GDCL/GA/01/1224

GREEN DONE CONSULTANTS

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GREEN AUDIT CERTIFICATE

CERTIFICATE FOR GREEN AUDIT

This Certificate is presented to

NAWADA VIDHI MAHAVIDYALAYA,

Campus-I, Kendua, Akauna Bazar, Nawada, Pin-805123, Campus-II, Police Line, Jalalpur Sanokhra Road, Nawada, Pin-805112

For completing the **GREEN AUDIT** of Their Campus on the 21st of April 2022.

This certificate will remain valid for 3 years from the date of issuance.

ATUL JOSHI

Accredited Energy Auditor - 0037
By Bureau of Energy Efficiency (MoP, GoI)
Director - **Green Done Consultants LLP**

ALKESH RAJDEV

Accredited Professional
Indian Green Building Council
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ENVIRONMENTAL AUDIT CERTIFICATE

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4/21/2022

REPORT ON GREEN AUDIT, ENERGY AUDIT & ENVIRONMENTAL AUDIT

NAWADA VIDHI MAHAVIDYALAYA,

Campus-I, Kendua, Akauna Bazar, Nawada, Pin-805123,

Campus-II, Police Line, Jalalpur Sanokhra Road, Nawada, Pin-805112

Service Request No.: GDCL/GA/12/07

GREEN DONE CONSULTANTS

Striving to make the globe greener

Prepared By:

Green Done Consultants LLP.

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Table of Contents

1. Executive Summary:

Eco campus is a concept implemented in many educational institutions, all over the world to make them sustainable because of their mass resource utilization and waste discharge into the environment.

Waste minimization plans for the educational institute are now mandatory to maintain the cleanliness of the campus. To find out the environmental performance of the educational institutions and to analyze the possible solutions for converting the educational campus into an eco-campus, the conducting Green Audit of institution is essential.

The green auditing of '**NAWADA VIDHI MAHAVIDYALAYA, Nawada'**, enables us to assess the practices, action and its impact on the environment. This audit was mainly focused on **Green Indicators** like consumption of energy in terms of electricity and fossil fuel, quality & utilization of water, vegetation, waste management practices and carbon footprint of the campus etc.

The premises were evaluated against the various criteria laid down by the National Assessment and Accreditation Council (NAAC). The major observations are provided below.

Renewable Energy

- The college has installed a small Roof-top Solar Photovoltaic System for self-use.
- The quantity of plant waste (organic waste with higher starch contents) is not very substantial, consequently, when the plants grow enough, college may explore the potential for biogas generation.

Green Campus Initiative

- There are pedestrian friendly pathways for in-campus movement.
- The college is yet to initiate restrictions on single-use plastic in the campus. College may extend it to completely banning plastic usage inside the campus.
- The campus is surrounded by greenery, trees, and proper landscaping.
- The bicycles are allowed for in-campus movement as required. Required cycle stands are provided inside the campus.
- Around 70% of staff and students use public transport for daily commuting.
- The movement of vehicles inside the campus is not restricted.

Environment & Energy Initiative

- The Institute has planted more than 32 varieties of more than 238 trees on its campus.
- Institute may go for replacement of existing fans with energy efficient BLDC fans.

Air Quality & Ventilation

- The classrooms and other areas are well ventilated to ensure proper air quality.
- The fans are appropriately installed to ensure proper air circulation
- The indoor as well as outdoor plants have also been provided to improve the environment.

Lighting System

- The usage of natural light is optimized through well designed structures and windows.
- College has replaced all the lighting fixtures with energy efficient LEDs.
- Institute may install sensor-based systems (motion sensors/ day-light sensors) to control operations of lights to save energy. It is recommended to install sensor-based devices to increase energy conservation.

Water Quality & Conservation

- The water is supplied through the bore well.
- The water quality reports are not available. Water analysis is recommended.
- Portable water purifiers are installed for water purification.
- The rainwater harvesting system is already installed.
- The distribution network and piping were found satisfactory and adequate.

Waste Management

- The effluent water is discharged in the common drainage system, however there is no Sewage Treatment plant.
- The waste is segregated into two types solid and liquid waste.
- E-waste is to be collected & disposed of separately.
- For plant waste and dry leaves vermi-composting can be maintained.

Green IT culture

- Electronic communication is encouraged to minimize usage of papers.
- Most of the papers are reused for double-sided printing to further minimize usage of paper.

Infrastructure usage

- Ramps and wheelchairs are provided for ease of movements for disabled persons.
- The on-campus movement is distributed with multiple entrances as well as staircases.
- The draining system for washrooms is efficient and effective.
- No seepages were observed in the building premises.

Auditors:

Mr. Atul Joshi

Accredited Energy Auditor (AEA-0037)

Bureau of Energy Efficiency (BEE, MoP)

Director – Green Done Consultant LLP.

Mr. Alkesh Rajdev

Accredited Professional

Indian Green Building Council

Director – Green Done Consultant LLP

2. Acknowledgment:

We wish to express our gratitude towards the Management of **NAWADA VIDHI MAHAVIDYALAYA, Campus-I, Kendua, Akauna Bazar, Nawada, Pin-805123, Campus-II, Police Line, Jalalpur Sanokhra Road, Nawada, Pin-805112** for having given us the opportunity for conducting the study and the support provided during the study.

We are also thankful to the **PRINCIPAL Dr. D.N. Mishra** and **NAAC Coordinator Dr. Mihir Kumar** for extending the necessary help and co-operation from their side.

3. Audit Team:

From **Green Done Consultants LLP, Mumbai**

1. Mr. Atul Joshi – Accredited Energy Auditor & Director.
2. Mr. Alkesh Rajdev – Accredited Sustainability Consultant, IGBC AP & Director.

From **NAWADA VIDHI MAHAVIDYALAYA, Campus-I, Kendua, Akauna Bazar, Nawada, Pin-805123, Campus-II, Police Line, Jalalpur Sanokhra Road, Nawada, Pin-805112.**

1. Principal - **Dr. D.N. Mishra** and
2. IQAC/ NAAC Coordinator – **Dr. Mihir Kumar**

4. Introduction:

4.1. About Institute:

Nawada Vidhi Mahavidyalay, Nawada recognized by the Bar Council of India, New Delhi and now affiliated to Magadh University, Bodh Gaya was started in the year 1989 with 3-year LL. B. programme. When Magadh University introduced 5-year B.A. LL. B. programme in the year 2005, our institution introduced the 5 year B.A. LL. B. programme in the same year. 3 Years LL. B. (Hons.) programme was introduced in our institution in the academic year 2019. It is a matter of great pride to state that this is the year of imparting legal education.

Vision

"Education is not the amount of information that is put into your brain and runs riot there, undigested, all your life. We must have life-building, man making, character-making assimilation of ideas. If you have assimilated five ideas and made them your life and character, you have more education than any man who has got by heart a whole library."

Mission

To provide conducive environment for teaching learning with the use of modern methods and technology.

To inspire the students to develop their personality as innovative and creative teachers with a scientific flair through various academic, co-curricular and extension activities.

To train the students as socially sensitive, responsible and professionally skilled teachers.

The college is situated in a rural area at Nawada which is about 120 kms from Patna, Bihar. The surroundings of the college are surrounded by well-maintained gardens, buildings, hostels, a computer center and playground. Believing in the holistic development of the students, the college is keen to make available its best facilities.

The student and faculty strength of the college is listed below:

Physical Structure:

Physical Structure	
Total Campus Area	8 acres
Built-up Area	5560
No. of Departments	3
Conference Halls	1
Classrooms	14
Office Rooms	4
Libraries	3
Auditorium	0
Canteen	1
Seminar Hall	1
Multipurpose Hall	1
Other Girls Common Room	2
Other Tea Room	1
Computer LAB-	1
Other Room	2

Total Strength of Students, Teachers & Non-teaching Staff:

Staff Details	Male	Female	Total
No. of Students	1069	741	1810
No. of Teaching Staff	41	12	53
No. of Non-Teaching Staff	32	19	51

1. Objectives of Green Audit:

The main objectives of this green audit are to assess the environmental quality and the management practice, and strategies being implemented in Nawada Vidhi Mahavidyalaya, Nawada, Bihar.

The specific objectives are:

1. To monitor the energy consumption pattern of the college.
2. To assess the quality of the water in the campus.
3. To quantify the liquid and solid waste generation and management plans in the campus.
4. To assess the carbon footprint of the college.
5. To assess whether the measures implemented by the College have helped to reduce the Carbon Footprint.
6. To impart environment management plans of the college.
7. Providing a database for corrective actions and future plans.
8. To assess whether extracurricular activities of the Institution support the collection, recovery, reuse and recycling of waste generated within the campus.
9. To identify the gap areas and suggest recommendations to improve the Green Campus status of the Nawada Vidhi Mahavidyalaya, Nawada, Bihar.

2. Target Areas of Green Audit:

Green audit forms part of a resource management process. Although they are individual events, the real value of green audit is the fact that they are carried out, at defined intervals, and their results can illustrate improvement or change over time. Eco-campus concept mainly focuses on the efficient use of energy and water; Minimize waste generation or pollution and efficiency in resource utilization. All these indicators are assessed in the process of "Green Auditing of this educational institute".

Eco-campus focuses on the reduction of contribution to emissions, procure a cost effective and secure supply of energy, encourage and enhance energy use conservation, promotes personal action, reduce the institute's energy and water consumption, reduce wastes to landfill, and integrate environmental considerations into all contracts and services considered to have significant environmental impacts. **Target areas included in this green auditing are water, energy, waste, green campus and carbon footprint.**

2.1. Auditing for Water Management

Water is a natural resource. All living organisms depend on water. While freely available in many natural environments, in human settlements potable (drinkable) water is less readily available. Groundwater depletion and water contamination are taking place at an alarming rate. Hence it is essential to examine the quality and usage of water in the college. Water auditing is conducted for the evaluation of facilities of raw water intake and determining the facilities for water treatment and reuse. The concerned auditor investigates the relevant method that can be adopted and implemented to balance the demand and supply of water.

2.2. Auditing for Energy Management

Energy conservation is an important aspect of campus sustainability which is also linked with carbon footprint of the campus. Energy auditing deals with the conservation and methods to reduce its consumption related to environmental degradation. It is therefore essential that any environmentally responsible institution examine its energy use practices.

2.3. Auditing for Waste Management:

Human activities create waste, and it is the way these wastes are handled, stored, collected and disposed of, which can pose risks to the environment and to public health. Solid waste can be divided into three categories: bio-degradable, non-biodegradable & hazardous waste.

1. Bio-degradable wastes include food wastes, canteen waste, wastes from toilets etc.
2. Non-biodegradable wastes include what is usually thrown away in homes and schools such as plastic, tins and glass bottles etc.
3. Hazardous waste is waste that is likely to be a threat to health or the environment like cleaning chemicals, acids and petrol.

Unscientific management of these wastes such as dumping in pits or burning them may cause harmful discharge of contaminants into soil and water supplies and produce greenhouse gases contributing to global climate change respectively. Special attention should be given to the handling and management of hazardous waste generated in the college.

Bio-degradable waste can be effectively utilized for energy generation purposes through anaerobic digestion or can be converted to fertilizer by composting technology. Non-biodegradable waste can be utilized through recycling and reuse. Thus, the minimization of solid waste is essential to a sustainable college. The auditor diagnoses the prevailing waste disposal policies and suggests the best way to combat the problems.

2.4. Auditing for Green Campus Management:

Trees play an important ecological role within the urban environment, as well as supporting improved public health and providing aesthetic benefits to cities. In one year, a single mature tree will absorb up to 48 pounds of carbon dioxide from the atmosphere and release it as oxygen. The amount of oxygen released by the trees of the campus is good for the people in the campus. So while you are busy studying and working on earning those good grades, all the trees in campus are also working hard to make the air cleaner for you.

2.5. Auditing for Carbon Footprint:

Burning of fossil fuels (such as petrol) has an impact on the environment through the emission of greenhouse gases into the atmosphere. The most common greenhouse gases are carbon dioxide, water vapour, methane, nitrous oxide and ozone. Of all the greenhouse gases, carbon dioxide is the most prominent greenhouse gas, comprising 402 ppm of the Earth's atmosphere. The release of carbon dioxide gas into the Earth's atmosphere through human activities is commonly known as carbon emissions. Vehicular emission is the main source of carbon emission in the campus, hence, to assess the method of transportation that is practiced in the college is important.

3. METHODOLOGY ADOPTED:

The methodology adopted to conduct the Green Audit of the Institution had the following components.

Onsite Data Collection:

A virtual tour of the college campus was organized by the Green Audit Team. The data samples and relevant photographs were collected through geo-tagged photographs. The key focus of the audit was on assessing the status of the green cover of the Institution, their waste management practices and energy conservation strategies etc.

Focus Group Discussion:

The Focus Group discussions were held with the staff members and the management focusing on various aspects of Green Audit. The discussion was focused on identifying the attitudes and awareness towards environmental issues at the institutional and local level.

Energy, Waste Management and Carbon Footprint Analysis Survey:

With the help of teachers and staff, the audit team has assessed the energy consumption pattern and waste generation, disposal and treatment facilities of the college. The monitoring was conducted with a detailed questionnaire survey method.

4. AUDIT STAGE:

Green auditing in **NAWADA VIDHI MAHAVIDYALAYA, Campus-I, Kendua, Akauna Bazar, Nawada, Pin-805123, Campus-II, Police Line, Jalalpur Sanokhra Road, Nawada, Pin-805112** began with the assessment of the status of the green cover of the Institution followed by waste management practices and energy conservation strategies etc. The team monitored different facilities at the college, determined different types of appliances and utilities (lights, taps, toilets, air conditioners, etc.) as well as measuring the usage per item (Watts indicated on the appliance, etc.) and identifying the relevant consumption patterns (such as how often an appliance is used) and their impacts. The staff and learners were interviewed to get details of usage, frequency or general characteristics of certain appliances. Data collection was done in the sectors such as Energy, Waste, Greening, Carbon footprint and Water use. College records and documents were verified several times to clarify the data received through survey and discussions.

5. GREEN AUDIT REPORT

5.1. Water Quality Assessment:

Water is provided through two bore well. Institute has installed R.O. system for drinking water. The bore well water is being used for flushing and gardening. Institute has not carried out lab testing of bore well water sample. Hence the current water analysis report was not available at the time of audit. The Institute has installed water coolers to provide cold water to the staff.

5.2. Water Management:

The source for the water used in the College is bore-well water. The Institute has installed four overhead tanks with a capacity of 500 Liter each.

- Water availability is good throughout the year & the institute does not need tanker water to meet its demand during peak summer.
- A water meter is not installed on the bore-well and hence, no record is maintained for daily water consumption.
- There were no leaking taps or water wastage reported during the audit phase.
- The institute is harvesting the Rainwater.
- There is no formal water management plan available with the institute.
- College has displayed signboards for spreading awareness of its water saving initiatives.
- There is no **Sewage Water Treatment** plant on the campus to recycle the wastewater for the use of flushing and gardening. The wastewater is being drained into the soak pit.
- The effluent generation from the laboratory is being discharged into the common.

5.3. Energy Audit Report:

5.3.1. Electrical Bill Analysis:

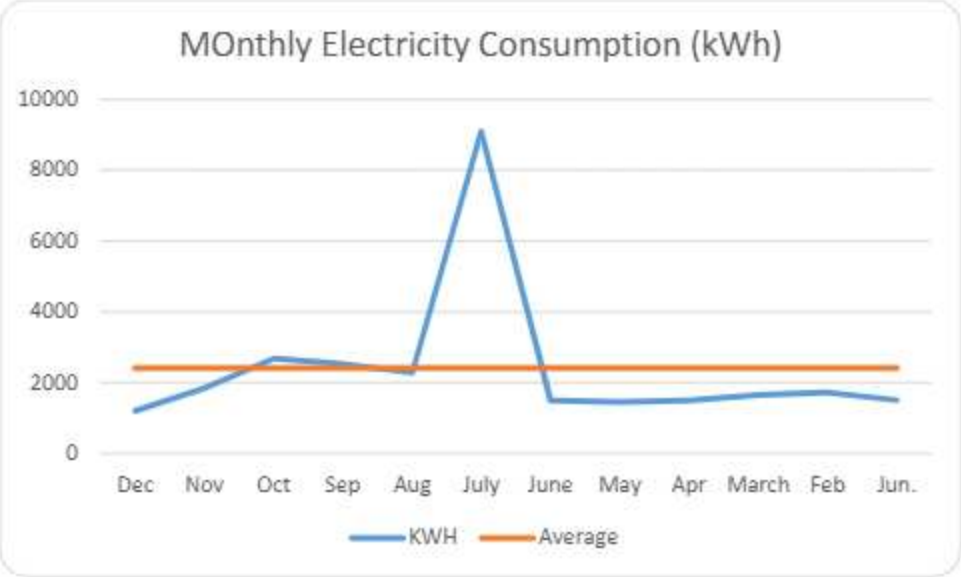
Electricity is supplied by SOUTH BIHAR POWER DISTRIBUTION COPMANY LIMITED (SBPDCL). The institute falls under the non-domestic NDS2D tariff category.

This is applicable for supply of electrical energy for non-domestic consumers having sanctioned/contracted load up to 70 kW, using electrical energy for light, fan and power loads for non-domestic purposes like shops, hospitals, nursing homes, clinics, dispensaries, restaurants, hotels, clubs, guest houses, marriage houses, public halls, show rooms, centrally air-conditioning units, offices, commercial establishments, nongovernment schools, colleges, libraries and research institutes, coaching institutes, common facilities in multistoried commercial office/buildings, Government and semi–government offices, public museums, Government educational institutions, their hostels and libraries, Government hospitals and government research institutions and non–profitable government aided educational institutions their hostels and libraries, non-profitable recognized charitable cum public institutions and other installations not covered under any other tariff schedule.

Non - Domestic Service – NDS – II (Demand based) Applicable to contracted load up to 70 kW in urban areas notified by Department of Urban Development, Government of Bihar from time to time. The rates are given in the following table.

Sl. No.	Category of Consumer	Fixed charge (Rs.)	Energy charges	
			Consumption in a month(Units)	(Paisa/Unit)
1.	**Metered** Contract load up to 0.5 kW	Rs.200/ month/connection	All Units	788
2	**Metered** Contract demandabove 0.5 kW and up to 70 Kw	Rs. 300/kW or part thereof per month	1-100 Units	788
			Above 100 Units	908
The billing demand shall be the maximum demand recorded during the month or 75% of the contract demand whichever is higher. If in any month the recorded maximum demand exceeds 105% of contract demand, that portion of the demand in excess of the contract demand shall be billed at twice the normal charges. The demand charges shall be recovered in full only if supply of power duly recorded by the consumer meter is maintained for at least 21 hours/day during the billing month. In any month if the supply of power is less than 21 hours/day, then the demand charge for that month shall be levied on pro-rata basis.				

The college consumes an average of 2416 kWh/ month of electrical energy based on the last one year's data. During the month of July, a sudden surge in the electricity consumption was found for unknown reasons.



5.3.2. Electrical Consumers:

Institute does not have air conditioners. The list of common electrical consumers along with its typical electricity consumption is provided in the table below.

Energy Audit					
Sl. No.	Room No. / Name	Type of Electrical Device	Power	Operation	
			Watt	Hrs/Day	Days/Month
1	1	4 LED TUBE,4 LED, 6 FAN	780x72	8/6	26/12
2	2	4 LED TUBE,2LED,6FAN	780x72	8/6	26/12
3	3	5 LEDTUBE,2LED,6FAN	520x36	8/6	26/12
4	4	4 LED TUBE,2LED,4FAN	520x36	8/6	26/12
5	5	5 LED TUBE,1LED,4FAN	520x36	8/6	26/12
6	6	3LED TUBE, 3LED,6FAN	520x37	8/6	26/12
7	7	6 LED TUBE,2LED,6FAN			26/12
8	8	2 LEDTUBE,4LED,4FAN			26/12
9	9	2 LED TUBE,4LED,4FAN			26/12
10	10	2 LED TUBE,4LED,4FAN			26/12
11	11	2 LED TUBE,4LED,4FAN			26/12
12	12	2 LED TUBE,4LED,4FAN			26/12
13	Green Room	1 LED TUBE,1LED,2FAN			26/12
14	Principal Chamber	2 LED TUBE,3+1LED,4FAN		8/6	26/12
15	Head Clerk	1 LED TUBE,3LED,4FAN		8/6	26/12
16	Seminar Hall	6 LED TUBE,6LED,10FAN		8/6	26/12
17	KT Computer Lab	2LED TUBE,3LED,6FAN		8/6	26/12
18	Library cum study Room	5LED TUBE,10LED,12FAN		8/6	26/12
19	HOD Room	3LEDTUBE, 3LED,4FAN		8/6	12-Aug
20	Multi-Purpose	12 LED TUBE,4LED,12FAN		8/6	25/12
21	SPOTS & YOGA	6 LED TUBE,5LED,8FAN	32"X12"	8/6	25/12
22	Canteen Room	5LED,4FAN			
23	Girls Room	3 LED TUBE,3 LED,4FAN			

Sl. No.	Room No. / Name	Type	Power	Operation	
			Watt	Hrs/Day	Days/Month
1	Administration	4 LED TUBE,5LED,4FAN			
2	Music	5 LED TUBE,2LED,4FAN			
3	IQAC	3LED TUBE,4LED,6FAN			
4	Guest Room	0 LED TUBE,1LED,2FAN			
5	Conference Room	8 LED TUBE,2LED,6FAN			
6	Smart Class	11 LED TUBE,5LED,12FAN			
7	Psycho Lab	6 LED TUBE,2LED,12FAN			
8	Visitor Room	2LED TUB,4,LED,6FAN			
9	Girl Cum Room	2 LED TUBE,4LED,4FAN			
10	Language lab	3LED TUBE,2LED,6FAN			
11	Psychology	3LED TUBE,2LED,6FAN			
12	Staffs Room	1LED TUBE,3LED,6FAN			
13	Boys Common Room	3LED,4FAN			
14	Art and Craft Room	2LED TUBE,3LED,4FAN			
15	Library Cum Room	2LED TUBE,1LED,2FAN			
16	CORRIDOOR(Ground), Room	12LED TUBE,7LED,8FAN			
17	Toilet (Ground)	2 LED TUBE,4LED,4FAN			
18	Sidhi (Ground)	1LED TUBE,1LED			
19	(SUPW) Room	4LED TUBE,2LED,4FAN			
20	Bramda (1st)	15LED TUBE,8LED,8FAN			
21	Girls Common Room(1st)	1LED TUBE,3LED,4FAN			
22	Toilet	2LED			
23	Toilet	2LED			
24	Staff Room (iind)	1LED TUBE,3LED,4FAN			
25	First Aid	1LED TUBE,1LED,2FAN			
26	Boys Common Room	4LED,4FAN			

5.4. Alternate Sources of Energy and Energy Conservation Measures

- The Institute has installed a small Solar PV Rooftop system.
- Since the biodegradable waste generation is very low, there is no Bio-gas plant.
- Institute is using electricity only from grid.
- Institute has not installed any sensor-based energy conservation system yet.
- **Institute has replaced all the existing lighting fixtures with LEDs and energy efficient lighting.**
- The Institute has air conditioners and most of the air conditioners 3-star rated.
- Institute is utilizing the natural light to its maximum. The classroom and offices are designed in such a way that it allows maximum sunlight and reduces the requirement of artificial lights.

5.5. Waste Management:

Following data provide the details of the waste generated & the disposal method adopted by the college.

Physical Structure	
Total Campus Area	8 acres
Built-up Area	5560
No. of Departments	3
Conference Halls	1
Classrooms	14
Office Rooms	4
Libraries	3
Auditorium	0
Canteen	1
Seminar Hall	1
Multipurpose Hall	1
Other Girls Common Room	2
Other Tea Room	1
Computer LAB-	1
Other Room	2

Total number of rooms (Classrooms, canteen, office, library etc.): **31**

Total number of stakeholders in the college: **3828**

Staff Details	Male	Female	Total
No. of Students	1069	741	1810
No. of Teaching Staff	41	12	53
No. of Non-Teaching Staff	32	19	51

5.5.1. Waste Management Practices Adopted by the College:

The following table shows the quantum of waste generation from office, labs & canteen.

Approximate quantity of waste generated per day (in kg)				
Office	**Type of Waste**			
Quantity	**Biodegradable**	**Non-Biodegradable**	**Hazardous**	**Others**
< 1kg	0.5	0.2	0	0.2
2 - 10 kg				
> 10 kg				
Labs	**Type of Waste**			
Quantity	**Biodegradable**	**Non-Biodegradable**	**Hazardous**	**Others**
< 1kg	0.2	0	0	0
2 - 10 kg				
> 10 kg	√	2'5Kgs	Nil	
Canteen	**Type of Waste**			
Quantity	**Biodegradable**	**Non-Biodegradable**	**Hazardous**	**Others**
< 1kg	0	0	0	0
2 - 10 kg				
> 10 kg				

How the waste generated in the college is managed?		
Options	**Yes/No**	**Remark**
Composting / Vermicomposting	Yes	
Recycling	NO	
Reusing	NO	
Other Ways	NO	Dumped into Municipalities Garbage Bin

Waste generated in college	
Type	**Separate Collection**
E-waste	Yes Computer, LED, Wire
Hazardous Waste	NO
Solid waste	Yes
Dry Leaves	YES
Canteen Waste	Yes
Liquid Waste	YES Bathroom + Canteen
Glass	NO
Unused Equipment /Scrap	Yes
Napkins	YES
Others (Specify)	NO

- The waste generated is collected and disposed of by Local Municipal Authorities.
- There is no biomedical waste, hazardous chemicals and radioactive waste getting generated.
- The institute is segregating the waste into solid & liquid waste.

5.6. Green Campus:

The Institute has planted more than 238 no. of trees on the campus.

Table 6. List of plants in the campus

S.No	Species	No. of Plants	S.No	Species	No. of Plants
1	MANGO	5	17	MUNGA	2
2	GULAB	4	18	Genda	15
3	SISAM	25	19	Amrud	20
4	ALOVERA	4	20	Aawla	3
5	TULSI	5	21	Keismass Tree	6
6	SAGWAN	35	22	Champa	2
7	KANERL	2	23	Leamon Grass	2
8	NEEM	15	24	MAJESTY PLANT	4
9	AMALA	1	25	AUGUST TREE	3
10	SHAMI	2	26	Rubber Plant	2
11	SAGAUN	42	27	COCONUT TREE	4
12	MORPANKHI	3	28	Lemon Tree	4
13	NARIYAL	7	29	Rera Plant	2
14	BARGAD	2	30	Croton	3
15	Nimbu	3	31	Dracacna	2
16	Mahogani	5	32	Papita	4

5.6.1. Green Campus Initiatives:

The following are a few activities under green campus initiatives.

- Automobile entry is not restricted to the campus.
- Institute is yet to adopt battery-powered vehicles for transportation. However, cycles are being used for internal transport.
- The pathways inside the campus are pedestrian friendly. The campus areas have been designed with the concept of open spaces including roads and lawns.
- The natural landscape has been preserved. There is a clear pedestrian connection through all campus roads and adequate parking facilities
- The Institute is segregating waste in to 'Dry Waste' and 'Wet Waste' before sending it for disposal.
- Institute has not yet initiated plastic ban in the campus.
- Awareness programmers, recycling plastics into reusable materials that do not harm the planet, alternatives to go plastic free, etc. are all afoot in college campuses.
- The college campus is landscaped with various trees & plants.
- Tree plantation is the major focus of the management to maintain the pristine purity and beauty of the institute to provide a congenial atmosphere for academic and non-academic pursuits.

5.6.2. Quality audits on Environment and Energy:

Institutes have initiated carrying out the following audit on regular basis.

1. Green Audit
2. Environmental Audit
3. Energy Audit

This is the first audit, and the institute plans to have such audits at regular frequency. Institute is carrying out many environmental promotion activities on the campus throughout the year. These activities include

- ✓ Cleanliness Drive
- ✓ Plantation Drive

The institute not only organizes such programs inside the campus but is also actively doing it outside the campus as well.

5.6.3. Routine Green Practices:

Every year the college celebrates World Environment Day, World Water Day, etc. in the campus. Plantation and cleanliness drives are also organized on the campus. Main focus of these programs is to provide awareness to the students about the importance of the environment, its conservation and sustainable use of environmental resources. The programs are conducted through seminars, poster presentation, quiz competition debates etc.

5.6.4. Disabled-Friendly Environment:

Institute has provided a ramp for easy access to classrooms for disabled students and staff. Wheelchairs are available for disabled students/ staff for movement in the campus.

5.6.5. Air Quality & Ventilation:

The classrooms and offices on the premises are well ventilated. The fans are operational and adequately placed to affect sufficient air changes. Fans installed are not star-rated.

5.6.6. Infrastructure Usage:

- College premises have multiple entrances and have broad passageways.
- The campus has a drainage system and there were no leakages/ seepages from the roof.
- The premises are equipped with fire extinguishers at required locations which are regularly checked and maintained.

5.6.7. Green IT Culture:

The institute is following a green IT culture.

- Email/ electronic communication mode is preferred to save papers.
- Both side printing is being adopted to save paper and trees.
- E-waste is not collected separately.

6. Carbon Footprint Analysis:

6.1. CO2e Calculation:

Carbon Footprint Calculation		
A- Scope 1 (Direct Emission)		
Source	Fuel Consumption	CO2
DG	NA	NA
Vehicles	NA	NA
Others	NA	NA
B- Scope 2 (Indirect Emission)		
Source	Unit Consumption	CO2e (KG)
Electricity Consumption (Annual)	28991	23194
Total A+B	**28991**	**23194**
Carbon Offset		
Source	Quantity	CO2 (KG)
Solar	0	0
Trees	238	7323
Others	Nil	0
Total		**7323**

Sr. No	Description	Remark
1	Direct Emissions	No Data available
2	Indirect Emissions	Calculated as per international standards
3	Reductions	Institute may install Solar PV rooftop to offset the emission with cleaner & greener energy sources. Or Plant more trees to offset the emission.

7. SUGGESTIONS AND RECOMMENDATIONS:

7.1. Water Management:

- There should be a proper monitoring of water consumption pattern in the campus. The bore well should be installed with a water meter to monitor the consumption. The water meter readings to be recorded every day or every week at a fixed time.
- It is recommended to check water quality from bore well and R.O. water quality for dissolved oxygen, acidity, alkalinity, chloride, hardness, pH, and conductivity, total dissolved solids and E-coli/ coliform.
- The wash basin taps may be equipped with water saving fixtures.
- The flush tanks of the toilets may be fitted with a dual volume system.
- Institute may install drip irrigation system to water the garden and plants in the campus.

7.2. Energy Management:

1. Ceiling fans have a very good scope for reducing power consumed using a technology called Brushless DC Motor or simply BLDC motor. BLDC technology, in general, has been in the market for a couple of decades. The traditional fan uses an induction motor and typically consumes 70-90 watts. But BLDC fan, on the other hand, can reduce power consumption up to 65%.
2. Prominent advantages of BLDC motor over induction motor are Lower Electricity Consumption, Longer backup on Inverters (even on Solar), improved reliability, Noise reduction, longer lifetime.
3. Institute may consider replacing existing fan with BLDC fans which

Sr. No.	Parameters	Unit	Value
1	Total No. of Fans	Nos.	250
2	Power Drawn by Regular Fans	Watts	80
3	Power Drawn by BLDC Fans	Watts	35
4	Energy Saving per Fan	Watts	45
5	Operating Hours Per Day	Hrs/Day	8
6	Annual Operating Days	Days/Yr	312
7	Annual Energy Savings Per Fan	kWh	112.32
8	Annual Energy Savings – For 250 Fans	kWh	28080
9	Energy Cost	Rs. /kWh	9.5
10	Annual Cost Savings	Lacs Rs.	2.67
11	Estimated Investment	Lacs Rs.	7.50
12	Simple Payback	Years	2.81

4. The college may adopt sensor-based (occupancy sensors) energy conservation approach for offices, classrooms and washrooms as well.
5. No action is required to offset carbon emissions in the present scenario.

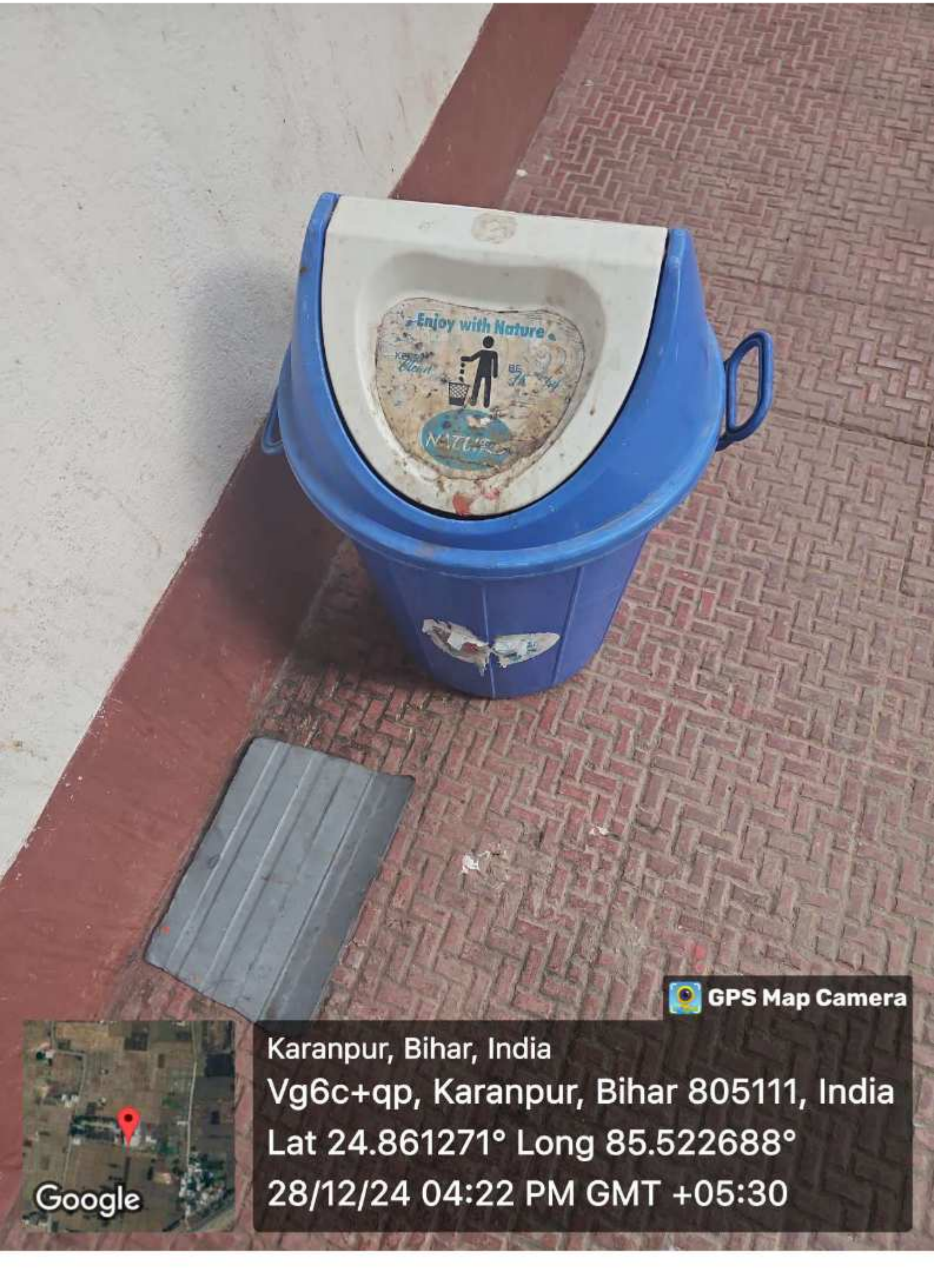
7.3. Green Campus:

Battery powered vehicles may be adopted in future to reduce emissions inside campus.

7.4. Waste Management:

College may undertake feasibility study to install sewage water treatment in the campus to recycle wastewater and use it in flush or for gardening purposes.

Efforts to be made to ban the use of plastic on the campus, and to encourage the use of biodegradable materials as alternatives. Try to achieve the goal of plastic free campus.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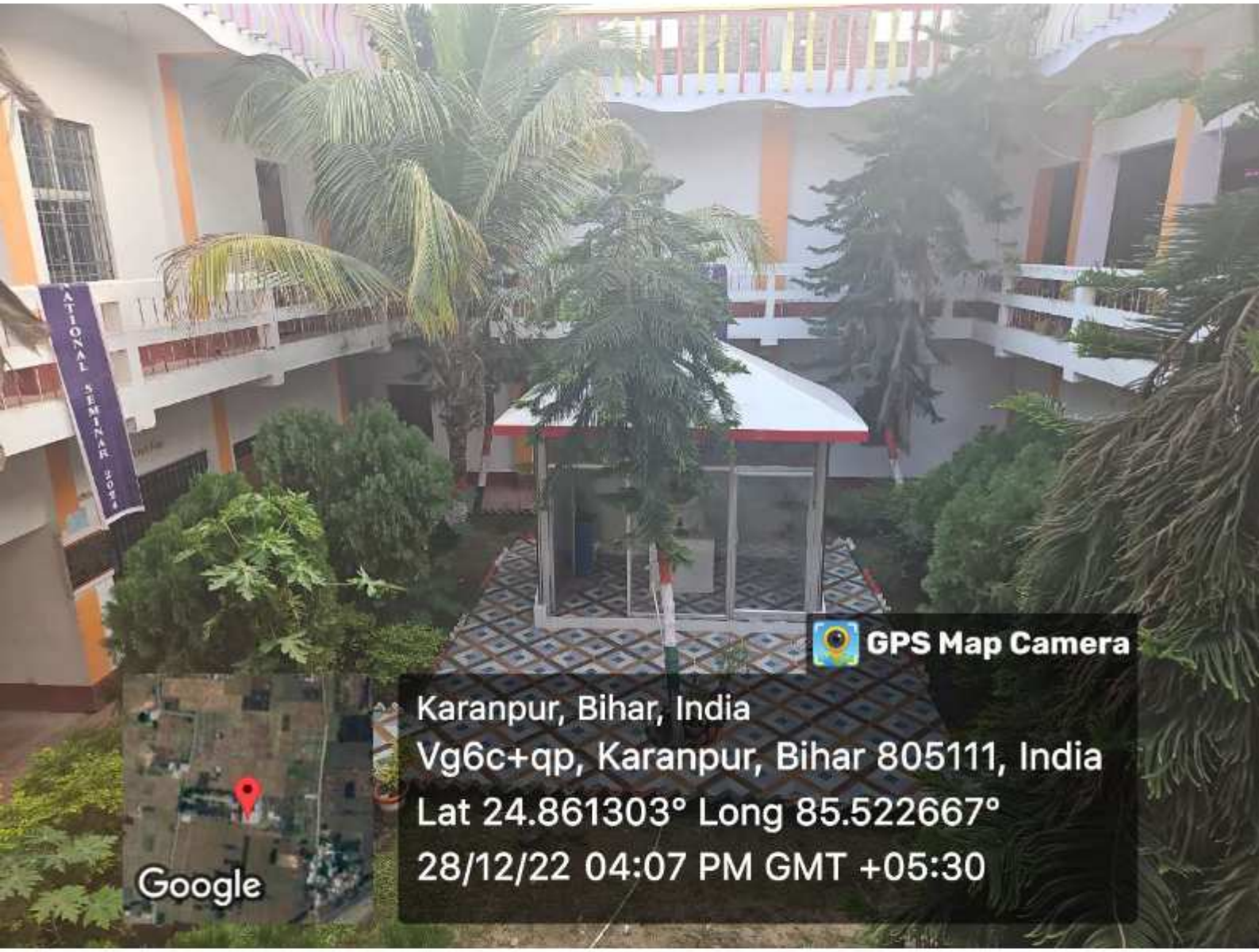
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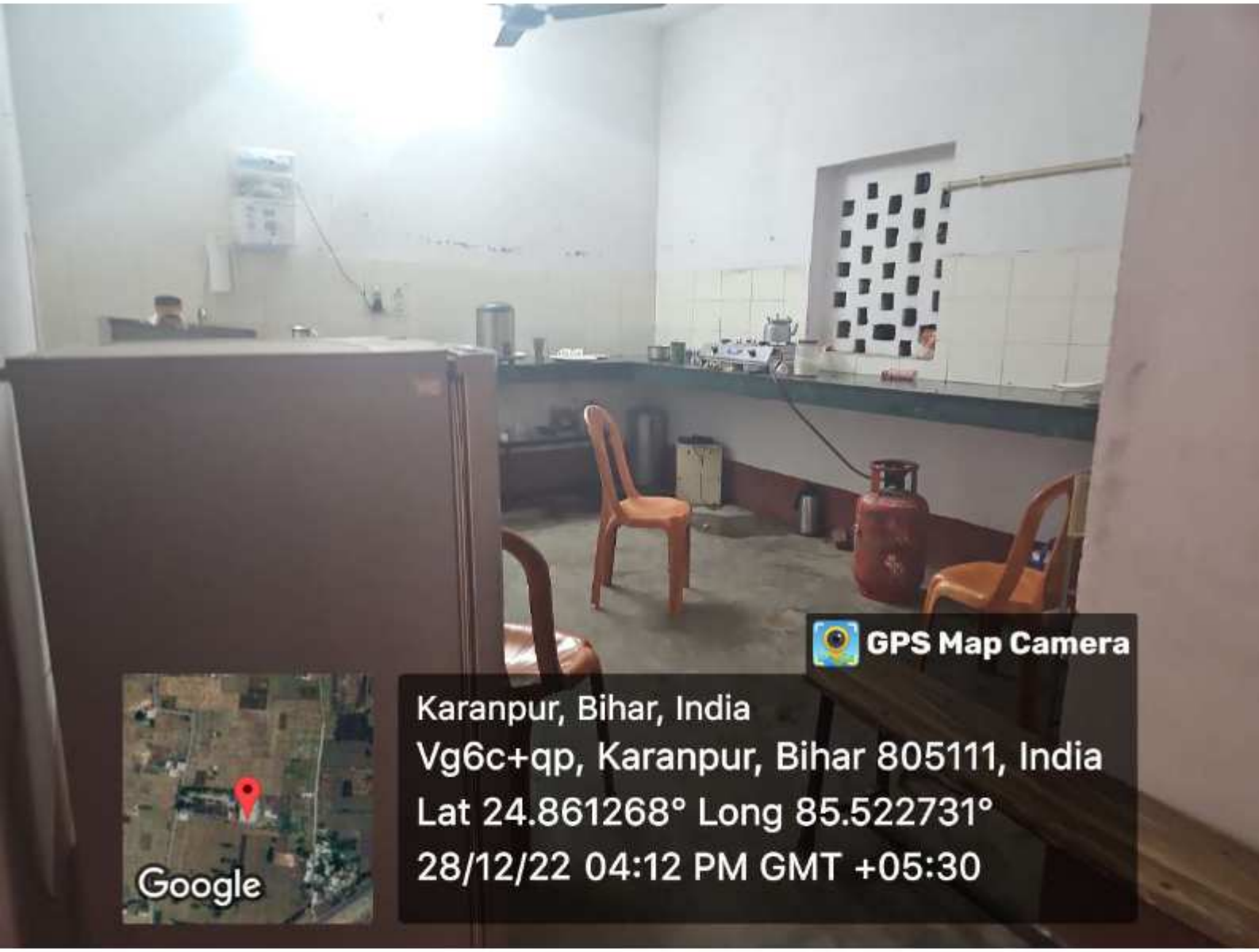
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Ladies Common Room
LADIES FACULTY COMMON ROOM
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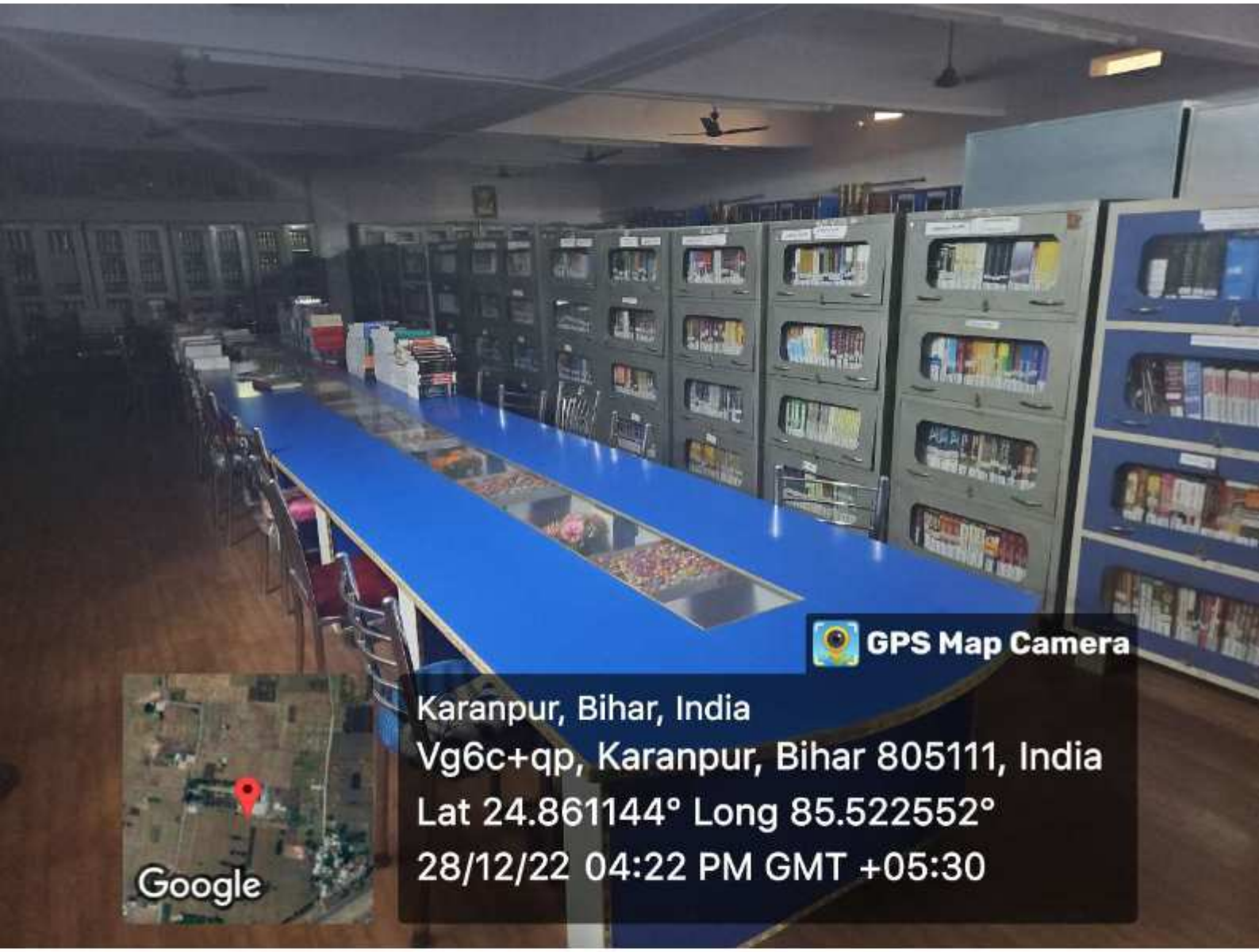
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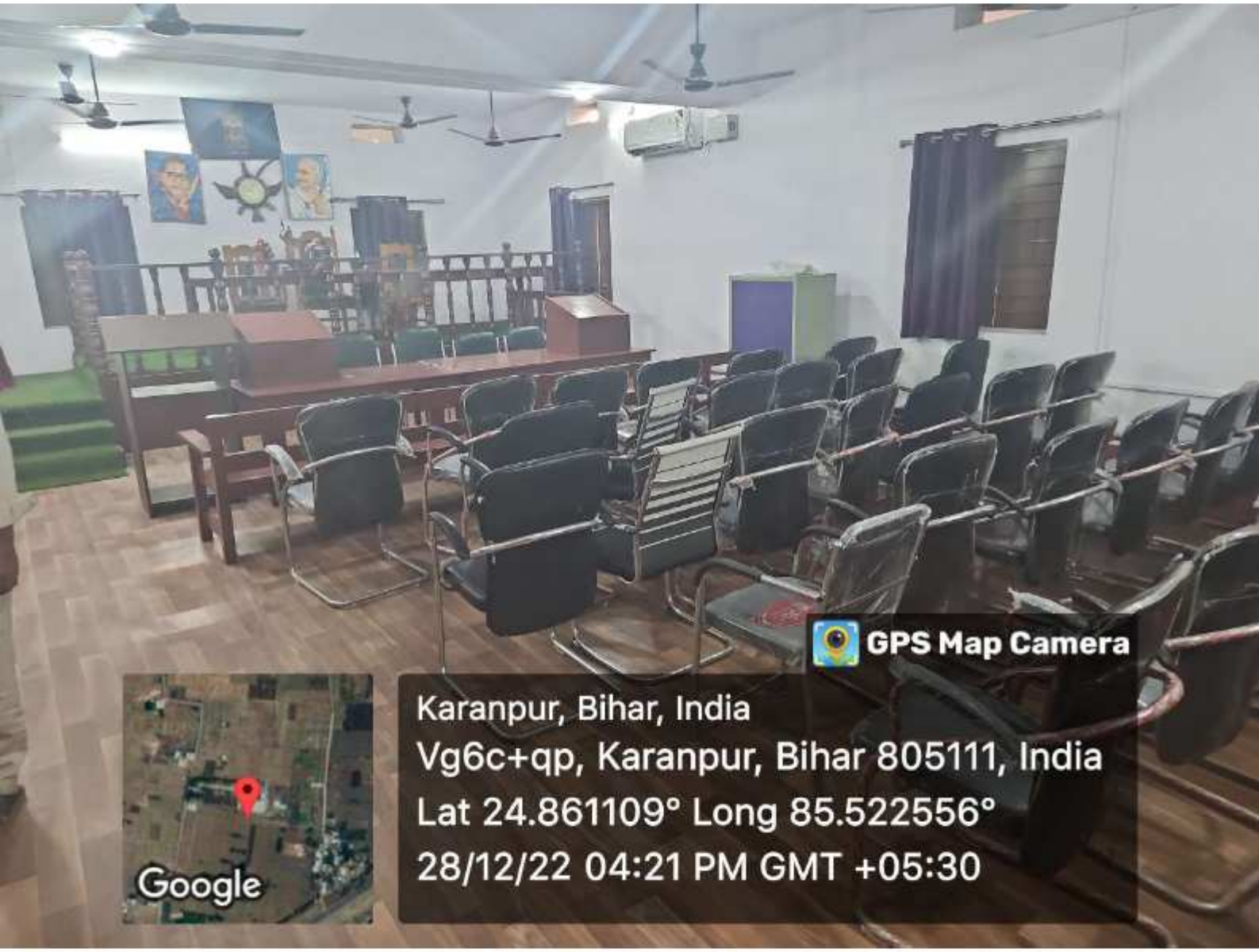
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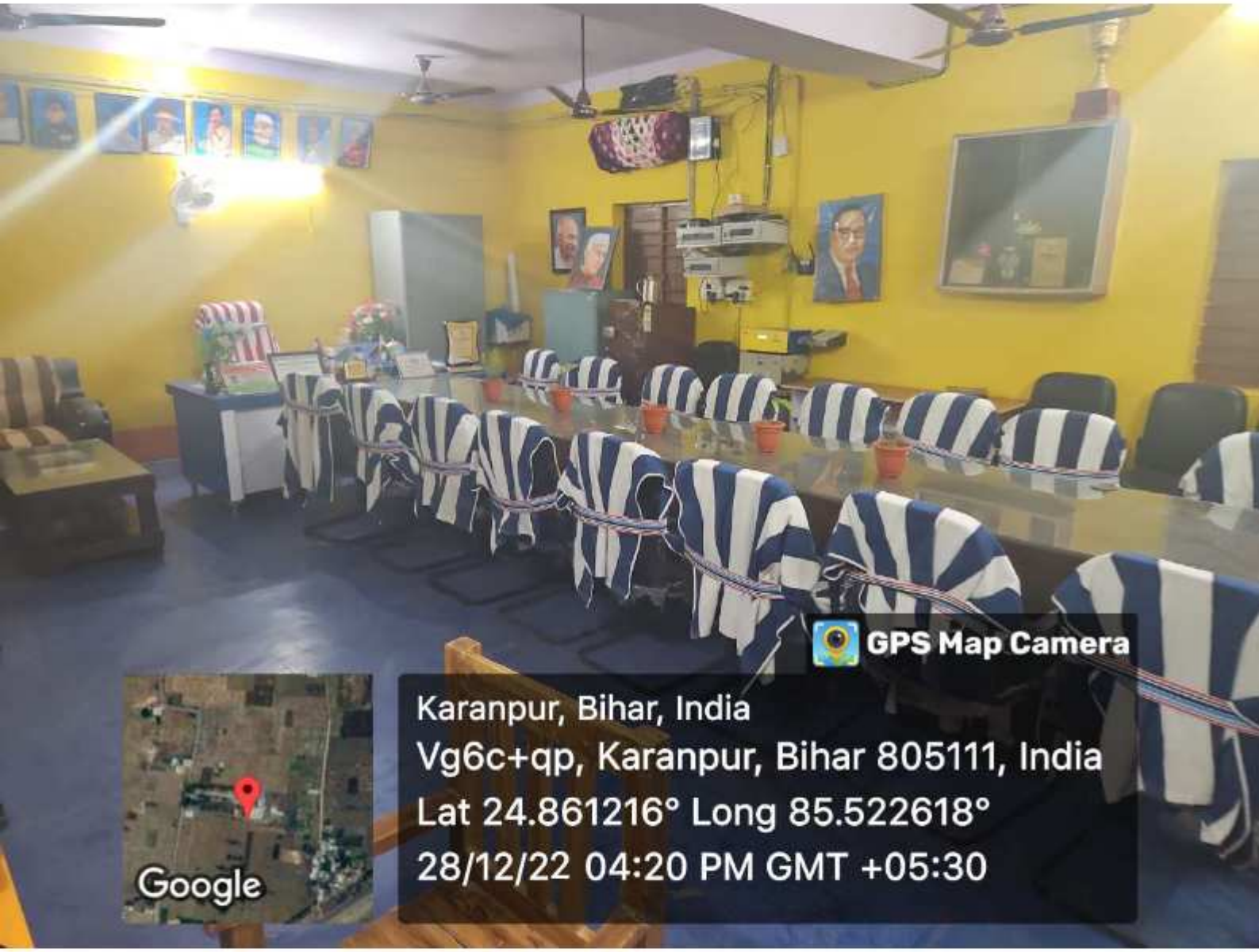
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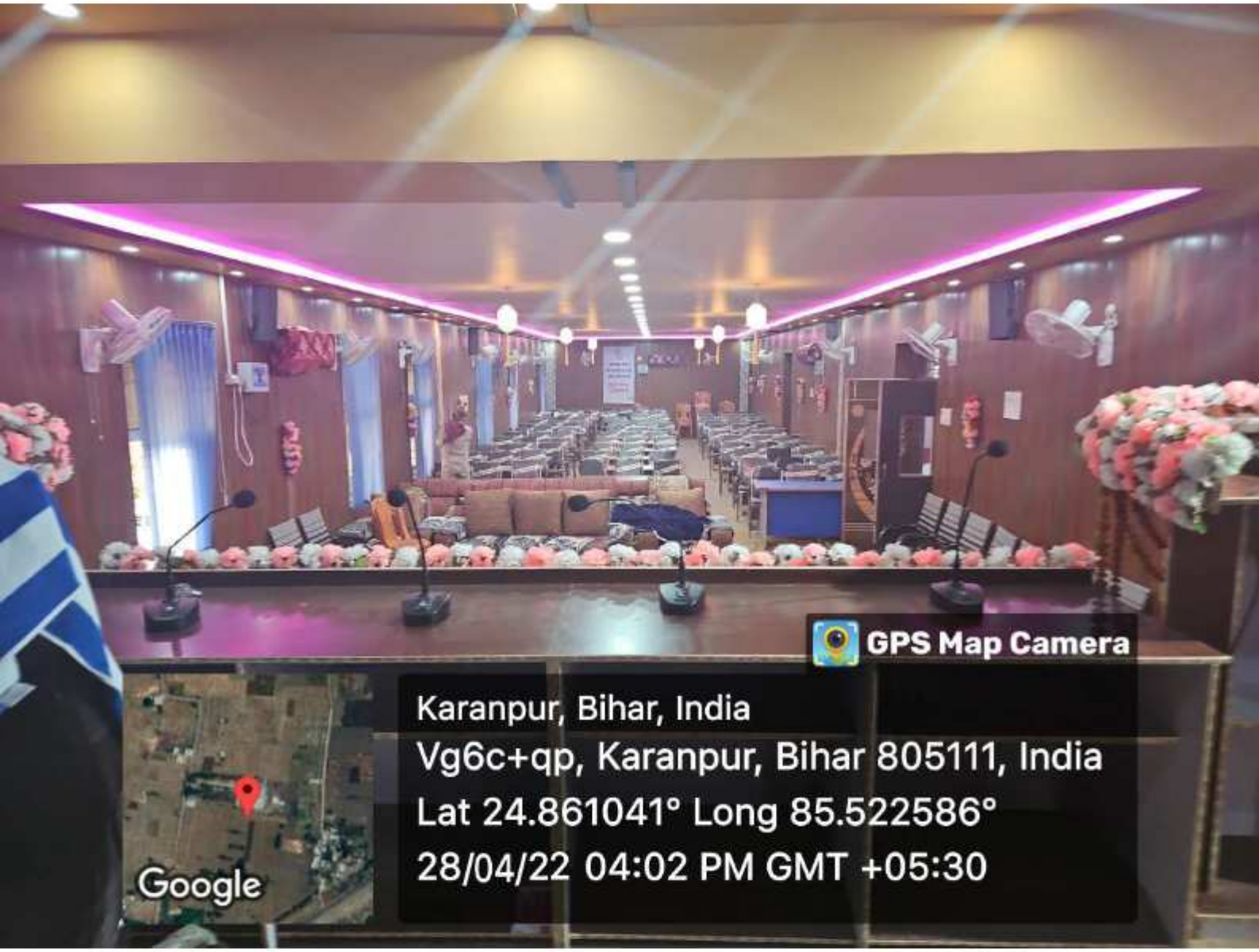
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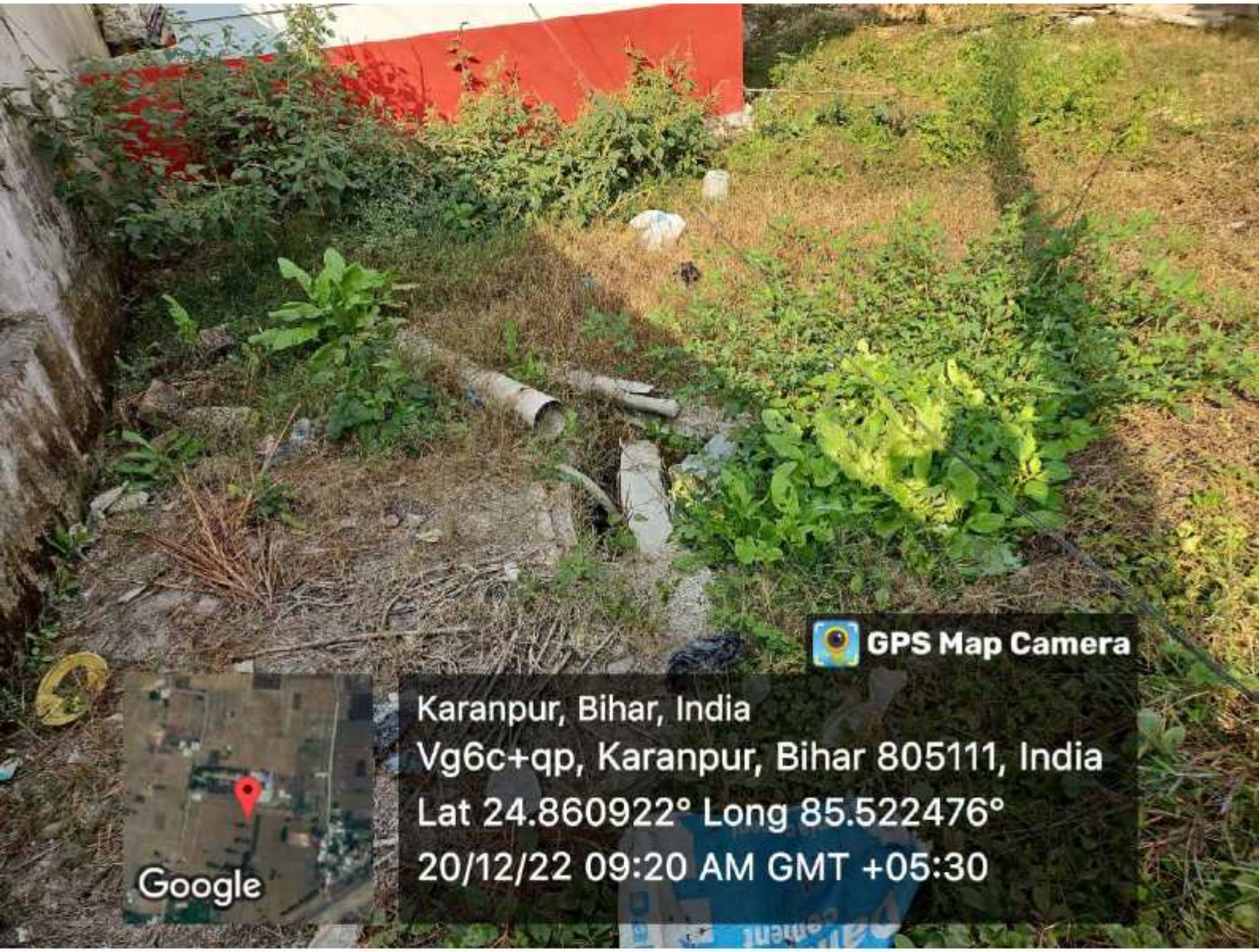
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