



KHARAGPUR COLLEGE

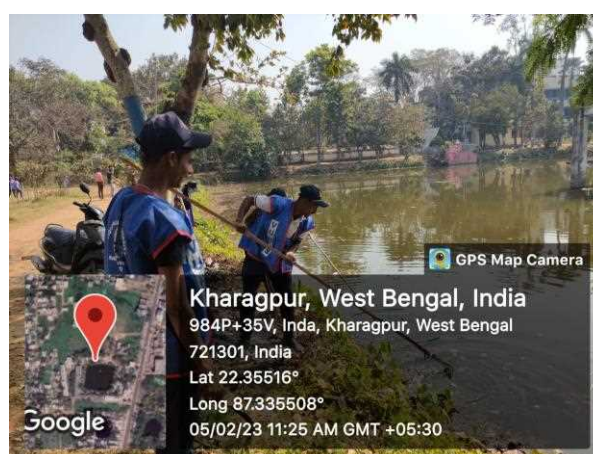
KHARAGPUR

ESTD. : 1949

P.O.– Inda, Kharagpur, Municipality– Kharagpur, Sub-Division– Kharagpur,
P.S.– Kharagpur (T), Dist.– Paschim Medinipur, West Bengal, PIN– 721305.

7.1.3 (a) Report on Environmental Promotional activities conducted beyond the campus and Clean and Green campus Initiatives with geo tagged photographs with caption and date

Clean and green campus initiatives by NSS units





Plantation in the campus by NSS units

(b) Environmental Promotional activities conducted beyond the campus



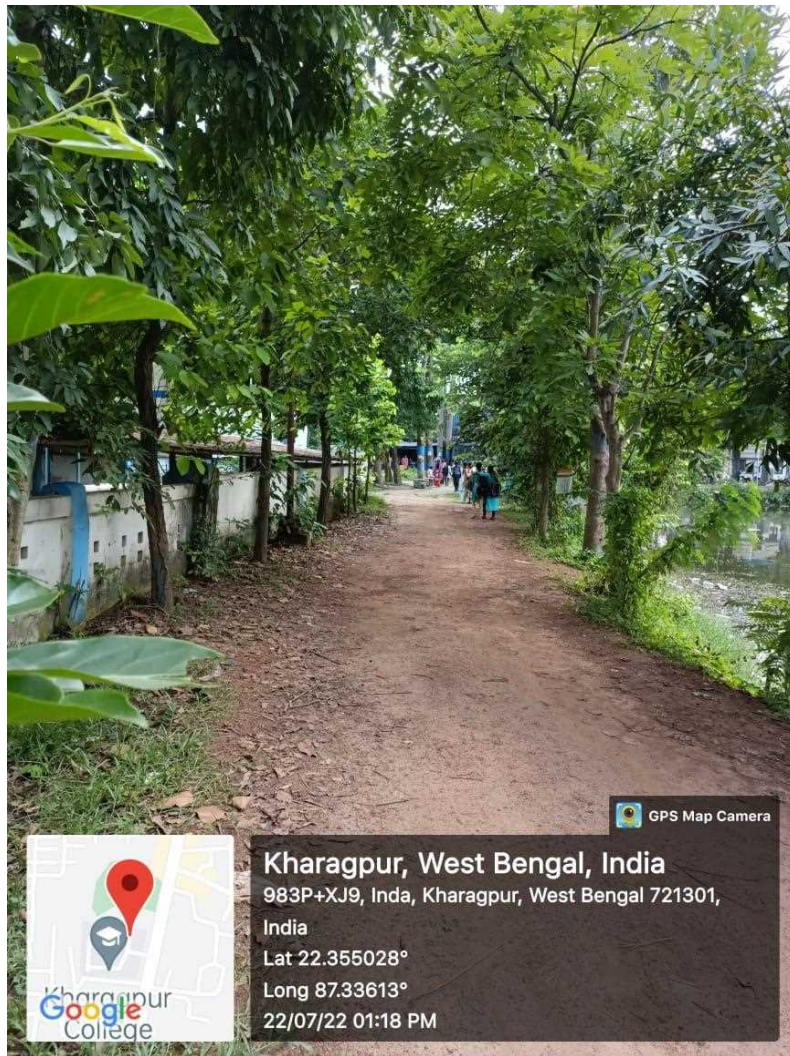
Cleaning programme of the Gandhi Colony(beyond the campus) an adapted colony of the college on the occasion of Clean India on 31.10.2022



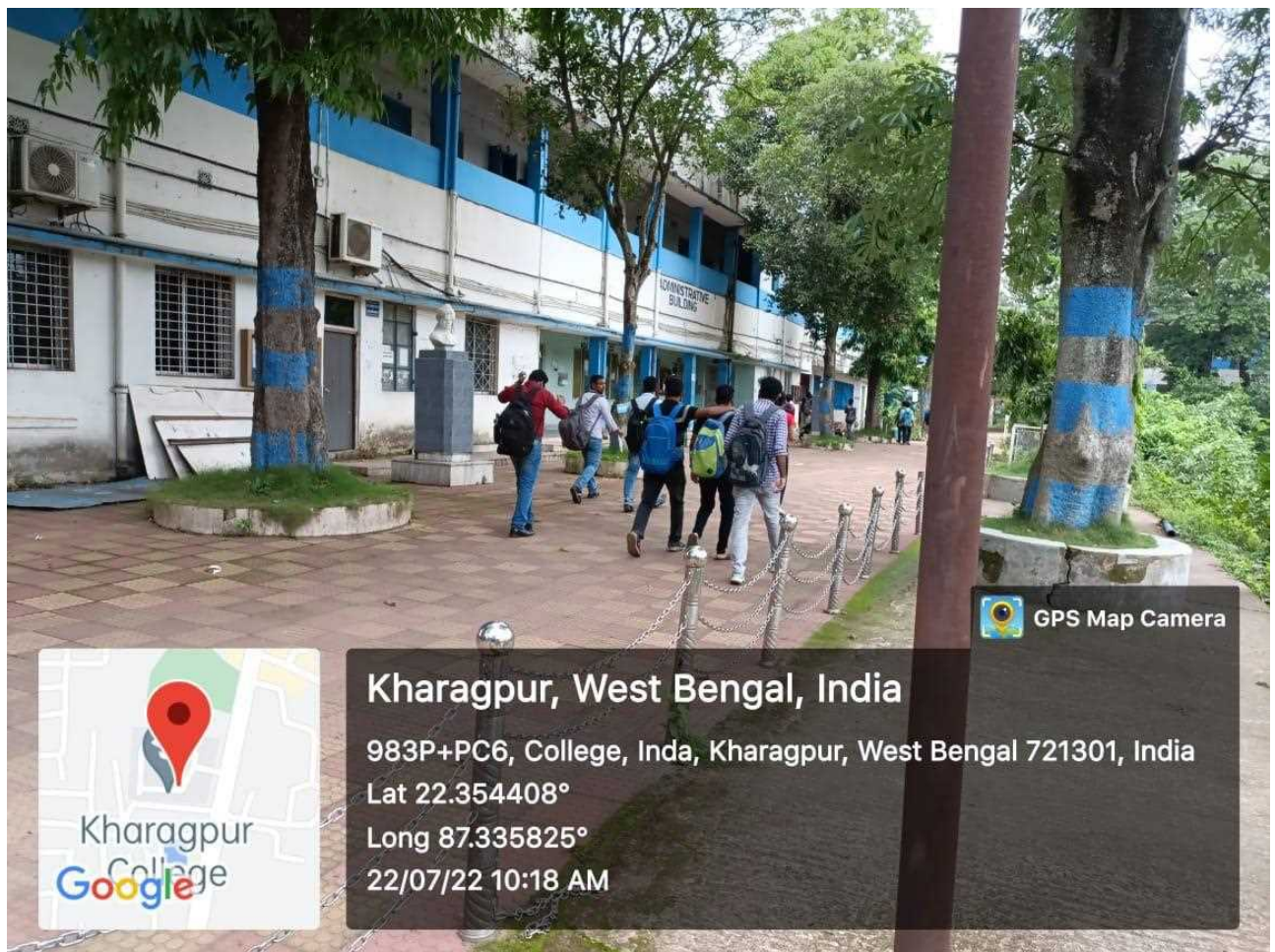
Campaign against Environmental pollution conducted by the NSS unit – I, Kharagpur College beyond the campus on 05.06.2023 (World Environment Day).



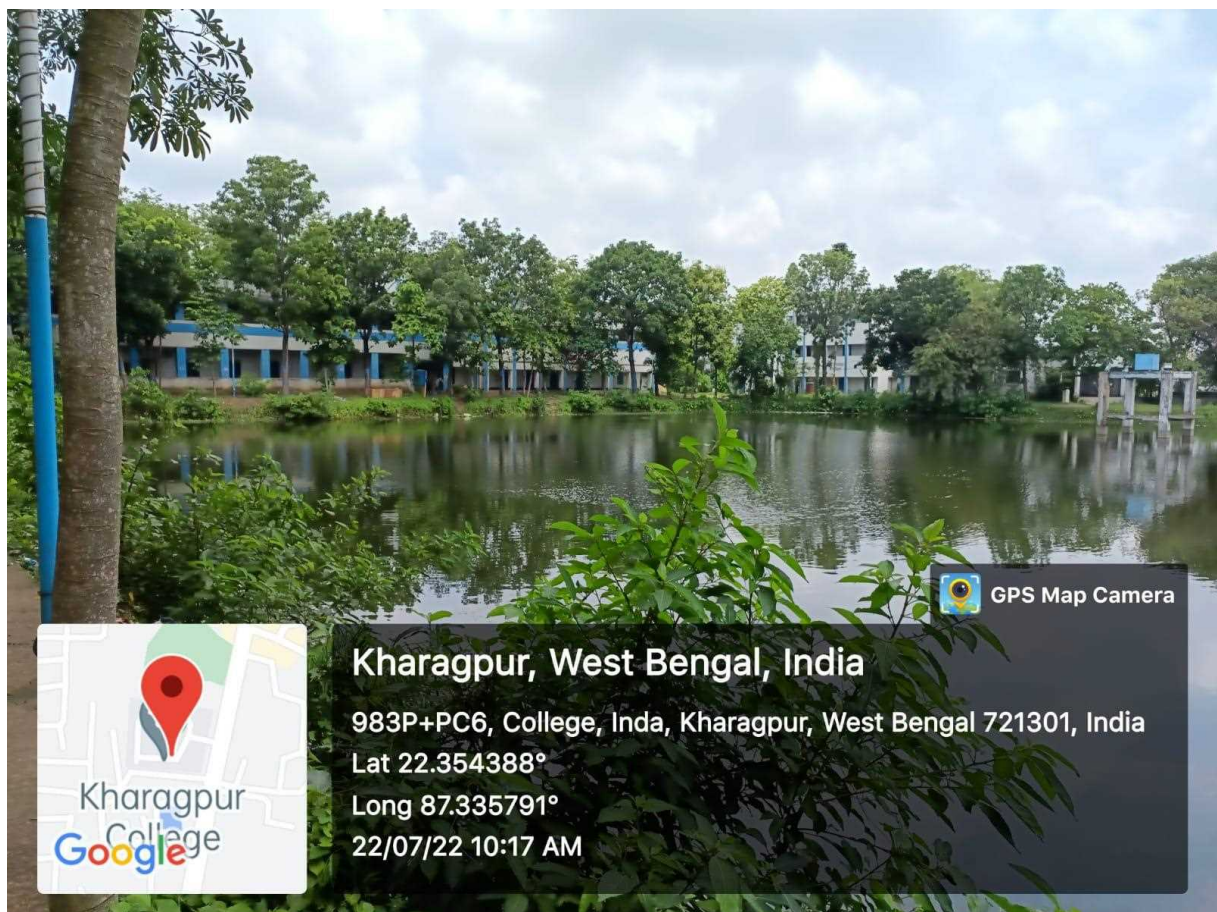
Main Entrance of the Kharagpur College



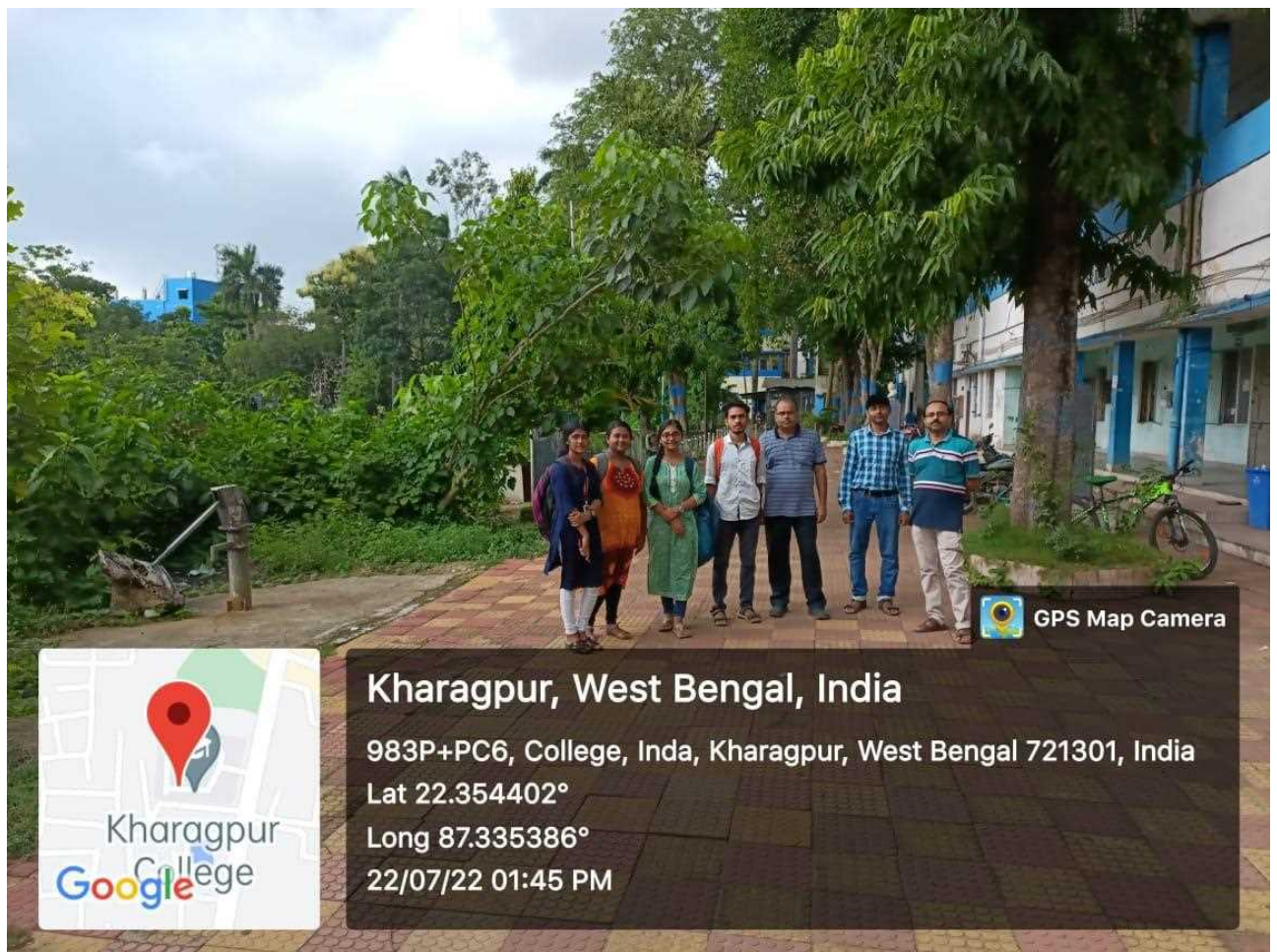
Road covered by trees and plants inside the college campus



Roads in front of administrative building.



A big pond at the centre of the main campus, landscaping with trees and plants



Road in front of the Science Building covered by trees and plants.

तारीख / Date: 12-12-2022

जापनसंख्या/ Memo no: MGNCRE/SAP/21



भारत सरकार / Government of India

महात्मा गांधी राष्ट्रीय ग्रामीण शिक्षा पररषद / Mahatma Gandhi National Council of Rural
Education उच्चशिक्षाशिभाग/Department of Higher Education

शिक्षामंत्रालय / Ministry of Education



Sustainability Index Certificate

This is to certify that **Kharagpur College, Kharagpur, Paschim Medinipur, W.B.** has successfully elevated the Swachhta Action Plan, adopted and implemented best practices in the areas of Sanitation, Hygiene, Waste Management, Water Management, Energy Management and Greenery Management.

Dr W G Prasanna Kumar
Chairman
MGNCRE, Ministry of Education
Government of India

Green Audit Certificate *(As per Green Building Parameters)*

The study is conducted as per Indian and International Green Building Standards initiated in the capacity of an Accredited & Certified Green Building Professional

It is awarded for **2020-2021 and 2021-2022** to the Esteemed Institution

(Analysed for 2 years and extended validity for 1 year, thus total 3 years)

Kharagpur College

OT Road, Inda, Kharagpur, Paschim Medinipur, West Bengal, India – 721305

(Site visit held on Friday, 20 January 2023)

As part of the Institution's initiatives for a Healthy & Sustainable Institute the audit was conducted.
We appreciate the immense efforts taken by Staff and students towards the Efficient Management of Premise.

Issued on **Wednesday, 15 March 2023** and valid till **March 2024**


Ar. Nahida Abdulla Shaikh

Registered Architect, P.G.D.R.D, ISO Certified I. A. (IMS)

Indian Green Building Council Accredited Professional (IGBC AP)

ASSOCHAM GEM Green Building Council Certified Professional (**Registration. No. 22/718**)

Project Head and Green Building Professional-Consultant

Sustainable Academe I Sustainability Department of Greenvio Solutions, Naigao

An environment Design and Consultancy developing Healthy and Sustainable Environment

Email: sustainableacademe@gmail.com I greenviosolutions@gmail.com



Website: <https://thegreenviosolutions.co.in/>

Energy Audit Certificate (As per Green Building Parameters)

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Website: <https://thegreenviosolutions.co.in/>

PASCHIM MEDINIPUR MANUSER ABALAMBAN WELFARE ORGANISATION



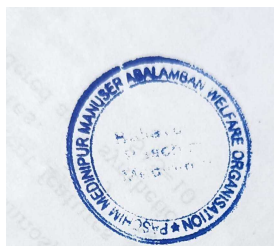
BALLAVPUR, PASCHIM MEDINIPUR

REGISTRATION NO - S0021359

GREEN AUDIT CERTIFICATE

This is to certify that Green Audit was conducted at Kharagpur College on 23rd June 2022. College has submitted all the necessary data and credentials for scrutiny. The activities and measures carried out by the college have been verified based on the report submitted and was found to be satisfactory. The efforts taken by the college authority and students to maintain green campus are highly appreciated.

Date - 30.06.2022



Happy Das

Secretary

PASCHIM MEDINIPUR

MANUSER ABALAMBAN

WELFARE ORGANISATION

BALLAVPUR, PASCHIM MEDINIPUR

Manuser Abalamban Welfare Organisation
Secretary
Happy Das

VALID TILL- JUNE 30, 2023

ENVIRONMENT AUDIT

STUDY PERIOD (TWO YEARS) 2020 – 2021 & 2021 – 2022

Sustainability study
AUDIT REPORT

Studied for
Kharagpur College
OT Road, Inda, Kharagpur, Paschim Medinipur,
West Bengal, India – 721305

Studied in the capacity of
Accredited with IGBC and Certified with ASSOCHAM GEM
Registered Architect & Green Building Professional

Studied by
 **Greenvia**
Signature Not Validated

Website: <https://greenvia.solutions.co.in/>

Email: GreenviaNTP@gmail.com

Valid till **March 2024**

Inferences of the Site visit

Audit conducted by : Nahida Shaikh, IGBC AP, GEM CP, Architect
Accredited and Certified Green Building Professional

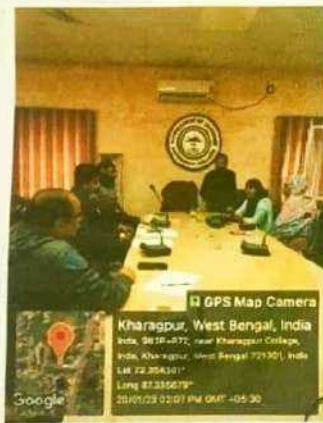
ASSOCHAM GEM Certified Professional Registration number 22/718

Link for the Verification website https://www.green-assochem.com/manage_gem_cp.php?page=12

Institute: Kharagpur College Date: 20/01/2023
Audits covered: Green Audit Day: Friday

Observations Positive points	Inferences
<ul style="list-style-type: none">- Aquatic zones- Heritage buildings with immense scope for improvisation	<ul style="list-style-type: none">- Hygiene should be improved- Undertake certain campus beautification programmes with students.- Under hygiene management of building repair

Evidence of the site visit



Signature of Ar. Nahida Shaikh,
ASSOCHAM GEM CP 22/718

College Name: Kharagpur College
Signature: [Signature] 20.01.2023.
Name: Dr. Jyotirmoy Pramanik
Designation: Co-ordinator, ZQAC.
Date: 20.01.2023.

For Greenvio Solutions

Signature: [Signature]

Name: Mrs F. A. Shaikh

Designation: Manager

Date: 20/01/23

(Principal is on leave today).

Signature Not Verified

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Disclaimer

The Audit Team has prepared this report for the **Kharagpur College** located at OT Road, Inda, Kharagpur, Paschim Medinipur, West Bengal, India – 721305 based on input data submitted by the College analysed by the team to the best of their abilities.

The details have been consolidated and thoroughly studied as per the various guidelines for Green Buildings available in National and International Standards; the report has been generated based on comparative analysis of the existing facilities and the prerequisites formulated by various standards. The inputs derived are a result of the inspection and research. These will further enhance and develop a Healthy and Sustainable Institution.

These can be implemented phase wise or as a whole depending on the decision taken by the Hon'ble Management and College. The warranty or undertaking, expressed or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

The audit is a thorough study based on the inspection and investigation of data collected over a period of time and should not be used for any legal action. This is the property of Greenvio Solutions and should not be copied or regenerated in any form.

The Report is prepared by the Team of Greenvio Solutions under their brand and department – Sustainable Academe as Consultancy firm with the Project Head - Ar. Nahida Shaikh who is as an Accredited and Certified Green Building Professional-Architect. Green Building consultancy is her forte and she is one of the most sought after names when it comes to providing excellent quality services within the stipulated time frame.

The Study is conducted in capacity of Accredited & Certified Green Building Professional with extensive experience.

Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

Sustainable Academe is our department for conducting Audits

Palghar District, Maharashtra- 401208

sustainableacademe@gmail.com

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Acknowledgement

The Audit Assessment Team thanks the **Kharagpur College, West Bengal, India** for assigning this important work of Environment Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to **Prof. Anjan Kumar Chaki**, President; **Dr. Bidyut Samanta**, Principal & Secretary (Ex-officio), G.B.; **Prof. Dr. Tapan Kumar Pal**, WBSCHÉ Nominee; **Dr. Hariprasad Sarkar**, V.U. Nominee; **Dr. Chhanda Ghosal**, V.U. Nominee; **Dr. Bimal Krishna Das**, Teachers' Representative; **Sri Rabindranath Changdar**, Teachers' Representative; **Dr. Sujit Mandal**, Teachers' Representative and **Sri Abhijit Pradhan**, NTS Representative.

Our heartfelt thanks to Chairperson of the entire process **Dr. Bidyut Samanta**, Principal for the valuable inputs.

We are also thankful to **College's Task force the faculty members** who have collected data required **Prof. Happy Das** (*Special mention for the excellent coordination*).

We highly appreciate the assistance of the **entire Teaching, Non-teaching and Admin staff** for their support while collecting the data.

Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

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1. Introduction

1.1 About the Institute and its history

Kharagpur College is a highly esteemed co-educational academic institution offering UG & PG Courses in multifarious subjects. The College is situated on a lush sprawling campus at India.

Kharagpur - an urban industrialized centre in the district of Paschim Medinipur of West Bengal on the south-western periphery in between West Bengal & Orissa. It is placed at the converging point of Orissa Trunk Road stretching across between Bombay Road and Puratan Bazaar. The institution is about 2.5 km away from Kharagpur Railway Station. Railway communication facilities make it an added advantage for this institution to drag students from far-flung areas strewn across the main town.

Kharagpur College received a bountiful donation of nearly 13.4 acre of land from late Saleha Khatoon, wife of late Nasir Ali Khan of Panchberia, Kharagpur.

Construction of the present College building started under the dispersal scheme of the Government of West Bengal on the second day of July 1951. Prof. H.B. Sarkar, a renowned historian, hailing from Dhaka, Bangladesh, was the Founder-Principal of this college.

The College has developed itself into an enormous institution of teaching and learning, and stands singularly as one in a cosmopolitan ambience. This great seat of learning is devoted to the cause of providing quality education in the fields of Arts, Science & Commerce.

To the objective of producing skilled professionals as well as talented youths of mounting personalities and firm commitments towards the service of the society as a whole, this institution, by and large, keeps itself occupied in an unfettered manner in upholding the environment which aims at motivating the students in practicing the virtues of self-

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discipline, creativity and excellence.

The institution sets out to inculcate knowledge and moral values into the fledgling minds of the young students and to forge a spirit of unity and solidarity among them to see India as a united nation. **The professed mission of the College is to follow the principle of 'Advancement of Learning' to encourage young minds in the new vistas of knowledge as demanded by globalization.**

The challenges have been mainly thrown by globalization the whole world is reeling under. Globalization demands qualitative education through modern technologies based on ICT-oriented teaching and learning process.

- ➔ The acute financial crunch faced by the College stands in the way of combating the first challenge.
- ➔ The second challenge is to open PG Courses in more and more new subjects and to introduce job-oriented Certificate and Diploma Courses in near future to generate extensive job opportunities for the students.
- ➔ The third challenge is to train up the students up to the expectations of different government and non-government concerns.

The youths will get exposed to new levels of training, to understand both theoretical and practical aspects of the profession they opt for. A large number of industrial units, it may be expected, will guide the youths in choosing appropriate professional fields to tap huge markets created by open economy. **In order to handle the above mentioned challenges, what the College needs first and foremost, is the expansion of infrastructural facilities that would require huge amount of money.**

Mobilizing resource is an uphill task. Just to drive home the point, various resource mobilizing measures are under way.

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1.2 Assessment of the Institute

1.2.1 Affiliations

The Institute is affiliated to **Vidyasagar University** which was established by an Act of the West Bengal legislature which was notified in the Calcutta Gazette on 24 June 1981. It is an affiliating university in Paschim Medinipur district of southern West Bengal, India.

1.2.2 Accreditation

The College received a CGPA of 2.76 with a B++ Grade in its first cycle of Accreditation in 2021 awarded by the National Assessment & Accreditation Council. The College is due to enter its second cycle of NAAC soon.

1.3 Facilities

The College emphasizes on latest technological advancement through its educational initiatives. Some of the current key facilities are listed below.

- ➔ Hostel facilities for boys and girl students
- ➔ Social welfare activities
- ➔ Library (Computerized) with separate reading room for students and staff.
- ➔ Teacher's Common room and Rest room for Non-Teaching Staff.
- ➔ Play Ground, Outdoor and Indoor games facilities, Multi-gym facility.
- ➔ Drinking water supply from deep tube well.
- ➔ Women's cell including committee against sexual harassment.
- ➔ Social interactions with neighbourhood society by extension activities.
- ➔ Boundary wall around the college campus.

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2. Institution overview

2.1 Populace analysis for Academic year 2021 - 2022

2.1.1 Students data

The student data (shared by the College) shows there were a total of **2,291 male and 1,307 female students** on the premises.

2.1.2 Staff data

Type	Male	Female	Total
Admin staff	14	1	15
Teaching staff	86	24	110
Non-Teaching staff	33	7	40
Total Staff Members	133	32	165

Table 1: Staff data of the Institution for 2021 - 2022

The staff data shows the premises had a total of **165** Staff Members.

2.2 Populace analysis for Academic year 2020 - 2021

2.2.1 Students data

The student data (shared by the College) shows there were a total of **1,882 male and 1,823 female students** on the premises.

2.2.2 Staff data

Type	Male	Female	Total
Admin staff	14	1	15
Teaching staff	86	24	110
Non-Teaching staff	33	7	40
Total Staff Members	133	32	165

Table 2: Staff data of the Institution for 2020 - 2021

The staff data shows the premises had a total of **165** Staff Members.

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2.3 Total College Area & College Building Spread Area

The **total site area is 20.09 acres & total Built-up area of College is 1,80,187.86 sq. ft. for around 3,763 populace footfalls.**

2.4 College Infrastructure

2.4.1 Establishment

Kharagpur College was founded on **29 August 1949** in the premises of Silver Jubilee School at Puratan Bazaar.

2.4.2 Spatial Organisation

The College has ample and wide open classes with facilities appropriate for an educational space. There are open spaces with a beautiful entrance approach. The balance of hardscape and softscape provides a landscape serene ambience. **Overall the Infrastructure of the Building is excellent in terms of the Architecture Design.**

2.4.3 Operation and maintenance of the premises

The data collection session was held with the staff regarding the operation and working hours. The schedule is mentions that the College is working six days a week from 6.30 a.m. to 7 p.m. every day (Morning shift being 6:30 a.m. to 1:00 p.m. while the Day shift being 10:00 a.m. to 4:00 p.m. and the evening shift being 1:00 p.m. to 7 p.m.)

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3. Green Building research approach

3.1 About the Green Building Study Audit

It is a systematic study of the aspects which make the Institution sustainable and healthy premises for its inhabitants.

3.2 Analysis of the Green Building Study Audit

The procedure included detailed verification as follows:

- ➔ Analysis of the data
- ➔ Observations
- ➔ Inferences
- ➔ Way forward

3.3 Strategy adopted for Green Building Study Audit

The strategies included data collection from the admin department, actual inventory, investigation to check the operation and maintenance, analysis of the data collection, and preparation of the Report.

3.4 Activities undertaken for the Green Building Study Audit

- ➔ Allotment and Initiation by the Institute
- ➔ Survey of students and staff completed
- ➔ Site visit at the Institute
- ➔ Submission of the Certificate

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Induction Meeting

Institute: Kharagpur College Date: 20/01/2023
Audits covered: Green Audit Day: Friday
Energy Environment

S. No	Name	Designation	Signature
1.	Mr. Happy Das	SACT-II	H. Das
2.	Prof. Mahanga Singh	Associate Prof.	M. Singh
3.	Dr. Jyotirmoy Pramanik	Associate Prof.	J. Pramanik
4.	Dr. Debashis Aich	Asst. Prof.	D. Aich
5.	Mr. Pankaj Patra	SACT-II	P. Patra
6.	Dr. Bimal Krishna Das	Associate Prof.	B. Das
7.	Mr. Nalade Abdullah	IGBC AP, project lead	N. Abdullah
8.	Mrs. Tanide Shakti	Project Manager	T. Shakti

College Name: Kharagpur College
Signature: [Signature]
Name: Dr. Jyotirmoy Pramanik
Designation: Coordinator B&AC
Date: 20/01/2023

For Greenvio Solutions
Signature: [Signature]
Name: Mrs F. A. Shaikh
Designation: Manager
Date: 20/01/23

(Principal is on leave today).

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Exit Meeting

Institute: Kharagpur College Date: 20/01/2023
Audits covered: Green Audit Day: Friday
Energy Environment

S. No	Name	Designation	Signature
1.	Prof. Mahanga Singh	Associate Prof.	M. Singh
2.	Mr. Happy Das	SACT - II	H. Das
3.	Dr. Jyotirmoy Pramanik	Associate Prof.	J. Pramanik
4.	Dr. Debashis Aich	Asst. Prof.	D. Aich
5.	Mr. Pankaj Patra	SACT - II	P. Patra
6.	Dr. Binul Krishna Das	Associate Prof.	B. Das
7.	Dr. Nalinda Abdulla	Project Head	N. Abdulla
8.	Dr. Farida Shaikh	Project Manager	F. Shaikh

Extension

College Name: Kharagpur College
Signature: [Signature]
Name: Dr. Jyotirmoy Pramanik
Designation: Co-ordinator SACT
Date: 20/01/2023



(Principal, Kharagpur College
is on leave today).

For Greenvio Solutions
Signature: [Signature]
Name: Mrs F. A. Shaikh
Designation: Manager
Date: 20/01/23



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4. Site investigations

The following listed are the site elements observed during the site visit. These are documented with spaces-positive points-improvement areas as follows:

4.1 Positive site features

- ➔ Pollution free premises:
 - ⇒ No Noise pollution
 - ⇒ No Dust pollution
 - ⇒ No Water pollution
 - ⇒ No Air pollution
- ➔ Availability of an Aquatic zone which acts as a natural rain water harvesting site.
- ➔ Resting places in the form of seating around the trees.
- ➔ Medicinal plant areas are provided in the site.
- ➔ Nearly low fossil fuel usage in the premises.
- ➔ Silence zone is maintained well in the premises.

4.2 Improvement areas of the site

- ➔ Need to adopt awareness practices about 'No smoking' and 'No tobacco'
- ➔ Certain places have issues about water leakages; there are maintenance issues.
- ➔ Cleanliness aspects need to be improved.
- ➔ Dry and wet (Twin-litter dustbins) are available but they need to be placed at appropriate locations at every designated distance and increase the nos. of bins in the outdoor areas.
- ➔ The Campus needs to undergo a structural audit as it is an old campus; this can be undertaken to improve the civil and repair areas of the premises.
- ➔ Increase the nos. of maintenance staff is an immediate step that needs to be taken to improve the site context w.r.t maintenance.

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5. Site observations

Environment is an essential part for human survival. We co-exist with the environment and it cannot be termed as a separate entity. The Ecological audit helps to understand the flora, fauna that exists and steps that can be taken to improve the same.

To denote if there are problems related to sound in and around the surrounding. In terms of the carbon footprint it helps in keeping a tab on the eco-friendly habits incorporated by the inhabitants of the premises.

Health today is the topmost priority, a general understanding of the initiatives undertaken along with sufficient hygiene practices adopted. Universal design is applicable to all built and unbuilt spaces.

5.1 Open Spaces

There is an open space in the premises used by students at present for sports and cultural gatherings. **There are provisions for natural plantations which have enhanced the beauty of the space.**

5.2 Flora audit

5.2.1 Flora audit

A flora survey was carried out to identify the total numbers of plants and trees. The landscape area has a variety of plantations constituting hundreds of surveyed trees in premises documented below.

S. No.	Plant name	Type	Nos.	Planted by
1	<i>Swietenia Macrophylla</i>	Tree	10	Staff
2	<i>Beaucarnea Recurvata</i>	Shrub	2	Staff
3	<i>Combretum Erythrophyllum</i>	Tree	3	Staff
4	<i>Pterocarpus Marsupium</i>	Tree	5	Students
5	<i>Alstonia Scholaris</i>	Tree	4	Staff

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6	<i>Polyalthia Longifolia</i>	Tree	9	Staff
7	<i>Mimusops Elengi</i>	Tree	4	Staff
8	<i>Caryota Urens</i>	Tree	2	Staff
9	<i>Hyophorbe Lagenicaulis</i>	Shrub	4	Staff
10	<i>Magnolia Champaca</i>	Tree	1	Staff
11	<i>Thuja Occidentalis</i>	Shrub	1	Staff
12	<i>Tectona Grandis</i>	Tree	10	Staff
13	<i>Cascabela Thevetia</i>	Tree	1	Staff
14	<i>Syzygium Cumini</i>	Tree	3	Staff
15	<i>Tamarindus Indica</i>	Tree	18	Grown Naturally
16	<i>Azadirachta Indica</i>	Tree	1	Grown Naturally
17	<i>Psidium Guajava</i>	Tree	2	Grown Naturally
18	<i>Mangifera Indica</i>	Tree	1	Grown Naturally
19	<i>Spathodea Campanulata</i>	Tree	3	Staff
20	<i>Musa × Paradisiaca</i>	Shrub	1	Students
21	<i>Albizia Lebbeck</i>	Tree	2	Staff
22	<i>Pterocarpus Santalinus</i>	Tree	1	Staff
23	<i>Sena Fistula</i>	Tree	1	Staff
24	<i>Terminalia Bellirica</i>	Tree	2	Staff
25	<i>Bauhinia Purpurea</i>	Tree	1	Students
26	<i>Roystonea Regia</i>	Tree	4	Staff
27	<i>Cycas Rumphii</i>	Shrub	2	Staff
28	<i>Manilkara Zapota</i>	Tree	1	Staff

Table 3: Details of the Flora in the premises

At present, there are more than 90 nos. plantations on the premises. The overall ambience of premises has lots of plants.

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5.3 Noise Audit

On a macro level the College is surrounded by huge farms and minimal residential blocks **thus there is a peaceful and noise free arena observed inside the premises.**

5.4 Carbon Footprint Audit

5.4.1 Eco-friendly Commuting Practices

- ➔ The site is located in a semi-urban locality.
- ➔ The College is a famous Institute and has a dedicated bus stop close by which acts as a source of public transport as mode of commute.
- ➔ As an alternative there are hostel facilities for students and thus the dependence on mode of transport to commute is further reduced.
- ➔ Overall, the carbon footprint is well under control owing to the above reasons.

5.4.2 Heat Island Reduction

The team was present on site: the following observations and inferences were documented:

- ➔ There are sufficient nos. of plantations on site which provide not just cool ambience but also shaded areas as natural walkways.
- ➔ However, there is an urgent need to improve the site context and increase the nos. of plantations on ground and terraces (rooftop gardens).

5.4.3 Outdoor Light Pollution Study

The College compound lights are not upward looking thus, these do not cause light pollution.

5.5 Universally accessible premises

As per World Report on Disability, 2011 there are 180 million approx. Persons with Disabilities that makes it 15% of total population of India.

The following facilities are available on the premises for the specially-abled as part of

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universally accessible premises initiatives.

- ➡ Ramps at the entrance area
- ➡ Low height risers in the staircases
- ➡ Non-slippery floor surfaces

The design of the premises is highly appropriate for access with passages and corridors being wide enough in size and naturally ventilated.

5.6 Fire Safety

Fire and life safety are an important consideration of the National Building Code 2016. This aspect is touched upon as part of this study in the capacity of an Architect registered with the Council of Architecture. As part of the research, fire safety audit was considered from the 'Building systems' perspective.

We have observed that fire extinguishers are the only source of fire safety measures at present.

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6. Site inferences

6.1 Section-wise suggestions related to premises

The following suggestions are to be considered as a **first priority** for implementation. These **should be executed within the next 1.5 to 2.5 years from the date of the Report submission**. The Institute can execute a plan after discussion with Project Head.

6.1.1 Site beautification

- ➔ **Beautification of the entrance pathway** - The existing bricks (waste from the existing new construction going on) can be used or upgraded the pathway through an appropriate Landscape Architecture design.
- ➔ **Bird house/ Feeders** - At appropriate locations there can be provisions for drinking water and some grains for birds as they visit the site much frequently.
- ➔ **Garden development** - The existing open space should be designed as an Architectural landscape.
 - Scientific name plates and QR codes – The team should undertake a project to have name plates with QR codes on every plant of the premises.
 - The landscape redesign and ecological redesign – This should be done to increase the shade cover in the entire premises.

6.1.2 Universally accessible premises

- ➔ **Universal Toilet** - There should be a minimum of 1 toilet in every block for the specially-abled people as per guidelines prescribed by the National Building Code 2016.
- ➔ **Resting places** - There should be increased provision for resting places on-premises outdoor and indoors.
- ➔ **Provisions for visually impaired - Tactile flooring** – The indoor and outdoor of the premises should have dedicated tactile flooring for the visually impaired.

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6.1.3 Life safety

- ➔ **Mandate fire extinguisher in spaces** - One fire extinguisher should mandatorily be there in every space which has an air conditioner/ gas cylinder.
- ➔ **Safety for scientific laboratory** – These areas should have sand buckets, ventilators, fire extinguisher as per required grade, fire and life safety notice board.
- ➔ **Combustible equipment** - Every space which has a gas cylinder or combustible equipment should have a provision for the barricade around the gas cylinders, appropriate safety board's mentioning 'danger sign' and 'Do not touch' with an additional small fire extinguisher close by.

6.1.4 Pollution Control

- ➔ **Promote the use of Eco-friendly vehicles** - There can be student and staff sensitization program on eco-friendly and battery-operated vehicles/ low emission vehicles for daily use.
- ➔ **Avoid burning waste** - The waste produced on the premises should not be burned as it is dangerous to the health of students and staff
- ➔ **Bicycles as a gift** - As an appreciation gesture maybe the student's toppers/ staff best performers can be awarded a bicycle occasionally.

6.1.5 Heat island reduction

- ➔ **Cool rooftops** - It is suggested that the Institute gets the Terrace roofs painted with Cooltop as it will help reduce the temperature of the spaces.
- ➔ **Shaded area for walkways** – There should be provisions for shaded walkways and also resting/ breakout zones.

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On-site investigation and physical verification

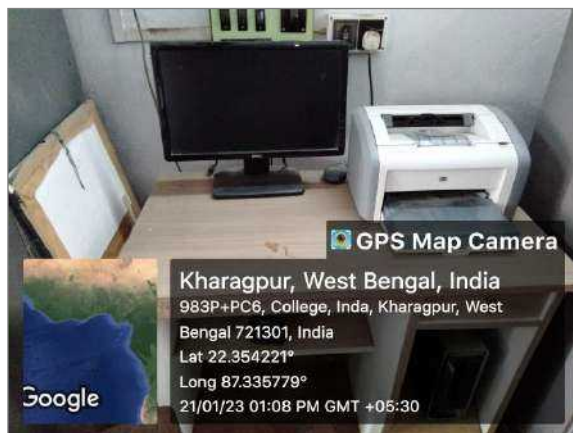
Audit Team during the visit and other photos collected during data documentation



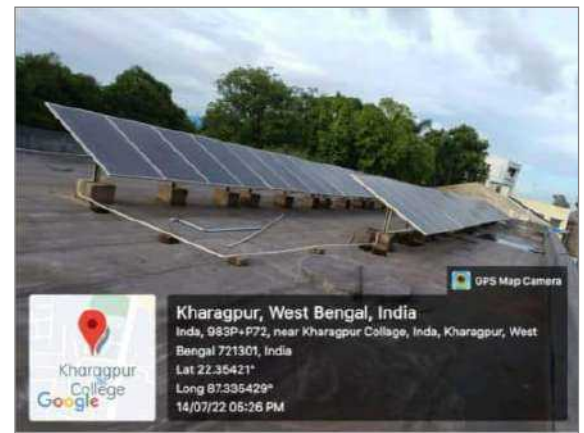
Discussion with the Core Team



On-site discussion at the outdoors



Energy appliances in the premises



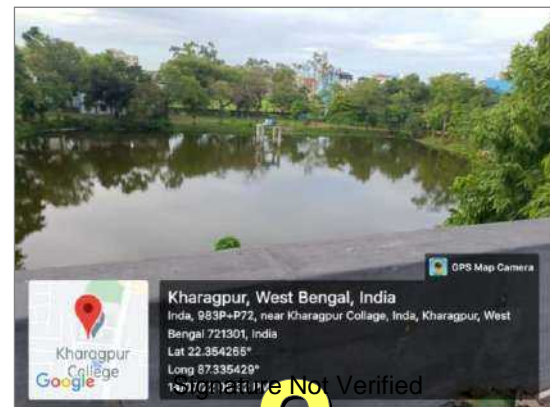
Rooftop solar panels in the premises



L-R : Potted plants; Nameplate on the plants; Outdoor gardening and Parking shed



Sanitary vending machine and dustbins in premises



Aquatic zone as rain water harvesting facility

7. References

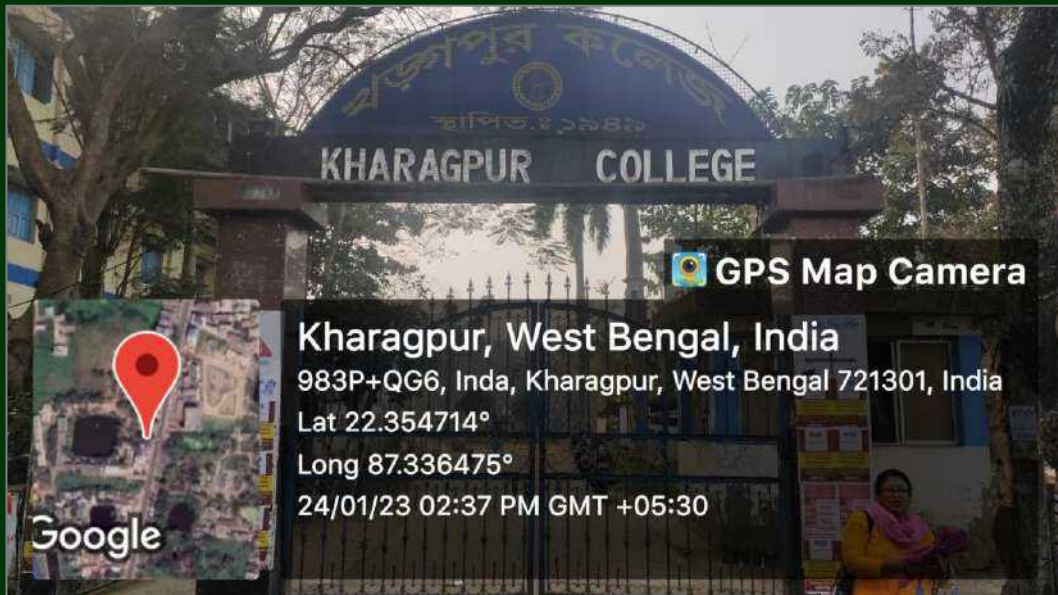
The study is based on the data collected, analyzed, rechecked, and confirmed through multiple modes. For the quality study, some standards/ notes have been referred to. These are listed and noted below. However, no direct references have been used anywhere. These are used as a base to analyze and study the data collected.

- ➔ Uniform Plumbing Code – India, 2008
- ➔ IGBC Green Existing Buildings – Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013
- ➔ IGBC Green Landscape Rating system, March 2013
- ➔ BOMA Canada Waste Auditing Guide, Best Environmental Standards, BOMA BEST – Canada
- ➔ Used only for understanding Universal design - Universal accessibility Guidelines for Pedestrian, Non-motorized vehicle and Public Transport Infrastructure – Report guidelines by Samartham (National centre for Accessible Environments) – an initiative supported by Shakti Sustainable Energy Foundation.

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ENERGY AUDIT

STUDY PERIOD (TWO YEARS) 2020 – 2021 & 2021 – 2022

Sustainability study

AUDIT REPORT

Studied for

Kharagpur College

OT Road, Inda, Kharagpur, Paschim Medinipur,
West Bengal, India – 721305

Studied in the capacity of

Accredited with IGBC and Certified with ASSOCHAM GEM

Registered Architect & Green Building Professional



Studied by

Signature Not Verified

Website: <https://greenviosolutions.co.in/>

Email: samantha@gmail.com

Valid till **March 2024**

Inferences of the Site visit

Audit conducted by : Nahida Shaikh, IGBC AP, GEM CP, Architect
Accredited and Certified Green Building Professional

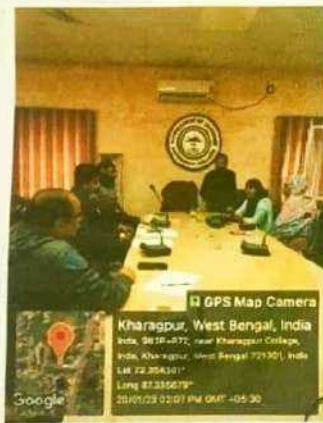
ASSOCHAM GEM Certified Professional Registration number 22/718

Link for the Verification website https://www.green-assochem.com/manage_gem_cp.php?page=12

Institute: Kharagpur College Date: 20/01/2023
Audits covered: Green Audit Day: Friday

Observations Positive points	Inferences
<ul style="list-style-type: none">- Aquatic zones- Heritage buildings with immense scope for improvisation	<ul style="list-style-type: none">- Hygiene should be improved- Undertake certain campus beautification programmes with students.- Under hygiene management of building repair

Evidence of the site visit



Signature of Ar. Nahida Shaikh,
ASSOCHAM GEM CP 22/718

College Name: Kharagpur College
Signature: [Signature] 20.01.2023.
Name: Dr. Jyotirmoy Pramanik
Designation: Co-ordinator, IQAC.
Date: 20.01.2023.

For Greenvio Solutions

Signature: [Signature]

Name: Mrs F. A. Shaikh

Designation: Manager

Date: 20/01/23

(Principal is on leave today).

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Disclaimer

The Audit Team has prepared this report for the **Kharagpur College** located at OT Road, Inda, Kharagpur, Paschim Medinipur, West Bengal, India – 721305 based on input data submitted by the College analysed by the team to the best of their abilities.

The details have been consolidated and thoroughly studied as per the various guidelines for Green Buildings available in National and International Standards; the report has been generated based on comparative analysis of the existing facilities and the prerequisites formulated by various standards. The inputs derived are a result of the inspection and research. These will further enhance and develop a Healthy and Sustainable Institution.

These can be implemented phase wise or as a whole depending on the decision taken by the Hon'ble Management and College. The warranty or undertaking, expressed or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

The audit is a thorough study based on the inspection and investigation of data collected over a period of time and should not be used for any legal action. This is the property of Greenvio Solutions and should not be copied or regenerated in any form.

The Report is prepared by the Team of Greenvio Solutions under their brand and department – Sustainable Academe as Consultancy firm with the Project Head - Ar. Nahida Shaikh who is as an Accredited and Certified Green Building Professional-Architect. Green Building consultancy is her forte and she is one of the most sought after names when it comes to providing excellent quality services within the stipulated time frame.

The Study is conducted in capacity of Accredited & Certified Green Building Professional with extensive experience.

Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

Sustainable Academe is our department for conducting Audits

Palghar District, Maharashtra- 401208

sustainableacademe@gmail.com

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Acknowledgement

The Audit Assessment Team thanks the **Kharagpur College, West Bengal, India** for assigning this important work of Energy Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to **Prof. Anjan Kumar Chaki**, President; **Dr. Bidyut Samanta**, Principal & Secretary (Ex-officio), G.B.; **Prof. Dr. Tapan Kumar Pal**, WBSCHÉ Nominee; **Dr. Hariprasad Sarkar**, V.U. Nominee; **Dr. Chhanda Ghosal**, V.U. Nominee; **Dr. Bimal Krishna Das**, Teachers' Representative; **Sri Rabindranath Changdar**, Teachers' Representative; **Dr. Sujit Mandal**, Teachers' Representative and **Sri Abhijit Pradhan**, NTS Representative.

Our heartfelt thanks to Chairperson of the entire process **Dr. Bidyut Samanta**, Principal for the valuable inputs.

We are also thankful to **College's Task force the faculty members** who have collected data required **Prof. Happy Das** (*Special mention for the excellent coordination*).

We highly appreciate the assistance of the **entire Teaching, Non-teaching and Admin staff** for their support while collecting the data.

Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

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1. Introduction

1.1 About the Institute and its history

Kharagpur College is a highly esteemed co-educational academic institution offering UG & PG Courses in multifarious subjects. The College is situated on a lush sprawling campus at India.

Kharagpur - an urban industrialized centre in the district of Paschim Medinipur of West Bengal on the south-western periphery in between West Bengal & Orissa. It is placed at the converging point of Orissa Trunk Road stretching across between Bombay Road and Puratan Bazaar. The institution is about 2.5 km away from Kharagpur Railway Station. Railway communication facilities make it an added advantage for this institution to drag students from far-flung areas strewn across the main town.

Kharagpur College received a bountiful donation of nearly 13.4 acre of land from late Saleha Khatoon, wife of late Nasir Ali Khan of Panchberia, Kharagpur. Construction of the present College building started under the dispersal scheme of the Government of West Bengal on the second day of July 1951. Prof. H.B. Sarkar, a renowned historian, hailing from Dhaka, Bangladesh, was the Founder-Principal of this college.

The College has developed itself into an enormous institution of teaching and learning, and stands singularly as one in a cosmopolitan ambience. This great seat of learning is devoted to the cause of providing quality education in the fields of Arts, Science & Commerce.

To the objective of producing skilled professionals as well as talented youths of mounting personalities and firm commitments towards the service of the society as a whole, this institution, by and large, keeps itself occupied in an unfettered manner in upholding the environment which aims at motivating the students in practicing the virtues of self-

discipline, creativity and excellence.

The institution sets out to inculcate knowledge and moral values into the fledgling minds of the young students and to forge a spirit of unity and solidarity among them to see India as a united nation. **The professed mission of the College is to follow the principle of 'Advancement of Learning' to encourage young minds in the new vistas of knowledge as demanded by globalization.**

The challenges have been mainly thrown by globalization the whole world is reeling under. Globalization demands qualitative education through modern technologies based on ICT-oriented teaching and learning process.

- ➔ The acute financial crunch faced by the College stands in the way of combating the first challenge.
- ➔ The second challenge is to open PG Courses in more and more new subjects and to introduce job-oriented Certificate and Diploma Courses in near future to generate extensive job opportunities for the students.
- ➔ The third challenge is to train up the students up to the expectations of different government and non-government concerns.

The youths will get exposed to new levels of training, to understand both theoretical and practical aspects of the profession they opt for. A large number of industrial units, it may be expected, will guide the youths in choosing appropriate professional fields to tap huge markets created by open economy. **In order to handle the above mentioned challenges, what the College needs first and foremost, is the expansion of infrastructural facilities that would require huge amount of money.**

Mobilizing resource is an uphill task. Just to drive home the point, various resource mobilizing measures are under way.

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1.2 Assessment of the Institute

1.2.1 Affiliations

The Institute is affiliated to **Vidyasagar University** which was established by an Act of the West Bengal legislature which was notified in the Calcutta Gazette on 24 June 1981. It is an affiliating university in Paschim Medinipur district of southern West Bengal, India.

1.2.2 Accreditation

The College received a CGPA of 2.76 with a B++ Grade in its first cycle of Accreditation in 2021 awarded by the National Assessment & Accreditation Council. The College is due to enter its second cycle of NAAC soon.

1.3 Facilities

The College emphasizes on latest technological advancement through its educational initiatives. Some of the current key facilities are listed below.

- ➔ Hostel facilities for boys and girl students
- ➔ Social welfare activities
- ➔ Library (Computerized) with separate reading room for students and staff.
- ➔ Teacher's Common room and Rest room for Non-Teaching Staff.
- ➔ Play Ground, Outdoor and Indoor games facilities, Multi-gym facility.
- ➔ Drinking water supply from deep tube well.
- ➔ Women's cell including committee against sexual harassment.
- ➔ Social interactions with neighbourhood society by extension activities.
- ➔ Boundary wall around the college campus.

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2. Institution overview

2.1 Populace analysis for Academic year 2021 - 2022

2.1.1 Students data

The student data (shared by the College) shows there were a total of **2,291 male and 1,307 female students** on the premises.

2.1.2 Staff data

Type	Male	Female	Total
Admin staff	14	1	15
Teaching staff	86	24	110
Non-Teaching staff	33	7	40
Total Staff Members	133	32	165

Table 1: Staff data of the Institution for 2021 - 2022

The staff data shows the premises had a total of **165** Staff Members.

2.2 Populace analysis for Academic year 2020 - 2021

2.2.1 Students data

The student data (shared by the College) shows there were a total of **1,882 male and 1,823 female students** on the premises.

2.2.2 Staff data

Type	Male	Female	Total
Admin staff	14	1	15
Teaching staff	86	24	110
Non-Teaching staff	33	7	40
Total Staff Members	133	32	165

Table 2: Staff data of the Institution for 2020 - 2021

The staff data shows the premises had a total of **165** Staff Members.

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2.3 Total College Area & College Building Spread Area

The **total site area is 20.09 acres & total Built-up area of College is 1,80,187.86 sq. ft. for around 3,763 populace footfalls.**

2.4 College Infrastructure

2.4.1 Establishment

Kharagpur College was founded on **29 August 1949** in the premises of Silver Jubilee School at Puratan Bazaar.

2.4.2 Spatial Organisation

The College has ample and wide open classes with facilities appropriate for an educational space. There are open spaces with a beautiful entrance approach. The balance of hardscape and softscape provides a landscape serene ambience. **Overall the Infrastructure of the Building is excellent in terms of the Architecture Design.**

2.4.3 Operation and maintenance of the premises

The data collection session was held with the staff regarding the operation and working hours. The schedule is mentions that the College is working six days a week from 6.30 a.m. to 7 p.m. every day (Morning shift being 6:30 a.m. to 1:00 p.m. while the Day shift being 10:00 a.m. to 4:00 p.m. and the evening shift being 1:00 p.m. to 7 p.m.)

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3. Green Building research approach

3.1 About the Green Building Study Audit

It is a systematic study of the aspects which make the Institution sustainable and healthy premises for its inhabitants.

3.2 Analysis of the Green Building Study Audit

The procedure included detailed verification as follows:

- ➔ Analysis of the data
- ➔ Observations
- ➔ Inferences
- ➔ Way forward

3.3 Strategy adopted for Green Building Study Audit

The strategies included data collection from the admin department, actual inventory, investigation to check the operation and maintenance, analysis of the data collection, and preparation of the Report.

3.4 Activities undertaken for the Green Building Study Audit

- ➔ Allotment and Initiation by the Institute
- ➔ Survey of students and staff completed
- ➔ Site visit at the Institute
- ➔ Submission of the Certificate

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Induction Meeting

Institute: Kharagpur College Date: 20/01/2023
Audits covered: Green Audit Day: Friday
Energy Environment

S. No	Name	Designation	Signature
1.	Mr. Happy Das	SACT-II	H. Das
2.	Prof. Mahanga Singh	Associate Prof.	M. Singh
3.	Dr. Jyotirmoy Pramanik	Associate Prof.	J. Pramanik
4.	Dr. Debashis Aich	Asst. Prof.	D. Aich
5.	Mr. Pankaj Patra	SACT-II	P. Patra
6.	Dr. Bimal Krishna Das	Associate Prof.	B. Das
7.	Mr. Nalade Abdullah	IGBC AP, project lead	N. Abdullah
8.	Mrs. Tanide Shakti	Project Manager	T. Shakti

College Name: Kharagpur College
Signature: [Signature]
Name: Dr. Jyotirmoy Pramanik
Designation: Coordinator B&AC
Date: 20/01/2023

For Greenvio Solutions
Signature: [Signature]
Name: Mrs F. A. Shaikh
Designation: Manager
Date: 20/01/23

(Principal is on leave today).

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Exit Meeting

Institute: Kharagpur College Date: 20/01/2023
Audits covered: Green Audit Day: Friday
Energy Environment

S. No	Name	Designation	Signature
1.	Prof. Mahanga Singh	Associate Prof.	M. Singh
2.	Mr. Happy Das	SACT - II	H. Das
3.	Dr. Jyotirmoy Pramanik	Associate Prof.	J. Pramanik
4.	Dr. Debashis Aich	Asst. Prof.	D. Aich
5.	Mr. Pankaj Patra	SACT - II	P. Patra
6.	Dr. Binul Krishna Das	Associate Prof.	B. Das
7.	Dr. Nalinda Abdulla	Project Head	N. Abdulla
8.	Dr. Farida Shaikh	Project Manager	F. Shaikh

Extension

College Name: Kharagpur College
Signature: [Signature]
Name: Dr. Jyotirmoy Pramanik
Designation: Co-ordinator SACT
Date: 20/01/2023



(Principal, Kharagpur College
is on leave today).

For Greenvio Solutions
Signature: [Signature]
Name: Mrs F. A. Shaikh
Designation: Manager
Date: 20/01/23



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4. Energy Audit

4.1 Sources of energy

4.1.1 Primary sources

The premise uses following sources of energy consumption.

- **Electrical (Metered)** – Light, Fans, Equipments, Pumps comprise these sources.
- **Renewable energy** – There are sources to harness solar energy in the premises.

4.1.2 Secondary sources

These are available in the form of Gas cylinders, Inverters, Diesel generator for general and backup purposes.

4.2 Site investigation analysis

The Site investigation observations and interviews with the Maintenance staff, Electrical department in charge are summarised below:

- The **switch-off drills are practised at present**, the maintenance staff and Lab Attendants put off switches of all equipments regularly.
- All the **computers are shut-off after use** and also put on power saving mode.

4.3 Actual Electrical Consumption as per Bills

4.3.1 Consumption study

The admin department had shared the bills for Meter which is connected to the Building and is the main source of energy supply. The details are documented below.

Duration	B.O.T units
March,2019-May,2019	23,759
June,19-Aug,19	24,232
Sep,19-Nov,19	26,029
Dec,19-Feb,2020	14,919

Table 3: Details of the electricity bill information

The above information shows that the energy consumption in terms of units is as follows:

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substantial utilization which is increasing the expense burden of the Institute.

4.4 Energy efficiency analysis w.r.t. equipment

- ➔ The premise has LED Lights to contribute to 77% in terms of number and **52% of the power requirement** is met through the same.
- ➔ The air conditioners are BEE star labelled appliances and new.
- ➔ The fans are not energy efficient but in good working conditions.
- ➔ Sensitization programs can be increased w.r.t this aspect.
- ➔ There is availability of solar panels on the rooftop; around 6% of the energy is utilised in the premises for the electrical consumption requirement.

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4.5 Calculated Electrical Consumption as per inventory

The electricity bills provide actual consumption data. The following is the calculated consumption. It is done to understand the percentage of energy usage in the premises by various applications. It is based on the inventory collected and interviews with the staff.

The additional data such as wattage is taken from market research. In terms of electrical consumption, the main sources are lights, fans, air conditioner, and equipment. The inventory and data collection for sources of energy consumed in the premise is summarised in the following sections.

The following analysis is combined for entire premise taking into considerations the duration as per schedule and usage of the premises.

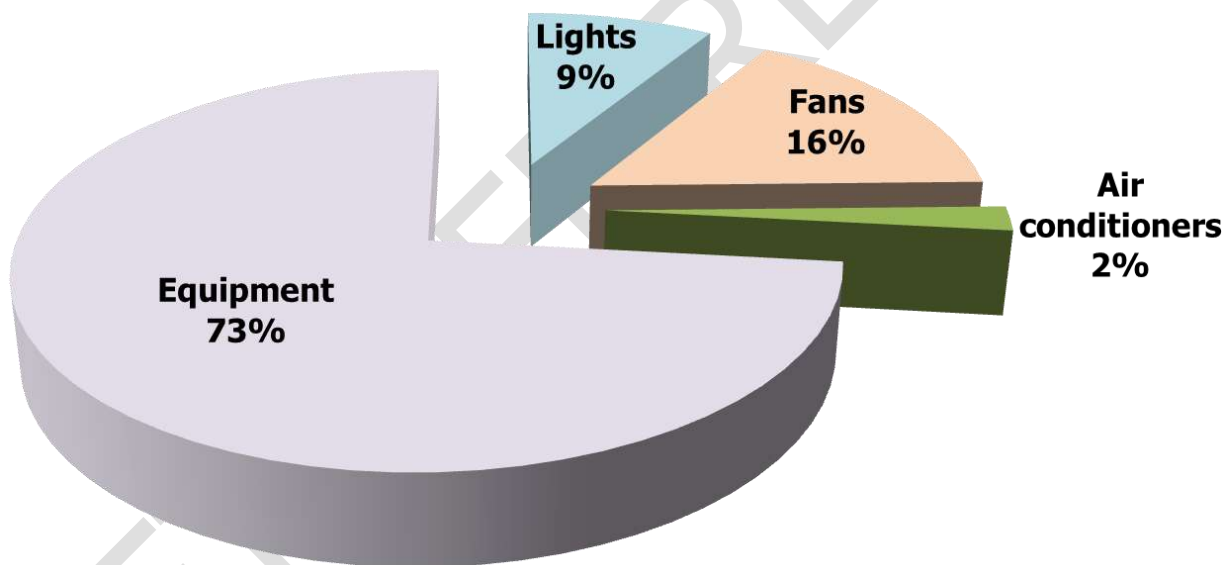


Figure 1: Summary of the calculated electrical consumption as per inventory

The above graph shows that equipment consumes 73% whereas the fans consume 16% while the lights consume 9% and the air conditioners consume 2% of the total calculated electrical energy.

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4.6 Lights

4.6.1 Types of lights based on the numbers

There are a total of **481 nos. of lights on the premises**; the following table shows the various types of lights on the premises.

S. No.	Type	Nos.
1	LED (Energy-efficient lights)	368
2	Non-LED (Non Energy-efficient lights)	113

Table 4: Summary of the types of lights on-premise

4.6.2 Types of lights based on the power consumption

The energy consumption of lights is **14,953 kWh** of energy.

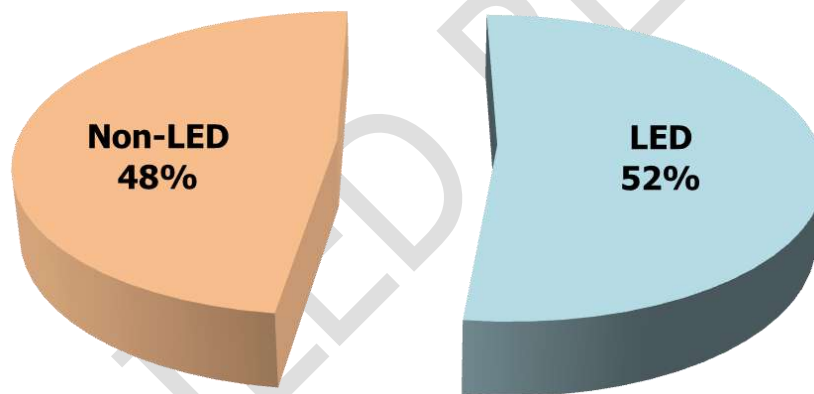


Figure 2: Energy consumed by types of lights in the premise based on the usage study

The analysis of the types of Lights on the premises shows that the **LED lights consume 52%** while the **Non-LED lights consume 48%**

4.6.3 Site investigation observations

- ➡ All lights are in working conditions.
- ➡ There was no fuse defect observed.

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4.7 Fans

4.7.1 Types of fans based on the numbers

There are a total of **380 fans** on the premises as follows:

Note: The information related to ceiling fans were shared thus the other type of fans are excluded for this study.

4.7.2 Types of fans based on the power consumption

The energy consumption of fans is **26,790 kWh** of the energy.

4.8 Air conditioners

4.8.1 Types of air conditioners based on the numbers

There are **28 air conditioners** on the entire premises.

4.8.2 Building-wise consumption analysis

The energy consumption of air conditioners is **3,439 kWh** of energy.

4.8.3 Site investigation observations

The Outdoor units are properly cleaned, maintained and had no dust collection problems.

4.8.4 About the replacement of current air conditioners

The current air conditioners are well maintained, though there is not an immediate requirement for replacement however, whenever the College undergoes redevelopment there can be provisions for replacement with energy-efficient appliances or new air conditioners that require less power consumption.

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4.9 Equipment

4.9.1 Types of Equipment

There are **199 nos. of equipment** in the Educational sector.

4.9.2 Types of equipment as per their energy contribution

The energy consumption of equipment is **1,24,093 kWh** of energy.

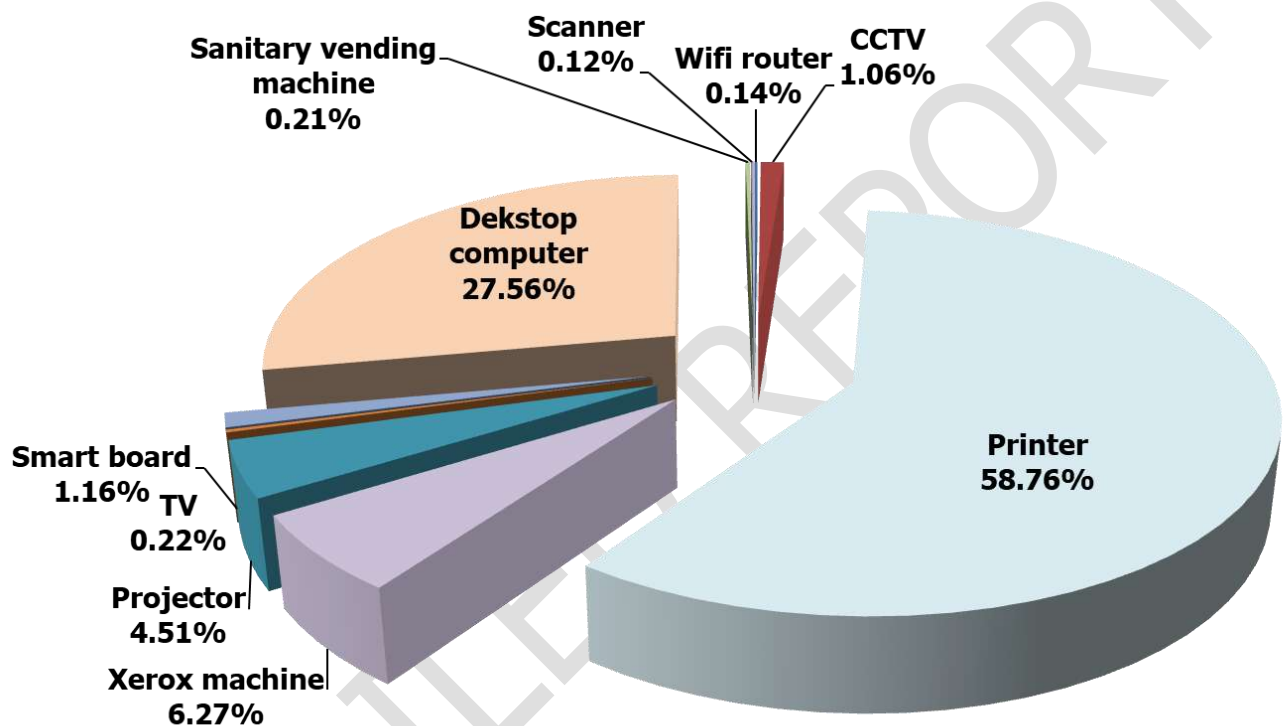


Figure 3: Energy consumed by types of equipment in the educational sector based on the usage study

The above summary shows that the **printer consumes more energy at 58.76%** while the **desktop computer consumes 27.56%** the **Xerox machine consumes 6.27%** and the **projector consumes 4.51%** these are the maximum consumers as compared to other equipment.

4.9.3 Site investigation observations

1. All equipments are in working conditions and daily monitoring and check is done by the maintenance staff and admin staff in an excellent manner.
2. No defect was found in any equipment of electrical consumption.

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4.10 Recommendations for a Sustainable Habitat

The following suggestions are to be considered as a **first priority** for implementation. These **should be executed within the next 1.5 to 2.5 years from the date of the Report submission**. The Institute can execute a plan after discussion with Project Head.

Electromechanical systems - Electrical and Lighting

Section 1 - Non-LED lights

The current light analysis shows that Non-LED lights consume anywhere between 50W to 54W and even more when in use; these should be replaced with LED lights which consume on an average 12-16W when in use. Our technical analysis shows that there would be a reduction of an average of **67% reduction** in energy consumption through lights specifically as a part of the electro -mechanical system if all **Non-LED lights on all floors** are replaced with an energy efficient appliance whenever the College undergoes renovation.

Section 2 - Ceiling fans

The current Fans are in proper working conditions and maintained well. The ceiling fans are in more quantity and consume at least 45W when in use. These should be replaced with energy efficient fans consuming 14W when in use. Our detailed study states that is all the **ceiling fans on all floors** if replaced with star rated appliance results in a reduction of average of **69% reduction** in energy consumption if replaced with energy efficient appliance. It will be suggested to either replace these now if College can have certain plans else the replacement can be done when fans get damaged or are not in working condition.

Section 3 - Equipment

- ➡ Replace the Non-LED (Regular) TV Monitors with LED equipment.
- ➡ Backup computer files during vacations.
- ➡ All electronic equipments should be cleaned out completely including system check up with AMC during vacations, this should be a periodic activity and the same should be documented every year.

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5. Inferences as consolidated study

The following details are consolidated study recommendations related to 'entire Institute' and should be considered as **second priority** for implementation, once the section wise recommendations are implemented. The following recommendations should be **implemented within 2.5 to 3.5 years from the date of the Report submission.**

5.1 Alternatives to increase renewable energy – Solar farms

This option can be explored with due discussion with the surrounding and adjacent farmland owners. This will serve as a noble project and will provide dual benefits to farm land and University w.r.t to electricity bill power reduction.



Plate 1: Solar farm concept for the Institute (For reference purpose only)

Image source: Zsuzsa Bóka from Pixabay

5.2 Alternatives to increase renewable energy – Solar parking

The College can turn its existing parking areas into solar panel powered parking areas. This will provide shade and renewable energy benefit to the College.



Plate 2: Solar parking concept for the Institute (For reference purpose only)

Source: Image by <https://solarpowerproject.in/solar-panels-for-parking-lots.php>

Signature Not Verified

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5.3 Alternatives towards Smart premises – Smart gardening

The College can undertake a Smart Gardening system using IoT Technology. This will result in saving time by scheduling time for watering; saving money through automated water schedules tracking dampness of soil to know when, how much water garden needs.



Plate 3: Solar farm concept for the Institute (For reference purpose only)

Image source: <https://housing.com/news/smart-gardening/>

Data source: <https://www.happysprout.com/inspiration/what-is-smart-gardening/>

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On-site investigation and physical verification

Audit Team during the visit and other photos collected during data documentation



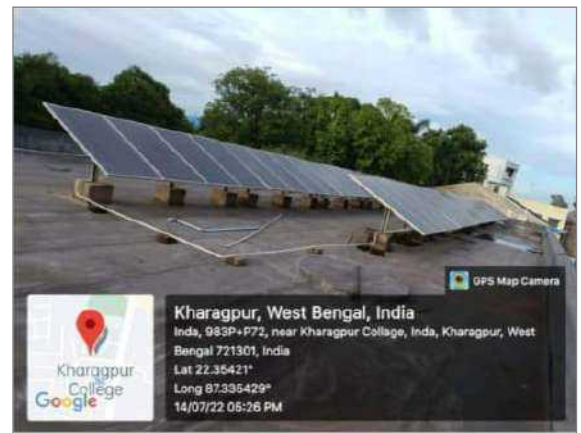
Discussion with the Core Team



On-site discussion at the outdoors



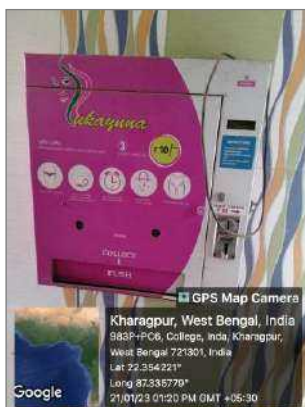
Energy appliances in the premises



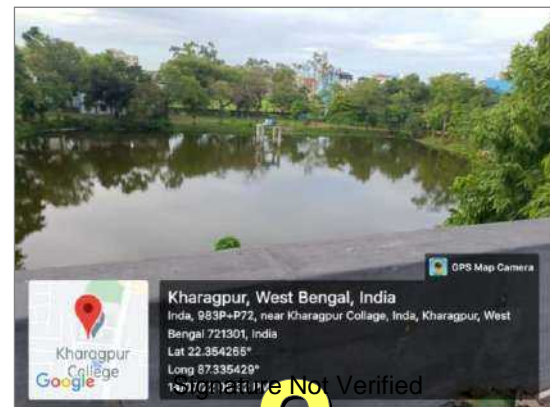
Rooftop solar panels in the premises



L-R : Potted plants; Nameplate on the plants; Outdoor gardening and Parking shed



Sanitary vending machine and dustbins in premises



Aquatic zone as rain water harvesting facility

6. References

The study is based on the data collected, analyzed, rechecked, and confirmed through multiple modes. For the quality study, some standards/ notes have been referred to. These are listed and noted below. However, no direct references have been used anywhere. These are used as a base to analyze and study the data collected.

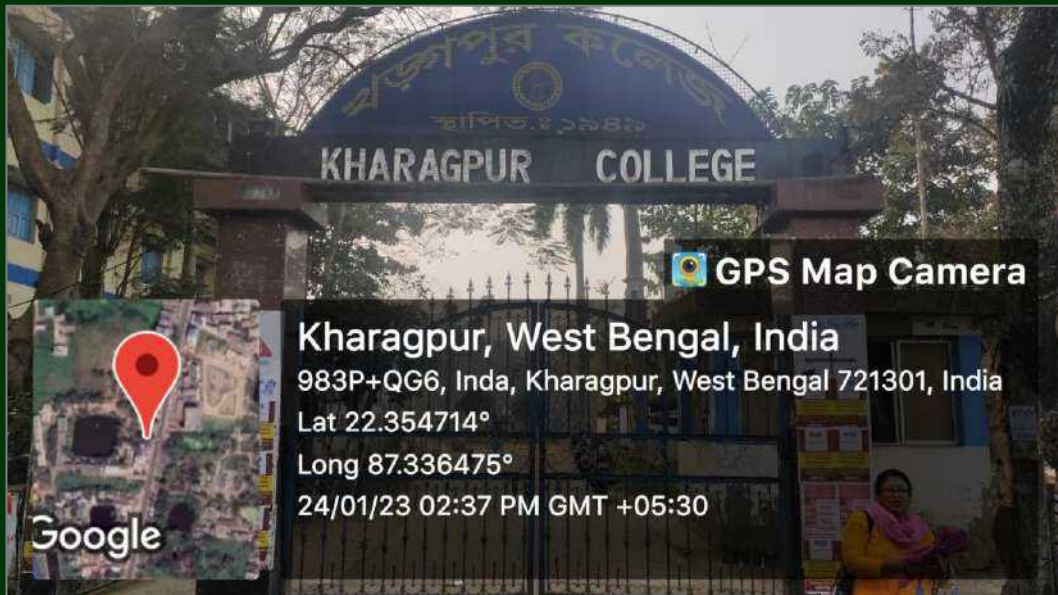
Specific references for study related to energy

- ➔ <https://www.energy.gov/eere/buildings/zero-energy-buildings>
- ➔ <https://www.dsaarch.com/zero-net-positive-energy>
- ➔ U.S. Energy Information Administration
- ➔ <https://www.happysprout.com/inspiration/what-is-smart-gardening/>
- ➔ <https://housing.com/news/smart-gardening/>
- ➔ Inference study reference image - Zsuzsa Bóka from Pixabay
- ➔ Inference study reference image - <https://solarpowerproject.in/solar-panels-for-parking-lots.php>

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BIDYUT
SAMANTA

तारीख / Date: 12-12-2022

जापनसंख्या/ Memo no: MGNCRE/SAP/21



भारत सरकार / Government of India

महात्मा गांधी राष्ट्रीय ग्रामीण शिक्षा पररषद / Mahatma Gandhi National Council of Rural
Education उच्चशिक्षाशिभाग/Department of Higher Education

शिक्षामंत्रालय / Ministry of Education



Sustainability Index Certificate

This is to certify that **Kharagpur College, Kharagpur, Paschim Medinipur, W.B.** has successfully elevated the Swachhta Action Plan, adopted and implemented best practices in the areas of Sanitation, Hygiene, Waste Management, Water Management, Energy Management and Greenery Management.

Dr W G Prasanna Kumar
Chairman
MGNCRE, Ministry of Education
Government of India

Environment Audit Certificate *(As per Green Building Parameters)*

The study is conducted as per Indian and International Green Building Standards initiated in the capacity of an Accredited & Certified Green Building Professional

It is awarded for **2020-2021 and 2021-2022** to the Esteemed Institution

(Analysed for 2 years and extended validity for 1 year, thus total 3 years)

Kharagpur College

OT Road, Inda, Kharagpur, Paschim Medinipur, West Bengal, India – 721305

(Site visit held on Friday, 20 January 2023)

As part of the Institution's initiatives for a Healthy & Sustainable Institute the audit was conducted.
We appreciate the immense efforts taken by Staff and students towards the Environment Protection and Conservation.

Issued on **Wednesday, 15 March 2023** and valid till **March 2024**


Ar. Nahida Abdulla Shaikh

Registered Architect, P.G.D.R.D, ISO Certified I. A. (IMS)

Indian Green Building Council Accredited Professional (IGBC AP)

ASSOCHAM GEM Green Building Council Certified Professional (**Registration. No. 22/718**)

Project Head and Green Building Professional-Consultant

Sustainable Academe I Sustainability Department of Greenvio Solutions, Naigaon

An environment Design and Consultancy developing Healthy and Sustainable Environment

Email: **sustainableacademe@gmail.com** I **greenviosolutions@gmail.com**



Website: <https://thegreenviosolutions.co.in/>

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Website: <https://thegreenviosolutions.co.in/>

(d) Review and update of Plastic Free Campus Policy:

To keep the College campus eco-friendly, the College authority has taken various steps not only for sensitizing the staff and students of the College but also by initiating some concrete steps. NSS units of the college regularly monitor and take action on the following policies throughout the year.

1. Ensure the protection of Environment
2. Ensure satisfaction to all stakeholders
3. Compliance to applicable regulatory requirements
4. Conservation of Energy through optimum utilization and reduce electricity conservation through the implementation of the best available energy technology
5. Green campus initiatives through plantation and protection of trees, plants and gardens
6. At the centre of the college there is a big pond of nearly 4800 sq metre, which is properly cleaned and maintained throughout the year. This pond not only enhances beauty of the college, but helps in maintaining the ecosystem as well.
7. Waste management in the campus through awareness, practices and use of appropriate bins for disposal of waste
8. Ensure the Plastic free campus. Use of plastic cups, polythene carry bags etc has been restricted inside the college campus.
9. Water conservation through awareness, practices and storage of water
10. Ensure the assistance to the disabled and provide the barrier free environment in the campus wherever possible
11. Saving energy in the best possible way: Students are made aware of the necessity of saving electricity and water through digital display board and posters at different corners of the college.
12. Use of Renewable Energy: The College has 20 KVA grid connected solar power plant and that produces around 700 units of electricity per month.
13. E-waste Management: The College has a MoU with Hulladek Recycling Pvt Ltd. for e-waste management.
14. Restricted entry of automobiles inside the campus
15. The college conducts Green audit, energy audit and environment audits on a regular basis.
16. NSS units conduct programs beyond the campus environmental promotional activities.
17. Enhancing awareness and knowledge of all concerned with respect to above.

Campaign for plastic free campus



(e) The list and description of courses which address the Environment and Sustainability into the Curriculum

Professional Ethics, Gender, Human Values, Environment and Sustainability

NAME OF THE PROGRAMME	COURSE CODE	COURSE NAME	ISSUES ADDRESSED	COURSE CONTENTS
	PHIHCC14	ETHICS (WESTERN)	ENVIRONMENT	Its nature, Concepts of Anthropocentrism and Non-anthropocentrism, value beyond sentient beings, reverence for life.
BA (HONOURS)	HISHDS04	PRE-COLONIAL SOUTH-EAST ASIA	Environment	Social Uses of Natural Resources,

IN HISTORY		Social Uses of Natural Resources		
	HISHDS04	PRE-COLONIAL SOUTH-EAST ASIA Changing Perception of Forests in Early India	Environment	Changing Perception of Forests in Early India
All students of UG 2 nd Semester	AECC II (Environment Studies)	Link of the syllabus		
B.Sc. Hons in Botany	DSE-1	Natural Resource Management	Environment and sustainability	Sustainable utilization of Land, Water, Forests, Energy, contemporary practices in resource management
B.Sc. Hons in Chemistry	SEC2	Basic Analytical Chemistry	Environment and sustainability	Analysis of soil, water, food products, cosmetics
	GE-4	Analytical Environmental Chemistry	Environment and sustainability	The Atmosphere, The Hydrosphere, The Lithosphere, Chemical Analysis
B.Sc. Hons in Economics	DSE3	Environmental Economics	Environment and sustainability	Theory of Externalities, International Environmental problems, Sustainable Development.
B.Sc. Hons in Physics	SEC2	Renewable energy and energy harvesting	Environment and sustainability	Fossil fuels and alternate source of energy, solar energy, wind energy harvesting, Ocean energy, Geothermal energy, Hydro energy, Piezoelectric energy harvesting.
M.A. in English	ENG 403B	Environment and literature	Environment and sustainability	The zoologist Ernest Haeckel, who coined the word 'ecology', defined it as the "relation of the animal both to its organic and to its inorganic environment". The statement's equivocality, sourced in man being rationally interpreted as a social animal, has been the ground of contention, both in a concrete, and a semi, or pseudoconcrete empirical sense. Thus, Timothy Morton would, in Ecology without Nature, and subsequently in Dark Ecology, argue the threshold(s) of transgression, and the ramifications of anthropocentric self-aggrandizement, pitted against the apocalyptic underside of Nature. Different strands of ecological thought would emerge in the literary criticism of Jerome McGann in The Romantic Ideology, as well as Jonathan Bate's Romantic Ecology where William Wordsworth's eco-philosophical and eco-ethical concerns are recommended as critiques of modernizations, and the necessary evils of Capitalism, to be generalized in the late 20th, and the early 21st century by Greg Garrard and Lawrence Buell. This course is designed to facilitate students with the core concepts of ecological thought and ecocriticism, witnessed in literary texts across centuries