year. This was part of the nationwide efforts to curb the spread of the virus. Despite the closure of physical campuses, educational institutions swiftly transitioned to online modes of teaching to ensure continuity in education. Faculty and staff operated on a roster duty system, minimizing on-campus presence to essential personnel only, which helped maintain necessary operations while adhering to safety protocols. As a result of reduced physical attendance, the overall water usage in colleges significantly decreased, as fewer people were present to use facilities like washrooms, canteens, and other on-campus amenities. This period highlighted the adaptability of educational systems in crisis situations and underscored the importance of resource management.

III) Water storage system

The campus is equipped with three overhead tanks, each with a capacity of 1,000 liters, contributing to a total volume of 3,000 liters. These tanks play a crucial role in maintaining the water supply for various campus activities, ensuring that there is sufficient storage to meet daily demands. The uniformity in tank size simplifies maintenance and management, allowing for a consistent and reliable distribution of water across the college's facilities.

Table 3: Categories of the water reservoir and its water holding capacity

Type	Number	Volume (l)	Total Volume (l)
Overhead	1	1000	1000
Overhead	1	1000	1000
Overhead	1	1000	1000
			3000

IV) Per capita water allocation and per capita usage

During the COVID-19 lockdown, there was a significant reduction in water consumption on college campuses due to the shift to online classes and the reduced on-campus presence of students and staff. The water usage data reflects this change. For instance, pond water used for gardening activities on the college campus was 4,000 liters per day over 50 days, resulting in a total of 200,000 liters annually. Groundwater consumption for drinking purposes among students was limited to 30 days, with 569 students using 2 liters per day, totaling 1,114 liters daily and 33,420 liters annually. Similarly, permanent teachers and non-teaching staff (NTS) consumed significantly less, with annual usages of 1,800 and 540 liters, respectively. For toilet usage, students used 24,975 liters per day over 30 days, while permanent teachers and NTS used 1,350 and 405 liters per day, leading to annual totals of 749,250, 40,500, and 12,150 liters, respectively. Hand and face washing for all students and staff was 1,023 liters per day over 30 days, amounting to 30,690 liters annually. Groundwater usage for mopping floors in the college's built-up area was 2,500 liters per day over 30 days, with an annual total of 75,000 liters. Overall, the total water usage during this period was 35,445 liters daily, culminating in 1,143,350 liters annually, highlighting the impact of reduced campus activities on resource consumption.

Table 5: Different categories of water usage

Water Source	Activity	Category	Days	No. of Users	Water usage/day/person	Total water usage/day	Annual water usage
Pondwater	Gardening		50	College Campus	4000	4000	200000
Groundwater	Drinking	Students	30	569	2	1114	33420
		Permanent Teacher	30	30	2	60	1800
		Permanent NTS	30	9	2	18	540
Groundwater	Toilet	Students	30	569	45	24975	749250
		Permanent Teacher	30	30	45	1350	40500
		Permanent NTS	30	9	45	405	12150
	Washing hands and face	All students & staff	30	2046	0.5	1023	30690
Groundwater	Mopping Floor		30	College Built-up Area	2500	2500	75000
Total Water Usage						**35445**	**1143350**

V) Utilization and wastewater generation

The college's annual water consumption data reveals significant utilization across various essential activities, reflecting its operational priorities and commitment to maintaining a functional and sustainable environment. Groundwater specifically allocated for gardening purposes amounts to 200000 liters, supporting the campus's green spaces and landscaping efforts. Drinking water, vital for the health and wellbeing of students, faculty, and staff, totals 35760 liters, ensuring access to safe and potable water. The largest share of water consumption is for toilet purposes, with a substantial 30690 liters used, underscoring the importance of sanitation facilities. Cleaning the college campus requires 75000 liters of water, contributing to the upkeep and hygiene of the campus environment. Washing hands and faces, a crucial aspect of personal hygiene, accounts for 259842 liters.

VI) Rainwater harvesting, usage, ground water recharge, waste water recycling / reuse

Pond harvesting is a significant aspect of the water management strategy on the college campus. The harvested pond water is primarily used for gardening, promoting sustainable practices and reducing

dependency on external water sources. Spanning a total area of 5.08 acres, the campus has a unique layout where only the building area is concreted, while the remaining land is natural ground. This design not only supports the aesthetic and ecological value of the campus but also plays a crucial role in enhancing groundwater recharge. The natural ground facilitates the infiltration of rainwater, effectively replenishing the groundwater table. Despite these efforts in pond harvesting, the campus currently does not implement wastewater recycling or reuse, highlighting an area for potential future development to further improve water sustainability on campus.

VII) Accessibility to water resources

The accessibility of water resources on our college campus is commendable, ensuring that all students and staff, regardless of gender, have equal and convenient access to clean water. Strategically placed water points throughout the campus facilitate ease of access, minimizing any barriers to obtaining water for drinking, sanitation, and other daily needs. This infrastructure supports the college's commitment to inclusivity, ensuring that everyone can equally benefit from the available resources. The campus design takes into consideration the needs of all genders, providing safe and private facilities that promote comfort and dignity. By prioritizing accessibility, the college not only enhances the quality of life for its community members but also fosters an environment of equality and respect. This approach reflects a broader commitment to sustainable and equitable resource management, recognizing water as a fundamental right for all individuals on campus.

SECTION 3
ENERGY RESOURCE MANAGEMENT

3. Energy Resource Management

I. Significance of Energy Resource Management

Energy conservation is a crucial component of campus sustainability, intricately linked to reducing the overall carbon footprint. Effective energy management practices not only contribute to environmental stewardship but also enhance the economic efficiency of the institution. Energy auditing involves a thorough evaluation of energy consumption patterns and the identification of strategies to minimize energy use and its associated environmental impacts. The process includes:

A. Assessment of energy use

i. **Preliminary assessment:** Gathering basic information about the facility, including its size, usage patterns, energy bills, and existing energy systems and scheduling an initial meeting with key stakeholders to outline the audit's scope and objectives.

ii. **Data collection:** Collecting detailed data on energy consumption through utility bills, meter readings, and energy management systems and documenting all energy-consuming equipment, including lighting, HVAC systems, machinery, and appliances.

iii. **Site inspection:** Conducting a thorough on-site inspection to assess the condition and performance of energy systems and identifying any obvious inefficiencies, such as outdated equipment, poor insulation, or leaks.

iv. **Benchmarking:** Analyzing the collected data to determine energy consumption patterns and identify areas of significant energy use and benchmarking to compare the facility's energy performance against similar facilities.

B. Analysis of Energy Efficiency

i. **Performance evaluation:** Utilizing key performance indicators (KPIs) to assess energy efficiency and detect inefficiencies.

ii. **Technology review:** Assessing the effectiveness of current technologies and systems, and exploring potential upgrades or replacements with more energy-efficient alternatives.

C. Development of conservation strategies

i. **Behavioral changes:** Encouraging energy-saving behaviors among students, faculty, and staff through awareness initiatives and training.

ii. **Operational improvements:** Implementing strategies like optimizing HVAC systems, improving insulation, and deploying energy management systems (EMS) to enhance efficiency.

iii. **Renewable energy integration:** Incorporating renewable sources like solar panels, wind turbines, and geothermal systems to reduce reliance on fossil fuels.

iv. **Energy storage solutions:** Implementing advanced systems for storing and optimizing the use of renewable energy.

II) Importance of the electricity and energy resource management

From a general point of view, an energy audit provides enormous benefits in different areas

i. **Identifying cost savings**: Energy audits help in identifying opportunities for reducing energy consumption and operational costs through efficiency improvements and better management practices.
ii. **Enhancing environmental sustainability**: By optimizing energy use, audits contribute to reducing carbon footprint and environmental impact, aligning with sustainability goals.
iii. **Improving operational efficiency**: Audits reveal inefficiencies in energy systems, enabling facilities to operate equipment more effectively and extend equipment lifespan.
iv. **Compliance and risk mitigation**: Audits ensure compliance with energy regulations and standards, audits mitigate risks associated with energy supply disruptions and regulatory non-compliance.
v. **Promoting organizational responsibility**: Conducting audits demonstrates commitment to responsible resource management, fostering a culture of sustainability within the organization.
vi. **Supporting strategic decision-making**: Insights from audits inform strategic decisions on capital investments in energy-efficient technologies and renewable energy integration.
vii. **Enhancing indoor environmental quality**: Efficient energy use often correlates with improved indoor air quality and comfort for occupants, benefiting overall health and productivity.
viii. **Securing funding and grants**: Audit findings can support applications for funding or grants aimed at implementing energy-saving initiatives and renewable energy projects.
ix. **Monitoring and continuous improvement**: Post-audit monitoring ensures sustained energy efficiency gains and identifies further optimization opportunities over time.

III. Total consumption in whole campus as well different sections

A. Electrical Energy

The sustainability of the campus community is significantly influenced by its energy use, sources, management, lighting systems, and various appliances. A comprehensive assessment of these factors is crucial for formulating effective energy conservation strategies. The primary areas of energy consumption within the campus include the office, canteen, and laboratory, each serving different functions and thus having varied energy demands. Table 6 presents the energy consumption pattern of the college over one year. The calculation method used to determine energy consumption is as follows:

Energy Consumption (kWh/year) =Power (W)×Hours×Number of Units×Days

During the COVID-19 pandemic lockdown, the energy consumption on college campuses decreased drastically due to the absence of regular on-site activities. An analysis of energy usage by various appliances illustrates this reduction. Air conditioners, which are typically significant energy consumers, were used for

only 4 hours daily over 30 days, resulting in an energy consumption of 720 kWh. CCTV cameras, operating at a lower power usage of 0.002 kW each, consumed just 3.12 kWh over the same period. The refrigerator, used sparingly, accounted for 96 kWh. Fans, being more numerous at 71 units, used 6,816 kWh when operated for 4 hours daily. Tube lights, another common fixture, consumed 1,656 kWh. Computers, with 7 units in use, contributed 168 kWh, while the projector, used for limited periods, added 14.4 kWh. Printers, operated for only an hour daily, consumed 13.5 kWh. The significant reduction in energy usage during the lockdown period reflects the shift to remote activities, leading to minimal operation of these appliances, and underscores the impact of reduced physical presence on energy conservation.

Table 6. Electrical equipment and their electricity consumption in college per year

Sl No.	Appliances	No of appliances	Power used(kW)/appliance	No of days	Usage per day(hour)	Energy Consumption
1	Air conditioner	4	1.5	30	4	720
2	CCTV	13	0.002	30	4	3.12
3	Refrigerator	1	0.8	30	4	96
4	Fan	71	0.8	30	4	6816
5	Tube light	69	0.2	30	4	1656
6	Computer	7	0.2	30	4	168
7	Projector	1	0.12	30	4	14.4
8	Printer	3	0.15	30	1	13.5

IV) Wiring and set-up conditions

The electrical infrastructure across the college campus has been found to be in good condition, as evidenced by a thorough survey conducted recently. The wiring of the electricity circuits is meticulously maintained, ensuring a high standard of safety and functionality. During the survey period, no instances of open wires or open circuits were detected, which is a testament to the diligent upkeep and regular inspections performed by the campus maintenance team. This level of attention to electrical safety minimizes the risk of electrical hazards, such as short circuits or electrical fires, thus safeguarding students, staff, and facilities. The well-maintained electrical system also contributes to the efficient operation of various campus facilities, ensuring that classrooms, laboratories, and administrative offices can function without interruption. Overall, the impeccable condition of the campus's electrical wiring underscores the college's commitment to providing a secure and conducive learning environment.

V. Renewable energy use

In response to growing concerns about carbon emissions and climate change, the college has embarked on several significant initiatives to transition towards renewable energy sources. Recognizing the importance of reducing its carbon footprint and promoting sustainability, the college has invested in the installation of solar panels in the parking area of the campus. The college ensures the efficiency and longevity of the solar

energy system through regular maintenance. The maintenance team of the college is responsible for the routine cleaning of the solar panels. This cleaning process is crucial because it removes dust, debris, and other particulate matter that can accumulate on the panels, which can significantly reduce their efficiency and energy output. By keeping the panels clean, the maintenance team helps to maximize their performance and ensure consistent energy production. These proactive measures not only demonstrate the college's commitment to sustainability and environmental stewardship but also serve as an educational model for students and the community. By investing in renewable energy and maintaining these systems meticulously, the college contributes to the broader effort to combat climate change and fosters a culture of sustainability on campus.

VI. Energy wise-use – Day light usage

Optimizing daylight usage in a college setting for efficient electrical energy management involves several technical strategies. Primarily, the integration of advanced daylight harvesting systems, which utilize sensors to adjust artificial lighting based on natural light availability, can significantly reduce energy consumption. Architectural designs incorporating large windows, skylights, and light shelves enhance natural light penetration, minimizing the need for electrical illumination during daytime hours. Additionally, implementing energy-efficient lighting fixtures with dimmable controls allows for dynamic adjustment of light levels in response to varying daylight conditions. Automated shading devices can prevent glare and excessive heat gain, maintaining a comfortable indoor environment while maximizing natural light usage. By leveraging these technologies and design principles, colleges can achieve substantial reductions in electrical energy consumption, promote sustainability, and enhance the overall learning environment.

SECTION 4
WASTE MANAGEMENT

4. Waste management

I. Solid waste collection and disposal system

The college has implemented a robust solid waste collection and disposal system to manage its waste effectively and promote environmental sustainability. The system encompasses a comprehensive approach, starting with the segregation of waste at the source. Separate bins for recyclable, nonrecyclable, and organic waste are strategically placed across the campus, ensuring that students, faculty, and staff can easily dispose of their waste appropriately. The waste is then collected regularly by the campus maintenance team, who ensure that each type of waste is handled correctly. Recyclable materials are sent to designated recycling centers, organic waste is composted on-site or transported to local composting facilities, and non-recyclable waste is disposed of following municipal guidelines. The college also conducts regular awareness campaigns to educate the campus community about the importance of waste segregation and recycling. This meticulous system not only helps in reducing the overall waste sent to landfills but also fosters a culture of environmental responsibility among the college community.

Different types of waste generated in the college campus and their disposal/ recycling			
Sl. No.	**Types of waste**	**Disposal method**	**Amount(kg/year)**
1	Solid waste collection and disposal system	The daily waste of college is segregated and disposed of at nearby garbage by college swiper	
2	Waste water collection and disposal system	Not present	
3	Toxic (Lab etc) and e-waste collection and disposal system	Not present	

II. Waste water collection and disposal system

The regular wastewater generated from toilets, basins, kitchens, and garden runoff on the college campus is disposed of through the existing drainage system. However, it was noted that there is no dedicated wastewater disposal or treatment plant present on the campus. This lack of specific treatment infrastructure means that the wastewater is not treated before being discharged, which could have implications for environmental compliance and sustainability practices. The absence of a treatment plant highlights an area for potential improvement in the college's waste management strategy to ensure that wastewater is handled in an environmentally responsible manner.

III. Per capita municipal waste generated annually

During the COVID-19 lockdown, the generation of waste from college campuses decreased drastically, reflecting the reduced physical presence of students, faculty, and staff. With the shift to online classes and remote work, the usual sources of waste, such as cafeteria disposables, paper waste from classrooms and offices, and general litter from daily campus activities, were significantly minimized. This reduction in waste production led to a decrease in the volume of waste that needed to be managed and disposed of. Consequently, waste collection, which typically operated on a more frequent schedule to accommodate the higher waste output, was adjusted to a weekly basis. This change not only highlighted the immediate impact of reduced on-campus activities on waste generation but also underscored the potential for more sustainable waste management practices in the future. The shift in waste collection frequency further demonstrated the adaptability of waste management systems in response to changing circumstances, ensuring that the reduced waste was efficiently and effectively handled.

SECTION 5
AMBIENT AIR & NOISE QUALITY

5.1. Ambient Air Quality

I. Ambient Air quality in the campus

During the lockdown, the college experienced a significant reduction in on-campus presence, as most students and staff were working or studying remotely. This decrease in foot traffic and occupancy led to minimal usage of the college facilities, including the air conditioning systems. As a result, the reduced operational demand allowed the air conditioning systems to remain in optimal condition. The infrequent use meant less wear and tear, lower energy consumption, and a decrease in maintenance needs, ultimately contributing to improved system performance and efficiency. Additionally, the downtime provided an opportunity for any necessary servicing or upgrades to be carried out without disrupting daily college activities, ensuring the air conditioning systems remained in excellent condition.

II. Ventilation system

The college premises are adequately aired, with classrooms designed to be well-ventilated, ensuring a continuous flow of fresh air. This thoughtful architectural feature creates a comfortable and healthy learning environment for students and faculty alike. Additionally, the abundant flora on the college grounds plays a crucial role in enhancing air quality. The plants and trees not only beautify the campus but also act as natural air purifiers by absorbing carbon dioxide and other gases, thus contributing to a cleaner and more sustainable atmosphere. This combination of good ventilation and strategic landscaping underscores the college's commitment to providing a healthy and conducive environment for education.

III. Source of air pollution

With the college campus experiencing minimal presence during the lockdown, the usual sources of air pollution saw a significant decrease. Typically, campuses are bustling with activities, including vehicle traffic, construction, and the operation of various machinery, all contributing to air pollution. However, with most students and staff working remotely, there was a drastic reduction in vehicle emissions from daily commutes and campus transport services. Additionally, the reduced usage of campus facilities like cafeterias, laboratories, and workshops meant lower emissions from equipment and energy consumption. This collective decrease in activity led to a noticeable improvement in air quality on the campus, contributing to a cleaner and more sustainable environment during the lockdown period.

SECTION 6
BIODIVERSITY

6. Biodiversity

I. Biodiversity assessment report

Major tree species

The college campus hosts a diverse array of tree species, contributing to its rich biodiversity and ecological balance. Among the major species observed is the Indian Jujube (Ziziphus mauritiana), belonging to the Rhamnaceae family, with a quantity of eight trees and an IUCN Red List status of "Least Concern" (LC). The Arecaceae family is well-represented with 15 Wild Date Palms (Phoenix sylvestris) and 10 Senegal Date Palms (Phoenix reclinata), the latter also listed as LC. The Fabaceae family includes 24 Cassie trees (Vachellia sarnesiana) and eight Cow Tamarind trees (Samanea saman), both of which are vital to the campus environment. The Meliaceae family contributes with seven Neem trees (Azadirachta indica), classified as LC, and 13 Cuban Mahogany trees (Swietenia mahagoni), which are noted as "Near Threatened" (NT). The Coconut Palm (Cocos nucifera) is the most numerous, with 30 individuals, alongside an equal number of Banana Trees (Musa paradisiaca linn) from the Musaceae family. Additionally, the Poaceae family is represented by seven Wamin Bamboo (Bambusa vulgaris), adding to the campus's botanical variety. These species not only enhance the aesthetic appeal of the campus but also play a crucial role in supporting the local ecosystem.

Table 11: List of major tree species observed in the college campus

List of major tree species observed in the college campus					
Sl No.	**Family**	**Common name**	**Scientific name**	**IUCN red list status**	**Quantity**
1	Rhamnaceae	Indian Jujube	*Ziziphus mauritiana*	LC	8
2	Arecaceae	Wild date Palm	*Phoenix sylvestris*		15
3	Fabaceae	Cassie	*Vachellia sarnesiana*		24
4	Meliacear	Neem	*Azadirachta indica*	LC	7
5	Arecaceae	Senegal Dat palm	*Phoenix reclinata*	LC	10
6	Aeracaceae	Coconut Plam	*Cocos nucifera*		30
7	Poaceae	Wamin Bamboo	*Bambusa vulgaris*		7
8	Meliaceae	Cuban Mahogany	*Swietenia mahagoni*	NT	13
9	Fabaceae	Cow Tamarind	*Samanea saman*	LC	8
10	Musaceae	Banana Tree	*Musa paradisiaca linn*		30

The college campus is home to a diverse collection of plant species, enhancing its ecological diversity and aesthetic value. The Rubiaceae family is represented by a single Gardenia (Gardenia jasminoides), classified as "Least Concern" (LC) on the IUCN Red List. The Apocynaceae family contributes six Periwinkle plants (Catharanthus roseus), while the Solanaceae family includes one Night Jasmine (Cestrum nocturnum), also listed as LC. Among the Garryaceae family, the Japanese Aucuba, or Gold Dust Plant (Aucuba japonica), is present in a single specimen. The Arecaceae family includes two Areca Palms (Dypsis lutescens), noted as "Near Threatened" (NT). The Asparagaceae family is represented by one Lily (Cordyline fruticosa) and four Aloe Vera plants (Aloe officinalis Forssk). The Araceae family is marked by one Pothos (Epipremnum pinnatum), while the Araliaceae family includes one Geranium-Leaf Aralia (Polyscias guilfoylei), with an LC status. The Agavaceae family adds four Song-of-India plants (Dracaena reflexa Lam), and the Fabaceae family has one Lam Licorice (Glycyrrhiza glabra). The Lamiaceae family contributes two Holy Basil plants (Ocimum tenuiflorum), while the Rutaceae family has one Curry Leaf Plant (Bergera koenigii), classified as LC. Additionally, the Crassulaceae family includes three Cathedral Bells (Kalanchoe pinnata), and the Molluginaceae family has one Green Carpetweed (Mollugo verticillata). These species not only add to the campus's visual appeal but also support its ecological balance.

Table 12: List of some medicinal plants observed in the college campus

Sl No.	Family	Common name	Scientific name	IUCN red list status	Quantity
1	Rubiaceae	Gardenia	*Gardenia Jasminoides*	LC	1
2	Apocynaceae	Periwinkle	*Catharanthus Roseus*		6
3	Solanaceae	Night Jasmine	*Cestrum Nocturnum*	LC	1
4	Garryaceae	Japanese Aucuba, Gold Dust Plant	*Aucuba Japonica*		1
5	Arecaceae	Areca Palm, Golden Cane Palm	*Dypsis Lutescen*	NT	2
6	Asparagaceae	Lily	*Cordyline Fruticosa*	LC	1
7	Asparagaceae	Aloe Vera	*Aloe Officinalis Forssk*		4
8	Araceae	Pothos, Devil's Ivy	*Epipremnum Pinnatum*		1
9	Araliaceae	Geranium-Leaf Aralia	*Polyscias Guilfoylei*	LC	1
10	Agavaceae	Song-of-India, Pleomele	*Dracaena Reflexa Lam*		4
11	Fabaceae	Lam Licorice, Licorice	*Glycyrrhiza Glabra*		1
12	Lamiaceae	Tulasi, Holy Basil	*Ocimum Tenuiflorum*		2
13	Rutaceae	Currybush, Curry Leaf Plant	*Bergera Koenigii*	LC	1
14	Crassulaceae	Cathedral Bells, Air Plant	*Kalanchoe Pinnata*		3
15	Molluginaceae	Green Carpetweed, Indian Chickweed	*Mollugo Verticillata*		1

II) In-house, gardening and tree management

The Eco-Club of Shishuram Das College takes pride in organizing an annual plantation program that significantly contributes to the campus's greenery and environmental sustainability. Each year, this initiative brings together students, faculty, and community members in a collaborative effort to plant and nurture a variety of plant species. Despite not having a professional gardener on staff, the Eco-Club manages all aspects of gardening and maintenance with dedication and enthusiasm. This hands-on approach not only fosters a sense of responsibility and environmental stewardship among participants but also enhances their understanding of horticulture and ecological conservation. The plantation program is a testament to the club's commitment to promoting green practices and creating a more sustainable campus environment. Through these efforts, the Eco-Club continues to inspire and educate the college community about the importance of preserving and enhancing natural spaces. During lockdown period all these initiatives were taken online.

III) Any wetland / grove / rare tree etc in the campus?

Shishuram Das College has established and maintained a diverse collection of medicinal plants on its campus, reflecting its commitment to promoting traditional knowledge and sustainable practices. This carefully curated selection of plants serves not only as a living repository of valuable botanical resources but also as a dynamic educational tool for students and faculty alike. The medicinal garden includes a variety of species known for their therapeutic properties, offering insights into their historical and contemporary uses in herbal medicine. By preserving these plants, the college provides opportunities for research and learning about the healing potential of nature, while also contributing to the conservation of plant biodiversity. The garden is an integral part of the campus, fostering an environment that encourages exploration and appreciation of natural remedies. This initiative underscores the college's dedication to integrating ecological awareness with academic growth, ultimately enriching the educational experience and promoting health and wellness within the community.

SECTION 7
GENERAL AWARENESS

7. General Awareness

I. Environmental Awareness of staff, teachers and students

The college staff demonstrated a strong awareness and appreciation for the environment, particularly regarding the floral diversity present on campus, by taking several initiatives online. Recognizing the importance of sustainability, the college authority proactively installed rainwater harvesting systems across the college rooftops, which play a crucial role in replenishing the groundwater table and contributing to water conservation efforts. Additionally, the college actively promotes biodiversity by organizing online workshops and webinars about the benefits and uses of various medicinal plants, which are meticulously maintained on campus by a dedicated gardener. This commitment to green practices extends to encouraging eco-friendly transportation methods, as seen in virtual campaigns promoting the use of bicycles and the provision of a bicycle stand for students. These efforts further emphasize the institution's dedication to fostering a sustainable and environmentally conscious campus community, even in an online setting.

II. Environmental awareness campaign

Due to the lockdown, all college programs were conducted online, including the annual observance of World Environment Day. The college marked this occasion with various virtual activities and initiatives aimed at raising awareness about environmental conservation and sustainability. Throughout the year, the college also organized a wide range of online environment awareness programs. These included virtual workshops, seminars, and educational sessions on topics such as waste management, renewable energy, and biodiversity conservation. Additionally, online campaigns encouraged participation in tree plantation drives and clean-up activities from home. By engaging the campus community in these ongoing efforts, the college instilled a sense of responsibility and stewardship towards the environment, fostering a culture of environmental awareness and activism among students, faculty, and staff. This sustained commitment to environmental education and advocacy underscores the college's dedication to promoting a greener and more sustainable future, even in a virtual setting.

III. Awareness communication

During the survey period, no environmental awareness-related communication in terms of banners, posters, or wall writings was observed on the college premises. This absence of visual messaging highlights a potential opportunity for the college to enhance its efforts in promoting environmental awareness and sustainability among the campus community. Implementing visible and informative signage can serve as a valuable tool for raising consciousness about environmental issues, encouraging eco-friendly behaviors, and fostering a culture of environmental stewardship. By incorporating such communication strategies, the college can effectively engage students, faculty, and staff in environmental initiatives and inspire collective action towards a greener and more sustainable campus environment.

SECTION 8
ENVIRONMENTAL COMPLIANCES

8. Environmental Compliances

I. Cleanliness in sanitation units

The cleanliness of the sanitation units within the college was notably prominent. Throughout the premises, the sanitation facilities, including restrooms and washrooms, were well-maintained and tidy, reflecting the college's commitment to providing a hygienic and comfortable environment for its students, faculty, and staff. The evident attention to cleanliness not only ensures the health and well-being of the campus community but also fosters a positive and conducive atmosphere for learning and working. This emphasis on sanitation underscores the college's dedication to upholding high standards of hygiene and promoting a pleasant experience for all individuals on campus.

II. Safety in Laboratory

Safety within the college laboratories is diligently maintained, ensuring a secure environment for students and faculty engaging in various scientific endeavors. Each laboratory is equipped with essential safety features such as exhaust systems and fire extinguishers, demonstrating the college's commitment to prioritizing the well-being of its occupants. These safety measures not only mitigate potential hazards but also adhere to industry standards and regulations, providing a conducive space for experimentation and research. By upholding stringent safety protocols and ensuring the availability of necessary safety equipment, the college fosters a culture of responsible laboratory practices, promoting both academic excellence and the protection of individuals within the laboratory setting.

III. Segregation of waste at source

While waste segregation measures are implemented within the college, and municipal waste collectors regularly visit to collect the waste, the campus was observed to have accumulated plastic waste during the survey period. Additionally, heaps of different types of waste were found in the backyard of the college. Despite these observations, the college actively participates in waste segregation efforts by regularly separating paper and electrical wastes for recycling purposes. This commitment to waste management reflects the college's recognition of the importance of environmental sustainability and its dedication to minimizing its ecological footprint. However, addressing the issues observed during the survey, such as the accumulation of plastic waste and unattended heaps of waste, presents an opportunity for the college to further enhance its waste management practices and foster a cleaner and greener campus environment.

IV. Air pollution management and preparedness (Smoke dousing, dust precipitating, window cover etc)

The college lacks dedicated air pollution monitoring units and has not implemented specific measures for mitigating air pollution. However, all windows across the campus are properly covered.

VI. Water wastage reduction vigilance

The college has established a comprehensive Water Wastage Reduction Vigilance Program to promote sustainable water use and mitigate unnecessary consumption. This initiative includes the installation of water-efficient fixtures such as low-flow faucets, dual-flush toilets throughout campus facilities to ensure optimal water usage. A robust maintenance protocol is in place to promptly address leaks and plumbing issues, preventing water loss. The program also encompasses educational campaigns designed to raise awareness among students, faculty, and staff about the critical importance of water conservation and to encourage responsible water use practices. To further support these efforts, the college has implemented rainwater harvesting systems, which collect and utilize rainwater for irrigation and other non-potable applications, thereby reducing the reliance on municipal water supplies. Through these measures, the college demonstrates a strong commitment to environmental stewardship and resource conservation.

SECTION 9
RECOMMENDATIONS

9. Recommendations

1. In the context of COVID-19, no specific environmental recommendations were provided.
2. Recommendations focused primarily on COVID-19 precautions and safety measures.
3. Emphasis was placed on social distancing to minimize virus spread.
4. Regular hand washing and use of hand sanitizers were strongly encouraged.
5. Wearing masks in public spaces was recommended to protect oneself and others.
6. Efforts were made to ensure good ventilation in indoor spaces to reduce transmission risk.
7. Awareness was raised about the importance of staying informed and following health guidelines issued by authorities.

Nayabad Integrated Social and Environmental Welfare Society

Certificate

Nayabad Integrated Social and Environmental Welfare Society is a non-profit and voluntary organization registered under the West Bengal Societies Registration Act XXVI of 1961 (Reg. No. No.S0005896 of 2019-2020).

This is to certify that the 'Nayabad Integrated Social and Environmental Welfare Society' (NISEWS), Kolkata 700099 has conducted a brief and precise 'Green Audit' for the 'Shishuram Das College', during the assessment year 2020 to 2021. The Green Audit was performed in accordance with the applicable standards prescribed by the Central Pollution Control Board and Ministry of Environment, Forests and Climate Change, Government of India, and following NAAC guidelines. The audit involves energy, water, waste, and biological inventories and gives recommendations that the institute can follow to improve the energy, water, waste, and environmental scenarios of the said institute.

NAYABAD INTEGRATED SOCIAL AND ENVIRONMENTAL WELFARE SOCIETY Kolkata 700099

Malancha Dey

Dr. Malancha Dey
(President, NISEWS)
Date: 24.06.2021

GENDER AUDIT REPORT

2021-2022

Sishuram Das College

Bhusna, South 24 Parganas

Performed by: Progyan Foundation for Research and Innovation (PFRI), Kolkata

CONTENT

Section I

Gender Audit

1. Gender audit

A. Introduction to gender audit

In 1983, Australia made a pivotal move towards gender equality when its parliament adopted a groundbreaking initiative. This effort, led by the "femocrats" within the ruling Labor Party, aimed to explore how the national budget might affect women's status. The following year saw the introduction of the Women's Budget Statement, a detailed report that highlighted the proposed budget's impact on Australian women and girls. This approach has since inspired around 40 other countries to integrate gender considerations into their planning processes.

B. Definition of gender audit

A gender audit is a systematic evaluation aimed at assessing gender equality within an institution. It involves analysing policies, programs, projects, services, organizational structures, and budgets to uncover gender patterns. The audit encompasses two aspects:

i. Internal Audit: Focuses on how effectively an organization promotes gender equality within its operations and structures, evaluating progress in gender mainstreaming and contributing to capacity development.

ii. External Audit: Assesses how well gender considerations are incorporated into the organization's external policies, programs, projects, and services, ensuring equitable benefits for all genders.

C. Aims and objectives of gender audit

Aims of gender audit

i. **Evaluate Gender Equality**: Assess how gender equality is embedded in organizational policies and practices.

ii. **Identify Disparities**: Discover gaps between genders in various organizational areas such as salary, promotions, and opportunities.

iii. **Enhance Accountability**: Foster transparency and responsibility by offering evidence-based recommendations for improving gender equity.

iv. **Support Strategic Planning**: Assist in creating targeted strategies to address gender imbalances.

Objectives of gender audit

i. **Examine Policies**: Review existing policies to understand their impact on gender equality.

ii. **Analyze Data**: Gather and analyze gender-disaggregated data to identify trends and issues.

iii. **Evaluate Practices**: Assess how organizational practices contribute to gender equity.

iv. **Gather Feedback**: Collect insights from employees and stakeholders about gender-related experiences.

v. **Formulate Recommendations**: Develop actionable recommendations to enhance gender balance and inclusivity.

vi. **Track Progress**: Set benchmarks to monitor progress in gender equality initiatives.

D. Importance of gender audit

i. **Advances Gender Equality**: Assesses how well gender equality is embedded in organizational practices, ensuring equal opportunities for all genders.

ii. **Reveals Disparities**: Highlights existing gender imbalances and areas needing improvement.

iii. **Enhances Policy Development**: Provides insights for creating more effective gender-responsive policies.

iv. **Strengthens Accountability**: Offers a framework for monitoring progress and holding organizations accountable for gender equality.

v. **Promotes Inclusive Practices**: Identifies successful mechanisms and practices to foster a more inclusive culture.

vi. **Optimizes Resource Allocation**: Assesses how resources are allocated to gender equality initiatives.

vii. **Improves HR Policies**: Evaluates the gender sensitivity of HR policies to enhance employment practices.

viii. **Supports Strategic Planning**: Helps in developing targeted strategies for gender equality.

ix. **Monitors Progress**: Measures the effectiveness of gender mainstreaming efforts and informs necessary adjustments.

E. Methodology of gender audit

i. **Define Scope and Objectives**: Set clear goals, scope, and objectives for the audit.

ii. **Develop Framework**: Create a framework to guide assessment areas, including policies, practices, and data collection.

iii. **Collect Data**: Use surveys, interviews, focus groups, and document reviews to gather relevant data.

iv. **Analyze Data**: Identify patterns and gaps in gender equality through data analysis.

v. **Review Policies and Practices**: Evaluate the impact of existing policies and practices on gender equality.

vi. **Engage Stakeholders**: Involve employees and stakeholders to gain diverse insights.

vii. **Assess Resources**: Evaluate how resources are allocated to gender equality initiatives.

viii. **Document Findings**: Compile and present findings in a comprehensive report.

ix. **Develop Recommendations**: Create actionable recommendations to address issues identified during the audit.

x. **Present Results**: Share results and recommendations with stakeholders for informed decision-making.

xi. **Monitor and Evaluate**: Track the implementation of recommendations and assess progress for continuous improvement.

Section II

Gender Auditing in the College

2. Gender auditing in the college

A. College details

The Department of Higher Education, Government of West Bengal, granted approval for the creation of Shishuram Das College, a General Degree College situated in Bhusna, Kamarpole, Diamond Harbour Sub-division, in the district of South 24 Parganas, beginning with the 2010–2011 academic year. The college commenced its operations in 2010 within the Sarisha High School premises, marking its role as a center for higher education. This development addressed the educational needs of local residents, particularly those from underprivileged and middle-class families who were unable to pursue higher education elsewhere.

Table 1: Brief about the college

Name of the College	**Shishuram Das College**
Name of the Principal	Dr. Nilesh Ranjan Maity
Latitude	22°14´58´´N
Longitude	88°18´07´´E
Address	Bhusna, P.O. - Kamarpole, P.S. – Parulia Coastal, District - South 24 Parganas, Pin- 743368, West Bengal
Contact Details	8918979749, shishuramdascollege@yahoo.co.in
No. of Departments (UG)	9
No. of Students	198
No. of Teachers	29
No. Non-teaching Staff	9

The establishment of Shishuram Das College was made possible through the generosity of the late Pranapati Das, an esteemed educationist and philanthropist, who donated Rs. 11 lakhs and 0.54 acres of land in memory of his father, Shishuram Das. Sri Rishi Kumar Halder, an ex-MLA and former college president, played a significant role in supporting the college's foundation. The Diamond Harbour Sarisha Janakalyan Sanstha also contributed significantly to the college's establishment, which now occupies a spacious 5.08-acre campus.

The ceremonial laying of the foundation stone for the new college building took place on August 16, 2010, with Dr. Suranjan Das, then Vice-Chancellor of the University of Calcutta, and Dr. Subimal Sen, then Chairman of the West Bengal State Council of Higher Education, leading the event. They were joined by Sri Rishi Kumar Halder, Dr. Haraprasad Samaddar, and other distinguished guests. Since its opening, the college has experienced significant growth in both infrastructure and academic offerings, earning a reputation for its exceptional academic environment. The campus features general and smart classrooms, a library, a canteen, common rooms, and a playground for sports and other activities.

B. Purpose of conducting the audit

Gender audits are carried out to ensure that gender equality is seamlessly incorporated into all aspects of an institution's operations. By scrutinizing policies, practices, and organizational culture, these audits identify disparities and imbalances in both academic and administrative areas. This process highlights how effectively the institution supports equitable opportunities for all genders, ranging from admissions and faculty appointments to resource distribution and career progression. Tackling these disparities is vital for creating an inclusive environment that champions fairness and equal opportunity for everyone, including students and staff.

In addition, gender audits offer crucial perceptions that influence strategic planning and decision-making. By examining the impact of existing practices and collecting feedback from stakeholders, colleges can develop targeted strategies to correct identified gender imbalances. These audits not only improve institutional accountability by providing evidence-based recommendations but also help colleges align their goals with broader commitments to gender equality and social justice. Ultimately, gender auditing contributes to fostering a supportive and equitable academic community where everyone has the opportunity to thrive.

C. Methodology of conducting the audit

Figure 1: Methodology of Gender Audit

Figure 1 is an infographic representation of the methodology followed for the gender audit.

Section III

Gender Audit Report of the College

3. Gender audit report of the college

A. Understanding gender balance

Gender balance pertains to the fair representation and involvement of all genders within an institution, typically assessed through the gender ratio. In a college context, attaining gender balance means ensuring that the gender ratio among students, faculty, and staff reflects equal opportunities, rights, and responsibilities for all genders. Gender balance is not just about numerical equality; it encompasses creating an inclusive atmosphere where everyone, irrespective of gender, can flourish academically, professionally, and personally. This involves tackling biases, enacting equitable policies, and fostering a culture of respect and equality.

B. Importance of maintaining gender balance in a college

Upholding gender balance in a college is vital for nurturing an inclusive and equitable educational environment. It ensures diverse perspectives and ideas, enriching the academic discourse and preparing students for real-world scenarios where gender diversity is a norm. Gender balance promotes equal opportunities, enabling individuals of all genders to access the same resources, support, and career prospects. Additionally, it helps break down stereotypes and biases, contributing to a more progressive and tolerant society. Colleges with balanced gender representation tend to have better overall performance, as they draw from a wider pool of talent and experiences, enhancing innovation and problem-solving capabilities.

C. Gender balance in the Shishuram Das College

The Gender audit team conducted a holistic evaluation of the functional environment at the Shishuram Das College through surveys and focus group discussions with various stakeholders associated with the college. The analysis demonstrated that the college provides equal access to all facilities to individuals of all gender groups.

The institution was observed to promote a gender-healthy environment through its inclusive departments and various extracurricular activities.

Table 2 depicts the gender-wise distribution of all stakeholders associated with the Shishuram Das College.

Table 2: Total Number of Stakeholders According to Gender

All Stakeholders	Male	Female	Transgender	Total
Students	248	501	0	749
Teachers	16	14	0	30
Non-teaching Staff	8	1	0	9

66.8% of the total registered students belonged to the female category while the remaining 33.1% were males. This was very close to the percentages prevailing during the previous year. The number of both males and females had increased considerably by 27.83% and 30.97% respectively. 53.33% of the teachers were males while 46.67% were females. Although this

distribution was more or less fair to both gender groups, a substantial gap was identified with respect to the non-teaching staff of the college. 88.89% of the total non-teaching staff was found to be male whereas only 1(11.11%) was female (Figure 2).

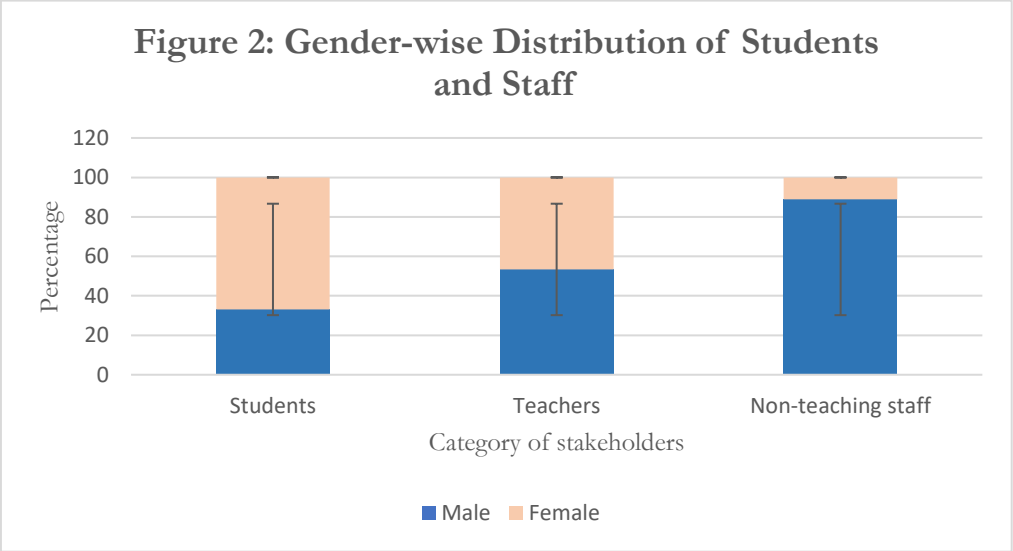
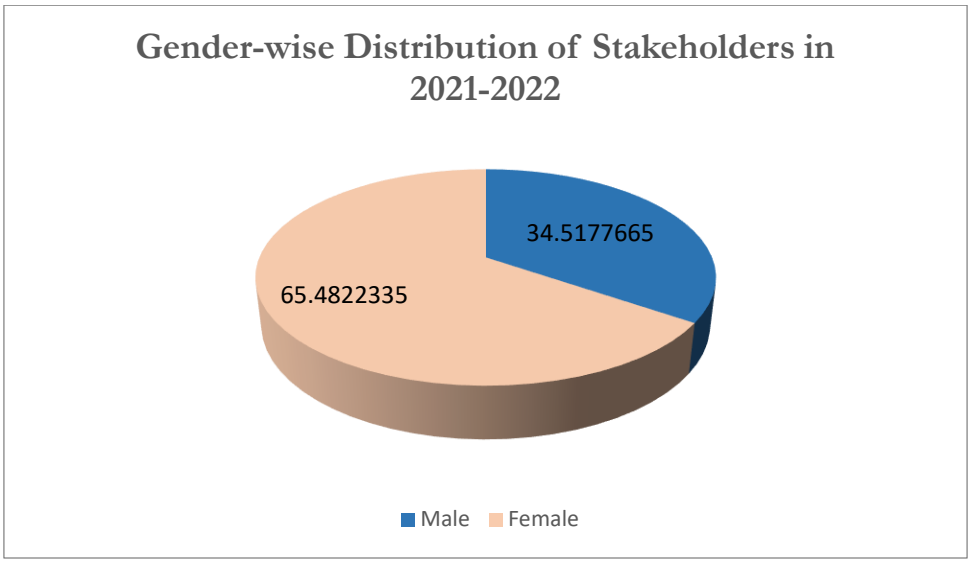


Figure 3 depicts the gender balance of the associated stakeholders in totality. This shows that the male-female ratio among all stakeholders in the college leans towards females due to the substantially high proportion of female students. This is praiseworthy and highlights the safe and secure environment that the institution provides for women. However, no individuals identified as the third gender. This was because no such individual had sought admission to the college.



D. Gender sensitization in the college

Shishuram Das College is devoted to promoting gender equity on its campus. The auditors found gender-segregated facilities like toilets and restrooms, all in excellent condition, demonstrating equitable care for all genders. Additionally, CCTV surveillance and security guards at the gate were observed to ensure the safety of everyone on campus. Extracurricular activities were seen to

encourage gender diversity and inclusion. Faculty, staff, and students effectively balanced caregiving responsibilities with their academic or professional roles.

The college has operated under a comprehensive gender policy since the academic year of 2019-2020. This policy ensures non-discrimination based on gender, equal opportunities for all, the use of gender-neutral language in official communications, forms, and policies, awareness of diverse gender identities, prevention of gender-based discrimination and harassment, and promotion of gender equity initiatives through committees, training programs, and Gender and Development (GAD) training.

The college is also committed to implementing and periodically reviewing this policy in collaboration with the Internal Quality Assurance Cell (IQAC). The IQAC, formed in the same academic year as the gender policy, comprises six members, including two women (33.33%). The Women Development Cell, also established in 2019-2020, operates efficiently under the leadership of Ms. Nupur Datta and two other female members. With 60% of its members being female and 40% male, the cell maintains a healthy gender balance.

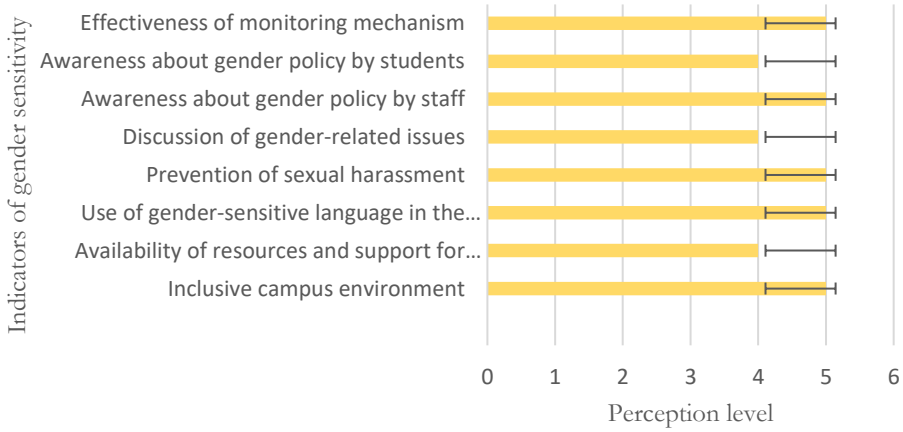
A tailoring course was organized by the college in association with The Bharat Sevasram Sangha, Diamond Harbour Branch for training women on a vocation that they might find useful after completing their education.

Photograph 1: Tailoring Course organized by the College in Collaboration with the Bharat Sevasram Sangha

Photograph 2: Participants in the Tailoring Course organized by the College in Collaboration with the Bharat Sevasram Sangha

Figure 4 indicates the level of perception of the gender audit team regarding the basic indicators of gender inclusivity and sensitivity inside the college campus. This perception is based on information collected from the college staff and students. Notably, not a single instance of sexual harassment or abuse has been reported, demonstrating the high level of safety inside the campus for women.

Figure 4: Level of Gender Inclusivity and Sensitivity in the Campus



Section IV

Summary and Recommendations

4. Summary and Recommendations

A. Summary

The Shishuram Das College provides a nurturing environment, suitable for stakeholders belonging to all categories (students, teachers, and non-teaching staff) and gender. The administrative authorities of the college are devoted to upholding the ideals of gender equity inside the campus. The comprehensive gender policy of the college acts as the guiding star in its path towards gender related development. The gender policy is well implemented and regularly monitored by the IQAC cell of the college. The college also adequately uses its Maintenance and Other Operating Expenses (MOOE) and other institutional budgets including personnel services, capital outlay, and canteen for gender and development. After observing every detail thoroughly, the gender audit team has assigned a score of **8.5** out of 10 according to its perception of the gender-related conditions prevailing in the Shishuram Das College.

B. Recommendations

Despite the prevailing gender-friendly environment of the college, there are some areas in which further improvement is possible. The following recommendations may help the college to promote an even better gender-based development inside its campus.

i. The IQAC cell may incorporate more females.
ii. Hiring of individuals belonging to the third gender in various important roles will enhance the gender-inclusive environment of the college.
iii. More females may be hired in the non-teaching category
iv. More females may be included in the governing body of the college.
v. Child-care facilities may be set up so that women members of the institution can use them if necessary
vi. Gender-neutral facilities may be set up so that they may be used by persons belonging to the third gender in the future.

Certificate

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Certificate

PROGYAN is an independent policy-science action research organization working as a subsidiary wing of the South Asian Forum for Environment (SAFE), which is a regional CSO and a major stakeholder in the UN Environment towards knowledge economy for all stakeholders to act in this climate milieu. PFRI, SAFE is accredited with ISO 14001:2015 certification and registered as a non-profit Section 8 company in India, committed to advancing scientific knowledge across socio-economies and socio-ecologies in developing adaptive guidelines and operational frameworks, sustainable solutions for resource optimization and climate change, in both rural and urban settings through innovation and research. The major scopes for PFRI include Strategic Environmental Impact Assessment and Institutional Green Audit along with field and analytical research.

This is to certify that the 'Progyan Foundation for Research and Innovation' (PFRI), Kolkata 700099 has conducted a brief and precise 'Gender Audit' for 'Shishuram Das College', during the assessment year 2021-2022. The Gender Audit was performed in accordance with the NAAC guidelines. Recommendations were given to achieve a comprehensive gender-related development in the institution.

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Malancha Dey

Dr. Malancha Dey
(Director and Senior Scientist, PFRI)
24.06.2022

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Progyan Foundation for Research & Innovation (PFRI)

GREEN AUDIT REPORT (2021-2022)

Shishuram Das college

Conducted by

Progyan Foundation for Research & Innovation (PFRI)

Table of Contents

Review Overview

Sl No	Audit parameters	Score Card	Page No	Remarks
1	Water Resource Management	9	10-17	Good
2	Energy Resource Management	7	18-25	Scope for betterment
3	Waste Management	7	26-30	Scope for betterment
4	Ambient Air & Noise Quality	8	31-34	Good
5	Biodiversity	9	35-42	Good
6	General Awareness	8.5	43-46	Good
7	Environmental Compliances	6.8	47-50	Moderate

1.1 Introduction to Green Audit

I. Basis of Green Audit

The term 'Green' means eco-friendly or not damaging the environment. This can acronymically be called 'Global Readiness in Ensuring Ecological Neutrality' (GREEN). Green Audit can be defined as the systematic identification, quantification, recording, reporting, and analysis of components of environmental diversity. Green accounting can be defined as the systematic identification quantification, recording, reporting & analysis of components of ecological diversity & expressing the same in financial or social terms. 'Green Auditing', an umbrella term, is known by another name 'Environmental Auditing'. The 'Green Audit' aims to analyze environmental practices within and outside the college campus, which will have an impact on the eco-friendly ambiance. It was initiated with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. Through Green Audit, one gets a direction as to how to improve the condition of the environment and various factors have determined the growth of carrying out Green Audit. Educational institutions have broad impacts on the world around them, both negative and positive. The activities pursued by campus can create a variety of adverse environmental impacts. But they are also in a unique position as educational institutions to be leaders in pursuing environmentally sustainable solutions.

Green Audit is a process of systematic identification, quantification, recording, reporting, and analysis of components of environmental diversity of various establishments. It aims to analyze environmental practices within and outside of the concerned sites, which will have an impact on the eco-friendly ambiance. The Green Audit can be a useful tool for a college to determine how and where they are using the most energy or water or resources; the college can then consider how to implement changes and make savings. It can also be used to determine the type and volume of waste, which can be used for a recycling project or to improve the waste minimization plan. It can create health consciousness and promote environmental awareness, values, and ethics. It provides staff and students with a better understanding of the green impact on campus.

II. Objectives of Green Audit

Green Audit regulates all such practices and checks whether our processes are consuming more than the required resources and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion, it is necessary to verify the processes and convert them into green and clean ones. The Green Audit provides an approach to it. It also increases overall consciousness among the people working in institutions toward an environment. The various components of the Green Audit such as:

i. To map the geographical location of the college and its surroundings
ii. To record the meteorological parameter where the college is situated
iii. To document the quality of drinking water
iv. To document the waste disposal system

- The document the quality of wastewater
- To document the floral and faunal diversity of the college
- To document the ambient environmental condition of air, water, and noise
- To estimate the energy requirements of the college
- Establish and implement environmental management in various departments
- Setup goal, vision, and mission for green practices on the campus
- To report the expenditure on green initiatives during the last five years

III. Benefits of Green Audit

There are many advantages of a Green Audit for an educational institute

- It would help to defend the environment in and around the campus
- Recognize the cost-saving methods through waste minimization and management
- Point out the prevailing and fourth-coming impacts on the environment
- Improve social and environmental awareness for the institute and students
- Authorize the organization to frame a better environmental performance
- It portrays a good image of the institution through its clean and green campus
- Improvement of environmental ethics and values and stewardship towards responsible environment management
- Finally, it will help to build a positive impression through green initiatives during the upcoming NAAC visit.

1.2. Details of the Audited Institution

The Department of Higher Education, Government of West Bengal approved the establishment of General Degree College named 'Shishuram Das College' at Bhusna, P.O. - Kamapole, P.S. - Diamond Harbour, Dist. - South 24 Parganas with effect from 2010 – 2011 academic session. Accordingly, in 2010, as a 'Destination of Higher Education' Shishuram Das College started its journey in the first year at Sarisha High School building. Thus the aspiration for higher education of the local people, particularly the students belonging to the poor and middle-class families who cannot afford to go far off places for meeting the demand of higher education, was fulfilled. The establishment of the College was possible for the educationist and philanthropist Late Pranapati Das who donated Rs. 11 Lakhs and 0.54 acre of land for the college in the name of his father Late Shishuram Das. Sri Rishi Kumar Halder (Ex-MLA and former President of the college) supported wholeheartedly towards the foundation of the College. Diamond Harbour Sarisha Janakalyan Sanstha played an important role in the foundation of the college. The college owes its huge premises (an area of 5.08 acres) to the society. The foundation stone of the present college building was laid on 16th August 2010 by Dr. Suranjan Das, the then Vice-Chancellor of the University of Calcutta and Dr. Subimal Sen, the then Chairman of West Bengal State Council of Higher Education in the presence of Sri Rishi Kumar Halder, Dr. Haraprasad Samaddar and others. Since then, the college has

expanded structurally and academically, thus earning the reputation of having an excellent academic environment. This number is expected to increase in the future. Apart from general classrooms, smart classroom and library the college also has canteen and common rooms for students and a playground for sports and other outdoor activities.

Table 1: Brief about the College

Name of the College	Sishuram das college
Name of the Principal	Dr. Nilesh Ranjan Maity
Latitude	22°14´58´´N
Longitude	88°18´07´´E
Total Campus Area	5.08 acre
Address	Bhusna, P.O. - Kamapole, P.S. - Diamond Harbour, Dist. - South 24 Parganas, West Bengal, Pin- 743368
Contact Details	8918979749, shishuramdascollege@yahoo.co.in
No. of Departments (UG)	10
No. of Students	749
No. of Teachers	29
No. of Non-teaching Staff	9

1.3. Vision and Mission Statement of the College

Vision:

The College aims at the upliftment of the people of the locality, particularly the poor and middle classes, through spreading higher education which will lead to enlightenment and employment. Since its establishment the college has aimed at propagating quality education among the students. Being located in the rural area of South 24 Parganas the college has evolved as a seat of academic excellence in the region and has significantly contributed in the fields of sports, physical education, socio-cultural activities and public awareness. Since its inception the college is committed to impart higher education to the aspiring youth.

Mission:

- To offer suitable undergraduate courses and to make the young students fit for educational and administrative services.
- To help every student in realizing his/her abilities and also to inspire him/her to know each and every scope of self-employment and entrepreneurship that can bring success in his/her future life.
- To offer value-based and value-added education to groom the students as capable, sensible and responsible citizens of the country.

- To provide quality education to the students irrespective of caste, creed, religion and diverse socio-economic status.
- To motivate the students to achieve academic distinction and excellence in every sphere of culture and administration.
- To inculcate values in the students and harbour a strong personality in each of them so that they can become the responsible citizens of modern India in the near future.

1.4. Methods of Auditing

The audit process was carried out in three phases from July 2018 to June 2019. At first, all the secondary data required for the study was collected from various key information sources and concerned departments. A broad reference work and literature review were carried out to clear the idea of green auditing. Different case studies and methodologies were studied, and the following methodology was adopted for the present audit. The methodology of the present study is based on onsite visits, personal observations, and questionnaire survey tools. Baseline data for Green Audit report preparation was collected by questionnaire survey method. Questionnaires prepared to conduct the Green Audit on the college campuses are based on the guidelines, rules, acts and, formats prepared by the Ministry of Environment, Forest and Climate Change, New Delhi, Central Pollution Control Board and, other statutory organizations. After the onsite visit and stakeholders' interview, the questionnaires were filled out. The generated data is subsequently gathered and used for further analysis. From the outcome of the overall study, a final report is prepared.

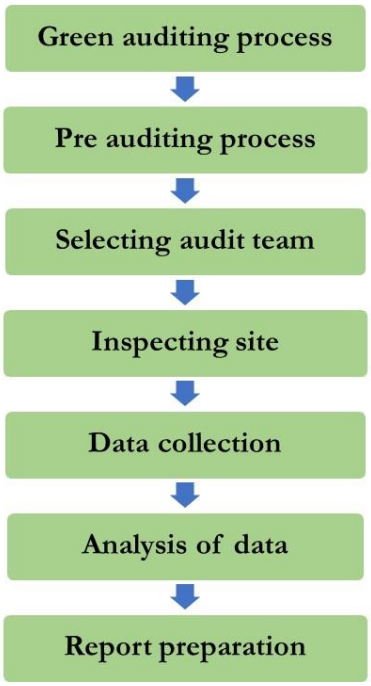


Fig. 2. Process of green audit

1.5. Scope of green audit

The scope of a green audit covers multiple facets of environmental management and sustainability practices. Key components include:

i. **Water usage:** Reviewing water consumption to find areas for reduction, implementing water-saving technologies, and ensuring proper wastewater treatment processes are in place.

ii. **Energy conservation:** Evaluating energy usage patterns, identifying inefficiencies, and recommending measures to reduce energy consumption and improve efficiency.

iii. **Waste management:** Assessing waste generation, segregation, and disposal practices. The audit identifies ways to minimize waste, promote recycling, and manage hazardous waste safely.

iv. **Pollution control:** Monitoring and controlling air, water, and soil pollution. The audit examines emissions, effluents, and practices that impact the environment, recommending strategies for pollution prevention and mitigation.

v. **Resource efficiency:** Analyzing the use of natural resources, such as raw materials and fuels, to ensure they are used efficiently and sustainably.

vi. **Compliance with environmental policies:** Ensuring that the organization adheres to local, national, and international environmental regulations and standards. This includes compliance with laws related to emissions, waste disposal, and resource use.

vii. **Sustainable practices:** Promoting the adoption of sustainable practices, such as using renewable energy sources, eco-friendly materials, and green technologies. The audit assesses the organization's overall sustainability strategy and its implementation.

viii. **Biodiversity conservation:** Evaluating the organization's impact on local ecosystems and biodiversity. This includes assessing land use practices, habitat protection efforts, and initiatives to preserve and enhance biodiversity. The audit identifies potential risks to wildlife and natural habitats and recommends actions to mitigate these impacts.

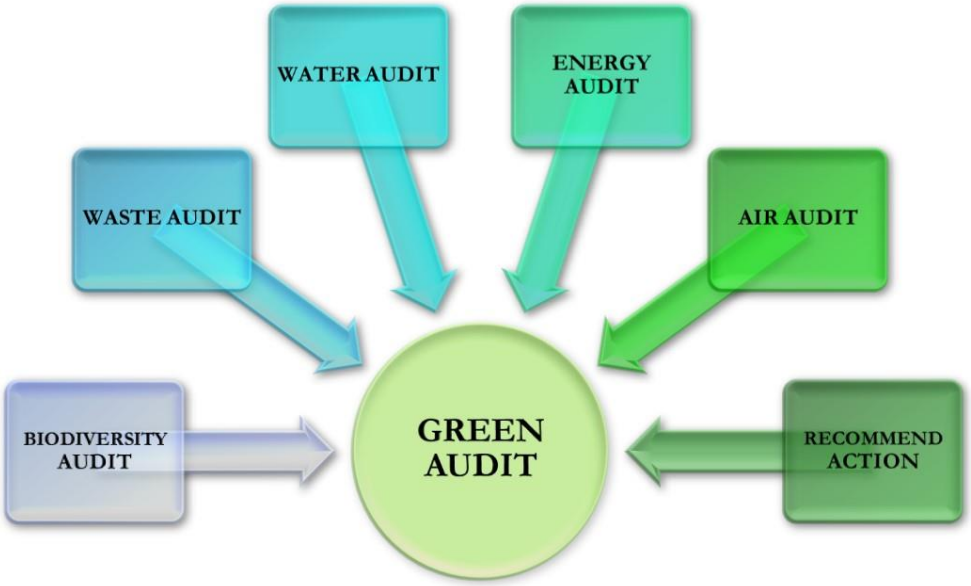


Figure 3 Scope of the green audit for 2018-2019

SECTION 2
WATER RESOURCE MANAGEMENET

2. Water Resource Management

I. Importance of water resource management

Water is one of the six essential nutrients, alongside carbohydrates, protein, fat, vitamins, and minerals. Approximately 60% of the human body is composed of water, and humans can survive only three to five days without fluids. Water plays critical roles in bodily functions, including waste removal, temperature regulation, and nutrient transport, which are vital for digestion.

A. Increasing Demand for Freshwater

The demand for freshwater is rising due to increasing living standards, industrialization, and urbanization. In response to this growing need, the Government of India launched the national mission on water conservation known as 'Jal Shakti Abhiyan.' This initiative urges all citizens to collaborate in addressing water scarcity by conserving every drop of water and suggests that water audits be conducted across all sectors of water use.

B. Water Auditing

A water audit is a systematic process designed to obtain a comprehensive water balance. It involves measuring the flow of water from the point of withdrawal or treatment through the distribution system, and into areas where it is used, eventually to its discharge. Water auditing is a cost-effective method for identifying and reducing water losses, optimizing water usage across multiple applications, and achieving significant water savings in sectors such as irrigation, domestic use, power generation, and industry.

C. Recommendations for Water Conservation

To address the increasing demand for freshwater, it is essential to reduce water consumption and enhance the reuse and recycling of treated wastewater. Implementing water audits can help identify inefficiencies and areas for improvement, thereby promoting sustainable water management practices. Given the vital importance of water for human survival and the growing pressures on freshwater resources, it is imperative to adopt comprehensive water conservation strategies. By conducting water audits and promoting the reuse and recycling of water, significant strides can be made towards sustainable water management, ensuring the availability of this essential resource for future generations.

D. Importance of Water Audit

i. When problems are identified, it is easier to work on solutions

ii. The process is more systematic

iii. It is possible to implement a tracking system

Climate, culture, diet habits, employment and working conditions, degree and type of development, and physiology are all thought to play a role in determining the amount of water required. According to the Southeast Asia Regional Office of the World Health Organization's (WHO) standards Administration requires 50 l per person per day (staff accommodation not included), Staff housing needs 30 l per person per day, and sanitation is dependent on technology, schools require 2 l per student; 10-15 l per student if water-flushed toilets are used.

II) Water quality

Table 2 provides a detailed overview of essential water quality parameters, meticulously measured following established standard protocols to ensure accuracy and reliability. WHO produces a series of water quality guidelines, including on drinking-water, safe use of wastewater, and safe recreational water environments. These guidelines are based on managing risks, and since 2004 the Guidelines for drinking-water quality promote the Framework for Safe Drinking-water. The analysis of water quality parameters reveals a comparison between raw and treated water against the Bureau of Indian Standards (BIS) values. Both raw and treated water have agreeable odor and taste, aligning with expectations. The pH of raw water is 7.19 and is adjusted to 7.10 in treated water, within the BIS standard range of 6.5 to 8.5. The iron content is significantly reduced from 1.157 mg/l in raw water to 0.068 mg/l in treated water, surpassing the standard limit of 0.30 mg/l. Total hardness decreases from 289 ppm in raw water to 240 ppm in treated water, still above the BIS standard of 200 ppm. Arsenic levels are minimized from 0.009 mg/l to 0.002 mg/l, both below the maximum allowable 0.01 mg/l. Chloride levels remain constant at 14.2 mg/l, well under the standard 250 mg/l. Turbidity is effectively reduced from 1.0 NTU to 0.3 NTU, complying with the standard of 1 NTU. Manganese is absent in both raw and treated water, meeting the 0.10 mg/l limit. Total dissolved solids (TDS) show a remarkable decrease from 660 mg/l to 63 mg/l, comfortably under the 500 mg/l standard. Both total and faecal coliforms are absent in raw and treated water, meeting the BIS standard of zero presence.

4o

Table 3 : Water quality assessment

Parameters	***Raw water***	***Treated water***	***Standard value (BIS)***
Odor	*Agreeable*	*Agreeable*	
Taste	*Agreeable*	*Agreeable*	
pH	*7.19*	*7.10*	*6.5-8.5*
Fe(mg/ l)	*1.157*	*0.068*	*0.30*
Total hardness as $CaCO_3$(ppm)	*289*	*240*	*200*
Arsenic (mg/ l)	*0.009*	*0.002*	*0.01*
Chloride (mg/ l)	*14.2*	*14.2*	*250*
Turbidity(NTU)	*1.0*	*0.3*	*1*
Mn (mg/ l)	*0*	*0*	*0.10*
TDS(mg/ l)	*660*	*63*	*500*
Total coliform (cfu/ 100ml)	*0*	*0*	*0*
Faecal coliform (cfu/ 100ml)	*0*	*0*	*0*

III) Water storage system

The college campus has a well-structured water storage system encompassing various reservoirs categorized by their location and purpose. The water storage system consists of three overhead tanks, each with a capacity of 1,000 liters. These tanks are strategically placed to ensure a consistent and reliable water supply. The first overhead tank holds 1,000 liters, as do the second and third tanks, bringing the total volume of stored water to 3,000 liters. This arrangement is designed to meet the daily water demands efficiently, ensuring that there is ample storage capacity to support various needs. The use of multiple overhead tanks provides redundancy and flexibility in water management, enhancing the system's reliability and resilience.

Table 3: Categories of the water reservoir and its water holding capacity

Type	Number	Volume (l)	Total Volume (l)
Overhead	1	1000	1000
Overhead	1	1000	1000
Overhead	1	1000	1000
			3000

IV) Per capita water allocation and per capita usage

The water usage data highlights various activities and their associated water sources within the college. For gardening, pond water is utilized for 210 days, with a total daily usage of 4,000 liters, resulting in an annual consumption of 840,000 liters. Groundwater serves multiple purposes, starting with drinking water for students, permanent teachers, and non-teaching staff (NTS). Students, with a population of 749, consume 1,494 liters daily over 254 days, amounting to an annual usage of 379,476 liters. Permanent teachers and NTS consume 60 liters and 18 liters daily, respectively, leading to annual usages of 15,240 liters and 4,572 liters. Groundwater is also used for toilets, with students using 33,615 liters daily, totaling 8,538,210 liters annually. Permanent teachers and NTS use 1,350 liters and 405 liters daily for toilet purposes, with annual consumptions of 342,900 liters and 102,870 liters. Washing hands and face involves all students and staff, with a daily use of 1,023 liters, leading to an annual total of 259,842 liters. Lastly, groundwater is used for mopping floors over 254 days, consuming 2,500 liters daily, amounting to 635,000 liters annually. Altogether, the college's total daily water usage is 44,465 liters, resulting in an annual water consumption of 11,118,110 liters.

Table 5: Different categories of water usage

Water Source	Activity	Category	Days	No. of Users	Water usage/day/person	Total water usage/day	Annual water usage
Pondwater	Gardening		**210**	College Campus	4000	4000	840000
Groundwater	Drinking	Students	**254**	749	2	1494	379476
		Permanent Teacher	**254**	30	2	60	15240
		Permanent NTS	**254**	9	2	18	4572
Groundwater	Toilet	Students	**254**	749	45	33615	8538210
		Permanent Teacher	**254**	30	45	1350	342900
		Permanent NTS	**254**	9	45	405	102870
	Washing hands and face	All students & staff	**254**	2046	0.5	1023	259842
Groundwater	Mopping Floor		**254**	College Built-up Area	2500	2500	635000
Total Water Usage						**44465**	**11118110**

V) Utilization and wastewater generation

The college generates significant wastewater annually from various activities. Gardening, which uses pond water, results in 840,000 liters of wastewater per year. The largest contributor is toilet usage, generating 8,983,980 liters of wastewater annually due to its high frequency and necessity for hygiene. Washing hands and face, involving all students and staff, produces 259,842 liters of wastewater each year. Additionally, mopping the floors contributes 635,000 liters of wastewater annually. Collectively, these activities highlight the substantial volume of wastewater that needs to be managed, underscoring the importance of effective wastewater treatment and recycling systems to minimize environmental impact.

Table 5. Amount of wastewater generated based on various activities

Activity	Wastewater generated (l/annum)
Gardening	840000
Toilet	8983980
Washing hands and face	259842
Mopping floor	635000

VI) Rainwater harvesting, usage, ground water recharge, waste water recycling / reuse.

Pond harvesting is a significant aspect of the water management strategy on our college campus. The harvested pond water is primarily used for gardening, promoting sustainable practices and reducing dependency on external water sources. Spanning a total area of 5.08 acres, the campus has a unique layout where only the building area is concreted, while the remaining land is natural ground. This design not only supports the aesthetic and ecological value of the campus but also plays a crucial role in enhancing groundwater recharge. The natural ground facilitates the infiltration of rainwater, effectively replenishing the groundwater table. Despite these efforts in pond harvesting, the campus currently does not implement wastewater recycling or reuse, highlighting an area for potential future development to further improve water sustainability on campus.

VII) Accessibility to water resources

During the survey period, it was determined that the accessibility of drinking water and sanitation facilities was highly satisfactory for all students. Notably, each block of the college campus is equipped with units that provide safe and clean drinking water. These units ensure that students have constant access to potable water, which is crucial for maintaining hydration and overall health. Furthermore, the survey revealed that the college has an efficient water supply system in place, guaranteeing a continuous flow of water in all toilets and washrooms across the camps. This consistent availability of water is essential for maintaining hygiene standards, as it facilitates regular handwashing and proper sanitation. The presence of these facilities indicates a well-maintained infrastructure that supports the health and well-being of the student population.

SECTION 3
ENERGY RESOURCE MANAGEMENT

3. Energy Resource Management

I. Significance of Energy Resource Management

Energy conservation is a crucial component of campus sustainability, intricately linked to reducing the overall carbon footprint. Effective energy management practices not only contribute to environmental stewardship but also enhance the economic efficiency of the institution. Energy auditing involves a thorough evaluation of energy consumption patterns and the identification of strategies to minimize energy use and its associated environmental impacts. The process includes:

A. Assessment of energy use

i. **Preliminary assessment:** Gathering basic information about the facility, including its size, usage patterns, energy bills, and existing energy systems and scheduling an initial meeting with key stakeholders to outline the audit's scope and objectives.

ii. **Data collection:** Collecting detailed data on energy consumption through utility bills, meter readings, and energy management systems and documenting all energy-consuming equipment, including lighting, HVAC systems, machinery, and appliances.

iii. **Site inspection:** Conducting a thorough on-site inspection to assess the condition and performance of energy systems and identifying any obvious inefficiencies, such as outdated equipment, poor insulation, or leaks.

iv. **Benchmarking:** Analyzing the collected data to determine energy consumption patterns and identify areas of significant energy use and benchmarking to compare the facility's energy performance against similar facilities.

B. Analysis of Energy Efficiency

i. **Performance evaluation:** Utilizing key performance indicators (KPIs) to assess energy efficiency and detect inefficiencies.

ii. **Technology review:** Assessing the effectiveness of current technologies and systems, and exploring potential upgrades or replacements with more energy-efficient alternatives.

C. Development of conservation strategies

i. **Behavioral changes:** Encouraging energy-saving behaviors among students, faculty, and staff through awareness initiatives and training.

ii. **Operational improvements:** Implementing strategies like optimizing HVAC systems, improving insulation, and deploying energy management systems (EMS) to enhance efficiency.

iii. **Renewable energy integration:** Incorporating renewable sources like solar panels, wind turbines, and geothermal systems to reduce reliance on fossil fuels.

iv. **Energy storage solutions:** Implementing advanced systems for storing and optimizing the use of renewable energy.

II) Importance of the electricity and energy resource management

From a general point of view, an energy audit provides enormous benefits in different areas

i. **Identifying cost savings**: Energy audits help in identifying opportunities for reducing energy consumption and operational costs through efficiency improvements and better management practices.
ii. **Enhancing environmental sustainability**: By optimizing energy use, audits contribute to reducing carbon footprint and environmental impact, aligning with sustainability goals.
iii. **Improving operational efficiency**: Audits reveal inefficiencies in energy systems, enabling facilities to operate equipment more effectively and extend equipment lifespan.
iv. **Compliance and risk mitigation**: Audits ensure compliance with energy regulations and standards, audits mitigate risks associated with energy supply disruptions and regulatory non-compliance.
v. **Promoting organizational responsibility**: Conducting audits demonstrates commitment to responsible resource management, fostering a culture of sustainability within the organization.
vi. **Supporting strategic decision-making**: Insights from audits inform strategic decisions on capital investments in energy-efficient technologies and renewable energy integration.
vii. **Enhancing indoor environmental quality**: Efficient energy use often correlates with improved indoor air quality and comfort for occupants, benefiting overall health and productivity.
viii. **Securing funding and grants**: Audit findings can support applications for funding or grants aimed at implementing energy-saving initiatives and renewable energy projects.
ix. **Monitoring and continuous improvement**: Post-audit monitoring ensures sustained energy efficiency gains and identifies further optimization opportunities over time.

III. Total consumption in whole campus as well different sections

A. Electrical Energy

The sustainability of the campus community is significantly influenced by its energy use, sources, management, lighting systems, and various appliances. A comprehensive assessment of these factors is crucial for formulating effective energy conservation strategies. The primary areas of energy consumption within the campus include the office, canteen, and laboratory, each serving different functions and thus having varied energy demands. Table 6 presents the energy consumption pattern of the college over one year. The calculation method used to determine energy consumption is as follows:

Energy Consumption (kWh/year) =Power (W)×Hours×Number of Units×Days

The energy consumption analysis of the college highlights the usage and impact of various appliances on campus. Air conditioners, with a total of four units each using 1.5 kW, consume a significant amount of energy, totaling 12,192 kWh annually, as they operate for 8 hours a day over 254 days. CCTV cameras,

despite their large number (13 units), have a minimal energy footprint due to their low power usage of 0.002 kW per unit, resulting in a consumption of just 52.832 kWh. The single refrigerator, operating continuously for 24 hours a day throughout the year, uses 4,876.8 kWh. Fans, which are quite numerous with 71 units, contribute 7,952 kWh to the total consumption, albeit used for a shorter period of 20 days annually. Tube lights, totaling 69 units, have a substantial energy draw of 28,041.6 kWh, given their daily usage of 8 hours across 254 days. Computers, with 7 units operating for 7 hours daily, account for 2,489.2 kWh. The projector, used for a shorter span of 200 days for 5 hours each day, consumes 120 kWh. Lastly, printers, with three units each using 0.15 kW, contribute 571.5 kWh to the total energy consumption. This comprehensive overview underscores the importance of efficient energy management and the potential benefits of adopting energy-saving technologies on campus.

Table 6. Electrical equipment and their electricity consumption in college per year

Sl No.	Appliances	No of appliances	Power used(kW)/appliance	No of days	Usage per day(hour)	Average of energy usage per year
1	Air conditioner (1.5 tonne)	4	1.5	254	8	12192
2	CCTV	13	0.002	254	8	52.832
3	Refrigerator (220 L)	1	0.8	254	24	4876.8
4	Fan	71	0.8	20	7	7952
5	Tube light	69	0.2	254	8	28041.6
6	Computer	7	0.2	254	7	2489.2
7	Projector	1	0.12	200	5	120
8	Printer	3	0.15	254	5	571.5

IV) Wiring and set-up conditions

The electrical infrastructure across the college campus has been found to be in good condition, as evidenced by a thorough survey conducted recently. The wiring of the electricity circuits is meticulously maintained, ensuring a high standard of safety and functionality. During the survey period, no instances of open wires or open circuits were detected, which is a testament to the diligent upkeep and regular inspections performed by the campus maintenance team. This level of attention to electrical safety minimizes the risk of electrical hazards, such as short circuits or electrical fires, thus safeguarding students, staff, and facilities. The well-maintained electrical system also contributes to the efficient operation of various campus facilities, ensuring that classrooms, laboratories, and administrative offices can function without interruption. Overall, the impeccable condition of the campus's electrical wiring underscores the college's commitment to providing a secure and conducive learning environment.

V. Renewable energy use

In response to growing concerns about carbon emissions and climate change, the college has embarked on several significant initiatives to transition towards renewable energy sources. Recognizing the importance of reducing its carbon footprint and promoting sustainability, the college has invested in the installation of solar panels in the parking area of the campus. The college ensures the efficiency and longevity of the solar energy system through regular maintenance. The maintenance team of the college is responsible for the routine cleaning of the solar panels. This cleaning process is crucial because it removes dust, debris, and other particulate matter that can accumulate on the panels, which can significantly reduce their efficiency and energy output. By keeping the panels clean, the maintenance team helps to maximize their performance and ensure consistent energy production. These proactive measures not only demonstrate the college's commitment to sustainability and environmental stewardship but also serve as an educational model for students and the community. By investing in renewable energy and maintaining these systems meticulously, the college contributes to the broader effort to combat climate change and fosters a culture of sustainability on campus.

VI. Energy wise-use – Day light usage

Optimizing daylight usage in a college setting for efficient electrical energy management involves several technical strategies. Primarily, the integration of advanced daylight harvesting systems, which utilize sensors to adjust artificial lighting based on natural light availability, can significantly reduce energy consumption. Architectural designs incorporating large windows, skylights, and light shelves enhance natural light penetration, minimizing the need for electrical illumination during daytime hours. Additionally, implementing energy-efficient lighting fixtures with dimmable controls allows for dynamic adjustment of light levels in response to varying daylight conditions. Automated shading devices can prevent glare and

excessive heat gain, maintaining a comfortable indoor environment while maximizing natural light usage. By leveraging these technologies and design principles, colleges can achieve substantial reductions in electrical energy consumption, promote sustainability, and enhance the overall learning environment.

SECTION 4
WASTE MANAGEMENT

4. Waste management

I. Solid waste collection and disposal system

The college has implemented a robust solid waste collection and disposal system to manage its waste effectively and promote environmental sustainability. The system encompasses a comprehensive approach, starting with the segregation of waste at the source. Separate bins for recyclable, nonrecyclable, and organic waste are strategically placed across the campus, ensuring that students, faculty, and staff can easily dispose of their waste appropriately. The waste is then collected regularly by the campus maintenance team, who ensure that each type of waste is handled correctly. Recyclable materials are sent to designated recycling centers, organic waste is composted on-site or transported to local composting facilities, and non-recyclable waste is disposed of following municipal guidelines. The college also conducts regular awareness campaigns to educate the campus community about the importance of waste segregation and recycling. This meticulous system not only helps in reducing the overall waste sent to landfills but also fosters a culture of environmental responsibility among the college community.

Fig 8: Waste found in college backyard

Sl. No.	Types of waste	Disposal method
1	Solid waste collection and disposal system	The daily waste of college is segregated and disposed of at nearby garbage by college swiper
2	Waste water collection and disposal system	Not present
3	Toxic (Lab etc) and e-waste collection and disposal system	Not present

II. Waste water collection and disposal system

The regular wastewater generated from toilets, basins, kitchens, and garden runoff on the college campus is disposed of through the existing drainage system. However, it was noted that there is no dedicated wastewater disposal or treatment plant present on the campus. This lack of specific treatment infrastructure means that the wastewater is not treated before being discharged, which could have implications for environmental compliance and sustainability practices. The absence of a treatment plant highlights an area for potential improvement in the college's waste management strategy to ensure that wastewater is handled in an environmentally responsible manner.

III. Waste collection and disposal system

The college diligently manages its solid waste by ensuring regular collection and disposal to maintain a clean and healthy campus environment. Waste bins are strategically placed throughout the campus to facilitate easy disposal by students, faculty, and staff. However, despite the efficient collection system, the college currently lacks a formal recycling procedure. As a result, all types of waste, including paper, plastic,

and other recyclable materials, are disposed of together without being sorted for recycling. This absence of a recycling process not only increases the volume of waste sent to landfills but also represents a missed opportunity for the college to contribute to environmental sustainability. Implementing a recycling program could significantly reduce the environmental footprint of the campus by diverting waste from landfills and promoting resource conservation. Additionally, introducing educational initiatives and infrastructure for recycling could engage the campus community in sustainable practices, fostering a culture of environmental responsibility and awareness.

IV. Per capita municipal waste generated annually

The college employs a comprehensive waste management system to address the diverse types of waste generated on campus. E-waste is managed through repair and recycling processes, ensuring that electronic items are either refurbished for further use or properly recycled to recover valuable materials. Plastic and solid waste are collected by municipal services, which handle their appropriate disposal and recycling where possible. Chemical waste is carefully disposed of in a designated soak pit, designed to neutralize and safely contain hazardous substances. Paper waste is managed through a combination of dumping and recycling efforts, aiming to reduce environmental impact and promote resource recovery. Garden waste is incinerated to safely dispose of organic materials. This multi-faceted approach reflects the college's commitment to effective and sustainable waste management practices.

SECTION 5
AMBIENT AIR & NOISE QUALITY

5.1. Ambient Air Quality

I. Ambient Air quality in the campus

Daily vehicular traffic on the college premises includes approximately 90 two-wheelers and 10 fourwheelers, reflecting a significant amount of movement within the campus. Despite this, there is currently no system in place to monitor Pollution Under Control (PUC) certificates, vehicle exhaust gas analysis, or the noise and vibration pollution caused by these vehicles. This lack of monitoring means that the college is not currently assessing or managing the potential environmental impact and health implications associated with vehicular emissions and noise pollution. Implementing such a system could help in reducing the environmental footprint of the campus traffic, ensuring compliance with environmental standards, and promoting a healthier campus environment.

II. Ventilation system

The college premises are adequately aired, with classrooms designed to be well-ventilated, ensuring a continuous flow of fresh air. This thoughtful architectural feature creates a comfortable and healthy learning environment for students and faculty alike. Additionally, the abundant flora on the college grounds plays a crucial role in enhancing air quality. The plants and trees not only beautify the campus but also act as natural air purifiers by absorbing carbon dioxide and other gases, thus contributing to a cleaner and more sustainable atmosphere. This combination of good ventilation and strategic landscaping underscores the college's commitment to providing a healthy and conducive environment for education.

III. Source of air pollution

The primary sources of air pollution at the college stem from vehicle exhausts associated with traffic accessing the campus. Despite the college's location being relatively distant from the main road, which mitigates direct exposure to roadway emissions, vehicular pollutants still pose a significant concern. The absence of major industrial facilities within a 500-meter perimeter of the college further underscores that vehicle emissions are the predominant contributors to local air quality degradation.

SECTION 6
BIODIVERSITY

6. Biodiversity

I. Biodiversity assessment report

Major tree species

The college campus hosts a diverse array of tree species, contributing to its rich biodiversity and ecological balance. Among the major species observed is the Indian Jujube (Ziziphus mauritiana), belonging to the Rhamnaceae family, with a quantity of eight trees and an IUCN Red List status of "Least Concern" (LC). The Arecaceae family is well-represented with 15 Wild Date Palms (Phoenix sylvestris) and 10 Senegal Date Palms (Phoenix reclinata), the latter also listed as LC. The Fabaceae family includes 24 Cassie trees (Vachellia sarnesiana) and eight Cow Tamarind trees (Samanea saman), both of which are vital to the campus environment. The Meliaceae family contributes with seven Neem trees (Azadirachta indica), classified as LC, and 13 Cuban Mahogany trees (Swietenia mahagoni), which are noted as "Near Threatened" (NT). The Coconut Palm (Cocos nucifera) is the most numerous, with 30 individuals, alongside an equal number of Banana Trees (Musa paradisiaca linn) from the Musaceae family. Additionally, the Poaceae family is represented by seven Wamin Bamboo (Bambusa vulgaris), adding to the campus's botanical variety. These species not only enhance the aesthetic appeal of the campus but also play a crucial role in supporting the local ecosystem.

Table 11: List of major tree species observed in the college campus

List of major tree species observed in the college campus					
Sl No.	**Family**	**Common name**	**Scientific name**	**IUCN red list status**	**Quantity**
1	Rhamnaceae	Indian Jujube	*Ziziphus mauritiana*	LC	8
2	Arecaceae	Wild date Palm	*Phoenix sylvestris*		15
3	Fabaceae	Cassie	*Vachellia sarnesiana*		24
4	Meliacear	Neem	*Azadirachta indica*	LC	7
5	Arecaceae	Senegal Dat palm	*Phoenix reclinata*	LC	10
6	Aeracaceae	Coconut Plam	*Cocos nucifera*		30
7	Poaceae	Wamin Bamboo	*Bambusa vulgaris*		7
8	Meliaceae	Cuban Mahogany	*Swietenia mahagoni*	NT	13
9	Fabaceae	Cow Tamarind	*Samanea saman*	LC	8
10	Musaceae	Banana Tree	*Musa paradisiaca linn*		30

The college campus is home to a diverse collection of plant species, enhancing its ecological diversity and aesthetic value. The Rubiaceae family is represented by a single Gardenia (Gardenia jasminoides), classified as "Least Concern" (LC) on the IUCN Red List. The Apocynaceae family contributes six Periwinkle plants (Catharanthus roseus), while the Solanaceae family includes one Night Jasmine (Cestrum nocturnum), also listed as LC. Among the Garryaceae family, the Japanese Aucuba, or Gold Dust Plant (Aucuba japonica), is present in a single specimen. The Arecaceae family includes two Areca Palms (Dypsis lutescens), noted as "Near Threatened" (NT). The Asparagaceae family is represented by one Lily (Cordyline fruticosa) and four Aloe Vera plants (Aloe officinalis Forssk). The Araceae family is marked by one Pothos (Epipremnum pinnatum), while the Araliaceae family includes one Geranium-Leaf Aralia (Polyscias guilfoylei), with an LC status. The Agavaceae family adds four Song-of-India plants (Dracaena reflexa Lam), and the Fabaceae family has one Lam Licorice (Glycyrrhiza glabra). The Lamiaceae family contributes two Holy Basil plants (Ocimum tenuiflorum), while the Rutaceae family has one Curry Leaf Plant (Bergera koenigii), classified as LC. Additionally, the Crassulaceae family includes three Cathedral Bells (Kalanchoe pinnata), and the Molluginaceae family has one Green Carpetweed (Mollugo verticillata). These species not only add to the campus's visual appeal but also support its ecological balance.

Table 12: List of some medicinal plants observed in the college campus

Sl No.	Family	Common name	Scientific name	IUCN red list status	Quantity
1	Rubiaceae	Gardenia	*Gardenia Jasminoides*	LC	1
2	Apocynaceae	Periwinkle	*Catharanthus Roseus*		6
3	Solanaceae	Night Jasmine	*Cestrum Nocturnum*	LC	1
4	Garryaceae	Japanese Aucuba, Gold Dust Plant	*Aucuba Japonica*		1
5	Arecaceae	Areca Palm, Golden Cane Palm	*Dypsis Lutescen*	NT	2
6	Asparagaceae	Lily	*Cordyline Fruticosa*	LC	1
7	Asparagaceae	Aloe Vera	*Aloe Officinalis Forssk*		4
8	Araceae	Pothos, Devil's Ivy	*Epipremnum Pinnatum*		1
9	Araliaceae	Geranium-Leaf Aralia	*Polyscias Guilfoylei*	LC	1
10	Agavaceae	Song-of-India, Pleomele	*Dracaena Reflexa Lam*		4
11	Fabaceae	Lam Licorice, Licorice	*Glycyrrhiza Glabra*		1
12	Lamiaceae	Tulasi, Holy Basil	*Ocimum Tenuiflorum*		2
13	Rutaceae	Currybush, Curry Leaf Plant	*Bergera Koenigii*	LC	1
14	Crassulaceae	Cathedral Bells, Air Plant	*Kalanchoe Pinnata*		3
15	Molluginaceae	Green Carpetweed, Indian Chickweed	*Mollugo Verticillata*		1

II) In-house, gardening and tree management

The Eco-Club of Shishuram Das College takes pride in organizing an annual plantation program that significantly contributes to the campus's greenery and environmental sustainability. Each year, this initiative brings together students, faculty, and community members in a collaborative effort to plant and nurture a variety of plant species. Despite not having a professional gardener on staff, the Eco-Club manages all aspects of gardening and maintenance with dedication and enthusiasm. This hands-on approach not only fosters a sense of responsibility and environmental stewardship among participants but also enhances their understanding of horticulture and ecological conservation. The plantation program is a testament to the club's commitment to promoting green practices and creating a more sustainable campus environment. Through these efforts, the Eco-Club continues to inspire and educate the college community about the importance of preserving and enhancing natural spaces.

III) Any wetland / grove / rare tree etc in the campus?

Shishuram Das College has established and maintained a diverse collection of medicinal plants on its campus, reflecting its commitment to promoting traditional knowledge and sustainable practices. This carefully curated selection of plants serves not only as a living repository of valuable botanical resources but also as a dynamic educational tool for students and faculty alike. The medicinal garden includes a variety of species known for their therapeutic properties, offering insights into their historical and contemporary uses in herbal medicine. By preserving these plants, the college provides opportunities for research and learning about the healing potential of nature, while also contributing to the conservation of plant biodiversity. The garden is an integral part of the campus, fostering an environment that encourages exploration and appreciation of natural remedies. This initiative underscores the college's dedication to integrating ecological awareness with academic growth, ultimately enriching the educational experience and promoting health and wellness within the community.

SECTION 7
GENERAL AWARENESS

7. General Awareness

I. Environmental Awareness of staff, teachers and students

The college staffs demonstrate a strong awareness and appreciation for the environment, particularly regarding the floral diversity present on campus. Recognizing the importance of sustainability, the college authority has taken proactive measures such as installing rainwater harvesting systems across the college rooftops. These systems play a crucial role in replenishing the groundwater table, contributing to water conservation efforts. Additionally, the college actively promotes biodiversity by regularly planting various types of medicinal plants, which are meticulously maintained by a dedicated gardener. This commitment to green practices extends to encouraging eco-friendly transportation methods, evidenced by the provision of a bicycle stand for students, further emphasizing the institution's dedication to fostering a sustainable and environmentally conscious campus community.

II. Environmental awareness campaign

The college consistently observes World Environment Day annually, marking the occasion with various activities and initiatives aimed at raising awareness about environmental conservation and sustainability. Beyond this special event, the college organizes a wide range of environment awareness programs throughout the year. These programs encompass diverse activities such as workshops, seminars, tree plantation drives, clean-up campaigns, and educational sessions on topics like waste management, renewable energy, and biodiversity conservation. By engaging the campus community in these ongoing efforts, the college instills a sense of responsibility and stewardship towards the environment, fostering a culture of environmental awareness and activism among students, faculty, and staff. This sustained commitment to environmental education and advocacy underscores the college's dedication to promoting a greener and more sustainable future.

III. Awareness communication

During the survey period, no environmental awareness-related communication in terms of banners, posters, or wall writings was observed on the college premises. This absence of visual messaging highlights a potential opportunity for the college to enhance its efforts in promoting environmental awareness and sustainability among the campus community. Implementing visible and informative signage can serve as a valuable tool for raising consciousness about environmental issues, encouraging eco-friendly behaviors, and fostering a culture of environmental stewardship. By incorporating such communication strategies, the college can effectively engage students, faculty, and staff in environmental initiatives and inspire collective action towards a greener and more sustainable campus environment.

SECTION 8
ENVIRONMENTAL COMPLIANCES

8. Environmental Compliances

I. Cleanliness in sanitation units

The cleanliness of the sanitation units within the college was notably prominent. Throughout the premises, the sanitation facilities, including restrooms and washrooms, were well-maintained and tidy, reflecting the college's commitment to providing a hygienic and comfortable environment for its students, faculty, and staff. The evident attention to cleanliness not only ensures the health and well-being of the campus community but also fosters a positive and conducive atmosphere for learning and working. This emphasis on sanitation underscores the college's dedication to upholding high standards of hygiene and promoting a pleasant experience for all individuals on campus.

II. Safety in Laboratory

Safety within the college laboratories is diligently maintained, ensuring a secure environment for students and faculty engaging in various scientific endeavors. Each laboratory is equipped with essential safety features such as exhaust systems and fire extinguishers, demonstrating the college's commitment to prioritizing the well-being of its occupants. These safety measures not only mitigate potential hazards but also adhere to industry standards and regulations, providing a conducive space for experimentation and research. By upholding stringent safety protocols and ensuring the availability of necessary safety equipment, the college fosters a culture of responsible laboratory practices, promoting both academic excellence and the protection of individuals within the laboratory setting.

III. Segregation of waste at source

While waste segregation measures are implemented within the college, and municipal waste collectors regularly visit to collect the waste, the campus was observed to have accumulated plastic waste during the survey period. Additionally, heaps of different types of waste were found in the backyard of the college. Despite these observations, the college actively participates in waste segregation efforts by regularly separating paper and electrical wastes for recycling purposes. This commitment to waste management reflects the college's recognition of the importance of environmental sustainability and its dedication to minimizing its ecological footprint. However, addressing the issues observed during the survey, such as the accumulation of plastic waste and unattended heaps of waste, presents an opportunity for the college to further enhance its waste management practices and foster a cleaner and greener campus environment.

IV. Air pollution management and preparedness (Smoke dousing, dust precipitating, window cover etc)

The college lacks dedicated air pollution monitoring units and has not implemented specific measures for mitigating air pollution. However, all windows across the campus are properly covered.

VI. Water wastage reduction vigilance

The college has established a comprehensive Water Wastage Reduction Vigilance Program to promote sustainable water use and mitigate unnecessary consumption. This initiative includes the installation of water-efficient fixtures such as low-flow faucets, dual-flush toilets throughout campus facilities to ensure optimal water usage. A robust maintenance protocol is in place to promptly address leaks and plumbing issues, preventing water loss. The program also encompasses educational campaigns designed to raise awareness among students, faculty, and staff about the critical importance of water conservation and to encourage responsible water use practices. To further support these efforts, the college has implemented rainwater harvesting systems, which collect and utilize rainwater for irrigation and other non-potable applications, thereby reducing the reliance on municipal water supplies. Through these measures, the college demonstrates a strong commitment to environmental stewardship and resource conservation.

SECTION 9
RECOMMENDATIONS

9. Recommendations

1. Introduce waste minimization and proper segregation on campus, as observed plastic waste behind toilets needs appropriate disposal.
2. Install garbage units for multi-level waste segregation, including paper, construction debris, glass, metal scrap, and food waste, and implement recycling plans for each type.
3. Establish a vermicomposting facility to produce compost for use as manure or fertilizer for campus plantations.
4. Implement regular air quality monitoring or mandate PUC certificate checks for all vehicles entering the campus.
5. Replace high-energy-consuming electrical appliances with energy-efficient, environmentally friendly alternatives.

Progyan Foundation For Research & Innovation (PFRI)

Certificate

PROGYAN is an independent policy-science action research organization working as a subsidiary wing of the South Asian Forum for Environment (SAFE), which is a regional CSO and a major stakeholder in the UN Environment towards knowledge economy for all stakeholders to act in this climate milieu. PFRI, SAFE is accredited with ISO 14001:2015 certification and registered as a non-profit Section 8 company in India, committed to advancing scientific knowledge across socio-economies and socio-ecologies in developing adaptive guidelines and operational frameworks, sustainable solutions for resource optimization and climate change, in both rural and urban settings through innovation and research. The major scopes for PFRI include Strategic Environmental Impact Assessment and Institutional Green Audit along with field and analytical research.

This is to certify that the 'Progyan Foundation for Research and Innovation' (PFRI), Kolkata 700099 has conducted a brief and precise 'Green Audit' for the 'Shishuram Das College' during the assessment year 2021 to June 2022. The Green Audit was performed in accordance with the applicable standards prescribed by the Central Pollution Control Board and Ministry of Environment, Forests and Climate Change, Government of India, and following NAAC guidelines. The audit involves energy, water, waste, and biological inventories and gives recommendations that the institute can follow to improve the energy, water, waste, and environmental scenarios of the said institute.

Malancha Dey

Dr. Malancha Dey
(Director & Senior Scientist, PFRI)
Date: 20. 06. 2022

PROGYAN FOUNDATION FOR RESEARCH & INNOVATION
Kolkata 700099
www.progyan.in

GENDER AUDIT REPORT

2022-2023

Sishuram Das College

Bhusna, South 24 Parganas

Performed by: Progyan Foundation for Research and Innovation (PFRI), Kolkata

CONTENT

Section I

Gender Audit

1. Gender audit

A. Introduction to gender audit

In 1983, Australia made a pivotal move towards gender equality when its parliament adopted a groundbreaking initiative. This effort, led by the "femocrats" within the ruling Labor Party, aimed to explore how the national budget might affect women's status. The following year saw the introduction of the Women's Budget Statement, a detailed report that highlighted the proposed budget's impact on Australian women and girls. This approach has since inspired around 40 other countries to integrate gender considerations into their planning processes.

B. Definition of gender audit

A gender audit is a systematic evaluation aimed at assessing gender equality within an institution. It involves analysing policies, programs, projects, services, organizational structures, and budgets to uncover gender patterns. The audit encompasses two aspects:

i. Internal Audit: Focuses on how effectively an organization promotes gender equality within its operations and structures, evaluating progress in gender mainstreaming and contributing to capacity development.

ii. External Audit: Assesses how well gender considerations are incorporated into the organization's external policies, programs, projects, and services, ensuring equitable benefits for all genders.

C. Aims and objectives of gender audit

Aims of gender audit

i. **Evaluate Gender Equality**: Assess how gender equality is embedded in organizational policies and practices.

ii. **Identify Disparities**: Discover gaps between genders in various organizational areas such as salary, promotions, and opportunities.

iii. **Enhance Accountability**: Foster transparency and responsibility by offering evidence-based recommendations for improving gender equity.

iv. **Support Strategic Planning**: Assist in creating targeted strategies to address gender imbalances.

Objectives of gender audit

i. **Examine Policies**: Review existing policies to understand their impact on gender equality.

ii. **Analyze Data**: Gather and analyze gender-disaggregated data to identify trends and issues.

iii. **Evaluate Practices**: Assess how organizational practices contribute to gender equity.

iv. **Gather Feedback**: Collect insights from employees and stakeholders about gender-related experiences.

v. **Formulate Recommendations**: Develop actionable recommendations to enhance gender balance and inclusivity.

vi. **Track Progress**: Set benchmarks to monitor progress in gender equality initiatives.

D. Importance of gender audit

i. **Advances Gender Equality**: Assesses how well gender equality is embedded in organizational practices, ensuring equal opportunities for all genders.

ii. **Reveals Disparities**: Highlights existing gender imbalances and areas needing improvement.

iii. **Enhances Policy Development**: Provides insights for creating more effective gender-responsive policies.

iv. **Strengthens Accountability**: Offers a framework for monitoring progress and holding organizations accountable for gender equality.

v. **Promotes Inclusive Practices**: Identifies successful mechanisms and practices to foster a more inclusive culture.

vi. **Optimizes Resource Allocation**: Assesses how resources are allocated to gender equality initiatives.

vii. **Improves HR Policies**: Evaluates the gender sensitivity of HR policies to enhance employment practices.

viii. **Supports Strategic Planning**: Helps in developing targeted strategies for gender equality.

ix. **Monitors Progress**: Measures the effectiveness of gender mainstreaming efforts and informs necessary adjustments.

E. Methodology of gender audit

i. **Define Scope and Objectives**: Set clear goals, scope, and objectives for the audit.

ii. **Develop Framework**: Create a framework to guide assessment areas, including policies, practices, and data collection.

iii. **Collect Data**: Use surveys, interviews, focus groups, and document reviews to gather relevant data.

iv. **Analyze Data**: Identify patterns and gaps in gender equality through data analysis.

v. **Review Policies and Practices**: Evaluate the impact of existing policies and practices on gender equality.

vi. **Engage Stakeholders**: Involve employees and stakeholders to gain diverse insights.

vii. **Assess Resources**: Evaluate how resources are allocated to gender equality initiatives.

viii. **Document Findings**: Compile and present findings in a comprehensive report.

ix. **Develop Recommendations**: Create actionable recommendations to address issues identified during the audit.

x. **Present Results**: Share results and recommendations with stakeholders for informed decision-making.

xi. **Monitor and Evaluate**: Track the implementation of recommendations and assess progress for continuous improvement.

Section II

Gender Auditing in the College

2. Gender auditing in the college

A. College details

The Department of Higher Education, Government of West Bengal, granted approval for the creation of Shishuram Das College, a General Degree College situated in Bhusna, Kamarpole, Diamond Harbour Sub-division, in the district of South 24 Parganas, beginning with the 2010–2011 academic year. The college commenced its operations in 2010 within the Sarisha High School premises, marking its role as a center for higher education. This development addressed the educational needs of local residents, particularly those from underprivileged and middle-class families who were unable to pursue higher education elsewhere.

Table 1: Brief about the college

Name of the College	**Shishuram Das College**
Name of the Principal	Dr. Nilesh Ranjan Maity
Latitude	22°14´58´´N
Longitude	88°18´07´´E
Address	Bhusna, P.O. - Kamarpole, P.S. – Parulia Coastal, District - South 24 Parganas, Pin- 743368, West Bengal
Contact Details	8918979749, shishuramdascollege@yahoo.co.in
No. of Departments (UG)	9
No. of Students	198
No. of Teachers	29
No. Non-teaching Staff	9

The establishment of Shishuram Das College was made possible through the generosity of the late Pranapati Das, an esteemed educationist and philanthropist, who donated Rs. 11 lakhs and 0.54 acres of land in memory of his father, Shishuram Das. Sri Rishi Kumar Halder, an ex-MLA and former college president, played a significant role in supporting the college's foundation. The Diamond Harbour Sarisha Janakalyan Sanstha also contributed significantly to the college's establishment, which now occupies a spacious 5.08-acre campus.

The ceremonial laying of the foundation stone for the new college building took place on August 16, 2010, with Dr. Suranjan Das, then Vice-Chancellor of the University of Calcutta, and Dr. Subimal Sen, then Chairman of the West Bengal State Council of Higher Education, leading the event. They were joined by Sri Rishi Kumar Halder, Dr. Haraprasad Samaddar, and other distinguished guests. Since its opening, the college has experienced significant growth in both infrastructure and academic offerings, earning a reputation for its exceptional academic environment. The campus features general and smart classrooms, a library, a canteen, common rooms, and a playground for sports and other activities.

B. Purpose of conducting the audit

Gender audits are carried out to ensure that gender equality is seamlessly incorporated into all aspects of an institution's operations. By scrutinizing policies, practices, and organizational culture, these audits identify disparities and imbalances in both academic and administrative areas. This process highlights how effectively the institution supports equitable opportunities for all genders, ranging from admissions and faculty appointments to resource distribution and career progression. Tackling these disparities is vital for creating an inclusive environment that champions fairness and equal opportunity for everyone, including students and staff.

In addition, gender audits offer crucial perceptions that influence strategic planning and decision-making. By examining the impact of existing practices and collecting feedback from stakeholders, colleges can develop targeted strategies to correct identified gender imbalances. These audits not only improve institutional accountability by providing evidence-based recommendations but also help colleges align their goals with broader commitments to gender equality and social justice. Ultimately, gender auditing contributes to fostering a supportive and equitable academic community where everyone has the opportunity to thrive.

C. Methodology of conducting the audit

Figure 1: Methodology of Gender Audit

The methodology followed for the gender audit has been shown by means of an infograph (Figure 1).

Section III

Gender Audit Report of the College

3. Gender audit report of the college

A. Understanding gender balance

Gender balance pertains to the fair representation and involvement of all genders within an institution, typically assessed through the gender ratio. In a college context, attaining gender balance means ensuring that the gender ratio among students, faculty, and staff reflects equal opportunities, rights, and responsibilities for all genders. Gender balance is not just about numerical equality; it encompasses creating an inclusive atmosphere where everyone, irrespective of gender, can flourish academically, professionally, and personally. This involves tackling biases, enacting equitable policies, and fostering a culture of respect and equality.

B. Importance of maintaining gender balance in a college

Upholding gender balance in a college is vital for nurturing an inclusive and equitable educational environment. It ensures diverse perspectives and ideas, enriching the academic discourse and preparing students for real-world scenarios where gender diversity is a norm. Gender balance promotes equal opportunities, enabling individuals of all genders to access the same resources, support, and career prospects. Additionally, it helps break down stereotypes and biases, contributing to a more progressive and tolerant society. Colleges with balanced gender representation tend to have better overall performance, as they draw from a wider pool of talent and experiences, enhancing innovation and problem-solving capabilities.

C. Gender balance in the Shishuram Das College

The Gender audit team conducted a holistic evaluation of the functional environment at the Shishuram Das College through surveys and focus group discussions with various stakeholders associated with the college. The analysis demonstrated that the college provides equal access to all facilities to individuals of all gender groups.

The institution was observed to promote a gender-healthy environment through its inclusive departments and various extracurricular activities.

Table 2 depicts the gender-wise distribution of all stakeholders associated with the Shishuram Das College.

Table 2: Total Number of Stakeholders According to Gender

All Stakeholders	Male	Female	Transgender	Total
Students	193	324	0	517
Teachers	16	14	0	30
Non-teaching Staff	8	1	0	9

62.67% of the total registered students belonged to the female category while the remaining 37.33% were males. Although the proportion of males had increased in comparison to the previous years, the number of both males and females had decreased considerably by 22.18% and 35.077% respectively. Both staff categories (teachers and non-teaching staff) remained

unchanged from the previous academic year (Figure 2), signifying a considerable scope for development in the non-teaching category.

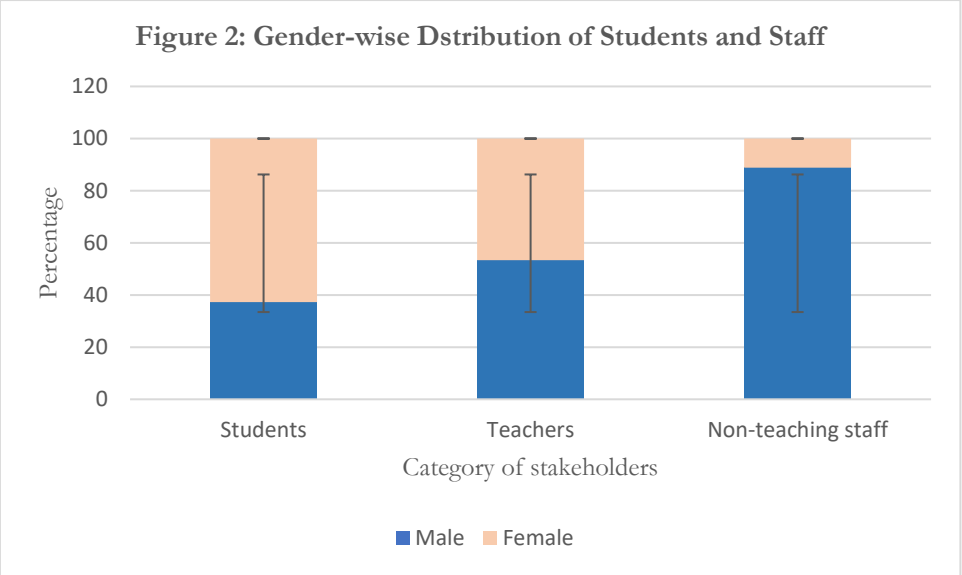
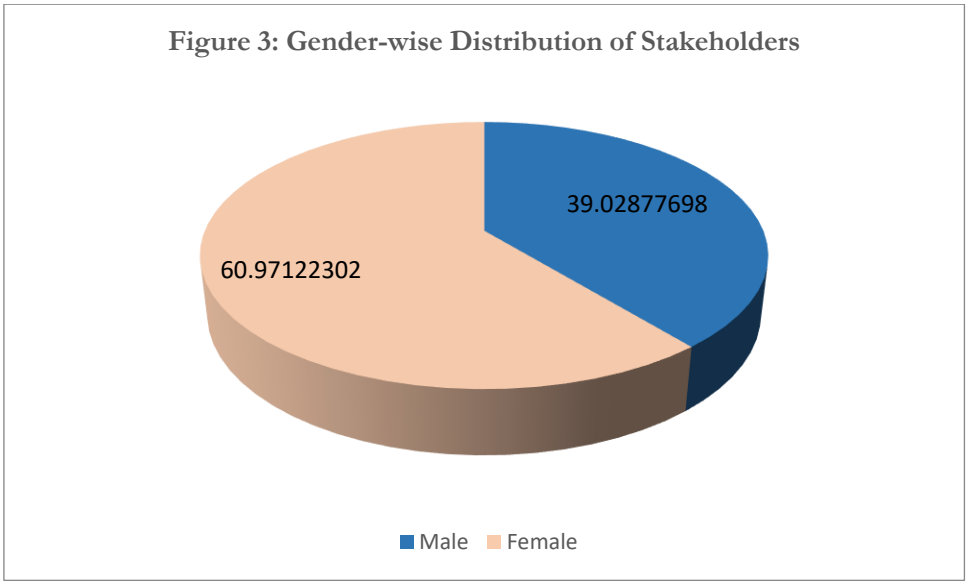


Figure 3 depicts the gender balance of the associated stakeholders in totality. This shows that the male-female ratio among all stakeholders in the college leans towards females, although the proportion of male has increased here from the previous years. This is admirable and underscores the secure environment that the institution provides for women. However, no individuals identified as the third gender. This was because no such individual had sought admission to the college.



D. Gender sensitization in the college

Shishuram Das College is dedicated to promoting gender equity on its campus. The surveyors found gender-segregated facilities like toilets and restrooms, all in excellent condition, demonstrating equitable care for all genders. Moreover, a newly purchased automated sanitary pad

vending machine was found to have been installed in the women's restroom. CCTV surveillance and security guards at the gate ensured the safety of everyone on campus. Also, extracurricular activities encouraged gender diversity and inclusion. Faculty, staff, and students effectively balanced caregiving responsibilities with their academic or professional roles.

Photograph 1: Sanitary Pad Vending machine inside the Women's Restroom

The college has operated under a comprehensive gender policy since the academic year of 2019-2020. This policy ensures non-discrimination based on gender, equal opportunities for all, the use of gender-neutral language in official communications, forms, and policies, awareness of diverse gender identities, prevention of gender-based discrimination and harassment, and promotion of gender equity initiatives through committees, training programs, and Gender and Development (GAD) training.

The college is also committed to implementing and periodically reviewing this policy in collaboration with the Internal Quality Assurance Cell (IQAC). The IQAC, formed in the same academic year as the gender policy, comprises six members, including two women (33.33%). This composition has remained unchanged since the year of its inception. The Women Development Cell, also established in 2019-2020, operates efficiently under the leadership of Ms. Nupur Datta and two other female members. With 60% of its members being female and 40% male, the cell maintains a healthy gender balance.

In the current academic year (2022-2023), the college has organised two significant events related to the crucial aspects of women's health- the 'Adolescent Health and Hygiene' programme and an

awareness camp with expecting mothers and women in maternity. The programme on adolescent health and hygiene was arranged by the Women Development Cell of the college while the other was the result of a collaborative effort of the faculty members and the students. The awareness camp was held at the local 'Anganwadi' centre. The speakers in the awareness camp highlighted the importance of antenatal care. Furthermore, the necessity of proper medications, and nutritious food during and after pregnancy was also discussed. This proves that the college is aware of its social responsibilities and tries to take opportunities to fulfill them.

Photograph 2: The 'Adolescent Health and Hygiene' Programme

Photograph 3: The Awareness Camp with Pregnant Women and Mothers at the Local Anganwadi Centre

Photograph 4: The Participants of the Awareness Camp at the Local Anganwadi Centre

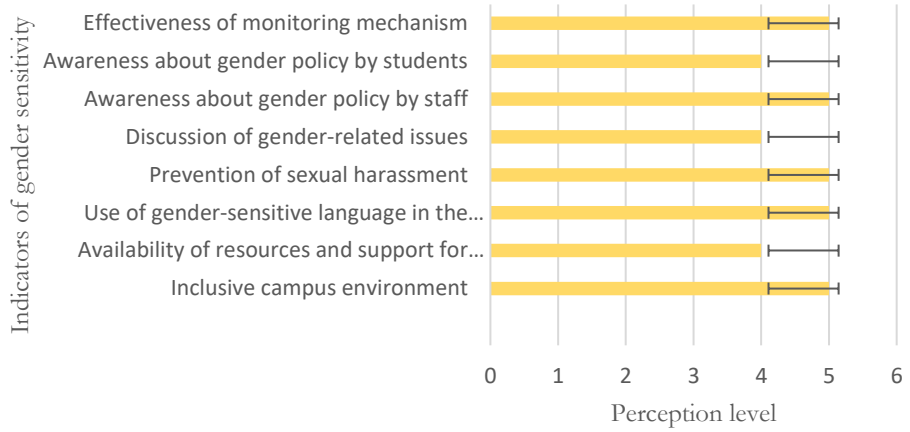
Figure 4 indicates the level of perception of the gender audit team regarding the basic indicators of gender inclusivity and sensitivity inside the college campus. This perception is based on information collected from the college staff and students. Notably, not a single instance of sexual harassment or abuse has been reported, demonstrating the high level of safety inside the campus for women.

In the academic year of 2022-2023, the Shishuram Das College arranged the 'Jhansi Programme' to train its female members in self-defense. This was a noble initiative and a vital one to ensure

Photograph 5: Male and Female Trainers at the Self Defence Programme

women's safety and security. Notably, the trainers included both males and females, so that the students did not feel uncomfortable.

Figure 4: Level of Gender Inclusivity and Sensitivity in the Campus



Section IV

Summary and Recommendations

4. Summary and Recommendations

A. Summary

The Shishuram Das College provides a gender-friendly environment, encouraging all its stakeholders to reach their maximum potential. The authorities of the college are dedicated towards maintaining gender equity inside the campus. The holistic gender policy of the college acts as the guiding star in its path towards gender related development. The gender policy is well implemented and regularly monitored by the IQAC cell of the college. The college also adequately uses its Maintenance and Other Operating Expenses (MOOE) and other institutional budgets including personnel services, capital outlay, and canteen for gender and development. The installation of the sanitary pad vending machine is a very essential as well as noble step undertaken by the college to foster a comfortable environment for women. After observing every detail thoroughly, the gender audit team has assigned a score of **8.5** out of 10 according to its perception of the gender-related conditions prevailing in the Shishuram Das College.

B. Recommendations

Despite the prevailing gender-friendly environment of the college, there are some areas in which further improvement is possible. The following recommendations may help the college to promote an even better gender-based development inside its campus.

i. The IQAC cell may incorporate more females.
ii. Hiring of individuals belonging to the third gender in various important roles will enhance the gender-inclusive environment of the college.
iii. More females may be hired in the non-teaching category
iv. More females may be included in the governing body of the college.
v. Child-care facilities may be set up so that women members of the institution can use them if necessary
vi. Gender-neutral facilities may be set up so that they may be used by persons belonging to the third gender in the future.
vii. Certificate courses on gender-related issues, especially those educating about the importance of gender diversity and gender neutrality may be introduced in the curriculum every year.

Certificate

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ISO 14001:2015 Certified

Certificate

PROGYAN is an independent policy-science action research organization working as a subsidiary wing of the South Asian Forum for Environment (SAFE), which is a regional CSO and a major stakeholder in the UN Environment towards knowledge economy for all stakeholders to act in this climate milieu. PFRI, SAFE is accredited with ISO 14001:2015 certification and registered as a non-profit Section 8 company in India, committed to advancing scientific knowledge across socio-economies and socio-ecologies in developing adaptive guidelines and operational frameworks, sustainable solutions for resource optimization and climate change, in both rural and urban settings through innovation and research. The major scopes for PFRI include Strategic Environmental Impact Assessment and Institutional Green Audit along with field and analytical research.

This is to certify that the 'Progyan Foundation for Research and Innovation' (PFRI), Kolkata 700099 has conducted a brief and precise 'Gender Audit' for 'Shishuram Das College', during the assessment year 2022-2023. The Gender Audit was performed in accordance with the NAAC guidelines. Recommendations were given to achieve a comprehensive gender-related development in the institution.

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Malancha Dey

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24.06.2023

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Progyan Foundation for Research & Innovation (PFRI)

GREEN AUDIT REPORT (2022-2023)

Shishuram Das college

Conducted by

Progyan Foundation for Research & Innovation (PFRI)

Review Overview

Sl No	Audit parameters	Score Card	Remarks
1	Water Resource Management	9	Good
2	Energy Resource Management	7	Scope for betterment
3	Waste Management	7	Scope for betterment
4	Ambient Air & Noise Quality	8	Good
5	Biodiversity	9	Good
6	General Awareness	8.5	Good
7	Environmental Compliances	6.8	Moderate

1.1 Introduction to Green Audit

I. Basis of Green Audit

The term 'Green' means eco-friendly or not damaging the environment. This can acronymically be called 'Global Readiness in Ensuring Ecological Neutrality' (GREEN). Green Audit can be defined as the systematic identification, quantification, recording, reporting, and analysis of components of environmental diversity. Green accounting can be defined as the systematic identification quantification, recording, reporting & analysis of components of ecological diversity & expressing the same in financial or social terms. 'Green Auditing', an umbrella term, is known by another name 'Environmental Auditing'. The 'Green Audit' aims to analyze environmental practices within and outside the college campus, which will have an impact on the eco-friendly ambiance. It was initiated with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. Through Green Audit, one gets a direction as to how to improve the condition of the environment and various factors have determined the growth of carrying out Green Audit. Educational institutions have broad impacts on the world around them, both negative and positive. The activities pursued by campus can create a variety of adverse environmental impacts. But they are also in a unique position as educational institutions to be leaders in pursuing environmentally sustainable solutions.

Green Audit is a process of systematic identification, quantification, recording, reporting, and analysis of components of environmental diversity of various establishments. It aims to analyze environmental practices within and outside of the concerned sites, which will have an impact on the eco-friendly ambiance. The Green Audit can be a useful tool for a college to determine how and where they are using the most energy or water or resources; the college can then consider how to implement changes and make savings. It can also be used to determine the type and volume of waste, which can be used for a recycling project or to improve the waste minimization plan. It can create health consciousness and promote environmental awareness, values, and ethics. It provides staff and students with a better understanding of the green impact on campus.

II. Objectives of Green Audit

Green Audit regulates all such practices and checks whether our processes are consuming more than the required resources and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion, it is necessary to verify the processes and convert them into green and clean ones. The Green Audit provides an approach to it. It also increases overall consciousness among the people working in institutions toward an environment. The various components of the Green Audit such as:

i. To map the geographical location of the college and its surroundings
ii. To record the meteorological parameter where the college is situated
iii. To document the quality of drinking water
iv. To document the waste disposal system

- The document the quality of wastewater
- To document the floral and faunal diversity of the college
- To document the ambient environmental condition of air, water, and noise
- To estimate the energy requirements of the college
- Establish and implement environmental management in various departments
- Setup goal, vision, and mission for green practices on the campus
- To report the expenditure on green initiatives during the last five years

III. Benefits of Green Audit

There are many advantages of a Green Audit for an educational institute

- It would help to defend the environment in and around the campus
- Recognize the cost-saving methods through waste minimization and management
- Point out the prevailing and fourth-coming impacts on the environment
- Improve social and environmental awareness for the institute and students
- Authorize the organization to frame a better environmental performance
- It portrays a good image of the institution through its clean and green campus
- Improvement of environmental ethics and values and stewardship towards responsible environment management
- Finally, it will help to build a positive impression through green initiatives during the upcoming NAAC visit.

1.2. Details of the Audited Institution

The Department of Higher Education, Government of West Bengal approved the establishment of General Degree College named 'Shishuram Das College' at Bhusna, P.O. - Kamapole, P.S. - Diamond Harbour, Dist. - South 24 Parganas with effect from 2010 – 2011 academic session. Accordingly, in 2010, as a 'Destination of Higher Education' Shishuram Das College started its journey in the first year at Sarisha High School building. Thus the aspiration for higher education of the local people, particularly the students belonging to the poor and middle-class families who cannot afford to go far off places for meeting the demand of higher education, was fulfilled. The establishment of the College was possible for the educationist and philanthropist Late Pranapati Das who donated Rs. 11 Lakhs and 0.54 acre of land for the college in the name of his father Late Shishuram Das. Sri Rishi Kumar Halder (Ex-MLA and former President of the college) supported wholeheartedly towards the foundation of the College. Diamond Harbour Sarisha Janakalyan Sanstha played an important role in the foundation of the college. The college owes its huge premises (an area of 5.08 acres) to the society. The foundation stone of the present college building was laid on 16th August 2010 by Dr. Suranjan Das, the then Vice-Chancellor of the University of Calcutta and Dr. Subimal Sen, the then Chairman of West Bengal State Council of Higher Education in the presence of Sri Rishi Kumar Halder, Dr. Haraprasad Samaddar and others. Since then, the college has

expanded structurally and academically, thus earning the reputation of having an excellent academic environment. This number is expected to increase in the future. Apart from general classrooms, smart classroom and library the college also has canteen and common rooms for students and a playground for sports and other outdoor activities.

Table 1: Brief about the College

Name of the College	Sishuram das college
Name of the Principal	Dr. Nilesh Ranjan Maity
Latitude	22°14´58´´N
Longitude	88°18´07´´E
Total Campus Area	5.08 acre
Address	Bhusna, P.O. - Kamapole, P.S. - Diamond Harbour, Dist. - South 24 Parganas, West Bengal, Pin- 743368
Contact Details	8918979749, shishuramdascollege@yahoo.co.in
No. of Departments (UG)	10
No. of Students	517
No. of Teachers	29
No. of Non-teaching Staff	9

1.3. Vision and Mission Statement of the College

Vision:

The College aims at the upliftment of the people of the locality, particularly the poor and middle classes, through spreading higher education which will lead to enlightenment and employment. Since its establishment the college has aimed at propagating quality education among the students. Being located in the rural area of South 24 Parganas the college has evolved as a seat of academic excellence in the region and has significantly contributed in the fields of sports, physical education, socio-cultural activities and public awareness. Since its inception the college is committed to impart higher education to the aspiring youth.

Mission:

- To offer suitable undergraduate courses and to make the young students fit for educational and administrative services.
- To help every student in realizing his/her abilities and also to inspire him/her to know each and every scope of self-employment and entrepreneurship that can bring success in his/her future life.
- To offer value-based and value-added education to groom the students as capable, sensible and responsible citizens of the country.

- To provide quality education to the students irrespective of caste, creed, religion and diverse socio-economic status.
- To motivate the students to achieve academic distinction and excellence in every sphere of culture and administration.
- To inculcate values in the students and harbour a strong personality in each of them so that they can become the responsible citizens of modern India in the near future.

1.4. Methods of Auditing

The audit process was carried out in three phases from July 2018 to June 2019. At first, all the secondary data required for the study was collected from various key information sources and concerned departments. A broad reference work and literature review were carried out to clear the idea of green auditing. Different case studies and methodologies were studied, and the following methodology was adopted for the present audit. The methodology of the present study is based on onsite visits, personal observations, and questionnaire survey tools. Baseline data for Green Audit report preparation was collected by questionnaire survey method. Questionnaires prepared to conduct the Green Audit on the college campuses are based on the guidelines, rules, acts and, formats prepared by the Ministry of Environment, Forest and Climate Change, New Delhi, Central Pollution Control Board and, other statutory organizations. After the onsite visit and stakeholders' interview, the questionnaires were filled out. The generated data is subsequently gathered and used for further analysis. From the outcome of the overall study, a final report is prepared.

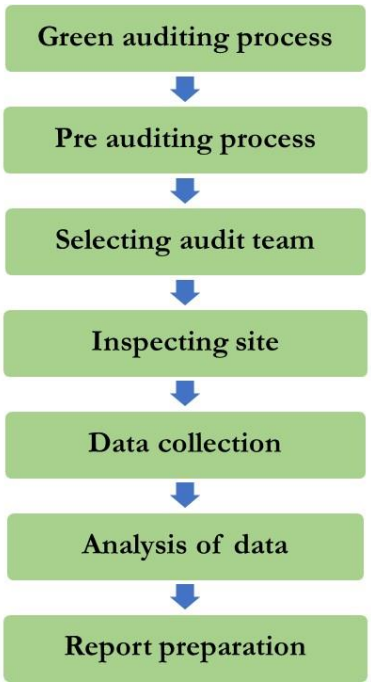

Fig. 2. Process of green audit

1.5. Scope of green audit

The scope of a green audit covers multiple facets of environmental management and sustainability practices. Key components include:

i. **Water usage:** Reviewing water consumption to find areas for reduction, implementing water-saving technologies, and ensuring proper wastewater treatment processes are in place.

ii. **Energy conservation:** Evaluating energy usage patterns, identifying inefficiencies, and recommending measures to reduce energy consumption and improve efficiency.

iii. **Waste management:** Assessing waste generation, segregation, and disposal practices. The audit identifies ways to minimize waste, promote recycling, and manage hazardous waste safely.

iv. **Pollution control:** Monitoring and controlling air, water, and soil pollution. The audit examines emissions, effluents, and practices that impact the environment, recommending strategies for pollution prevention and mitigation.

v. **Resource efficiency:** Analyzing the use of natural resources, such as raw materials and fuels, to ensure they are used efficiently and sustainably.

vi. **Compliance with environmental policies:** Ensuring that the organization adheres to local, national, and international environmental regulations and standards. This includes compliance with laws related to emissions, waste disposal, and resource use.

vii. **Sustainable practices:** Promoting the adoption of sustainable practices, such as using renewable energy sources, eco-friendly materials, and green technologies. The audit assesses the organization's overall sustainability strategy and its implementation.

viii. **Biodiversity conservation:** Evaluating the organization's impact on local ecosystems and biodiversity. This includes assessing land use practices, habitat protection efforts, and initiatives to preserve and enhance biodiversity. The audit identifies potential risks to wildlife and natural habitats and recommends actions to mitigate these impacts.

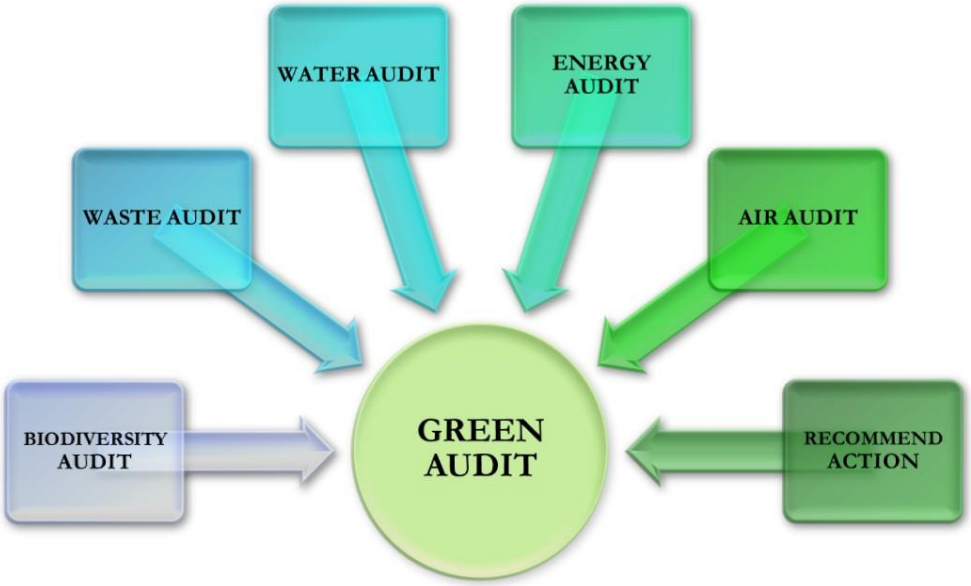

Figure 3 Scope of the green audit for 2018-2019

SECTION 2
WATER RESOURCE MANAGEMENET

2. Water Resource Management

I. Importance of water resource management

Water is one of the six essential nutrients, alongside carbohydrates, protein, fat, vitamins, and minerals. Approximately 60% of the human body is composed of water, and humans can survive only three to five days without fluids. Water plays critical roles in bodily functions, including waste removal, temperature regulation, and nutrient transport, which are vital for digestion.

A. Increasing Demand for Freshwater

The demand for freshwater is rising due to increasing living standards, industrialization, and urbanization. In response to this growing need, the Government of India launched the national mission on water conservation known as 'Jal Shakti Abhiyan.' This initiative urges all citizens to collaborate in addressing water scarcity by conserving every drop of water and suggests that water audits be conducted across all sectors of water use.

B. Water Auditing

A water audit is a systematic process designed to obtain a comprehensive water balance. It involves measuring the flow of water from the point of withdrawal or treatment through the distribution system, and into areas where it is used, eventually to its discharge. Water auditing is a cost-effective method for identifying and reducing water losses, optimizing water usage across multiple applications, and achieving significant water savings in sectors such as irrigation, domestic use, power generation, and industry.

C. Recommendations for Water Conservation

To address the increasing demand for freshwater, it is essential to reduce water consumption and enhance the reuse and recycling of treated wastewater. Implementing water audits can help identify inefficiencies and areas for improvement, thereby promoting sustainable water management practices. Given the vital importance of water for human survival and the growing pressures on freshwater resources, it is imperative to adopt comprehensive water conservation strategies. By conducting water audits and promoting the reuse and recycling of water, significant strides can be made towards sustainable water management, ensuring the availability of this essential resource for future generations.

D. Importance of Water Audit

i. When problems are identified, it is easier to work on solutions

ii. The process is more systematic

iii. It is possible to implement a tracking system

Climate, culture, diet habits, employment and working conditions, degree and type of development, and physiology are all thought to play a role in determining the amount of water required. According to the Southeast Asia Regional Office of the World Health Organization's (WHO) standards Administration requires 50 l per person per day (staff accommodation not included), Staff housing needs 30 l per person per day, and sanitation is dependent on technology, schools require 2 l per student; 10-15 l per student if water-flushed toilets are used.

II) Water quality

Table 2 provides a detailed overview of essential water quality parameters, meticulously measured following established standard protocols to ensure accuracy and reliability. WHO produces a series of water quality guidelines, including on drinking-water, safe use of wastewater, and safe recreational water environments. These guidelines are based on managing risks, and since 2004 the Guidelines for drinking-water quality promote the Framework for Safe Drinking-water. The analysis of water quality parameters reveals a comparison between raw and treated water against the Bureau of Indian Standards (BIS) values. Both raw and treated water have agreeable odor and taste, aligning with expectations. The pH of raw water is 7.19 and is adjusted to 7.10 in treated water, within the BIS standard range of 6.5 to 8.5. The iron content is significantly reduced from 1.157 mg/l in raw water to 0.068 mg/l in treated water, surpassing the standard limit of 0.30 mg/l. Total hardness decreases from 289 ppm in raw water to 240 ppm in treated water, still above the BIS standard of 200 ppm. Arsenic levels are minimized from 0.009 mg/l to 0.002 mg/l, both below the maximum allowable 0.01 mg/l. Chloride levels remain constant at 14.2 mg/l, well under the standard 250 mg/l. Turbidity is effectively reduced from 1.0 NTU to 0.3 NTU, complying with the standard of 1 NTU. Manganese is absent in both raw and treated water, meeting the 0.10 mg/l limit. Total dissolved solids (TDS) show a remarkable decrease from 660 mg/l to 63 mg/l, comfortably under the 500 mg/l standard. Both total and faecal coliforms are absent in raw and treated water, meeting the BIS standard of zero presence.

4o

Table 3 : Water quality assessment

Parameters	***Raw water***	***Treated water***	***Standard value (BIS)***
Odor	*Agreeable*	*Agreeable*	
Taste	*Agreeable*	*Agreeable*	
pH	*7.19*	*7.10*	*6.5-8.5*
Fe(mg/ l)	*1.157*	*0.068*	*0.30*
Total hardness as $CaCO_3$(ppm)	*289*	*240*	*200*
Arsenic (mg/ l)	*0.009*	*0.002*	*0.01*
Chloride (mg/ l)	*14.2*	*14.2*	*250*
Turbidity(NTU)	*1.0*	*0.3*	*1*
Mn (mg/ l)	*0*	*0*	*0.10*
TDS(mg/ l)	*660*	*63*	*500*
Total coliform (cfu/ 100ml)	*0*	*0*	*0*
Faecal coliform (cfu/ 100ml)	*0*	*0*	*0*

III) Water storage system

The college campus has a well-structured water storage system encompassing various reservoirs categorized by their location and purpose. The water storage system consists of three overhead tanks, each with a capacity of 1,000 liters. These tanks are strategically placed to ensure a consistent and reliable water supply. The first overhead tank holds 1,000 liters, as do the second and third tanks, bringing the total volume of stored water to 3,000 liters. This arrangement is designed to meet the daily water demands efficiently, ensuring that there is ample storage capacity to support various needs. The use of multiple overhead tanks provides redundancy and flexibility in water management, enhancing the system's reliability and resilience.

Table 3: Categories of the water reservoir and its water holding capacity

Type	Number	Volume (l)	Total Volume (l)
Overhead	1	1000	1000
Overhead	1	1000	1000
Overhead	1	1000	1000
			3000

IV) Per capita water allocation and per capita usage

The water usage data highlights various activities and their associated water sources within the college. For gardening, pond water is utilized for 210 days, with a total daily usage of 4,000 liters, resulting in an annual consumption of 840,000 liters. Groundwater serves multiple purposes, starting with drinking water for students, permanent teachers, and non-teaching staff (NTS). Students, with a population of 747, consume 1,494 liters daily over 254 days, amounting to an annual usage of 379,476 liters. Permanent teachers and NTS consume 60 liters and 18 liters daily, respectively, leading to annual usages of 15,240 liters and 4,572 liters. Groundwater is also used for toilets, with students using 33,615 liters daily, totaling 8,538,210 liters annually. Permanent teachers and NTS use 1,350 liters and 405 liters daily for toilet purposes, with annual consumptions of 342,900 liters and 102,870 liters. Washing hands and face involves all students and staff, with a daily use of 1,023 liters, leading to an annual total of 259,842 liters. Lastly, groundwater is used for mopping floors over 254 days, consuming 2,500 liters daily, amounting to 635,000 liters annually. Altogether, the college's total daily water usage is 44,465 liters, resulting in an annual water consumption of 11,118,110 liters.

Table 5: Different categories of water usage

Water Source	Activity	Category	Days	No. of Users	Water usage/day/person	Total water usage/day	Annual water usage
Pondwater	Gardening		**210**	College Campus	4000	4000	840000
Groundwater	Drinking	Students	**254**	517	2	1094	277876
		Permanent Teacher	**254**	30	2	60	15240
		Permanent NTS	**254**	9	2	18	4572
Groundwater	Toilet	Students	**254**	517	45	24615	6252210
		Permanent Teacher	**254**	30	45	1350	342900
		Permanent NTS	**254**	9	45	405	102870
	Washing hands and face	All students & staff	**254**	2046	0.5	1023	259842
Groundwater	Mopping Floor		**254**	College Built-up Area	2500	2500	635000
Total Water Usage						**35065**	**8730510**

V) Utilization and wastewater generation

The college generates significant wastewater annually from various activities. Gardening, which uses pond water, results in 840,000 liters of wastewater per year. The largest contributor is toilet usage, generating 667980 liters of wastewater annually due to its high frequency and necessity for hygiene. Washing hands and face, involving all students and staff, produces 259,842 liters of wastewater each year. Additionally, mopping the floors contributes 635,000 liters of wastewater annually. Collectively, these activities highlight the substantial volume of wastewater that needs to be managed, underscoring the importance of effective wastewater treatment and recycling systems to minimize environmental impact.

Table 5. Amount of wastewater generated based on various activities

Activity	Wastewater generated (l/annum)
Gardening	840000
Toilet	667980
Washing hands and face	259842
Mopping floor	635000

VI) Rainwater harvesting, usage, ground water recharge, waste water recycling / reuse.

Pond harvesting is a significant aspect of the water management strategy on our college campus. The harvested pond water is primarily used for gardening, promoting sustainable practices and reducing dependency on external water sources. Spanning a total area of 5.08 acres, the campus has a unique layout where only the building area is concreted, while the remaining land is natural ground. This design not only supports the aesthetic and ecological value of the campus but also plays a crucial role in enhancing groundwater recharge. The natural ground facilitates the infiltration of rainwater, effectively replenishing the groundwater table. Despite these efforts in pond harvesting, the campus currently does not implement wastewater recycling or reuse, highlighting an area for potential future development to further improve water sustainability on campus.

VII) Accessibility to water resources

During the survey period, it was determined that the accessibility of drinking water and sanitation facilities was highly satisfactory for all students. Notably, each block of the college campus is equipped with units that provide safe and clean drinking water. These units ensure that students have constant access to potable water, which is crucial for maintaining hydration and overall health. Furthermore, the survey revealed that the college has an efficient water supply system in place, guaranteeing a continuous flow of water in all toilets and washrooms across the camps. This consistent availability of water is essential for maintaining hygiene standards, as it facilitates regular handwashing and proper sanitation. The presence of these facilities indicates a well-maintained infrastructure that supports the health and well-being of the student population.

SECTION 3
ENERGY RESOURCE MANAGEMENT

3. Energy Resource Management

I. Significance of Energy Resource Management

Energy conservation is a crucial component of campus sustainability, intricately linked to reducing the overall carbon footprint. Effective energy management practices not only contribute to environmental stewardship but also enhance the economic efficiency of the institution. Energy auditing involves a thorough evaluation of energy consumption patterns and the identification of strategies to minimize energy use and its associated environmental impacts. The process includes:

A. Assessment of energy use

i. **Preliminary assessment:** Gathering basic information about the facility, including its size, usage patterns, energy bills, and existing energy systems and scheduling an initial meeting with key stakeholders to outline the audit's scope and objectives.

ii. **Data collection:** Collecting detailed data on energy consumption through utility bills, meter readings, and energy management systems and documenting all energy-consuming equipment, including lighting, HVAC systems, machinery, and appliances.

iii. **Site inspection:** Conducting a thorough on-site inspection to assess the condition and performance of energy systems and identifying any obvious inefficiencies, such as outdated equipment, poor insulation, or leaks.

iv. **Benchmarking:** Analyzing the collected data to determine energy consumption patterns and identify areas of significant energy use and benchmarking to compare the facility's energy performance against similar facilities.

B. Analysis of Energy Efficiency

i. **Performance evaluation:** Utilizing key performance indicators (KPIs) to assess energy efficiency and detect inefficiencies.

ii. **Technology review:** Assessing the effectiveness of current technologies and systems, and exploring potential upgrades or replacements with more energy-efficient alternatives.

C. Development of conservation strategies

i. **Behavioral changes:** Encouraging energy-saving behaviors among students, faculty, and staff through awareness initiatives and training.

ii. **Operational improvements:** Implementing strategies like optimizing HVAC systems, improving insulation, and deploying energy management systems (EMS) to enhance efficiency.

iii. **Renewable energy integration:** Incorporating renewable sources like solar panels, wind turbines, and geothermal systems to reduce reliance on fossil fuels.

iv. **Energy storage solutions:** Implementing advanced systems for storing and optimizing the use of renewable energy.

II) Importance of the electricity and energy resource management

From a general point of view, an energy audit provides enormous benefits in different areas

i. **Identifying cost savings**: Energy audits help in identifying opportunities for reducing energy consumption and operational costs through efficiency improvements and better management practices.
ii. **Enhancing environmental sustainability**: By optimizing energy use, audits contribute to reducing carbon footprint and environmental impact, aligning with sustainability goals.
iii. **Improving operational efficiency**: Audits reveal inefficiencies in energy systems, enabling facilities to operate equipment more effectively and extend equipment lifespan.
iv. **Compliance and risk mitigation**: Audits ensure compliance with energy regulations and standards, audits mitigate risks associated with energy supply disruptions and regulatory non-compliance.
v. **Promoting organizational responsibility**: Conducting audits demonstrates commitment to responsible resource management, fostering a culture of sustainability within the organization.
vi. **Supporting strategic decision-making**: Insights from audits inform strategic decisions on capital investments in energy-efficient technologies and renewable energy integration.
vii. **Enhancing indoor environmental quality**: Efficient energy use often correlates with improved indoor air quality and comfort for occupants, benefiting overall health and productivity.
viii. **Securing funding and grants**: Audit findings can support applications for funding or grants aimed at implementing energy-saving initiatives and renewable energy projects.
ix. **Monitoring and continuous improvement**: Post-audit monitoring ensures sustained energy efficiency gains and identifies further optimization opportunities over time.

III. Total consumption in whole campus as well different sections

A. Electrical Energy

The sustainability of the campus community is significantly influenced by its energy use, sources, management, lighting systems, and various appliances. A comprehensive assessment of these factors is crucial for formulating effective energy conservation strategies. The primary areas of energy consumption within the campus include the office, canteen, and laboratory, each serving different functions and thus having varied energy demands. Table 6 presents the energy consumption pattern of the college over one year. The calculation method used to determine energy consumption is as follows:

Energy Consumption (kWh/year) =Power (W)×Hours×Number of Units×Days

The energy consumption analysis of the college highlights the usage and impact of various appliances on campus. Air conditioners, with a total of four units each using 1.5 kW, consume a significant amount of energy, totaling 12,192 kWh annually, as they operate for 8 hours a day over 254 days. CCTV cameras,

despite their large number (13 units), have a minimal energy footprint due to their low power usage of 0.002 kW per unit, resulting in a consumption of just 52.832 kWh. The single refrigerator, operating continuously for 24 hours a day throughout the year, uses 4,876.8 kWh. Fans, which are quite numerous with 71 units, contribute 7,952 kWh to the total consumption, albeit used for a shorter period of 20 days annually. Tube lights, totaling 69 units, have a substantial energy draw of 28,041.6 kWh, given their daily usage of 8 hours across 254 days. Computers, with 7 units operating for 7 hours daily, account for 2,489.2 kWh. The projector, used for a shorter span of 200 days for 5 hours each day, consumes 120 kWh. Lastly, printers, with three units each using 0.15 kW, contribute 571.5 kWh to the total energy consumption. This comprehensive overview underscores the importance of efficient energy management and the potential benefits of adopting energy-saving technologies on campus.

Table 6. Electrical equipment and their electricity consumption in college per year

Sl No.	Appliances	No of appliances	Power used(kW)/appliance	No of days	Usage per day(hour)	Average of energy usage per year
1	Air conditioner (1.5 tonne)	4	1.5	254	8	12192
2	CCTV	13	0.002	254	8	52.832
3	Refrigerator (220 L)	1	0.8	254	24	4876.8
4	Fan	71	0.8	20	7	7952
5	Tube light	69	0.2	254	8	28041.6
6	Computer	7	0.2	254	7	2489.2
7	Projector	1	0.12	200	5	120
8	Printer	3	0.15	254	5	571.5

IV) Wiring and set-up conditions

The electrical infrastructure across the college campus has been found to be in good condition, as evidenced by a thorough survey conducted recently. The wiring of the electricity circuits is meticulously maintained, ensuring a high standard of safety and functionality. During the survey period, no instances of open wires or open circuits were detected, which is a testament to the diligent upkeep and regular inspections performed by the campus maintenance team. This level of attention to electrical safety minimizes the risk of electrical hazards, such as short circuits or electrical fires, thus safeguarding students, staff, and facilities. The well-maintained electrical system also contributes to the efficient operation of various campus facilities, ensuring that classrooms, laboratories, and administrative offices can function without interruption. Overall, the impeccable condition of the campus's electrical wiring underscores the college's commitment to providing a secure and conducive learning environment.

V. Renewable energy use

In response to growing concerns about carbon emissions and climate change, the college has embarked on several significant initiatives to transition towards renewable energy sources. Recognizing the importance of reducing its carbon footprint and promoting sustainability, the college has invested in the installation of solar panels in the parking area of the campus. The college ensures the efficiency and longevity of the solar energy system through regular maintenance. The maintenance team of the college is responsible for the routine cleaning of the solar panels. This cleaning process is crucial because it removes dust, debris, and other particulate matter that can accumulate on the panels, which can significantly reduce their efficiency and energy output. By keeping the panels clean, the maintenance team helps to maximize their performance and ensure consistent energy production. These proactive measures not only demonstrate the college's commitment to sustainability and environmental stewardship but also serve as an educational model for students and the community. By investing in renewable energy and maintaining these systems meticulously, the college contributes to the broader effort to combat climate change and fosters a culture of sustainability on campus.

VI. Energy wise-use – Day light usage

Optimizing daylight usage in a college setting for efficient electrical energy management involves several technical strategies. Primarily, the integration of advanced daylight harvesting systems, which utilize sensors to adjust artificial lighting based on natural light availability, can significantly reduce energy consumption. Architectural designs incorporating large windows, skylights, and light shelves enhance natural light penetration, minimizing the need for electrical illumination during daytime hours. Additionally, implementing energy-efficient lighting fixtures with dimmable controls allows for dynamic adjustment of light levels in response to varying daylight conditions. Automated shading devices can prevent glare and

excessive heat gain, maintaining a comfortable indoor environment while maximizing natural light usage. By leveraging these technologies and design principles, colleges can achieve substantial reductions in electrical energy consumption, promote sustainability, and enhance the overall learning environment.

SECTION 4
WASTE MANAGEMENT

4. Waste management

I. Solid waste collection and disposal system

The college has implemented a robust solid waste collection and disposal system to manage its waste effectively and promote environmental sustainability. The system encompasses a comprehensive approach, starting with the segregation of waste at the source. Separate bins for recyclable, nonrecyclable, and organic waste are strategically placed across the campus, ensuring that students, faculty, and staff can easily dispose of their waste appropriately. The waste is then collected regularly by the campus maintenance team, who ensure that each type of waste is handled correctly. Recyclable materials are sent to designated recycling centers, organic waste is composted on-site or transported to local composting facilities, and non-recyclable waste is disposed of following municipal guidelines. The college also conducts regular awareness campaigns to educate the campus community about the importance of waste segregation and recycling. This meticulous system not only helps in reducing the overall waste sent to landfills but also fosters a culture of environmental responsibility among the college community.

Fig 8: Waste found in college backyard

Sl. No.	Types of waste	Disposal method
1	Solid waste collection and disposal system	The daily waste of college is segregated and disposed of at nearby garbage by college swiper
2	Waste water collection and disposal system	Not present
3	Toxic (Lab etc) and e-waste collection and disposal system	Not present

II. Waste water collection and disposal system

The regular wastewater generated from toilets, basins, kitchens, and garden runoff on the college campus is disposed of through the existing drainage system. However, it was noted that there is no dedicated wastewater disposal or treatment plant present on the campus. This lack of specific treatment infrastructure means that the wastewater is not treated before being discharged, which could have implications for environmental compliance and sustainability practices. The absence of a treatment plant highlights an area for potential improvement in the college's waste management strategy to ensure that wastewater is handled in an environmentally responsible manner.

III. Waste collection and disposal system

The college diligently manages its solid waste by ensuring regular collection and disposal to maintain a clean and healthy campus environment. Waste bins are strategically placed throughout the campus to facilitate easy disposal by students, faculty, and staff. However, despite the efficient collection system, the college currently lacks a formal recycling procedure. As a result, all types of waste, including paper, plastic,

and other recyclable materials, are disposed of together without being sorted for recycling. This absence of a recycling process not only increases the volume of waste sent to landfills but also represents a missed opportunity for the college to contribute to environmental sustainability. Implementing a recycling program could significantly reduce the environmental footprint of the campus by diverting waste from landfills and promoting resource conservation. Additionally, introducing educational initiatives and infrastructure for recycling could engage the campus community in sustainable practices, fostering a culture of environmental responsibility and awareness.

IV. Per capita municipal waste generated annually

The college employs a comprehensive waste management system to address the diverse types of waste generated on campus. E-waste is managed through repair and recycling processes, ensuring that electronic items are either refurbished for further use or properly recycled to recover valuable materials. Plastic and solid waste are collected by municipal services, which handle their appropriate disposal and recycling where possible. Chemical waste is carefully disposed of in a designated soak pit, designed to neutralize and safely contain hazardous substances. Paper waste is managed through a combination of dumping and recycling efforts, aiming to reduce environmental impact and promote resource recovery. Garden waste is incinerated to safely dispose of organic materials. This multi-faceted approach reflects the college's commitment to effective and sustainable waste management practices.

SECTION 5
AMBIENT AIR & NOISE QUALITY

5.1. Ambient Air Quality

I. Ambient Air quality in the campus

Daily vehicular traffic on the college premises includes approximately 90 two-wheelers and 10 fourwheelers, reflecting a significant amount of movement within the campus. Despite this, there is currently no system in place to monitor Pollution Under Control (PUC) certificates, vehicle exhaust gas analysis, or the noise and vibration pollution caused by these vehicles. This lack of monitoring means that the college is not currently assessing or managing the potential environmental impact and health implications associated with vehicular emissions and noise pollution. Implementing such a system could help in reducing the environmental footprint of the campus traffic, ensuring compliance with environmental standards, and promoting a healthier campus environment.

II. Ventilation system

The college premises are adequately aired, with classrooms designed to be well-ventilated, ensuring a continuous flow of fresh air. This thoughtful architectural feature creates a comfortable and healthy learning environment for students and faculty alike. Additionally, the abundant flora on the college grounds plays a crucial role in enhancing air quality. The plants and trees not only beautify the campus but also act as natural air purifiers by absorbing carbon dioxide and other gases, thus contributing to a cleaner and more sustainable atmosphere. This combination of good ventilation and strategic landscaping underscores the college's commitment to providing a healthy and conducive environment for education.

III. Source of air pollution

The primary sources of air pollution at the college stem from vehicle exhausts associated with traffic accessing the campus. Despite the college's location being relatively distant from the main road, which mitigates direct exposure to roadway emissions, vehicular pollutants still pose a significant concern. The absence of major industrial facilities within a 500-meter perimeter of the college further underscores that vehicle emissions are the predominant contributors to local air quality degradation.

SECTION 6
BIODIVERSITY

6. Biodiversity

I. Biodiversity assessment report

Major tree species

The college campus hosts a diverse array of tree species, contributing to its rich biodiversity and ecological balance. Among the major species observed is the Indian Jujube (Ziziphus mauritiana), belonging to the Rhamnaceae family, with a quantity of eight trees and an IUCN Red List status of "Least Concern" (LC). The Arecaceae family is well-represented with 15 Wild Date Palms (Phoenix sylvestris) and 10 Senegal Date Palms (Phoenix reclinata), the latter also listed as LC. The Fabaceae family includes 24 Cassie trees (Vachellia sarnesiana) and eight Cow Tamarind trees (Samanea saman), both of which are vital to the campus environment. The Meliaceae family contributes with seven Neem trees (Azadirachta indica), classified as LC, and 13 Cuban Mahogany trees (Swietenia mahagoni), which are noted as "Near Threatened" (NT). The Coconut Palm (Cocos nucifera) is the most numerous, with 30 individuals, alongside an equal number of Banana Trees (Musa paradisiaca linn) from the Musaceae family. Additionally, the Poaceae family is represented by seven Wamin Bamboo (Bambusa vulgaris), adding to the campus's botanical variety. These species not only enhance the aesthetic appeal of the campus but also play a crucial role in supporting the local ecosystem.

Table 11: List of major tree species observed in the college campus

List of major tree species observed in the college campus					
Sl No.	**Family**	**Common name**	**Scientific name**	**IUCN red list status**	**Quantity**
1	Rhamnaceae	Indian Jujube	*Ziziphus mauritiana*	LC	8
2	Arecaceae	Wild date Palm	*Phoenix sylvestris*		15
3	Fabaceae	Cassie	*Vachellia sarnesiana*		24
4	Meliacear	Neem	*Azadirachta indica*	LC	7
5	Arecaceae	Senegal Dat palm	*Phoenix reclinata*	LC	10
6	Aeracaceae	Coconut Plam	*Cocos nucifera*		30
7	Poaceae	Wamin Bamboo	*Bambusa vulgaris*		7
8	Meliaceae	Cuban Mahogany	*Swietenia mahagoni*	NT	13
9	Fabaceae	Cow Tamarind	*Samanea saman*	LC	8
10	Musaceae	Banana Tree	*Musa paradisiaca linn*		30

The college campus is home to a diverse collection of plant species, enhancing its ecological diversity and aesthetic value. The Rubiaceae family is represented by a single Gardenia (Gardenia jasminoides), classified as "Least Concern" (LC) on the IUCN Red List. The Apocynaceae family contributes six Periwinkle plants (Catharanthus roseus), while the Solanaceae family includes one Night Jasmine (Cestrum nocturnum), also listed as LC. Among the Garryaceae family, the Japanese Aucuba, or Gold Dust Plant (Aucuba japonica), is present in a single specimen. The Arecaceae family includes two Areca Palms (Dypsis lutescens), noted as "Near Threatened" (NT). The Asparagaceae family is represented by one Lily (Cordyline fruticosa) and four Aloe Vera plants (Aloe officinalis Forssk). The Araceae family is marked by one Pothos (Epipremnum pinnatum), while the Araliaceae family includes one Geranium-Leaf Aralia (Polyscias guilfoylei), with an LC status. The Agavaceae family adds four Song-of-India plants (Dracaena reflexa Lam), and the Fabaceae family has one Lam Licorice (Glycyrrhiza glabra). The Lamiaceae family contributes two Holy Basil plants (Ocimum tenuiflorum), while the Rutaceae family has one Curry Leaf Plant (Bergera koenigii), classified as LC. Additionally, the Crassulaceae family includes three Cathedral Bells (Kalanchoe pinnata), and the Molluginaceae family has one Green Carpetweed (Mollugo verticillata). These species not only add to the campus's visual appeal but also support its ecological balance.

Table 12: List of some medicinal plants observed in the college campus

Sl No.	Family	Common name	Scientific name	IUCN red list status	Quantity
1	Rubiaceae	Gardenia	*Gardenia Jasminoides*	LC	1
2	Apocynaceae	Periwinkle	*Catharanthus Roseus*		6
3	Solanaceae	Night Jasmine	*Cestrum Nocturnum*	LC	1
4	Garryaceae	Japanese Aucuba, Gold Dust Plant	*Aucuba Japonica*		1
5	Arecaceae	Areca Palm, Golden Cane Palm	*Dypsis Lutescen*	NT	2
6	Asparagaceae	Lily	*Cordyline Fruticosa*	LC	1
7	Asparagaceae	Aloe Vera	*Aloe Officinalis Forssk*		4
8	Araceae	Pothos, Devil's Ivy	*Epipremnum Pinnatum*		1
9	Araliaceae	Geranium-Leaf Aralia	*Polyscias Guilfoylei*	LC	1
10	Agavaceae	Song-of-India, Pleomele	*Dracaena Reflexa Lam*		4
11	Fabaceae	Lam Licorice, Licorice	*Glycyrrhiza Glabra*		1
12	Lamiaceae	Tulasi, Holy Basil	*Ocimum Tenuiflorum*		2
13	Rutaceae	Currybush, Curry Leaf Plant	*Bergera Koenigii*	LC	1
14	Crassulaceae	Cathedral Bells, Air Plant	*Kalanchoe Pinnata*		3
15	Molluginaceae	Green Carpetweed, Indian Chickweed	*Mollugo Verticillata*		1

II) In-house, gardening and tree management

The Eco-Club of Shishuram Das College takes pride in organizing an annual plantation program that significantly contributes to the campus's greenery and environmental sustainability. Each year, this initiative brings together students, faculty, and community members in a collaborative effort to plant and nurture a variety of plant species. Despite not having a professional gardener on staff, the Eco-Club manages all aspects of gardening and maintenance with dedication and enthusiasm. This hands-on approach not only fosters a sense of responsibility and environmental stewardship among participants but also enhances their understanding of horticulture and ecological conservation. The plantation program is a testament to the club's commitment to promoting green practices and creating a more sustainable campus environment. Through these efforts, the Eco-Club continues to inspire and educate the college community about the importance of preserving and enhancing natural spaces.

III) Any wetland / grove / rare tree etc in the campus?

Shishuram Das College has established and maintained a diverse collection of medicinal plants on its campus, reflecting its commitment to promoting traditional knowledge and sustainable practices. This carefully curated selection of plants serves not only as a living repository of valuable botanical resources but also as a dynamic educational tool for students and faculty alike. The medicinal garden includes a variety of species known for their therapeutic properties, offering insights into their historical and contemporary uses in herbal medicine. By preserving these plants, the college provides opportunities for research and learning about the healing potential of nature, while also contributing to the conservation of plant biodiversity. The garden is an integral part of the campus, fostering an environment that encourages exploration and appreciation of natural remedies. This initiative underscores the college's dedication to integrating ecological awareness with academic growth, ultimately enriching the educational experience and promoting health and wellness within the community.

SECTION 7
GENERAL AWARENESS

7. General Awareness

I. Environmental Awareness of staff, teachers and students

The college staffs demonstrate a strong awareness and appreciation for the environment, particularly regarding the floral diversity present on campus. Recognizing the importance of sustainability, the college authority has taken proactive measures such as installing rainwater harvesting systems across the college rooftops. These systems play a crucial role in replenishing the groundwater table, contributing to water conservation efforts. Additionally, the college actively promotes biodiversity by regularly planting various types of medicinal plants, which are meticulously maintained by a dedicated gardener. This commitment to green practices extends to encouraging eco-friendly transportation methods, evidenced by the provision of a bicycle stand for students, further emphasizing the institution's dedication to fostering a sustainable and environmentally conscious campus community. Notably, one of the students had completed a project on Global Warming under Environmental Studies.


SHISHURAM DAS COLLEGE

Affiliated to University of Calcutta

Environmental Studies (AECC-2) Project Completion Certificate, 2023

This is to certify that Tiasha Halder, a student of Semester-II at Shishuram Das College, with Registration number 571-1211-0003-22, has completed a project on 'Global Warming'.

Project Supervisor (Environmental Studies)
Shishuram Das College

Principal
Shishuram Das College
Bhusna, Kamarpole, 24 Pgs. (S)

Photograph 1: Certificate of Project Completion

II. Environmental awareness campaign

The college consistently observes World Environment Day annually, marking the occasion with various activities and initiatives aimed at raising awareness about environmental conservation and sustainability. Beyond this special event, the college organizes a wide range of environment awareness programs throughout the year. These programs encompass diverse activities such as workshops, seminars, tree plantation drives, clean-up campaigns, and educational sessions on topics like waste management,

renewable energy, and biodiversity conservation. By engaging the campus community in these ongoing efforts, the college instills a sense of responsibility and stewardship towards the environment, fostering a culture of environmental awareness and activism among students, faculty, and staff. This sustained commitment to environmental education and advocacy underscores the college's dedication to promoting a greener and more sustainable future.

III. Awareness communication

During the survey period, no environmental awareness-related communication in terms of banners, posters, or wall writings was observed on the college premises. This absence of visual messaging highlights a potential opportunity for the college to enhance its efforts in promoting environmental awareness and sustainability among the campus community. Implementing visible and informative signage can serve as a valuable tool for raising consciousness about environmental issues, encouraging eco-friendly behaviors, and fostering a culture of environmental stewardship. By incorporating such communication strategies, the college can effectively engage students, faculty, and staff in environmental initiatives and inspire collective action towards a greener and more sustainable campus environment.

SECTION 8
ENVIRONMENTAL COMPLIANCES

8. Environmental Compliances

I. Cleanliness in sanitation units

The cleanliness of the sanitation units within the college was notably prominent. Throughout the premises, the sanitation facilities, including restrooms and washrooms, were well-maintained and tidy, reflecting the college's commitment to providing a hygienic and comfortable environment for its students, faculty, and staff. The evident attention to cleanliness not only ensures the health and well-being of the campus community but also fosters a positive and conducive atmosphere for learning and working. This emphasis on sanitation underscores the college's dedication to upholding high standards of hygiene and promoting a pleasant experience for all individuals on campus.

II. Safety in Laboratory

Safety within the college laboratories is diligently maintained, ensuring a secure environment for students and faculty engaging in various scientific endeavors. Each laboratory is equipped with essential safety features such as exhaust systems and fire extinguishers, demonstrating the college's commitment to prioritizing the well-being of its occupants. These safety measures not only mitigate potential hazards but also adhere to industry standards and regulations, providing a conducive space for experimentation and research. By upholding stringent safety protocols and ensuring the availability of necessary safety equipment, the college fosters a culture of responsible laboratory practices, promoting both academic excellence and the protection of individuals within the laboratory setting.

III. Segregation of waste at source

While waste segregation measures are implemented within the college, and municipal waste collectors regularly visit to collect the waste, the campus was observed to have accumulated plastic waste during the survey period. Additionally, heaps of different types of waste were found in the backyard of the college. Despite these observations, the college actively participates in waste segregation efforts by regularly separating paper and electrical wastes for recycling purposes. This commitment to waste management reflects the college's recognition of the importance of environmental sustainability and its dedication to minimizing its ecological footprint. However, addressing the issues observed during the survey, such as the accumulation of plastic waste and unattended heaps of waste, presents an opportunity for the college to further enhance its waste management practices and foster a cleaner and greener campus environment.

IV. Air pollution management and preparedness (Smoke dousing, dust precipitating, window cover etc)

The college lacks dedicated air pollution monitoring units and has not implemented specific measures for mitigating air pollution. However, all windows across the campus are properly covered.

VI. Water wastage reduction vigilance

The college has established a comprehensive Water Wastage Reduction Vigilance Program to promote sustainable water use and mitigate unnecessary consumption. This initiative includes the installation of water-efficient fixtures such as low-flow faucets, dual-flush toilets throughout campus facilities to ensure optimal water usage. A robust maintenance protocol is in place to promptly address leaks and plumbing issues, preventing water loss. The program also encompasses educational campaigns designed to raise awareness among students, faculty, and staff about the critical importance of water conservation and to encourage responsible water use practices. To further support these efforts, the college has implemented rainwater harvesting systems, which collect and utilize rainwater for irrigation and other non-potable applications, thereby reducing the reliance on municipal water supplies. Through these measures, the college demonstrates a strong commitment to environmental stewardship and resource conservation.

SECTION 9
RECOMMENDATIONS

9. Recommendations

1. Introduce waste minimization and proper segregation on campus, as observed plastic waste behind toilets needs appropriate disposal.
2. Install garbage units for multi-level waste segregation, including paper, construction debris, glass, metal scrap, and food waste, and implement recycling plans for each type.
3. Use of alternative energy sources should be introduced.
4. Implement regular air quality monitoring or mandate PUC certificate checks for all vehicles entering the campus.
5. Introduce air pollution monitoring unit.

Progyan Foundation for Research & Innovation

Progyan Foundation For Research & Innovation (PFRI)

PROGYAN is an independent policy-science action research organization working as a subsidiary wing of the South Asian Forum for Environment (SAFE), which is a regional CSO and a major stakeholder in the UN Environment towards knowledge economy for all stakeholders to act in this climate milieu. PFRI, SAFE is accredited with ISO 14001:2015 certification and registered as a non-profit Section 8 company in India, committed to advancing scientific knowledge across socio-economies and socio-ecologies in developing adaptive guidelines and operational frameworks, sustainable solutions for resource optimization and climate change, in both rural and urban settings through innovation and research. The major scopes for PFRI include Strategic Environmental Impact Assessment and Institutional Green Audit along with field and analytical research.

This is to certify that the 'Progyan Foundation for Research and Innovation' (PFRI), Kolkata 700099 has conducted a brief and precise 'Green Audit' for the 'Shishuram Das College', during the assessment year 2022 to June 2023. The Green Audit was performed in accordance with the applicable standards prescribed by the Central Pollution Control Board and Ministry of Environment, Forests and Climate Change, Government of India, and following NAAC guidelines. The audit involves energy, water, waste, and biological inventories and gives recommendations that the institute can follow to improve the energy, water, waste, and environmental scenarios of the said institute.

Malancha Dey

Dr. Malancha Dey
(Director & Senior Scientist, PFRI)
Date: 21. 06. 2023

PROGYAN FOUNDATION FOR RESEARCH & INNOVATION
Kolkata
700099
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OUR COLLEGE ORGANIZED AN AWARENESS PROGRAMME ON 'PLANTATION'

The Eco-club of Shishuram Das College organized a comprehensive awareness program centered on tree plantation. The initiative began with a mass campaign involving a march from the college to Sarisha More, aimed at raising environmental consciousness among local residents. During this march, students and professors engaged the community in discussions about the benefits of tree planting and environmental conservation.

A key highlight of the program was a street play performed by the students, which depicted the historic Chipko movement. This powerful performance illustrated the crucial role of community activism in protecting forests and underscored the importance of individual and collective action in environmental conservation.

In addition to the awareness campaign, the eco-club undertook a significant tree planting effort. They planted numerous trees along both sides of the Falta SEZ road and near the BDO office. This hands-on activity aimed to enhance local green spaces and demonstrate practical steps for improving the environment.

To further extend their impact, the eco-club distributed tree saplings to local residents. They provided information on how to care for the saplings and encouraged the community to actively participate in ongoing tree planting efforts. The distribution was accompanied by motivational talks to inspire residents to contribute to tree conservation.

Overall, the program successfully combined education, community engagement, and direct action to promote environmental sustainability.

Beyond the campus environmental promotion activities

OUR COLLEGE CELEBRATE WORLD CYCLE DAY EVERY YEAR

Every year, Shishuram Das College celebrates World Cycle Day with great enthusiasm and a variety of activities aimed at promoting sustainable transportation and healthy living. The event, organized by the Department of Physical education, brings together students, faculty, and local community members to highlight the benefits of cycling. The day typically begins with a mass cycling rally, where participants cycle through the town, spreading the message of eco-friendly transportation. The rally starts from the college campus and follows a predetermined route, passing through key areas and landmarks, including Sarisha 246 More. Cyclists of all ages join in, creating a vibrant and energetic atmosphere.

Professor Toufik Gazi delivered a speech on the importance of bicycles in promoting sustainable transportation and healthy living.