




**GOVERNMENT OF WEST BENGAL**  
*Office of the Principal*  
**Government General Degree College, Kaliganj**  
**Debagram, Nadia - 741137**  
**Ph: 03473-267514**  
**Website: [www.kaliganjgovtcollege.ac.in](http://www.kaliganjgovtcollege.ac.in)**

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**GREEN AUDIT REPORT**  
**Academic Session 2021-2022**

  
Officer-in-charge  
Government General Degree  
College, Kaliganj  
Debagram, Nadia



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# GREEN AUDIT REPORT

**GOVT. GENERAL DEGREE COLLEGE,  
KALIGANJ**



**FOR THE  
ACADEMIC YEAR**

**2021 - 2022**

*M. Halim*  
Officer-in-charge  
Government General Degree  
College, Kaliganj  
Debagram, Nadia



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**GREEN AUDIT CERTIFICATE**

*Certificate*

This is to certify that Govt. General Degree College, Kaliganj has conducted detailed Green Audit for the academic year 2021-22 for their campus by submitting necessary data and credentials for through scrutiny. The day-to-day practices or activities of the campus was found satisfactory and the genuine efforts of the students, faculty members and staffs towards ecology and environment is highly appreciated and commendable.

*Mahua Pal* 9.7.22

(DR. MAHUA PAL)  
केन्द्रीय राष्ट्रीय पादपालय  
Central National Herbarium  
भारतीय वनस्पति सर्वेक्षण  
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**1. Green Audit Team**

| Sl. No. | Name of the members          | Designation   |
|---------|------------------------------|---|
| 1.      | Dr. Tulika Talukdar (Lahiri) | Officer-in-charge,<br>Govt. General Degree College, Kaliganj                |
| 2.      | Dr. Mahua Pal                | Botanist,<br>Central National Herbarium,<br>Botanical Survey of India       |
| 3.      | Dr. Sudipta Pramanik         | IQAC Coordinator &<br>Assistant Professor & Head,<br>Department of Sanskrit |
| 4.      | Dr. Anikul Islam             | NAAC Coordinator &<br>Assistant Professor,<br>Department of Chemistry       |
| 5.      | Dr. Prosenjit Ghosh          | Assistant Professor & Head,<br>Department of Zoology                        |
| 6.      | Shri Partha Lodh             | Assistant Professor & Head,<br>Department of Botany                         |
| 7.      | Dr. Mithun Sarkar            | Assistant Professor & Head,<br>Department of Chemistry                      |
| 8.      | Shri Krishnendu Dalui        | Assistant Professor & Head,<br>Department of Physiology                     |

Compilation of the Report:

Shri Partha Lodh,  
Jt. Convenor, Ecoclub,  
Govt. General Degree College, Kaliganj



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**1. INTRODUCTION**

**E**cology has always been an important aspect of planning and development in our civilization even before the coinage of the term itself and the assignment of concept or meaning associated with the term. Even to this date this concept has been realized and practiced towards sustainable development to some extent worldwide. A College is an academic institution which not only a mirror of society, but it produces a responsible citizen who can work for the nation. But in order to carry out day to day activities of an educational institute we utilize a major section of natural resources in direct form such water or energy in terms of electricity and generate waste in various forms. It is important to monitor the institutions' activity carefully in this regard otherwise it may lead to adverse environmental impacts as well. A careful and planned activities considering the environment can not only minimize the detrimental effects, but it adds up to the generating interest and awareness and ultimately making the stakeholders of the institutions responsible towards environment. A critical environmental assessments and continuous monitoring can play a big role in not only developing the institution in most sustainable manner but also making the students and teachers more responsible for working for the environment.

Considering all of the aspects of need of environmental consideration in day to day academic life of an institution, the National Assessment and Accreditation Council (NAAC) has made the annual green audit mandatory for all Higher Education Institutions. It comes under the Criteria VII of NAAC, an autonomous body under UGC to conduct assessments and accreditation in different grades. It is also a moral responsibility for the institutes to be aware of the present environmental practices that are presently in practice or needed to enforce in order to reduce the carbon footprint by various measures.



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## 2. GOALS FOR AUDIT

The main purpose of the green audit is to promote Environmental Management and green practices to be adopted in the campus. The audit aims to identify, quantify and formulate the framework for environmental sustainability. The main objectives may be outlined as follows:

1. Formulation and/or updating of environmental management policies for the organization.
2. Assessment of environmental impacts of each and every processes and operation of air, water and soil.
3. Detection of any wastage of water by leakage, spills or other such problems if any.
4. Providing an indication of the effectiveness of the system and suggestion for environment.
5. Enabling management to develop environmental strategy for approaching towards a green corporate culture.



Figure 1 Satellite Image of the Entire Campus



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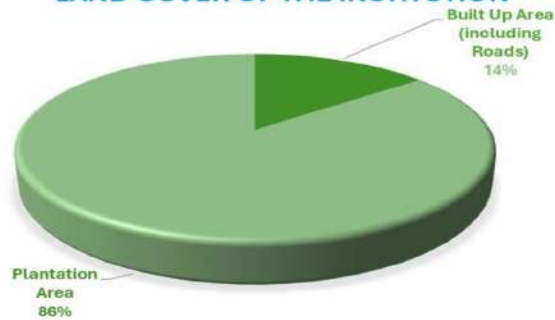
**3. ABOUT THE COLLEGE**

**3.1. LAND USE OF CAMPUS:**

Total Area of the College: 5 Acre

| Area/Building  | Category            | Area (in Sq. m)                 |
|--|---------------------|---------------------------------|
| Guard Room   | Building            | 15.2                            |
| College Academic Building                                    | Building            | 736                             |
| Cycle Shed (Northern Flank)                                  | Other Build Up Area | 236.4                           |
| Student Activity Room  | Building            | 322                             |
| Cycle Shed (Southern Flank)                                  | Other Build Up Area | 204.4                           |
| Shed for Students section I                                  | Other Build Up Area | 56.6                            |
| Shed for Students section II                                 | Other Build Up Area | 18                              |
| Hostel Building  | Building            | 236.2                           |
| Cemented Pathway in front of College                         | Other Build Up Area | 669.9                           |
| Cemented Pathway upto Hostel building from Academic Building | Other Build Up Area | 400                             |
| <b>Total Build Up area including cemented Pathway</b>        |                     | <b>2894.7 Sq. m = 0.72 Acre</b> |
| <b>Total Area of College</b>                                 |                     | <b>5 Acre</b>                   |
| <b>Area available for Green Cover</b>                        |                     | <b>4.28 Acre</b>                |

**LAND COVER OF THE INSTITUTION**



\* Source: Form No. 4879, PWD Form No. 45B Rf. 'Construction of different structures of new Government General Degree College at Kaliganj in the district of Nadia' and Google Earth (<https://earth.google.com/web/@23.70504858,88.29509599,37.16444334a,501.81611775d,35y,0h,0t,0r/data=!0m!KATA>) Accessed 23.04.2022.





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#### 4. EXECUTIVE SUMMARY

Green audit is conducted to assess whether the day-to-day practices of the institution are in conformity with the ecology and sustainability. It gives us a temporal snapshot of our trends of utilization of natural resources such as water, electricity, or fossil fuel by which we can assess the overall ecological footprint and force us to think about the imperative planning required to reduce it for our environment. In this difficult time of climate change and natural resource depletion green audit is a keystone for converting the campus green and sustainable.

This is the second attempt to conduct green audit of the campus in conformity with the NAAC Criteria. It was focused on energy consumption and management, water usage and management of wastewater, the biodiversity of the campus, management of waste disposal and carbon footprint and sequestration of the campus.

#### 5. ACKNOWLEDGEMENT

We would like to thank Dr. Tulika Talukdar (Lahiri), Officer-in-charge, Govt. General Degree College, Kaliganj for her consent to undertake this audit. We would like to sincerely thank all departments, students, faculty members and non-teaching staff for their kind cooperation during the survey.

#### 6. METHODOLOGY

To perform green audit, the methodology adopted included different tools such as preparation of questionnaire, ground verification and physical inspection of the campus, documentation of observations and scrutiny of existing documents related to the green practices or on study reports of the key components such as air, water, soil of the campus, interviewing key persons, analysis of data, representation after measurements if needed and summarizing the recommendations. The entire study was conducted considering the following aspects mainly:

- A) Energy Consumption and Management
- B) Water Budgeting and Management



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- C) Waste Disposal and Recycling
- D) Greening the campus
- E) Carbon footprint and carbon neutralization

**7. GREEN AUDIT ANALYSIS**

**7.1. GENERAL INFORMATION OF COLLEGE**

**Q1: Green Audit conducted earlier for the institute?**

No, this is the first time green audit is being conducted.

**Q2: What is the total strength of the institute? (in terms of people count) ?**

427 including Students, Faculty Members and non teaching and support staffs  
[Students: 389; Faculty Members: 23; Librarian-1; Non-Teaching Staffs: 13,  
Canteen Staff: 01]

**Q3: What is the total number of working days of your campus in a year?**

There are one hundred and ninety eight working days in a year as per Holiday List.  
Although the College remain open for other Administrative Purposes during  
Summer and Puja Vaccation.



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**Q4: Where is the institute located?**

The institute is located at Village- Debagram, Beside NH-12 (earlier NH34) Highway, about 1.5 km northbound from nearest railway station named Debagram.

**Q5: Which of the following are found near your institute?**

|                 |                 |                              |
|-----------------|-----------------|------------------------------|
| Playground: Yes | Toilets: Yes    | Hostel: Yes (but not opened) |
| Garden: Yes     | Laboratory: Yes | Guest House: No              |
| Kitchen: Yes    | Canteen: Yes    |                              |

**Q6: Which of the following are found near your institute?**

|                                    |                    |
|------------------------------------|--------------------|
| Dump Yard: No, Not in the vicinity | Open Drainage: No  |
| Garbage Heap: None                 | Industry: No       |
| Public convenience: Available      | Stagnant Water: No |

## **7.2. WASTE DISPOSAL AND RECYCLING**

**Q1: Does the institute generate waste? If so what are they?**

Yes, Solid waste, liquid waste, canteen waste, laboratory waste and e-waste.

**Q2: What is the amount of waste generated per day (in kg)?**

Biodegradable Waste: 08 Kg;  
Non-biodegradable Waste: 3 kg;  
Other Waste: <0.5 kg



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**Q3: How is the waste managed in the institute? By composting, Recycling, Reusing, Others (specify)?**

Waste are catagorised and disposed according to their colour coded bins. Food waste recycled by using in vermicomposting, Plastics are prohibited in campus

**Q4: Do you use recycled paper in the institute?**

Although there is no paper recycler but students takes initiative in making recycled paper using waste paper of the institute and use them in wall magazine of departments such as in Botany Department.

**Q5. How do you spread the message of recycling to others in the community?**

By Installation of Colour coded Waste bins for recycling Consultation with University for e-waste collection Awareness among students by posters, seminars etc.

**Q6: Can you acheive zero garbage in the campus?**

Not acheived yet but possible through strict waste management policy and planning and by waste minimization and awareness it can be acheived in future

### **7.3.WATER MANAGEMENT**

**Q1: List water usage in the institute**

The followings are a list of water usage types: Drinking Water (Through Water Purifiers), Kitchen of Canteen and Toilets, Gardening and others. The usgae of water in total is estimated to be 4666 Lit./day



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**Q2: Do the institute have effective system for water recycling?**

Although the waste water is disposed off in soak pits but a rain harvesting system is in place which is used for gardening purposes to reduce the need of water for the gardening.

**7.4. GREENING THE CAMPUS**

**Q1: Is there a garden in the institute**

There are separate gardens in place, one maintained by Red-Cross society, one medicinal plant garden maintained by the college as well.

**Q2: Total number of Plants in campus?**

There are 126 Trees in the campus, the number of hedge plants estimated to be more than 1000 and the entire grass cover is measured to be 17320 sq.m

**Q3: Is there any plantation programme and plant distribution programme for students and community?**

Yes, Plantation programmes frequently organized by NSS and Ecoclub as well inside the campus and beyond the campus as well. NSS distribute seedings and saplings to the adopted villages and to the students as well as a part of their extension activity and community services.

**7.5. CARBON FOOTPRINT AND SESQUESTRATION**

**Q1: Electricity used per year- CO<sub>2</sub> emission from electricity**

(electricity used per year in kWh/1000) x 0.84  
(146820/1000) x 0.84  
=123.32 tons



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Q2: LPG gas used in per year - CO<sub>2</sub> emission from LPG

(LPG used per year in kg) x 2.99  
= in Chemistry Lab 38 kg and in Canteen 113.6 kg x 2.99  
=(38+113.6) x 2.99 kg = 151.6 x 2.99 = 0.045 tons

Q3: Diesel/Petrol used per year - CO<sub>2</sub> emission from generator

There is no generator in existence in the college campus, hence CO<sub>2</sub> emission is NIL in this aspect. There is no college-owned vehicles either. The only usage of diesel or petrol is in case of grass cutter machine  
(Diesel/Petrol used per year in liters) x 2.68 = 36 x 2.68 = 0.096 tons

- Total CO<sub>2</sub> emission per year= 123.46 tons
- After consideration of carbon sequestration capacity of campus the net carbon emission is 73.62 tons only.

## 8. DETAILED EVALUATION OF GREEN AUDIT

### 8.1. ENERGY CONSUMPTION AND MANAGEMENT

- ⬇ Percentage of annual lighting power requirement met through LED bulbs: 16.13%
- ⬇ Annual lighting power requirement met through LED bulbs (in KWH) – 4.74
- ⬇ Annual lighting power requirement (in KWH)- 26.14
- ⬇ Percentage of annual lighting power requirement met through other sources: 81.87%
- ⬇ Use of renewable energy: A Solar light has been installed in front of main Entry Gate.

In order to make the efficient use of Electricity the following actions have been taken by college as noted during the audit.

**Efficient Day Lighting:** The college is designed to optimally utilize natural light. Rooms and Laboratories are buffered by long wide corridors; each room has ample glass paneled windows for optimal utilization of natural light. Similarly, Lab & Office orientation were made to maximize the use of natural light during day time, facilitating lesser use of light.

**Save Electricity and Switch off Drive:** 'Save Electricity' campaigns are conducted throughout the academic year. As a result, stickers near the switchboards of classrooms urging users to switch off lights and fans on their way out has been



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noted. Postering & campaigning were made to promote various good practices like "Switch Off" drive,

**Efficient Use of HVAC Systems:** AC were Turned off after sufficient cooling during summer days. Additionally, Ecoclub celebrates NO AC Day once a month on the last Saturdays of the month.

**Optimization of Electrical Appliances and Devices :** Most of the Equipments & Computers were run in Power saver mode to save more electricity. As a part of Energy usage monitoring by Ecoclub it has been noted that running the existing monitors connected to the PC in 1366 x 768 resolution saves around 2 Watts of Electricity. As a result all PC were optimized as such to save around 45 Watts of electricity as a whole.

**Usage of IOT (Internet of Things) devices** such as smart plugs in Department of Botany in equipment such as incubators, slide warming tables to switch of the appliances remotely at proper time to save electricity.

**Continuous Monitoring :** Regular monitoring of electric ware to avoid wastage of electricity as well as casualties is done by PWD Electrician.



Picture of Solar Light installed at the entrance of the building

**Using Renewable Energy:** In addition to the solar light installed at gate, solar calculators were used.



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**8.2. WATER BUDGETING AND MANAGEMENT**

**Results of Water Auditing:**

|  |   |
|--|---|
| ✚ No of Water Tanks- Installed                       | 2 x 2000 Lit. Tank for Canteen and Gardening<br>4 x 2000 Lit. for Main Building<br>2 x 500 Lit. as Rainwater Harvesting System used for Gardening<br>This excludes 2 x 2000 Lit. Tank installed in Hostel not in use during this entire auditing period |
| ✚ Source of Water                                    | Borewell Plant  |
| ✚ No of borewell Pump                                | 2   |
| ✚ No of Water Cooler with Drinking water filtration- | 4   |
| ✚ No. of Urinals:                                    | 31  |
| ✚ No of Toilets:                                     | 14  |
| ✚ No of basins with taps:                            | 21  |
| ✚ No of taps with leakage:                           | None  |
| ✚ Average Water usage:                               | 4866.6 Lit./day (Considering 6 working days per week)   |

**Waste Water Management:**

Wastewater along with the Liquid waste from the campus is disposed off through a well developed drainage system and pipelines into the high drains. Liquid chemical waste from Department of Chemistry is disposed off into a



separate soak-pit to avoid direct contamination. To avoid arsenic, lead and  
Plate: A. Borewell near ground, B. Rainwater Harvesting System





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Cadmium pollution, the Department of Chemistry has restricted the use of any such chemicals.

**Evaluation of findings of Water Auditing:**

The college have a storage capacity of 8000 Lit. of water for general usage in the main building and additionally tanks with 4000 Lit. of storage capacity above student activity center to be utilized in canteen, common room facility and for gardening purposes. Therefore, the average usage of water per day is estimated to be 4666.6 Lit. per day (3166 Lit. for students and staffs and 1000 Litter for Canteen and Gardening). The quality of the drinking water from the water purifiers was also good and TDS calculated for the drinking water is 211 and no bacterial growth was observed while plating on Nutrient Agar (As per Project Report from Botany Department). The College has an additional 1000 Lit. Capacity of Rainwater Harvesting set up used only for gardening purposes, for players' usage after matches as well as for cleaning of garage & other parts of college premises.

**8.3. WASTE DISPOSAL AND RECYCLING**

8.3.1. Solid Waste Management- A proper waste management system is an essential part of keeping the campus clean and free from pollution. In order to ensure this the institution has a total waste management system developed scientifically, keeping in mind the nature of waste- materials inside the campus. We have installed waste-bins of diverse colours for disposal of solid and e- waste which are further classified into biodegradable and non- biodegradable. The waste bins are tagged into three categories as "Plastic and Glass waste", "Food Waste" and "Metal and e-Waste". The waste bins have been properly labeled and installed in convenient places both inside and outside the building in both campuses. The students, teachers and non teaching members are encouraged to use the bins when needed. Napkin Incinerator is installed as a part of Solid waste management system.



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- 8.3.2. **Liquid Waste-** Liquid waste from the campus is disposed off through a well developed drainage system and pipelines into the high drains. Liquid chemical waste from Department of Chemistry is disposed off into a separate soak-pit to avoid direct contamination. To avoid arsenic, lead and Cadmium pollution, the Department of Chemistry has restricted the use of any such chemicals.
- 8.3.3. **e-waste management-** The institution being a government body, P.W.D (Electricals) looks after the e-related waste management.
- 8.3.4. **Green Laboratory Practices:** The Department of Chemistry has been leading the movement for green practices in the laboratory and management of chemical waste. Green practices are followed by minimizing the quantity of chemicals required for different experiments by employing dilute solutions, using smaller burettes and pipettes and performing experiments in groups where feasible. Solutions for disposal are neutralized, e.g. during titrations, and flushed down the sink using copious amounts of water. Acid in some cases is to be precipitated with ferric alum.
- 8.3.5. **Biological Hazards:** All microbes, animals, blood, sera, and cells of animal origin are potentially infectious. As part of laboratory protocol, the general advisory is to:
- Use gloves while handling such materials, especially if there is a wound or scratch.
  - All plastic ware used for storing live samples should be autoclaved prior to disposal as general laboratory waste.
  - Use extreme caution when handling sharp cutting devices such as blades, scalpel, razor, blade or needles; these are disposed in a specific Disposal Container
  - Use bacterial culture under a bio-safety cabinet and autoclave it before discarding.
  - Fire and Electrical Hazards: Power supplies and electrical equipment pose fire hazard and electric shock hazards, if not used properly.



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Students are advised not to operate any electrical equipment with wet hands; ensure that storage and handling of flammable solvents (e.g. ether, methanol etc.) is far from the burners. Specific instructions for using autoclaves and centrifuges are explicitly displayed.

- Fire extinguishers are kept full and readily accessible for any emergency.



Plate : Waste Bins of Different Colours at Different Places: A. Green Dustbin for Biodegradable Waste near Canteen, B. Blue Dustbin for Plastic Waste (Non-biodegradable) at Main building, C. Green Bin at Botany Department, D. Blue Waste Bin at Ground floor for Plastic Waste, E. Red Waste bin at Botany Department for Broken Glasswares or other hazardous waste.



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**8.4. GREENING THE CAMPUS**

**FLORISTIC DIVERSITY IN TERMS OF TREE SPECIES IN THE INSTITUTION**

| Sl No.   | Scientific Names                                 | Family          | Common Name           | Number |
|--|--|-----------------|-----------------------|--------|
| 1  | <i>Mangifera Indica</i> L.                       | Anacardiaceae   | Mango                 | 3      |
| 2  | <i>Plumeria rubra</i> L.                         | Apocynaceae     | Plumeria              | 3      |
| 3  | <i>Borassus flabifer</i> L.                      | Areacaceae      | Indian Borassus       | 1      |
| 4  | <i>Cocos nucifera</i> L.                         | Areaceae        | Coconut               | 1      |
| 5  | <i>Areca</i> sp.                                 | Areaceae        | Areca Palm            | 2      |
| 6  | <i>Phoenix sylvestris</i> (L.) Roxb.             | Areaceae        | Date Palm             | 8      |
| 7  | <i>Bauhinia variegata</i> L.                     | Caesalpiniaceae | Bauhinia              | 2      |
| 8  | <i>Trema orientalis</i> (L.) Blume               | Cannabaceae     | Trema                 | 1      |
| 9  | <i>Terminalia arjuna</i> (Roxb.) Wight & Arn.    | Combretaceae    | Arjun                 | 1      |
| 10   | <i>Dalbergia sissoo</i> Roxb.                    | Fabaceae        | Indian Rosewood       | 6      |
| 11   | <i>Swietenia macrophylla</i> King                | Meliaceae       | Mahagony              | 22     |
| 12   | <i>Azadirachta indica</i> A.Juss.                | Meliaceae       | Neem                  | 3      |
| 13   | <i>Khaya selegalensis</i> (Desr.) A.Juss         | Meliaceae       | African Mahagony      | 5      |
| 14   | <i>Accacia auriculiformis</i> A. Cunn. Ex Benth. | Mimosaceae      | Accacia               | 11     |
| 15   | <i>Samanea saman</i> (Jacq.) Merr.               | Mimosaceae      | The Rain Tree         | 1      |
| 16   | <i>Artocarpus heterophyllus</i> Lam.             | Moraceae        | Jackfruit             | 4      |
| 17   | <i>Ficus hispida</i> L. f.                       | Moraceae        | Fig                   | 22     |
| 18   | <i>Ficus religiosa</i> L.                        | Moraceae        | Bodhi Tree            | 1      |
| 19   | <i>Psidium guajava</i> L.                        | Myrtaceae       | Guava                 | 8      |
| 20   | <i>Syzygium cumini</i> L.                        | Myrtaceae       | Jaam                  | 1      |
| 21   | <i>Emblica officinalis</i> Gaertn                | Phyllanthaceae  | Gooseberry/<br>Amlaki | 2      |
| 22   | <i>Zizypus mauritiana</i> Lam.                   | Rhamnaceae      | Kul                   | 2      |
| 23   | <i>Neotamarkia cadamba</i> Roxb.                 | Rubiaceae       | Kadam                 | 1      |
| 24   | <i>Murraya koenigii</i> L.                       | Rutaceae        | Curry Pata            | 1      |
| 25   | <i>Citrus maxima</i> (Burm.) Merr.               | Rutaceae        | Batabi                | 4      |
| 26   | <i>Mimusops elengi</i> L.                        | Sapotaceae      | Bakul                 | 3      |
| 27   | <i>Tectona grandis</i> L.f.                      | Verbenaceae     | Teak                  | 5      |
| TOTAL PLANT BELONGING TO TREE SPECIES CATAGORY |  |                 |                       | 124    |

Source: Departmental Report on Biodiversity Monitoring by Department of Botany.



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Plate 1. A Glimpse of Campus flora showing diversity of plants in the campus. A: *Syzygium cumini*, B: *Accacia auriculiformis*, C: *Mangifera indica*, D: *Leucaena leucocephala*, E: *Adhatoda vasica*, F: *Eclipta prostrata*, G: *Alternanthera philoxeroides*.



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**FAUNAL DIVERSITY OF THE INSTITUTION**

| Categories                  | Common Name                   | Scientific Name                      |
|-----------------------------|-------------------------------|--------------------------------------|
| <b>Invertebrate</b>         | Honey bee                     | <i>Apis indica</i>                   |
|                             | Earthworm                     | <i>Lumbricus Terrestris</i>          |
|                             | Ants                          | Belonging to several taxa            |
|                             | Small insect                  | Belonging to several taxa            |
|                             | Moths                         | Belonging to several taxa            |
|                             | Butterfly                     | Belonging to several taxa            |
| <b>Vertebrate</b>           | <b>Amphibia</b>               |                                      |
|                             | Frog                          | <i>Bufo melanostictus</i>            |
|                             | Caecilians                    | <i>Ichthyophis sp</i>                |
|                             | <b>Reptiles</b>               |                                      |
|                             | House gecko                   | <i>Hemidactylus frenatus</i>         |
|                             | Striped Keelback              | <i>Xenochrophis vittatus</i>         |
|                             | Indian Rat Snake              | <i>Ptyas mucosa</i>                  |
|                             | Garden Lizard                 | <i>Calotes versicolor</i>            |
|                             | <b>Birds</b>                  |                                      |
|                             | Black Drongo                  | <i>Dicrurus macrocercus</i>          |
|                             | House Crow                    | <i>Corvus splendens</i>              |
|                             | Jungle Crow                   | <i>Corvus macrorhynchos</i>          |
|                             | Indian Robin                  | <i>Saxicolodius fulicatus</i>        |
|                             | Red-Vented Butbul             | <i>Pycnonotus cafer</i>              |
|                             | Purple Sunbird                | <i>Nectarinia asiatica</i>           |
|                             | Common Myna                   | <i>Acridotheres tristis</i>          |
|                             | Jungle Myna                   | <i>Acridotheres fuscus</i>           |
|                             | House Sparrow                 | <i>Passer domesticus</i>             |
|                             | Common Tailorbird             | <i>Orthotomus sutorius</i>           |
|                             | Jungle Babbler                | <i>Turdoides striatus</i>            |
|                             | Brown Shrike                  | <i>Lanius cristatus</i>              |
|                             | Asian Koel                    | <i>Eudynamys scolopaceus</i>         |
|                             | Greater Coucal                | <i>Centropus sinensis</i>            |
|                             | Cattle Egret                  | <i>Bubulcus ibis</i>                 |
|                             | Little Egret                  | <i>Egretta garzetta</i>              |
|                             | Indian Pond Heron             | <i>Ardeola grayii</i>                |
|                             | Stork-billed Kingfisher       | <i>Ptilinopus (Halcyon) capensis</i> |
|                             | Small Bee-Eater               | <i>Merops orientalis</i>             |
|                             | Spotted Dove                  | <i>Streptopelia chinensis</i>        |
|                             | Blue Rock Pigeon              | <i>Columba livia</i>                 |
|                             | Alexandrine Parakeet          | <i>Psittacula eupatria</i>           |
|                             | Barn Owl                      | <i>Tyto alba</i>                     |
|                             | Spotted Owlet                 | <i>Athene brama</i>                  |
|                             | Common Hoopoe                 | <i>Upupa epos</i>                    |
|                             | Asian Palm Swift              | <i>Cypsiurus balasensis</i>          |
|                             | Brahminy Kite                 | <i>Haliastur indus</i>               |
| <b>Mammals</b>              |                               |                                      |
| Domestic dog                | <i>Canis familiaris</i>       |                                      |
| Domestic cat                | <i>Felis silvestris catus</i> |                                      |
| Three-striped palm squirrel | <i>Funambulus palmarum</i>    |                                      |
| Common jackal               | <i>Canis aureus</i>           |                                      |
| Gray langur                 | <i>Semnopithecus entellus</i> |                                      |
| Rat                         | <i>Rattus norvegicus</i>      |                                      |
| Indian grey mongoose        | <i>Herpestes edwardsi</i>     |                                      |



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In pursuit of greening the campus the college has given focus to the student community in a participative model of sustainable green practice that becomes a part of their own life style, where ever they go. The following things are noted in support of the effort of the institution for greening the campus

**Plastic-free campus-** In order to make the campus plastic free, the use of single-use plastic material such as plastic cups, bags etc is discouraged. Plastic is totally banned in the College campus. students, teachers and non-teaching members strictly follow no plastic policy. We make sure that no one uses one time use plastic materials such as plastics bags, cups and plates inside the campuses. Signboards showing "SAY NO TO PLASTIC" have been put up at different places inside the campus.

**Separate Committees in place:** A committee under the Teachers Council named College Beautification Committee regularly monitors the maintenance of an environment friendly campus. An Ecoclub is formed consisting of teaching, non-teaching & students members of the College to sustain the biodiversity of the College as well as to ensure ecological balance of the campus and sustainable use of the resources.

**Paper less Drive:** College has initiated paper less drive as per strong recommendation of the College Ecoclub. As an initial step towards paperless office, the college management has confirmed minimum paper waste policy for its activities such as sending meeting notifications through e-mail and restricting the use of print copies for the members. The college also issues web notifications for different activities in the college website.

**Awareness and Plantation Programmes:** For creation of eco-friendly atmosphere and sensitizing the stakeholders like students, staff members towards environmental issues, the college NSS plays a pivotal role. The students of NSS unit undertake cleaning, environmental awareness, social awareness, plantation programmes etc. in the college campus and adjoining locality regularly. The college Eco-club also organizes plantation programmes and celebrates World Environment Day to sensitize all concerned to issues like



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environmental degradation, preservation of natural resources, global warming, climate change etc. Teaching of Environmental Science as Ability Enhancement Core Course under CBCS system or as Value Added Course under NEP is also plays a crucial role in creating awareness. The entire campus has been declared — No Plastic, No Tobacco and No Horn Zone.

**Reducing Carbon Foot print for Transport:**

By use of Bicycles & Electric vehicles– Students and some of the staff members of the college residing at a close distance from the college use bicycles for commutation and campus has two bicycle parking stands. Few staffs use electric bike for communication.

**8.5.CARBON FOOTPRINT & CARBON NUTRILIZATION**

There are a total of 141 trees in campus over a vast land of 5 Acre areas out of which 104 full grown trees and 37 semi grown trees. If carbon absorption capacity of full grown trees is taken into account (22kg CO<sub>2</sub>) then carbon absorption of entire campus *for full grown trees only estimated to be around  $22\text{kg} \times 104 = 2.29 \text{ tons of CO}_2$* . Similarly, *for semi grown trees  $37 \times 6.8 \text{ kg} = 0.25 \text{ tons of CO}_2$* . Additionally, the college ground has a mini eco-forest region comprising of numerous bushes and small trees which could not be audited due to rich fauna comprising of various replites exploration could not be conducted. The area comprising of 288.95 Sq. Meters (0.07 Acres). *With an average rate of  $0.5\text{kg/sq.m}$  area, the total carbon sequestration amount could be calculated as  $0.5 \times 288.95 = 0.014 \text{ tons}$* . The rest of the campus including the playground covered by various members of Poaceae and Cyperaceae more commonly known as grasses and sedges respectively. With a rate of 2.727 kg/sq.m rate (Wang et. al., 2022) the total carbon sequestration is estimated as  $2.73 \times 17320.55 = 47285.1 \text{ kg}$  or 47.29 tons of CO<sub>2</sub>. Therefore, total CO<sub>2</sub> sequestration by the campus is =  $2.29 + 0.25 + 0.014 + 47.29 \text{ tons} = 49.84 \text{ tons}$ .





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The college has taken several additional efforts for Carbon neutrality in addition to plantation by a number of measures such as- Usage of personal vehicles by the staff members conform to state defined pollution rules which matches with Euro III and Euro IV specifications to reduce carbon emission,



Plate: Green initiatives of the institution beyond the campus: A. Plantation of Plants at Chapai Village, B. Cleanliness Programme at Plassey Monument, C. Installation of Solar Lamp at Bersa Village of Purulia District, D. Distribution of recycled cloths (in good condition) to the needy people of Chapai Village. E. Distribution of Plants as a part of Tree Plantation Programme.



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some of staff use EV as bike as well and by Installation of low energy consumption lights to mention a few. It is noteworthy to mention that most of the students and staff of the college use public transport facilities like buses, trains, auto-rickshaws, Toto etc. as the institution is situated just beside NH-12 (earlier NH-34) which connect the college campus to Debagram Railway station [Station Code: DEB] and other adjoining areas as well making it suitable for everyone to avail bus and train services thereby reducing carbon footprint.

**8.6. GREEN INITIATIVES OUTSIDE THE CAMPUS**

The College have an active and motivated NSS unit who undertake cleaning, environmental awareness, social awareness, plantation programmes etc. beyond the campus as a part of their extension programmes. NSS Unit of the college have regularly conducted Plantation Programmes in adopted village named 'Chapai gram' where several Plantlets have been planted and distributed among the villagers. The NSS Unit also installed two solar light at different locations outside the campus . It is noteworthy one such installation of solar light has been installed at Bersa village of Purulia District where Elephants frequently enter the vicinity of the village in order to provide lighting in the dark areas using renewable energy source ensuring the safety of the villagers in a village where using electricity was not a feasible option.

**9. RECOMMENDATION**

- ❖ College should follow a strict Environmental Policy or Green Policy to achieve sustainable development.
- ❖ The Ecoclub and NSS should be empowered to look after all green practices in the college
- ❖ Conducting more awareness programmes in terms of Seminar or Webinars and continuing special importance to Value Added Course on Environmental Science to create awareness of Environmental conservation among students and other stakeholders.



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**10. CONCLUSIONS**

Considering being a new College, Govt. General Degree College, Kaliganj have progressed with a careful consideration of the environmental consciousness in mind of their students, faculty members and staffs. The environmental awareness is substantial and installation of solar light at the entrance, usage of rainwater harvesting systems are noteworthy. Moreover, the eco awareness campaign and actions such as plantation and scientific environmental management practices showing how the campus is moving towards a green campus. If this positive approach continues and adds up then it may lead to prosperous future not only in greening the campus but also sustainable environment and community development.

**11. REFERENCES**

- ❖ Energy Conservation Act 2010.
- ❖ Patil, S. Langi, B and Gurav, M. 2019. Green Audit in Academic Institutes. International Journal of Multidisciplinary Educational Research 8(6): 131-145.
- ❖ The Environment [Protection] Act – 1986 (Ammended 1991) & Rules- 1986 (Ammended 2010)
- ❖ The Water [Prevention and Control of Pollution] Act- 1974 (Ammended 1988) & The Water [Prevention and Control of Pollution] Rules- 1982
- ❖ Wang, R., Mattox, C.M., Phillips, C.L. and Kowalewski and A.R. 2022. Carbon sequestration in turngrass-soil systems. Plants 11(19): 2478.
- ❖ Anonymous. 2008. Climate of West Bengal. Controller of Publications, Govt. of India,
- ❖ NEP (2006) National Environment Policy. 2006. Ministry of Environment, Forest and Climate Change, Govt. of India