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# 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-assocham.com/manage\_gem\_cp.php?pageno=12

Institute: Kharagour College Date: 20/01/2023

Audits covered: Green Audit Day: Friday

Observations Positive points	Inferences
- Aquatic robes  - theirage buildings with immense swipe for improvisation	- Hygiche should be improved - Undertake cretain campus beautification perogrammes with students. - Under hygiche mangement building repair

Evidence of the site visit





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

College Name: Kharaspur College
Signature: 120.01.2023.

Name: Dr. Jyohirmin Pranamik
Designation: Co-ordinator, LSAC.

Date: 20.01.2023.

(Principal is on leave today).

For Greenvio Solutions

Signature: Name: Mrs F. A. Shaikh Designation: Manager

Date: 20 61

Greenvin



# Disclaimer

The Audit Team has prepared this report for the **Kharagpur College** located at <u>OT Road,</u> <u>Inda, Kharagpur, Paschim Medinipur, West Bengal, India – 721305</u> 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

<u>Sustainable Academe</u> is our department for conducting Audits

Palghar District, Maharashtra- 401208

<u>sustainableacademe@gmail.com</u>



# **Acknowledgement**

The Audit Assessment Team thanks the **Kharagpur College, West Bengal, India** for assigning this important work of Green 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**, WBSCHE 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.



#### 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.



# 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

Туре	Male	Female	Total
Admin staff	14	1	15
Teaching staff	86	24	110
Non-Teaching staff	33	7	40
<b>Total Staff Members</b>	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

Туре	Male	Female	Total
Admin staff	14	1	15
Teaching staff	86	24	110
Non-Teaching staff	33	7	40
<b>Total Staff Members</b>	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.



# 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.)



# 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: Kharagour College Date: 20/01/2023

Audits covered: Green Audit Day: Friday Enegry Greinment

S. No	Name	Designation	Signature
1.	Mr. Happy Das	SAC7- 11	H.Dar.
2.	Prof. Mahanga Singh		M. sigh
3.	Dr. Jyotirmoy Prama		1
4.	Dr. Debashis Aich		de
5.	Mr. Pankaj Patra	SACT- II	P. P.SH
C.	Dr. Blund Krishna De	s Associate Prof	Broah
7.	Ke. Nato de Abdulla	SGRCAP, phoject	0.1.1
8-	Mas Jande Shalle	Project- Manag	d of
	4 1		

College Name: Kharageur College Signature: Signature:

Name: Dr. Jyohirmon Pramanik

Designation: Co-adinatory & Ac

Date: 20/01/20 23.

Principal is an interpretation to day).

For Greenvio Solutions Signature:

Name: Mrs F. A. Shaikh Designation: Manager

Date: 20/01/23





S. No	overed: Green Augy Environm	Designation	Signature
1.	Prof. Mahanga Singl Mr. Happy Das	Associate Prof.	H.S.je
3.	Die 7 die Das	3ACT - 11	Hoon.
A.	Dr. Tyofirmoy Pramau		to
5.	Dr. Debashis Aich		
6.	Dr. Bimel Krishne D	as Associate Prof	Broab
7.	Ar. Nalida Abdulla		
	Mes. Janda Shaika	Project Marge	Hali Juli
8.	Mes. Janda shur en	I real con the fo	11/1000
			1



# 4. Green Practices Audit

The increasing global warming and climate change have made us realise that apart from the enormous strategies the individual small efforts need to be taken by individuals and Educational Institutes as the younger generations are the future of the world and once they are taught about these practices only then can we assume a better future.

# 4.1 Green practices

We observed the following points during the Site investigation and data verification of the premises; these are common for all the Buildings on the premises.

- **Social awareness** The College has taken up awareness drives on various social issues for rural upliftment and regeneration in the College and surrounding villages. ■
- Fresh environment The College provides an eco-friendly ambience with fresh air and soothing environment which helps to maintain a physical and mental balance. This kind of a space it a must for an educational specially technical institute which is inviting and gives the stakeholders an opportunity to explore indoor and outdoor learning to a great extent.
- **Team work** − The best quality of the College which sets it apart is its coordinating, cooperative staff members; for a building the foundation plays the most important role for its future similarly for an educational institute its staff members do.

# 4.2 Community development

The College has undertaken certain social initiatives for local villages; they have informed during the discussion that it shall proceed with multiple activities in future. Currently it has dedicated 'Outreach committee' which undertakes certain activities.



# **4.3** Section-wise recommendations related to 'Green practices'

The following suggestions are to be considered as a <u>first priority</u> 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.

- Increase the plantations on the premise There can be provision for more plantations on the premise maybe even a Kitchen garden facility.
- → Plant as a gift As a kind gesture, the guests visiting the premise can be asked to plant a small plant on the premise itself and they can be even given plants/bouquets from the flowers of the plants on the premise as a gift.
- Signages on the plants mentioning scientific names The practice of having the names of each plant and tree will provide awareness among the staff and students.



# 5. Waste Audit

Waste is an inevitable part of our lives. Over the years the awareness about waste management techniques has given a rise to rethink how the waste can be avoided being sent to the landfills. The audit provides an approximation of the types of waste generated, location of waste collections, disposal techniques used, waste segregation methodologies adopted, and waste management strategies that are implemented in addition to the newer ways that can be adopted aiming to make the premise clean and sustainable.

# 5.1 Waste produced

- Solid waste − The solid waste from the toilets is let into the storm water drains.
  We suggest undertaking a septic tank plant in the premises as there is availability of land and resources.
- Liquid waste The blank and grey water from the wash basin and kitchens, toilets is let into the storm water drains. We suggest undertaking a septic tank plant in the premises as there is availability of land and resources.
- **E-waste management** − <u>We suggest practicing a dedicated Plastic collection</u> drive and utilising the same for a best out of waste installation.
- → Plastic waste The current practices involve sensitization programs and awareness drives, however <u>we suggest practicing a dedicated Plastic collection</u> <u>drive and utilising the same for a best out of waste installation.</u>
- → Organic waste The day-to-day waste is handed over to local municipality; however <u>we suggest undertaking 'Organic compost' management strategy.</u>
- **Bio-waste** <u>The sanitary vending machine are in working conditions; however we suggest to install incinerator of have dedicated bins as substitutes for bio-waste management.</u>

# 5.1.2 Bins summary

There are dustbins inside the premises and outside the premises; as per our study we feel the current number is sufficient.



# 5.3 Section-wise recommendation related to 'waste audit'

The following suggestions are to be considered as a <u>first priority</u> 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.

- Dustbins at every 100m There should be a dustbin at every 50-100 in the open spaces
- Include better plastic/ E-waste management measures The Institute can celebrate one day of every month as a 'Plastic/ E-waste awareness day' The stakeholders (Students and staff members) can be asked to bring plastic/ E-waste which can be further given to an NGO for recycling or better purpose.



# 6. Water Audit

Water is one of the basic needs. Pure drinking water is a resource that needs to be preserved efficiently. A water audit helps to identify the sources of water consumption, and the water requirement by the premises is met by these sources. The points and effective usage without any wastage. Understanding the techniques which are best suited to the site to increase water conservation in terms of awareness and practice.

# 6.1 Water availability and consumption

#### **6.1.1 Source of Primary water supply**

The College requires water from the Local Municipality for drinking water purposes. <u>There</u> is water tanks equipped with an RO facility used for primary drinking water and connected to secondary usage as well.

#### 6.1.2 Source of Secondary water supply

The College uses the secondary sources of water supply for general usages such as watering plants, kitchen, toilets, and wash basins connected to the labs and other spaces.

At present, there is 1 water pond available in the premises as secondary sources of water supply. Details of the same are documented below:

Name of buildings	No. of tanks	Capacity in liters
1.Administrative building	06	6*2000=12000
2.Geography Dept.	05	5*1000=5000
3.Bengali Dept.	04	4*1000=4000
4.Library	01	1*1000=1000
5.Vidyasagar Building	02	1000+750=1750
6.BCA Dept.	01	1*2000=2000
7.Commerce new building	01	1*2000=2000
8.Inside campus	02	1000+500=1500
9.Boys' Hostel	03	3*1000=3000
10.Indoor stadium & swimming pool	03	1000+2000=3000

Table 3: Details of the water tanks in the premises



#### 6.1.3 Source of Tertiary water supply

The tertiary source of water is the additional source of water harvesting. We have suggested adopting practice of rain water bunds around every block and connecting the overflow pipes of the artificial water pond (farm pond) to the well for ground water recharge.

#### 6.1.4 Source of Reusing waste water

The initiative is not under practice at present completely only the chemicals are neutralized before letting it down in the drains. We have suggested to under practices of green chemistry as per discussion during the induction and exit meeting on site to treat the waste water from the laboratories and reused the same after filtering for watering the plants and the trees in the premises.

### 6.2 Areas of water usage

Based on the inventory done and data shared by the staff it was found that the premise has the following facilities:

Urinals	

_		
_		Into
	I OII	lets

- Washbasins
- ⇒ Taps (Indoors)
- Taps (Outdoors)

As per the data shared by the College and on-site observation, it was noted that there is no water wastage of water in the form of Cleanliness of toilets.



#### 6.3 Recommendations for a Sustainable Habitat

The following suggestions are to be considered as a <u>first priority</u> 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.

- Signages Messages about avoiding water wastage should be placed at appropriate locations.
- Waterless urinals There can be the provision of waterless urinals as a Green Building initiative in the premise, either the existing ones can be replaced with such a facility or new toilets can be constructed in this manner.



# 7. Health and Hygiene Audit

The hygiene is a part and parcel of our daily life. It is extremely essential to keep the surroundings clean in the same manner as we would want our houses to be. Educational Institutes have a bigger role to play in order to affect the young minds in the positive manner through better hygienic practices.

#### 7.1 Facilities available

The Institution has washroom facility, hand wash, drinking water and dustbin facilities in the premises.

# 7.2 Smoke Exposure

The Institution is a tobacco and smoke free premises which helps in adapting to a Healthy Institution

# 7.3 Hygiene

As per the Site visit the following analysis has a positive impact on premises.

- ⇒ For overall hygiene of the students and staff there are facilities such as Washroom facility on hand wash.
- ⇒ The staffs keep a regular check about the operation and maintenance of the equipments each floor.
- Water management initiative with appropriate hygiene is undertaken.
- The areas of water tanks in site on ground floor are clean



# 7.4 Section-wise recommendation related to 'Health and hygiene audit'

The following suggestions are to be considered as a <u>first priority</u> 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.

- Avoid burning waste The waste produced on the premises should not be burned as it is dangerous to the health of students and staff
- → Pest control program The Institute should practice pest control programs with appropriate sanitation facilities through an appropriate agency.
- Signboards − The Institute should have multiple signboards about 'No smoking' and 'Healthy premises' at every nook and corner of the Institute.
- Compound wall − The compound wall should have awareness messages about 'No Smoking' and 'No Tobacco'



# 8. 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.** 

- Signing of a MoU for improvement w.r.t. to Green Building aspects of premises – The same was suggested before the visit and has been undertaken with immediate action. It can be undertaken through a MoU with the team who has conducted the audit.
- → Articles and Documentation The premises has multiple features which add to the beauty of the nature and improve the environment in the premises, it is thus suggested to have an article written every month as guided by the Team based on the MoU. It can be undertaken through a MoU with the team who has conducted the audit.
- Development of smart eco-villages − This is a pilot project that can be undertaken for any 1 of the NSS or UBA villages as a prototype based on the study in coordination with all departments, this scope and detailed plan of action provided as per MoU. It can be undertaken through a MoU with the team who has conducted the audit.



### **On-site investigation and physical verification**

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



Discussion with the Core Team

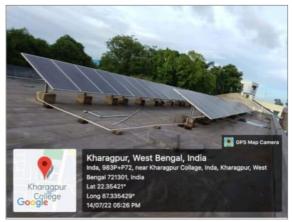




On-site discussion at the outdoors



Energy appliances in the premises



Rooftop solar panels in the premises







GPS Map Camera

Kharagpur, West Bengal, India
983P+PC6, College, Inda, Kharagpur, West
Bengal 721301, India
Lat 22.354221\*
Long 87.335779\*
21/01/23 01:41 PM GMT +05:30

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



# 9. 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-motorizes vehicle and Public Transport Infrastructure - Report guidelines by Samarthyam (National centre for Accessible Environments) - an initiative supported by Shakti Sustainable Energy Foundation.



