GV/ GA/ 03-22/ 56

Green Audit Certificate

is awarded for **2019-20 and 2020-21** to the Esteemed Institution

Debra Thana Sahid Kshudiram Smriti Mahavidyalaya

Gangaramchak, P.O.: Chakshyampur,

District: Paschim Medinipur, Pin: 721124

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

Issued on **Tuesday, 15 March 2022** valid till **March 2023**

Ar. Nahida Shaikh

Architect, IGBC Accredited Professional, Assocham GEM Certified Professional (Regn. No. 22/718)

Project Head and Green Building Professional-Consultant

Sustainable Academe

Sustainability Department of Greenvio Solutions, Naigaon

An environment Design and Consultancy developing Healthy and Sustainable Environments

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

Greenvio Solutions

GV/ ENVT/ 03-22/ 57

Environment Audit Certificate

is awarded for **2019-20 and 2020-21** to the Esteemed Institution

Debra Thana Sahid Kshudiram Smriti Mahavidyalaya

Gangaramchak, P.O.: Chakshyampur,

District: Paschim Medinipur, Pin: 721124

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

Issued on **Tuesday, 15 March 2022** valid till **March 2023**

Ar. Nahida Shaikh

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Greenvio Solutions

GV/ EA/ 03-23/ 55

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Greenvio Solutions

Date: 15 March 2022
Ref no: LA/15/03/29

Letter of Appreciation

For

Implementing the recommendations suggested during the Green, Energy and Environment Audit Process

Awarded to

Debra Thana Sahid Kshudiram Smriti Mahavidyalaya

Gangaramchak, P.O.: Chakshyampur,
District: Paschim Medinipur, Pin: 721124

With reference to the above cited subject we appreciate the efforts of the College in **implementing the activity of printing and putting up awareness posters related to Cleanliness, Energy, Waste, Water, Save Environment.** The College has printed these and put them at appropriate locations in the premise.

We hope the College continues similar efforts in the future as well. We have attached some of the photographic evidences in this letter.

Best regards,

Ar. Nahida Shaikh
Project Head and Green Building Consultant
Sustainable Academe
Sustainability Department of Greenvio Solutions, Naigaon
An environment Design and Consultancy developing Healthy and Sustainable Environments
sustainableacademe@gmail.com I **greenviosolutions@gmail.com**

Dr. Ramkrishna Maiti

Professor
Department of Geography & Environment Management
Vidyasagar University
Email:-ramkrishna@mail.vidyasagar.ac.in

Certificate

This is to certify that Debra Thana Sahid Kshudiram Smriti Mahavidyalaya has conducted detailed Environmental Green Audit of their campus and has submitted 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 faculty and students towards environment and sustainability is highly appreciated and commendable.

Ramkrishna Maiti 25/06/2021

Prof. Ramkrishna Maiti
Professor
Department of Geography & Environment Management
Vidyasagar University

Dr. Ramkrishna Maiti
Professor
Dept. of Geography & Envt Mngt.
VIDYASAGAR UNIVERSITY
Midnapore-721102, W.B.

Environment Audit

2019-20 & 2020-21

AUDIT REPORT

Studied for

Debra Thana Sahid
Kshudiram Smriti Mahavidyalaya

Gangaramchak, P.O.: Chakshyampur,
District: Paschim Medinipur, Pin: 721124, West Bengal, India

Analysed by

Greenvio Solutions

15 March 2022

Background reference image Nic Y C Gua on unsplash

Disclaimer

The Audit Team has prepared this report for the **Debra Thana Sahid Kshudiram Smriti Mahavidyalaya** located at *Gangaramchak, P.O.: Chakshyampur, District: Paschim Medinipur, Pin: 721124, West Bengal, India* 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 has completed audits of multiple Institutes including Technical, State University, Private University and Single Faculty Colleges for a total of more than 45 lakhs+ sq. ft. of Built-up area audited till date Pan India 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

Acknowledgement

The Audit Assessment Team thanks the **Debra Thana Sahid Kshudiram Smriti Mahavidyalaya, West Bengal** 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 **Dr. Humayun Kabir,** President; **Dr. Rupa Dasgupta,** Secretary; **Sri Vivekananda Mukherjee,** State Government nominee; **Smt. Rekha Hui,** State Government nominee; **Prof. Chandradipa Ghosh,** University nominee; **Dr. Partha Pratim Chakraborty,** University nominee; **Prof. Saikat Chakrabarti,** Teacher's Representative; **Prof. Soumya Kanti Hota,** Teacher's Representative; **Prof. Partha Pratim Pramanik,** Teacher's Representative; **Sri. Barun Chakraborty,** Non-Teaching Representative and **everyone from the Management.**

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

We are also thankful to **College's Task force the faculty members - Green Audit Coordinators** who have collected data required **Dr. Pankoj Kanti Sankar,** Barsur; **Partha Pratim Pramanik** H.O.D, Dept. of Geography; **Joydev De**, H.O.D, Dept. of Physics **(Special mention for the excellent coordination)**; **Tanushri Maity,** SACT; **Sumana Khatua,** SACT; **Soumya Kanti Ghosh,** SACT; **Arindam Das,** SACT; **Asis Rana,** SACT; **Deblina De,** SACT; **Subhankar Manna,** SACT; **Bishal Das,** SACT and **Sk. Khairul Basar**, SACT

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

Contents

1. Introduction

1.1 About the foundation of the Institution

The Foundation Stone of Debra Thana S.K.S. Mahavidyalaya was laid on 17 November 2005 and the classes of the newly admitted students were started from 15 September 2006. Since then the College is striving towards its goal of providing access to higher education to the students of this area. Since its initiation the college has recorded notable growth in terms of infrastructure, subjects offered and also in student strength. There are tough challenges ahead but we are determined that this institution will progress steadily towards its desired goal.

Debra Thana Sahid Kshudiram Smriti Mahavidyalaya is established with a motto 'educate, empower and emancipate students and making them capable not only for individualistic growth but for financial independence and making them responsible citizens of India.' Its chief objective is to kindle a light in the darkness of mere being.

1.2 Statements of the College

Vision

To transform our college into a Centre of excellence in the arena of higher education and contribute to the inclusive development of the country by generating quality human resources. The college aims at the holistic development of the young learners and hopes they are young citizens of the nation who are dependable, honest, committed and possess a sound value system. To build a young generation who can act as essential components in the process of cultural, socio-economic and environmentally sustainable development as individuals, communities and a nation is also our vision. The college is fully aware of educating not only the registered student but also a whole family. With this in mind, Debra Thana S.K.S. Mahavidyalaya aims at imparting an education that not only propels the students up the career ladder, but also empowers rural people including women and makes them independent and successful citizens. It is our vision to ensure a democratic, secular, cultured and intellectual environment so that students of all caste and creed can exchange their views and build themselves up to operate not only as responsible individuals but also as a productive, efficient and conscientious team.

Mission

- To disseminate Higher Education to a large regional hinterland.
- To promote inclusive education and development amongst all economic sections of the society without gender bias.
- To provide an ambience that makes our students ethically strong and professionally competent and, thereby, contributing to a healthy and prosperous society.
- To encourage innovative thinking and creativity and inculcate research skills in our students.
- To optimize the use of available infrastructure for sustained development of the college.
- To supplement and enrich the existing curriculum through seminars.
- To propagate higher education amongst women.
- To equip and empower students with relevant knowledge, competence and creativity to face global challenges.
- To emphasize value education to create human resources with modern view and foresight who can contribute to the national development by catering to the needs of the economy, society and country as a whole.
- To restrain brain drain by gradually increasing the intake capacity in higher education in order to cope with the rapid increase in aspiring students in a scenario characterized by universalization and globalization of education.
- To promote analytical and empirical study in basic and social sciences, and humanities leading to contribution in higher level of research amongst the faculty members and students.

1.3 About the Institution

The aim of the college is to continuously enhance the teaching methods in order to provide students with an opportunity for their all-round development. It also strives for excellence in academics and makes an effort to induce passion for learning along with the inspiration for decisive thinking and assessment, thereby helping them to become the best professionals in their chosen careers.

The Institution offers the following courses affiliated to Vidyasagar University, West Bengal.

- **Graduation** – It offers the following Undergraduate courses.
  - Faculty of Humanities (General) - Bachelor of Arts (B.A.) in Bengali, English, History, Sanskrit, Political science, Education, Music, Santali and Physical Education
  - Faculty of Humanities (Honors) - Bachelor of Arts (B.A.) in Bengali, English, History, Sanskrit, Political science, Philosophy, Education and Santali
  - Faculty of Science & Technology (General) - Bachelor of Science (B. Sc) – Physics, Chemistry, Mathematics, Geography, Botany, Physiology, Nutrition and Computer science
  - Faculty of Science & Technology (Honors) - Bachelor of Science (B. Sc) – Physics, Chemistry, Mathematics, Geography, Nutrition and Computer science
  - Professional courses - Bachelor Of Computer Application (B.C.A.) and Bachelor in Medical Laboratory Technology (B.M.L.T.)
- **Post-Graduation** – It offers the following Post Graduation courses.
  - Faculty of Humanities - Masters of Arts (M.A.) in English Literature,
- **Diploma Programs -** It offers the following courses
  - 1 year Advanced Diploma in Hardware, Networking and Information Security(recognised by UGC)
  - 1 year Certificate course in Spoken English
  - Certificate course in Mushroom Cultivation
  - Certificate Course in Self Defence
  - Certificate course in Hands on Computer
- **Vocational Courses -** It offers B .Voc in Automobile

The College works towards training young women and men to be competent, committed and compassionate, and lead in all walks of life. It has the following aims and objectives.

- To ensure quality in education.

- To inculcate self-confidence and morality through value based education.
- To make our students energetic and vigorous to face the challenges to come.
- To make them socially committed and flexible to global changes.
- To make them confident and self-sufficient.

1.4 The surrounding premises around the Institution

The Premises is situated amidst the landscape serene of **Paschim Medinipur district of West Bengal State** with immense peace and calmness in the surroundings. The College is surrounded by Educational Buildings on the North side, Residential and Commercial areas on the macro front from all the sides. There is a frontal approach which provides quite a beautiful appreciation space while approaching the premises; this area is surrounded by huge trees which positively complement the background-foreground aspect in terms of Natural space and built-form Architecture. It also provides ample shade which enhances the micro climate of the region. The location of College is feasible to the nearby essential amenities such as Public Health Center, Fire Station, Civic body-Public administrative buildings, Recreational gardens and Police Station.

1.5 Assessment of the College

1.5.1 Establishment

The College was **established in 2006** Vide G.O. No 618 Edn(CS), DT 24 Aug'2006 and No 855 Edn(CS) , DT 27.10.2006 and **it is constituted by Department of Higher Education, Govt. of West Bengal.**

1.5.2 Affiliations and approvals

The college is **permanently affiliated to Vidyasagar University, West Bengal**: VU/R/5EC/50/Affi/(New College)/851/06 DT 6.9.06.

1.5.3 Certification

The institute is listed on the AISHE or All India Survey on Higher Education which was established by the Ministry of Human Resource Development and its code is **C-19090-**

2020.

1.5.4 Accreditation

NAAC - The College received a CGPA of 2.01 with a B Grade in its first cycle of Accreditation. The College is due to enter its second cycle of NAAC soon.

1.5.5 Recognitions

The college has achieved the University Grant Commission (UGC) recognition

- 2(f) Memo No- F.No. 8-367/2011(CPP-I/C) December 2012
- 12(B) Memo No- F.No-8-367/2011(CPP-I/C) December 2013

2. Institution overview

2.1 Populace analysis for Academic year 2019-20

2.1.1 Students data

The student data (shared by the College) shows there were a total of **1,590 Boys and 2,183 Girls** students thus **a total of 3,773 students** in the premises.

2.1.2 Staff data

Type	Male	Female	Total
Admin Staff	15	3	**18**
Teaching Staff	65	29	**94**
Non-Teaching Staff	25	6	**31**
Total Staff Members	**105**	**38**	**143**

Table 1: Staff data of the Institution for 2019-20

The staff data shows the premises had a total of **143** Staff Members.

2.2 Populace analysis for Academic year 2020-21

2.2.1 Students data

The student data (shared by the College) shows there were a total of **1,397 Boys and 2,299 Girls** students thus **a total of 3,696 students** in the premises.

2.2.2 Staff data

Type	Male	Female	Total
Admin Staff	15	3	**18**
Teaching Staff	66	29	**95**
Non-Teaching Staff	25	5	**30**
Total Staff Members	**106**	**37**	**143**

Table 2: Staff data of the Institution for 2020-21

The staff data shows the premises had a total of **143** Staff Members.

2.3 Total College Area & College Building Spread Area

The **total site area is 5.23 Acres** and the **total Built-up area of College is 52,000 sq. ft.** for **a total of 3,839 footfalls.**

2.4 College Infrastructure

2.4.1 Establishment

The College was established in 2006. The college is located pretty close to nature and hence has very fresh environment which is absolutely pollution free and healthy. The Building is a Reinforced Cement Concrete (RCC) framework building. **Overall the Infrastructure of the Building is excellent in terms of the Architecture Design and Green Building Design. The Premises covers quite a few of the requirements for a Green Habitat.**

2.4.2 Spatial Organisation

The overall ambience of the College is warm and inviting. The classrooms and other spaces have ample natural ventilation in the form of clear glass windows with fresh air ventilation. The architecture of the building is quite well designed. The colour palette not just helps the building to stand out but also provides an Institutional arena. It balances with the local architecture with the natural landscapes of huge trees all around. The design emphasis on providing calmness to the built form and gradually merges with the serene landscape.

The floor to floor height is more than 10 feet. There is no provision for lifts in the premises, whereas there are amenities such as CCTV, Fire extinguishers, Library and first aid box.

2.4.3 Operation and Maintenance of the premises

The interview session with the staff regarding the operation and working hours is summarized in the table. The Institutions are open Monday to Saturday for full day. Sunday is an off for all. Below mentioned in the table are the average working hours. The detail wise timing for each is mentioned below.

S. No.	Section	Spaces	Time	Hours/ day	Days in a year
1	Main Institutional College	Student areas and Teaching faculty	Monday to Friday (10:15 a.m. to 05:15 p.m.) Saturday (10:15 a.m. to 03:15 p.m.)	7 (Average)	172
2	General areas	Admin areas and library, Passage, staircase, toilet	Monday to Friday (09:15 a.m. to 05:15 p.m.) Saturday (09:15 a.m. to 03:15 p.m.)	8(Average)	200

Table 3: Schedule of the timings of the premises


Gangaram Chak, West Bengal, India
9HH6+7J5, Gangaram Chak, West Bengal 721126, India
Lat 22.378591°
Long 87.561579°
07/03/22 03:25 PM


Baragar, West Bengal, India
Debra college Road, Debra, West Bengal 721126, India
Lat 22.382429°
Long 87.565694°
04/01/22 04:14 PM


Gangaram Chak, West Bengal, India
9HH6+7J5, Gangaram Chak, West Bengal 721126, India
Lat 22.378719°
Long 87.561803°
07/03/22 03:18 PM

3. Green Building Study Audit

3.1 About the Green Building Study Audit

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

3.2 Analysis for the Green Building Study Audit

The procedure included detailed verification for the following:

Energy Audit

- Analysis of the Lights, Fans, AC, Equipment
- Renewable energy
- Scope for reducing the current energy bills if any
- Improvement in the thermal comfort of the campus

Green Audit

- Green initiatives
- Hygiene audit
- Water Audit - Analysis of the current water consumption of campus; Scope to include Rain water harvesting and Waste water treatment in campus
- Waste Audit - Current waste produced, its segregation and usage; Strategies to be adopted for waste management and awareness

Environmental Audit

- Analysis of the current landscape + hardscape of campus
- Analysis of the flora and fauna of campus
- Strategies adopted at present to enhance vegetation
- Measures that can be adopted for ecological improvement of the premises.

3.3 Strategy adopted for Green Building Study Audit

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

3.4 Timeline of the activities for Green Building Study Audit

- 21 February 2022 – Discussion with the College
- 22 February 2022 – Allotment and Initiation by the College
- 01 March 2022 – Survey of the Student and staff submitted
- 09 March 2022 – Data submitted by College
- 15 March 2022 – Submission of the Report

4. Site Study

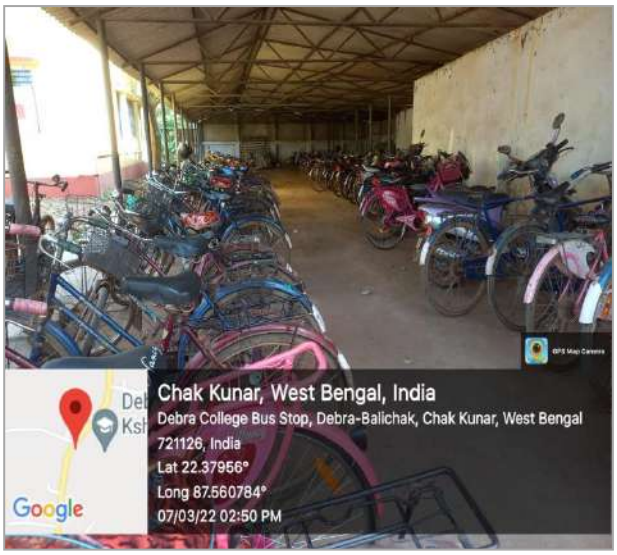
The following listed are some of the positive site elements which are beneficial to the college in terms of tangible and intangible benefits.

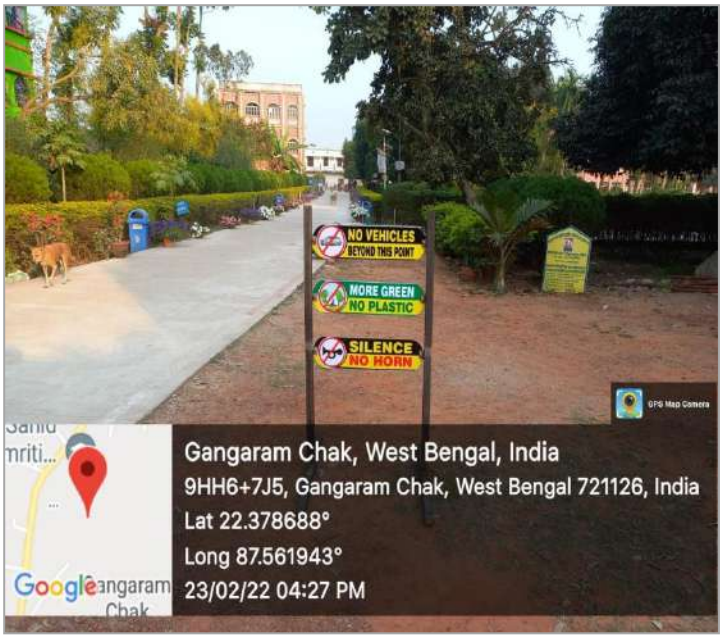
- **Location -** The Debra Thana Sahid Kshudiram Smriti Mahavidyalaya is located at Gangaramchak, P.O.: Chakshyampur, District: Paschim Medinipur, Pin: 721124 and falls under the Midnapur Municipality situated in the State of West Bengal.
- **Neighbourhood context -** The premises is surrounding by open spaces and Residential, Commercial and Educational areas on the immediate surroundings of the site.
- **Natural physical features –** The premises includes a rich biodiversity and huge number of plants in the adjacent open space. The site does not have major different in the land levels (contours).
- **Manmade features –** The premises is situated in a rural area amidst residential areas and open spaces with appropriate proximity to necessary amenities. There is sufficient appreciation space for entrance. The materials used for construction are RCC and the landscaping includes innumerable natural trees as well as potted plants.
- **Circulation –** There is a smooth transition of pedestrian traffic inside the premises due to the large entrance gate and the huge open space where vehicles of students and staff is parked.
- **Climate –** The average wind speed in Medinipur is 2.5 m/s with the maximum wind speed of around 8 m/s. The average ambient temperature remains 26.4°C, varies from 10.3°C to 40°C. The average reletive humidity remains around 74%, varies from 15.6% to 99%. The station pressure varies from 1000 hPa to 985 hPa, averaged around 1014 hPa.

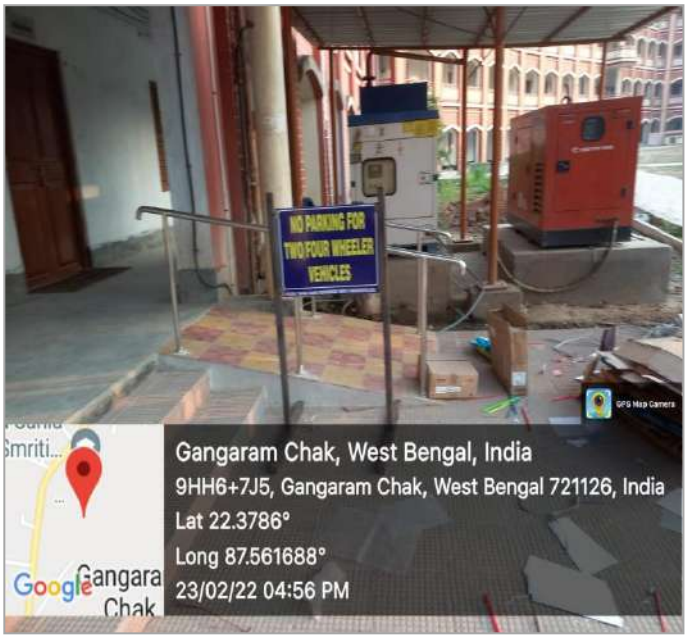
(Source: https://www.indianclimate.com/show-data.php?request=EVA2NMBWJI)

On-site investigation and physical verification

The user friendly premises with facilities such as ramps, parking, no entry zone, wheelchair, toilets







Ecological (Environment) Audit

Background reference image Yugal Shrivastava on pexels

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5. Ecological (Environmental) Audit

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.

As part of our study we could state that the Institution has developed eco-friendly practices and sustainable solutions which are well reflected in the rich biodiversity of the Premises. Being situated near the city the appreciation space towards the main entrance provides a welcoming approach to the College.

The college has huge open space used by all. The students use it for as a leisure place for study and college ground is used for sports activities. There are ample resting spaces as part of building design which provide a resting and warm welcoming approach in the premises.

5.1 Open Spaces

There is a beautiful balance of natural and open spaces in the premises and the open/ vegetation spaces are balanced overall. The ground is used by students at present for sports and cultural gatherings. The design on the entire is such that the landscape and softscape spaces are very well oriented and located thus being extremely useful to Institutions in the site. **There are provisions for natural plantations which have enhanced the beauty of the space.**

There are adequate numbers of Maintenance staff allotted for the upgrading the open spaces and they have done an excellence job in terms of the duty allotted. The infrastructure committee too is involved in this process. The traditional tap and pipe facility is adopted for watering and the college has taken special provisions for the same. The spaces are watered daily insummer. T**he efforts to maintain the existing space are commendable.**

5.2 Flora and fauna audit

A flora survey was carried out to identify the total numbers of plants and trees every year. The landscape area has a variety of plantations constituting hundreds of surveyed trees in premises in the last few years as follows with detail description of each.

S. No.	Plant name	Type	Nos.
1	*Chhatim (Alstonia Scholaris)*	Tree	1
2	*Akashpani (Acacia Auriculiformis)*	Tree	1
3	*Silver Trumpet Tree (Tabebuia Aurea)*	Tree	2
4	*Lombu Mehogini (Khaya Anthotheca)*	Tree	4
5	*Mehogini (Khaya Anthotheca)*	Tree	9
6	*Bottle Brush Tree (Callistemon Lanceolatus)*	Tree	5
7	*Aam (Mango) (Mangifera Indica)*	Tree	3
8	*Bokul(Mimusops Elengi)*	Tree	10
9	*Peara (Guava) (Psidium Guajava)*	Tree	2
11	*Jam (Black Berry)*	Tree	1
12	*Ashok Tree (Saraca Asoca)*	Tree	3
13	*Lebu (Citrus Limon)*	Tree	Many
14	*Bichuti (Tragia Involucrita)*	Herb	Many
15	*Arrowhead Plant (Syngonium Podophyllum)*	Herb	Many
16	*Guloncho (Tinospora Cordifolia)*	Herb	Many
17	*Ghirtokumari (Aloe Vera)*	Herb	Many
18	*Nayantara(Catharanthus Roseus)*	Herb	Many
19	*Seth Chandan (Santalum Album)*	Plant	Many
20	*Lal Kola (Red Banana) (Musa Acuminata)*	Tree	2
21	*Patabahar (Odiaeum Variegatum)*	Shrub	Many
22	*Korobi (Nerium Oleander)*	Plant	Many
23	*Jhau (Thuja Occidentalis)*	Tree	4
24	*Silver Trumpet Tree (Tabebuia Aurea)*	Tree	1
25	*Bokul(Mimusops Elengi)*	Tree	10
26	*Holud Polash (Butea Monosperma)*	Tree	2
27	*Togor(Tabernaemontana Divaricata)*	Shrub	5
28	*Garden Pine (Araucaria Heterophylla)*	Tree	2

29	*Chalta (Dillenia Indica)*	Tree	1
30	*Mehogini (Khaya Anthotheca)*	Tree	7
31	*Supari (Areca Catechu)*	Tree	12
32	*Narikel(Cocos Nucifera)*	Tree	12
33	*Pine (Pinus Sylvestris)*	Tree	3
34	*Jam (Black Berry)(Syzygium Cumini)*	Tree	1
35	*Bottle Brush Tree (Callistemon Lanceolatus)*	Shrub	2
36	*Kanthal (Jackfruit)(Callistemon Lanceolatus)*	Tree	1
37	*Peara (Guava)(Psidium Guajava)*	Tree	1
38	*Lal Polash (Butea Monosperma)*	Tree	1
39	*Bokul(Mimusops Elengi)*	Tree	1
40	*Garden Croton(Codiaeum Variegatum)*	Shrub	Many
41	*Nayantara(Catharanthus Roseus)*	Herb	Many
42	*Jhau (Thuja Occidentalis)*	Shrub	Many
43	*Gandharaj (Gardenia Jasminoides)*	Shrub	Many
44	*Ponytail Palm(Gardenia Jasminoides)*	Shrub	27
45	*Togor(Tabernaemontana Divaricata)*	Shrub	Many
46	*Boishakhi(Salix Tetrasperma)*	Shrub	Many
47	*Rangan(Ixora Coccinea)*	Shrub	Many
48	*Ban Jui (Volkameria Mermis)*	Shrub	Many
49	*Lal Rangan(Ixora Coccinea)*	Shrub	Many
50	*Aam (Mango) Mangifera Indica*	Shrub	Many
51	*Jooba(Hibiscus Rosa Sinensis)*	Shrub	Many
52	*Chhatim (Alstonia Scholaris)*	Tree	Many
53	*Akashpani (Acacia Auriculiformis)*	Tree	1
54	*Jam (Black Berry)(Syzygium Cumini)*	Tree	Many
55	*Debdaru(Syzygium Cumini)*	Tree	Many
56	*Sada Rangan(Ixora Coccinea)*	Shrub	Many
57	*Belful(Jasminum Sambac)*	Plant	Many
58	*Ghirtokumari (Aloe Vera)*	Herb	Many
59	*Narikel (Cocos Nucifera)*	Tree	2
60	*Akashpani (Acacia Auriculiformis)*	Tree	250
61	*Guava Psidium Guajava*	Tree	30

62	*Coconut (Cocos Nucifera)*	Tree	3
63	*Lemon (Citrus Limon)*	Tree	5
64	*Aam (Mango) Mangifera Indica*	Tree	10

Table 4: Details of the Flora in the premises

At present there are more than 436+ plantations comprising of plants, trees, shrubs. All of these are planted by the on various occasions and some have grown naturally. Timely maintenance with sufficient care has resulted in positive benefits for the surroundings.

5.3 Noise Audit

5.3.1 Macro level

On a macro level there are open grounds in the site. The approach road too has very minimal traffic. As the college is oriented amidst the residential areas with immense vegetation the noise levels do not affect the students and staff in their day to day functioning. The approach road too is pretty away. **Overall the noise level in terms of bad effect is extremely low and there are positive outcomes as per our analysis on macro level.**

5.3.2 Micro level

The college has an adequate open space covered with huge trees prevailing naturally in the premises which act as a noise barrier; in addition the Institution building is surrounded by Residential Buildings which further act as a benefit in reducing any noise pollution. There are bare minimum parking provisions provided in the premises which causes bare minimum noise as they are situated near the entrance which is a bit away from the College building. The college does not have generator thus there is no inconvenience or sound problem caused due to the same. There are no particular equipments which cause any noise effect. **Overall the noise levels inside the premises are low which is a good approach.**

5.4 Carbon Footprint Audit

5.4.1 Eco-friendly Commuting Practices

Based on data collection and discussion with staff the following points were noted:

- **Ease of commuting –** Owing to close proximity to public transport the access is

very feasible and walk able.

- **Parent's commute -** There are 2 Parent-teacher meetings held in a year and the turn-out is around 40-60%
- **Vehicles details** – The provision provided by College includes s vehicle parking is allowed at present as follows.

S. No.	Type	Nos.	For (student/ Staff)
1.	Cars	15-20	Staff
2	Bikes	80-100	Staff and Students
3	Cycles	80-100	Students
4	Electric vehicles	4-6	Staff and Students

Table 5: Details of the Parking in the premises

- **Commute details** – The students and staff commute from multiple places, the college is situated in a central area hence most of the students and staff commute using cycles and public transport.

5.4.2 Heat Island Reduction

The Institution has **adopted the following practices which are yielding positive results** in terms of Urban Heat Island Effect which refers to increase in temperature of the surrounding because of ineffective strategies.

- **Exposed roof areas –** The terrace is a flat roof which is absolutely clean and well maintained. The Buildings are covered with white paint and the Maintenance staff along with Management have taken ample measures to maintain the same. **There was no weathering of roof observed.** The current practices are well maintained.
- **Exposed non-roof hardscape areas -** There are pathway on all sides of the premises. These include some natural and potted plantations along the pathways. However, the trees are huge and the canopy is wide spread thus providing ample shade to the outdoor areas of the premises. Hence, there are no direct sunrays or similar effect affecting the students and staff. The college has an open space in the form of lush green carpet which acts as a solution for the urban heat island effect.

This huge green space is a very good solution for reducing any harmful health consequences which may arise due to harsh sunlight.

There are adequate measures adopted in the premises to reduce heat island effect of Building roofs and in site.

5.4.3 Outdoor Light Pollution Study

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

5.5 Universal Campus

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

There are Ramps, Handrails along staircase and low height risers in the Staircases as part of universal campus initiatives. The design of the premises is appropriate for access with passages and corridors being wide enough in size and naturally ventilated. The doubly and singly loaded corridors are safe from fire safety aspect. The college has resting places (seating areas) in the outdoor along the trees thereby making it user friendly for the specially abled students. **The college can plan to have 100% lifts in the future depending on the situation and facilities in addition to universal toilet.**

5.6 Fire Safety

The Institution has undertaken adequate fire safety measures. Each floor has an open staircase without any barriers for fire safety measures. These staircases are free of any kind of storage or combustible material. The windows in each classroom are at a low height with fresh air and natural light thereby adding to ample ventilation throughout the day. The college should adopt additional fire safety practices such as fire hydrant and others whenever the College undergoes further extension or renovation. The current facilities are however quite well maintained.

Our observation was that there are adequate Fire extinguishers in the premises. Though, there can also be provision for additional fire safety signages.

5.7 Survey Results

An online survey was conducted to analyse the views about the premises, following are some of the reviews.

5.7.1 Participation

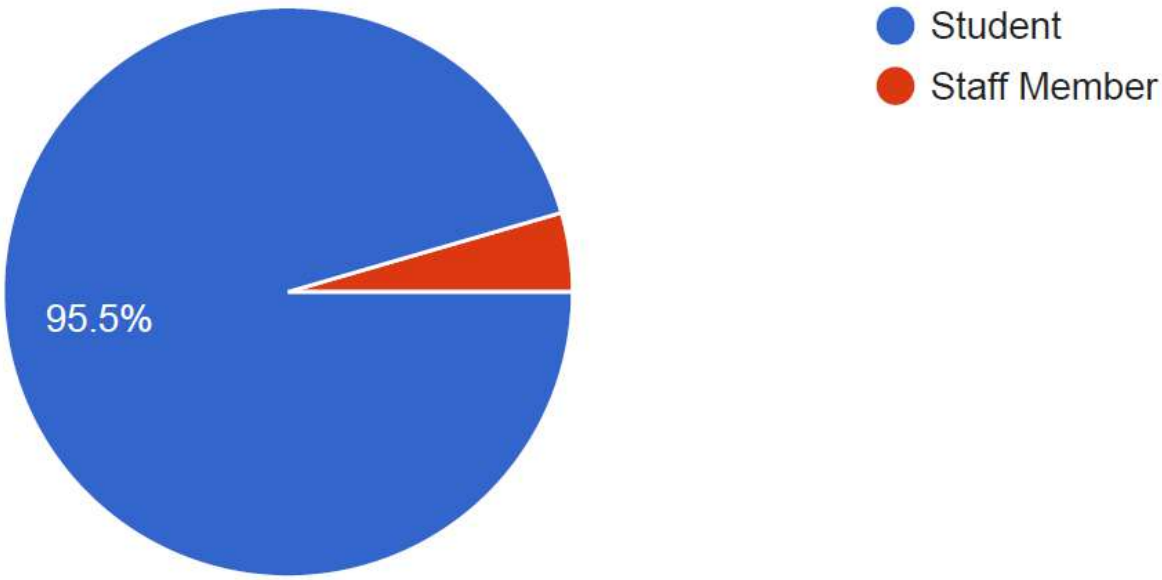

Figure 1: Participation analysis in the survey

A total of **736 responses** were received out of which 96% were students.

5.7.2 What according to you are the positive steps taken by the College towards Green Building/ Good maintenance?

We have listed some of the key responses below.

- Production of Solar energy, Biogas and Vermicompost are some of the major positive step taken by college.
- Tree plantation, Gardening, water treatment, proper use of dustbin, mushroom farming etc.
- Our institute maintains cleanliness and has so many trees, a beautiful garden and full building is decorated with flower tubs which makes our study environment friendly.
- Our Garden with various plants give us oxygen, electrical vehicle in college campus available, Solar energy also present in our campus. Bio gas also available which is used in college hostel cooking.

5.8 Positive site features as per our study

a) Cool rooftops

The College has the Terrace roofs painted with white cover it helps reduce the temperature of the spaces.

b) User friendly movability in premises

There are provisions of Kerb Ramp in the Building premises, also low height hand rail for ease of access.

c) Avoid using plastic in premises

There are provisions for ban on the use of plastic bags or products in the Premises.

d) OPAC system

The system in the library is beneficial for the students.

e) Paperless technologies

The college has gone technology friendly and paperless in the functioning of the Premises.

f) Universal Toilet

There are toilets for the specially abled people as per guidelines prescribed by National Building Code 2016.

g) Resting places

There are provisions for resting places in premises in outdoor and indoor.

5.9 Recommendations for a Sustainable Habitat by Greenvio Solutions

Site beautification

a) Low VOC Paints and Adhesives

Whenever the College undergoes repairs or renovations there should be use of materials with low emissions so as to reduce the adverse health impacts on workmen and the students occupying the space thereafter.

b) Additional facilities for birds

There can be provision for drinking water and food facility for birds visiting in the College premise.

Pollution Control

a) Promote the use of Eco-friendly vehicles

There can be provision for battery operated vehicles/ low emission vehicles such as electrically driven vehicles parking in open space along with battery charge points, this would inspire students to change mode of transportation and adopt sustainable practices.

b) Bicycles as a gift

As an appreciation gesture may be the students toppers/ staff best performers can be awarded with a bicycle occasionally.

h) No Vehicle day

It can practiced every fourth Saturday of every month. It should be followed by every student, faculty, nonteaching to make college premises pollution free.


Chak Kunar, West Bengal, India
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West Bengal 721126, India
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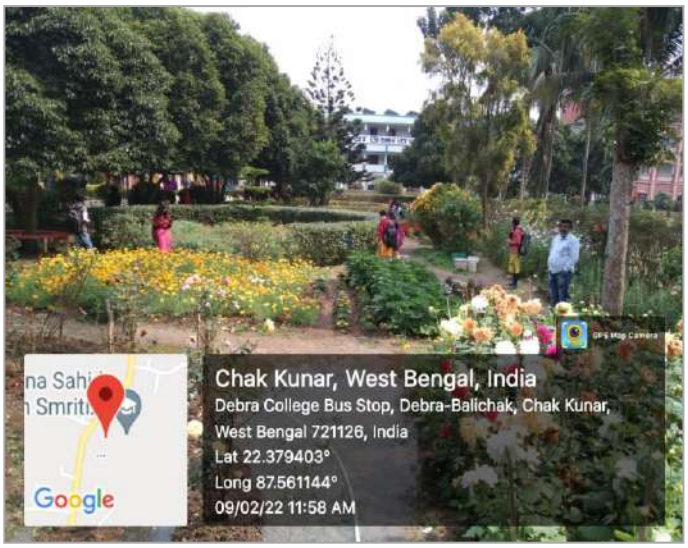
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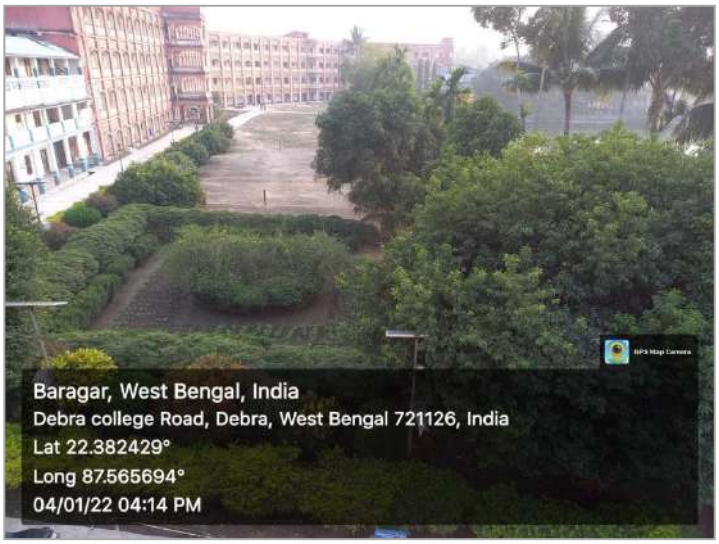
Baragar, West Bengal, India
Debra college Road, Debra, West Bengal 721126, India
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Chak Kunar, West Bengal, India
Debra College Bus Stop, Debra-Balichak, Chak Kunar, West Bengal 721126, India
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6. Towards a Healthy & Sustainable Institution

6.1 Inputs by Greenvio Solutions

Based on the analysis of the study of premises in addition to the recommendations provided in each section of Ecological, Water, Waste and Energy Audit the College can adopt the following strategies towards a Healthy and Sustainable Institution practices.

a) **Kitchen garden -** There can be provision of kitchen garden practices in a designated area of the open space this would enhance the biodiversity and be useful in training students and staff about the healthy practices and vegetables grown which would be used in Canteen. It helps in capacity building. The smaller steps taken have huge impacts when each student would adopt these practices in their homes or societies and grow kitchen garden, terrace garden there will be a long term benefit for the environment as a whole.

b) **Cutlery in the Canteen –** The regular plastic and steel plates, spoons used in Canteen can be replaced with eco-friendly and organic leaves, paper straw, disposable plates, edible spoons and tables made out of sugarcane waste or bamboo. This will be first of its kind initiative to be adopted and practiced thus also inculcating the healthy practices in students.

c) **Signages –** In addition to the signages being in regular language there can be additional signages in braille language for the specially abled students.

6.2 Survey Results

An online survey was conducted to analyse the student and staff views about what changes according to you can be undertaken for Green audit improvement in College premises and activity, some of the key responses are listed below. Whereas many responses **stated there were no changes requires because the present practices are excellent.**

- There is no need to change anything.
- I think all have been done by our college, but if they maintain and continue this type of programme, then improvement will gradually increase.

Some of the suggestions by the Students and staff are listed below:

- Minimizing usage of papers, ban of polythene and plastic inside the campus, use of emitting free vehicles etc.
- Must have one dustbin in every 10 m.
- The environment and study ,and the others is good but in our college there is no nearby playground in our college .so we have to cross the road for playing outdoor games and the road crossing is too much risky. So it is my earnest request to our principal ma'am to solve this problem
- Tree plantation program or cleaning activity.
- Extension of solar power grid, plantation.
- Use of more sensors to reduce electricity use.

However, it should be noted that the College has taken up multiple initiatives and because of Pandemic the students have not practically visited the campus so many of these points are not mandatory at the moment.

7. References

1. Uniform Plumbing Code – India, 2008
2. IGBC Green Existing Buildings – Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013
3. IGBC Green Landscape Rating system, March 2013
4. BOMA Canada Waste Auditing Guide, Best Environmental Standards, BOMA BEST - Canada
5. Climate data https://www.indianclimate.com/show-data.php?request=EVA2NMBWJI
6. 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.

GREEN AUDIT

2019-20 & 2020-21

AUDIT REPORT

Studied for

Debra Thana Sahid
Kshudiram Smriti Mahavidyalaya

Gangaramchak, P.O.: Chakshyampur,
District: Paschim Medinipur, Pin: 721124, West Bengal, India

Analysed by

Greenvio Solutions

15 March 2022

Background reference image Sasin Tipchai on unsplash

Disclaimer

The Audit Team has prepared this report for the **Debra Thana Sahid Kshudiram Smriti Mahavidyalaya** located at *Gangaramchak, P.O.: Chakshyampur, District: Paschim Medinipur, Pin: 721124, West Bengal, India* 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 has completed audits of multiple Institutes including Technical, State University, Private University and Single Faculty Colleges for a total of more than 45 lakhs+ sq. ft. of Built-up area audited till date Pan India 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

Acknowledgement

The Audit Assessment Team thanks the **Debra Thana Sahid Kshudiram Smriti Mahavidyalaya, West Bengal** 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 **Dr. Humayun Kabir,** President; **Dr. Rupa Dasgupta,** Secretary; **Sri Vivekananda Mukherjee,** State Government nominee; **Smt. Rekha Hui,** State Government nominee; **Prof. Chandradipa Ghosh,** University nominee; **Dr. Partha Pratim Chakraborty,** University nominee; **Prof. Saikat Chakrabarti,** Teacher's Representative; **Prof. Soumya Kanti Hota,** Teacher's Representative; **Prof. Partha Pratim Pramanik,** Teacher's Representative; **Sri. Barun Chakraborty,** Non-Teaching Representative and **everyone from the Management.**

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

We are also thankful to **College's Task force the faculty members - Green Audit Coordinators** who have collected data required **Dr. Pankoj Kanti Sankar,** Barsur; **Partha Pratim Pramanik** H.O.D, Dept. of Geography; **Joydev De**, H.O.D, Dept. of Physics **(Special mention for the excellent coordination)**; **Tanushri Maity,** SACT; **Sumana Khatua,** SACT; **Soumya Kanti Ghosh,** SACT; **Arindam Das,** SACT; **Asis Rana,** SACT; **Deblina De,** SACT; **Subhankar Manna,** SACT; **Bishal Das,** SACT and **Sk. Khairul Basar**, SACT

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

Contents

1. Introduction

1.1 About the Foundation of the Institution

The Foundation Stone of Debra Thana S.K.S. Mahavidyalaya was laid on 17 November 2005 and the classes of the newly admitted students were started from 15 September 2006. Since then the College is striving towards its goal of providing access to higher education to the students of this area. Since its initiation the college has recorded notable growth in terms of infrastructure, subjects offered and also in student strength. There are tough challenges ahead but we are determined that this institution will progress steadily towards its desired goal.

Debra Thana Sahid Kshudiram Smriti Mahavidyalaya is established with a motto 'educate, empower and emancipate students and making them capable not only for individualistic growth but for financial independence and making them responsible citizens of India.' Its chief objective is to kindle a light in the darkness of mere being.

1.2 Statements of the College

Vision

To transform our college into a Centre of excellence in the arena of higher education and contribute to the inclusive development of the country by generating quality human resources. The college aims at the holistic development of the young learners and hopes they are young citizens of the nation who are dependable, honest, committed and possess a sound value system. To build a young generation who can act as essential components in the process of cultural, socio-economic and environmentally sustainable development as individuals, communities and a nation is also our vision. The college is fully aware of educating not only the registered student but also a whole family. With this in mind, Debra Thana S.K.S. Mahavidyalaya aims at imparting an education that not only propels the students up the career ladder, but also empowers rural people including women and makes them independent and successful citizens. It is our vision to ensure a democratic, secular, cultured and intellectual environment so that students of all caste and creed can exchange their views and build themselves up to operate not only as responsible individuals but also as a productive, efficient and conscientious team.

Mission

- To disseminate Higher Education to a large regional hinterland.
- To promote inclusive education and development amongst all economic sections of the society without gender bias.
- To provide an ambience that makes our students ethically strong and professionally competent and, thereby, contributing to a healthy and prosperous society.
- To encourage innovative thinking and creativity and inculcate research skills in our students.
- To optimize the use of available infrastructure for sustained development of the college.
- To supplement and enrich the existing curriculum through seminars.
- To propagate higher education amongst women.
- To equip and empower students with relevant knowledge, competence and creativity to face global challenges.
- To emphasize value education to create human resources with modern view and foresight who can contribute to the national development by catering to the needs of the economy, society and country as a whole.
- To restrain brain drain by gradually increasing the intake capacity in higher education in order to cope with the rapid increase in aspiring students in a scenario characterized by universalization and globalization of education.
- To promote analytical and empirical study in basic and social sciences, and humanities leading to contribution in higher level of research amongst the faculty members and students.

1.3 About the Institution

The aim of the college is to continuously enhance the teaching methods in order to provide students with an opportunity for their all-round development. It also strives for excellence in academics and makes an effort to induce passion for learning along with the inspiration for decisive thinking and assessment, thereby helping them to become the best professionals in their chosen careers.

The Institution offers the following courses affiliated to Vidyasagar University, West Bengal.

- **Graduation** – It offers the following Undergraduate courses.
  - Faculty of Humanities (General) - Bachelor of Arts (B.A.) in Bengali, English, History, Sanskrit, Political science, Education, Music, Santali and Physical Education
  - Faculty of Humanities (Honors) - Bachelor of Arts (B.A.) in Bengali, English, History, Sanskrit, Political science, Philosophy, Education and Santali
  - Faculty of Science & Technology (General) - Bachelor of Science (B. Sc) – Physics, Chemistry, Mathematics, Geography, Botany, Physiology, Nutrition and Computer science
  - Faculty of Science & Technology (Honors) - Bachelor of Science (B. Sc) – Physics, Chemistry, Mathematics, Geography, Nutrition and Computer science
  - Professional courses - Bachelor Of Computer Application (B.C.A.) and Bachelor in Medical Laboratory Technology (B.M.L.T.)
- **Post-Graduation** – It offers the following Post Graduation courses.
  - Faculty of Humanities - Masters of Arts (M.A.) in English Literature,
- **Diploma Programs -** It offers the following courses
  - 1 year Advanced Diploma in Hardware, Networking and Information Security(recognised by UGC)
  - 1 year Certificate course in Spoken English
  - Certificate course in Mushroom Cultivation
  - Certificate Course in Self Defence
  - Certificate course in Hands on Computer
- **Vocational Courses -** It offers B .Voc in Automobile

The College works towards training young women and men to be competent, committed and compassionate, and lead in all walks of life. It has the following aims and objectives.

- To ensure quality in education.

- To inculcate self-confidence and morality through value based education.
- To make our students energetic and vigorous to face the challenges to come.
- To make them socially committed and flexible to global changes.
- To make them confident and self-sufficient.

1.4 The surrounding premises around the Institution

The Premises is situated amidst the landscape serene of **Paschim Medinipur district of West Bengal State** with immense peace and calmness in the surroundings. The College is surrounded by Educational Buildings on the North side, Residential and Commercial areas on the macro front from all the sides. There is a frontal approach which provides quite a beautiful appreciation space while approaching the premises; this area is surrounded by huge trees which positively complement the background-foreground aspect in terms of Natural space and built-form Architecture. It also provides ample shade which enhances the micro climate of the region. The location of College is feasible to the nearby essential amenities such as Public Health Center, Fire Station, Civic body-Public administrative buildings, Recreational gardens and Police Station.

1.5 Assessment of the College

1.5.1 Establishment

The College was **established in 2006** Vide G.O. No 618 Edn(CS), DT 24 Aug'2006 and No 855 Edn(CS) , DT 27.10.2006 and **it is constituted by Department of Higher Education, Govt. of West Bengal.**

1.5.2 Affiliations and approvals

The college is **permanently affiliated to Vidyasagar University, West Bengal**: VU/R/5EC/50/Affi/(New College)/851/06 DT 6.9.06.

1.5.3 Certification

The institute is listed on the AISHE or All India Survey on Higher Education which was established by the Ministry of Human Resource Development and its code is **C-19090-**

2020.

1.5.4 Accreditation

NAAC - The College received a CGPA of 2.01 with a B Grade in its first cycle of Accreditation. The College is due to enter its second cycle of NAAC soon.

1.5.5 Recognitions

The college has achieved the University Grant Commission (UGC) recognition

- 2(f) Memo No- F.No. 8-367/2011(CPP-I/C) December 2012
- 12(B) Memo No- F.No-8-367/2011(CPP-I/C) December 2013

2. Institution overview

2.1 Populace analysis for Academic year 2019-20

2.1.1 Students data

The student data (shared by the College) shows there were a total of **1,590 Boys and 2,183 Girls** students thus **a total of 3,773 students** in the premises.

2.1.2 Staff data

Type	Male	Female	Total
Admin Staff	15	3	**18**
Teaching Staff	65	29	**94**
Non-Teaching Staff	25	6	**31**
Total Staff Members	**105**	**38**	**143**

Table 1: Staff data of the Institution for 2019-20

The staff data shows the premises had a total of **143** Staff Members.

2.2 Populace analysis for Academic year 2020-21

2.2.1 Students data

The student data (shared by the College) shows there were a total of **1,397 Boys and 2,299 Girls** students thus **a total of 3,696 students** in the premises.

2.2.2 Staff data

Type	Male	Female	Total
Admin Staff	15	3	**18**
Teaching Staff	66	29	**95**
Non-Teaching Staff	25	5	**30**
Total Staff Members	**106**	**37**	**143**

Table 2: Staff data of the Institution for 2020-21

The staff data shows the premises had a total of **143** Staff Members.

2.3 Total College Area & College Building Spread Area

The **total site area is 5.23 Acres** and the **total Built-up area of College is 52,000 sq. ft.** for **a total of 3,839 footfalls.**

2.4 College Infrastructure

2.4.1 Establishment

The College was established in 2006. The college is located pretty close to nature and hence has very fresh environment which is absolutely pollution free and healthy. The Building is a Reinforced Cement Concrete (RCC) framework building. **Overall the Infrastructure of the Building is excellent in terms of the Architecture Design and Green Building Design. The Premises covers quite a few of the requirements for a Green Habitat.**

2.4.2 Spatial Organisation

The overall ambience of the College is warm and inviting. The classrooms and other spaces have ample natural ventilation in the form of clear glass windows with fresh air ventilation. The architecture of the building is quite well designed. The colour palette not just helps the building to stand out but also provides an Institutional arena. It balances with the local architecture with the natural landscapes of huge trees all around. The design emphasis on providing calmness to the built form and gradually merges with the serene landscape.

The floor to floor height is more than 10 feet. There is no provision for lifts in the premises, whereas there are amenities such as CCTV, Fire extinguishers, Library and first aid box.

2.4.3 Operation and Maintenance of the premises

The interview session with the staff regarding the operation and working hours is summarized in the table. The Institutions are open Monday to Saturday for full day. Sunday is an off for all. Below mentioned in the table are the average working hours. The detail wise timing for each is mentioned below.

S. No.	Section	Spaces	Time	Hours/ day	Days in a year
1	Main Institutional College	Student areas and Teaching faculty	Monday to Friday (10:15 a.m. to 05:15 p.m.) Saturday (10:15 a.m. to 03:15 p.m.)	7 (Average)	172
2	General areas	Admin areas and library, Passage, staircase, toilet	Monday to Friday (09:15 a.m. to 05:15 p.m.) Saturday (09:15 a.m. to 03:15 p.m.)	8(Average)	200

Table 3: Schedule of the timings of the premises


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Long 87.561579°
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Baragar, West Bengal, India
Debra college Road, Debra, West Bengal 721126, India
Lat 22.382429°
Long 87.565694°
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3. Green Building Study Audit

3.1 About the Green Building Study Audit

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

3.2 Analysis for the Green Building Study Audit

The procedure included detailed verification for the following:

Energy Audit

- Analysis of the Lights, Fans, AC, Equipment
- Renewable energy
- Scope for reducing the current energy bills if any
- Improvement in the thermal comfort of the campus

Green Audit

- Green initiatives
- Hygiene audit
- Water Audit - Analysis of the current water consumption of campus; Scope to include Rain water harvesting and Waste water treatment in campus
- Waste Audit - Current waste produced, its segregation and usage; Strategies to be adopted for waste management and awareness

Environmental Audit

- Analysis of the current landscape + hardscape of campus
- Analysis of the flora and fauna of campus
- Strategies adopted at present to enhance vegetation
- Measures that can be adopted for ecological improvement of the premises.

3.3 Strategy adopted for Green Building Study Audit

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

3.4 Timeline of the activities for Green Building Study Audit

- 21 February 2022 – Discussion with the College
- 22 February 2022 – Allotment and Initiation by the College
- 01 March 2022 – Survey of the Student and staff submitted
- 09 March 2022 – Data submitted by College
- 15 March 2022 – Submission of the Report

Green practices

Background reference image Free photos on pixabay

Greenvio Solutions

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 in the premises.

- **Architecturally planned and designed landscaped garden spaces with wide walkways.**
- **Rainwater harvesting system facility** is practiced. This has proved to be quite beneficial in retaining the water and reusing the same in the premises.
- **Cleanliness** has been observed as one of the best features of the premises.
- There is **availability of open space in the premise in addition to the provision of the multiple varieties of flora.**
- The NSS Team, College authorities **jointly conduct initiatives for upgrading of the premises from environmental view.**
- Fresh environment is maintained and upgraded by the presence plants. **The vegetation benefits the users by providing shade.**
- **Lectures/workshops conducted on green practices and green infrastructure.**
- **Waste water treatment and reuse through septic tank facility.** Usage of drip irrigation facilities in the premises.
- **Solid waste management is practiced in the premises in the form of vermicomposting (8 Vermi Compost Pit each of size 5m x 3m x 3m).** The college has undertaken specific measures and set forth a designated area in the premises for executing and maintaining the practice.
- **Availability of Biogas plant with 1 cubic meter capacity.**

4.2 Community Development

The various community development programs conducted include Tree Plantation, Life Learning, Employability Skill program introduced for the youth, Blood Donation Camp, Food Kit Distribution Program to the neighbourhood community, Relief fund programs.

A lot of efforts are involved right from planning to execution. The main motive behind these is social welfare. This kind of a though process is highly admirable. We respect and congratulate the Institute for the same.

4.3 Eco-friendly initiatives undertaken

The Institution has undertaken the following initiatives through **excellent efforts** towards save environment measures before pandemic. The NSS Department conducts various activities like tree plantation, nature cleanliness, visits to nearby flora and fauna, rural development initiatives.

S. No.	Name of the activity	Date	Participant nos.
Study period 2019-2020			
1	Observance of Vana Mahotsab with plantation of saplings and environmental awareness programme	14/06/2019 – 21/06/2019	236
2	Blood donation camp organised in collaboration with Debra Block Hospital Blood Bank on August 9, 2019	09/08/2019	85
2	Celebration of Independence Day on August 15 by organising a cultural programme and Join the Defence Programme	15/08/2019	800
3	Celebration of NSS Day	24/09/2019	198
4	AIDS Awareness Rally and Seminar	01/12/2019	201
5	Celebration of Republic Day on 26 January	26/01/2020	209
6	'Pledge for life' tobacco control pledge and poster campaign	01/03/2020 – 07/03/2020	300
7	Village and Household Survey	March-May 2020	120

8	Observance of Environment Day on June 5 with plantation of saplings and poster competition	05/06/2020	100
Study period June 2021 to May 22			
1	AIDS awareness campaign through posters	01/12/2020	16
2	Celebration of World No Tobacco Day by organizing an anti-tobacco poster campaign	31/05/2021	20
3	Celebration of Environment Day by planting a plant in the local area by the students and through a poster competition.	05/06/2021	74

Table 4: Details of the environment related activities

It is very much evident that the College takes full efforts to spread awareness and provide outreach for sections of events such as Gender Equality, Health, Eco-efficiency, National significance. However, due to lockdown more social events could not take place.

4.3.1 General activities Conducted by NSS and NCC unit

There are National Service Scheme units in the College. The N.S.S Programme Officers of the College have been working as a team with dedication for the following activities.

- Cleaning campaign in the society.
- Afforestation through tree plantation.
- Creating awareness of such issues as social problems, education and cleanliness.
- Awareness Rallies about environment, cleanliness
- Organization of health camps, Street plays.
- Fund raising for the Armed forces.

4.4 Survey Results

An online survey was conducted to analyse the student and staff views about the Energy management practices adopted in College, following is the result received.

4.4.1 Participation

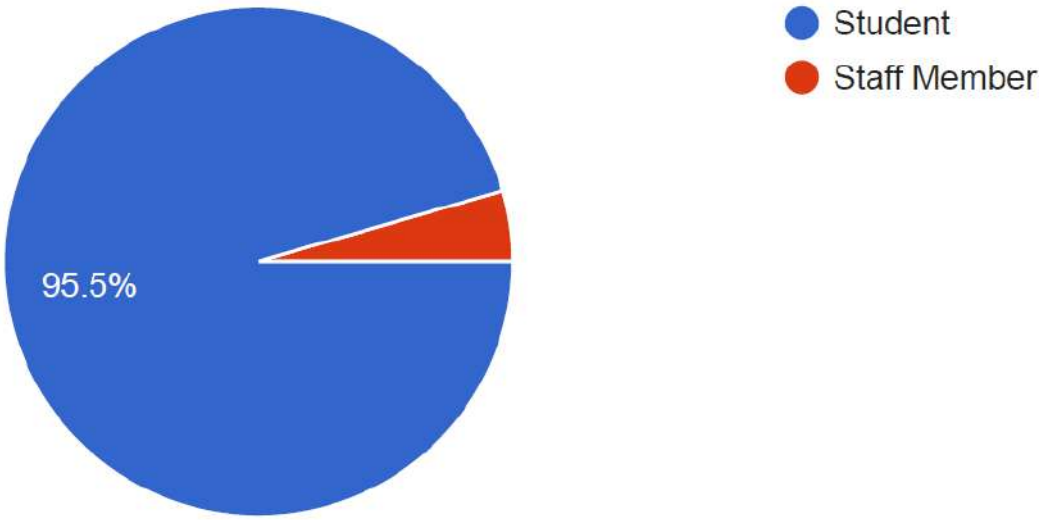

Figure 1: Participation analysis in the survey

A total of **736 responses** were received out of which 96% were students.

Note about the review-rating survey

The Participants were asked to review (Though an online mode) the practice on a scale of 1-5 with scale components as follows:

- Scale 1 – Poor
- Scale 2 – Satisfactory
- Scale 3 – Good
- Scale 4 – Very good
- Scale 5 – Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)

4.4.2 Rate the Green awareness practices in College

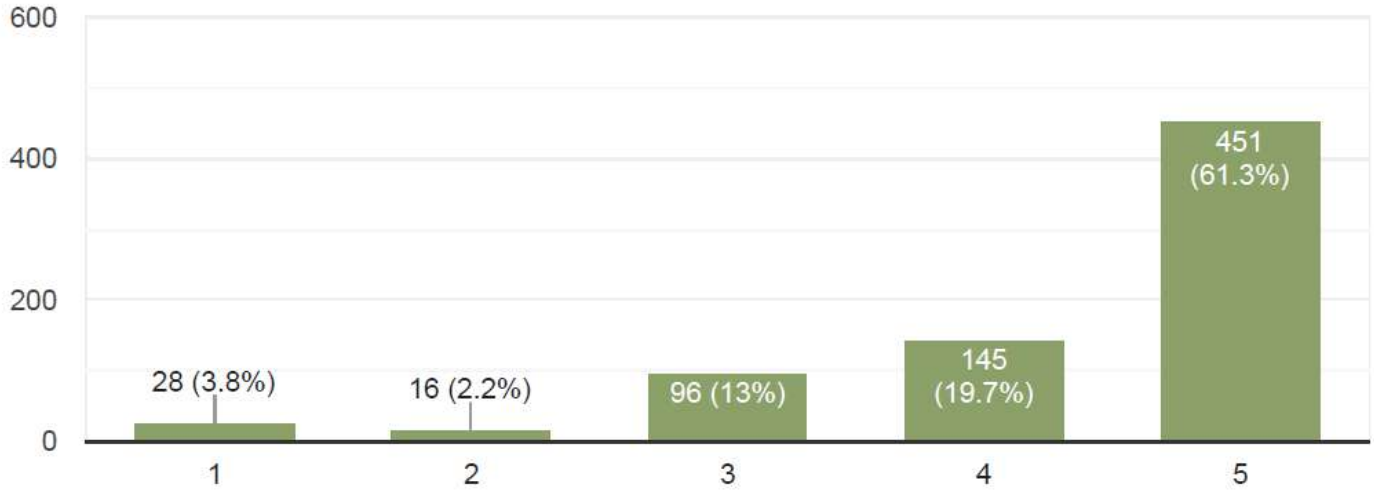

Figure 2: Green awareness practices in College

There were mixed responses received the highest was for **rating 5 (Excellent) at 61%** followed by **20% for rating 4 (Very Good).**

4.4.3 Does your College conduct environment awareness programs/ webinars/ plantations/ cleanliness or similar programs?

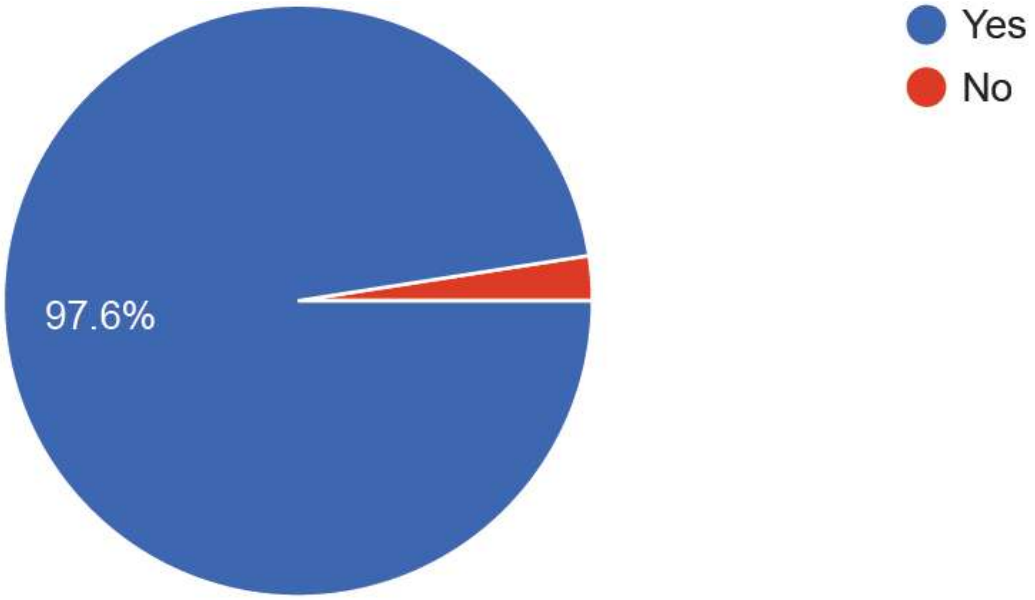

Figure 3: Confirmation of the environment awareness programs/ webinars/ plantations/ cleanliness or similar programs conducted by the College

The students, staff **98%** of responses confirmed activities are conducted which is very excellent.

4.4.4 Do you participate is such events?

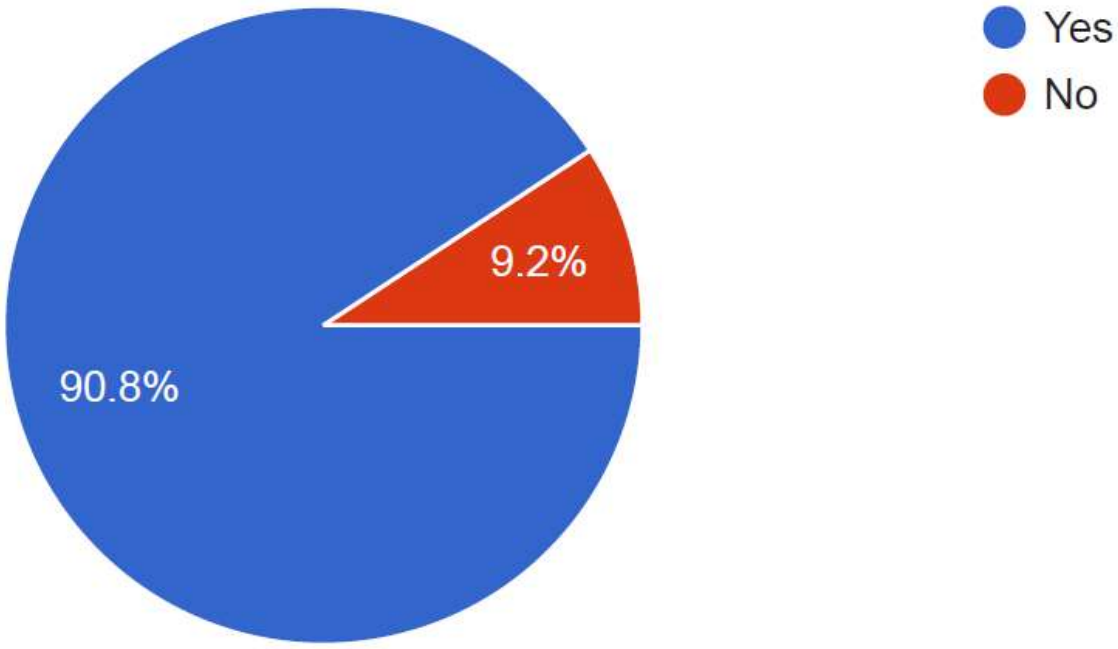

Figure 4: Participation in the environment awareness programs/ webinars/ plantations/ cleanliness or similar programs conducted by the College

The students, staff **almost 91%** of the responses confirmed their participation, **this is an excellent response.**

4.4.5 If yes, what has been your experience about the program?

We have listed some of the key responses below.

- **Program is so good. I learnt about awareness of environment and value of this thing. Much thankful to our college authority**
- Very well managed and every event is very peaceful
- **It's very good to see our college doing this type of webinar or program and my experience is good**
- Excellent
- Fabulous
- **Very nice program**
- It is good
- **Great experience**

4.5 Positive points practiced by the College

We have listed some of the key responses below received as part of the survey stage.

- Production of Solar energy, Biogas and Vermicompost are some of the major positive step taken by college.
- Tree plantation, Gardening, water treatment, proper use of dustbin, mushroom farming etc.
- Our institute maintains cleanliness and has so many trees, a beautiful garden and full building is decorated with flower tubs which makes our study environment friendly.
- Our Garden with various plants give us oxygen, electrical vehicle in college campus available, Solar energy also present in our campus. Bio gas also available which is used in college hostel cooking.

4.6 Recommendations for a Sustainable Habitat by Greenvio Solutions

a) Plant as a gift

As a kind gesture the guests visiting the premise can be asked to plant a small plant in the premise itself and they can be even given plants/ bouquet from the flowers of the plants in the premise as a gift.

b) Tree adoption scheme

The college can adopt One Faculty – One tree adoption scheme which is one of its kind practice, this can be very beneficial especially during the summer season.

c) 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.

Waste Audit

Background reference image Polina Tankilevitch on pexels

Greenvio Solutions

5. Waste Audit

Waste is an inevitable part of our lives. Over the years as the awareness about waste management techniques has given a rise to rethink how the waste can be avoided form 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, waste management strategies that are and implemented in addition to the newer ways the can be adopted aiming to make the premise clean and sustainable. Here sustainable refers to a broader aspect to analyse whether the current techniques are having positive or negative effect on the stakeholders of the premises.

5.1 Waste produced

5.1.1 Types and disposal of waste in Premises

The types of waste collected in the premises are as follows, these are separated before processing.

S. No.	Type of waste	Source and quantity	Current Disposal method	Can be treated/ recycled?	Methodology
1	Solid waste	Toilets–Biodegradable waste of 50-60 kg per week	Biogas	Yes	CONTINUE - with the current practice
2	Paper waste	Newspaper and other paper	Given to vendor	Yes	CONTINUE - with the current practice
3	E-waste	Computers - Non-biodegradable waste as per the annual year usage	Given to vendor	Yes	CONTINUE - with the current practice
4	Dry waste in form of leaves	Open space & plantations, papers - Non biodegradable waste of 8-10 kg per week	Vermi-composing	Yes	CONTINUE - with the current practice
5	Liquid waste	Toilets, washbasins – Around 100 – 120 litres per week during general times and 50 litres at present	Led into the storm water drain	Yes	TREATED - Sewage Treatment plant can be proposed (small scale)
6	Organic regular waste	Dust, dirt usually dry waste from Canteen and all sources – approx. 3 to 5 kg	Vermi-composing	Yes	CONTINUE - with the current practice

Table 5: Summary of the types of waste produced in the premises

5.1.2 Bins summary

There are **44 Dustbins in the premises** with volume of 15 litres (medium sized) each and made up of plastic material. The analysis of dustbins is presented below.

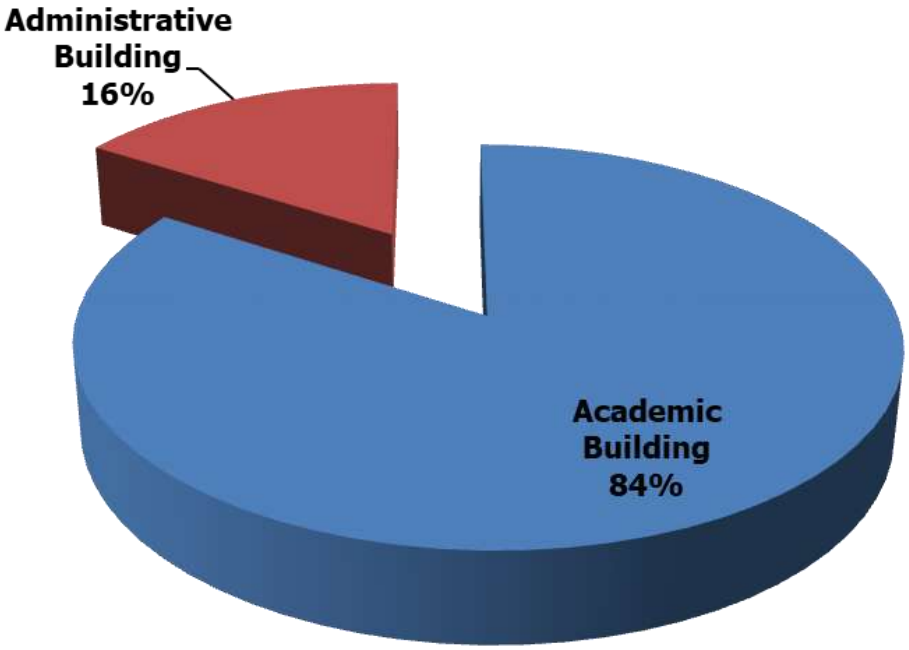

Figure 5: Analysis of dustbins section wise in the premises

The above analysis shows **84% dustbins are present in the Academic building section** and **16% are present in the Administrative building section.**

5.2 Waste handling

Quantification wise as per Interview and survey it was found the following type of waste is Solid, Liquid, Hazardous Waste, Dry leaves, E-Waste, Canteen waste, Unused Equipment and Others (Sanitary Napkins) waste is collected. The waste produced on premises is segregated. It is collected on a weekly basis. The waste is not handed over to the local municipality van. There is a dumping pit in the garden which should not be there.

5.3 Waste management

The College reuses the papers. Ample measures are taken to maintain hygiene. No smell problem or health related issues due to the waste are there. There are adequate numbers of bins present in all parts of building. The waste does not pollute the ground or surface water. There is no problem of air pollution from waste as informed.

The wastes from toilets are discharged to main drains through underground covered channels (Safety Tanks) thus avoiding any incident. There is provision for Sanitary Napkin Disposal Machine in the premises for proper & hygienic disposal of sanitary napkins.

5.4 Survey Results

Note about the review-rating survey

The Participants were asked to review (Though an online mode) the practice on a scale of 1-5 with scale components as follows:

- Scale 1 – Poor
- Scale 2 – Satisfactory
- Scale 3 – Good
- Scale 4 – Very good
- Scale 5 – Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)

Rating for the views regarding the Waste management practices adopted in College, following is the result received.

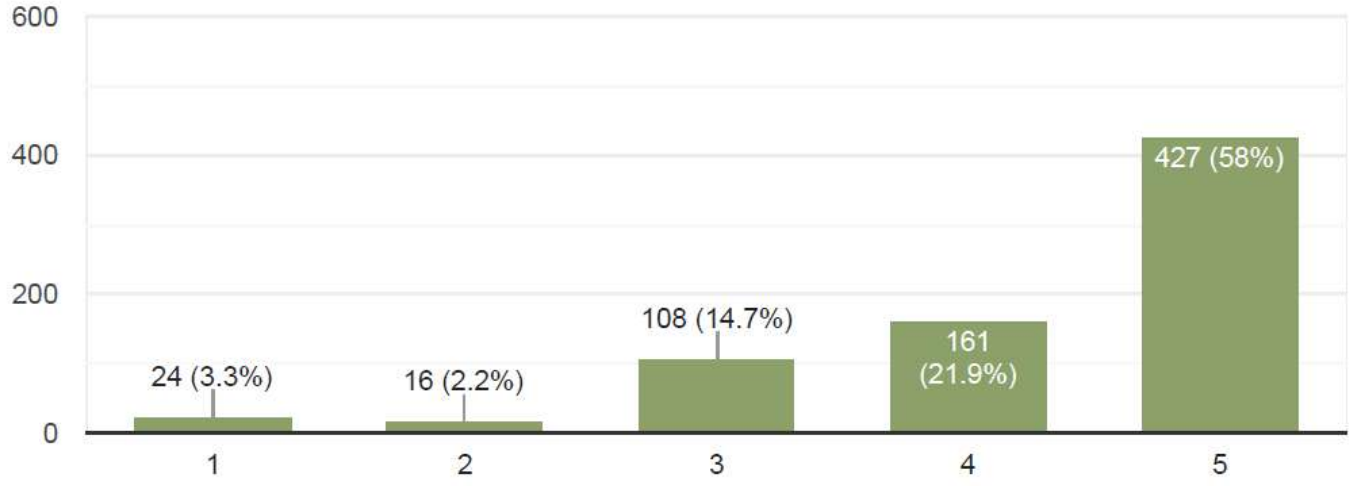

Figure 6: Waste management practices in College

There were mixed responses received the equal also the highest was for **rating 5 (Excellent) for 58% and rating 4 (Very good) at 22%**

5.5 Recommendations for a Sustainable Habitat

As per the data verification for this audit the efforts of the College are highly appreciable as they are very well maintained, hence additional recommendations are excluded for this section. In future the existing plastic dustbins can be replaced with an eco-friendly material bin or up cycled material bins.


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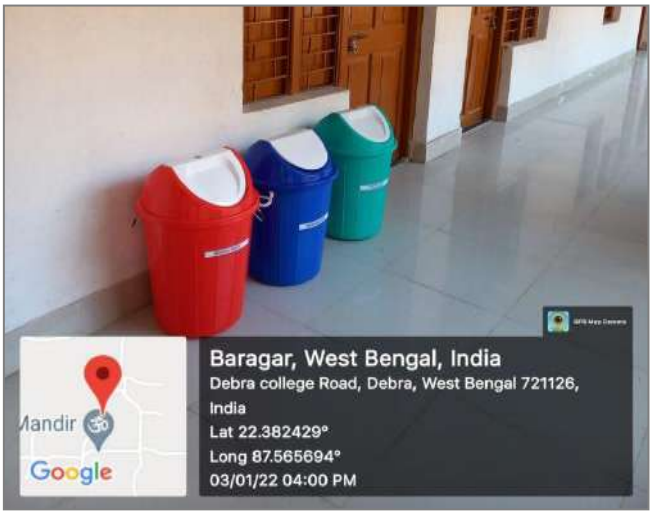
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Water Audit

Background reference image Vlad Chetan on pexels

Greenvio Solutions

6. Water Audit

Water is one of the basic needs. Pure drinking water is a resource which needs to be preserved efficiently. Water audit helps to identify the sources of water consumption, the water requirement by the campus met by these sources. The points and effective usage of 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 Sources of Primary water supply

The main source of water is through Bore well. The College requires water from the Local Municipality. The total water consumption through the tanks on site, these are available in a quantity of 3 tanks in both the buildings locations. The capacity of each is as follows:

S. No.	Type	Capacity in litres	Nos
1	Administrative Building	1,000	1
2	Academic Building	2,000	2
3	Academic Building	2,000	1
Total		**5,000 litres**	**3**

Table 6: Tanks and well in the premise

6.1.2 Sources of Secondary water supply

6.1.2.1 Bore wells

There are 4 Bore wells available on the site which are used as underground water facility with daily water being pumped for using submersible pumps. On a daily basis water is pumped from per well for usage depending on the need.

6.1.2.2 Rain water harvesting

The college has natural rain water harvesting facility in the form of a natural water body close to the site.

6.2 Water requirement

The main areas of water requirement and type of usage is as follows

- **Drinking water –** Consumption of around 2,000 litres of water through Aquaguard like system available in the premise, the taps and water cooler.
- **Toilet blocks**– General usage by occupants in toilets, urinals, bathrooms, wash basins using approx. 500 litres of water daily
- **Cleaning of the premises –** The entire Institution is very well maintained with respect to hygiene and cleaning is one of the major uses of water requirement. The toilet areas are cleaned twice on a daily basis.
- **Garden and surrounding open space** – Cleaning, watering the plants requires approximately more than good amount of water, keeping in mind the scale of the open spaces there is supply system connected directly and the plants, trees are hardly watered regularly. Though, they are watered on alternate days in winter season and about 2-3 times a day in summer season on a regular climate day it is watered 3 days a week and in rainy season it is dependent on the monsoon showers. The regular tap and a pipe system is practiced at present.

6.3 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 – 37 Nos.
- Toilets – 23 Nos.
- Wash basins – 19 Nos.
- Taps (Indoors) – 21 Nos.
- Taps (Outdoors) – 24 Nos.

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.

6.4 Site investigation about water management.

The College has an excellent management system which is very appreciable. We have observed the following points.

- There is **no water leakage in the entire premise;** the pipes are well maintained with adequate hygiene.
- **The premise has an efficient water management in terms of operations and maintenance.**
- The toilets are kept very tidy and are cleaned every day.
- The **waste water does not mix with ground water and gets directed to storm water drains.**
- **The College has natural rainwater harvesting system in the form of natural water body close to the premises which is very useful.**
- There are sufficient number of taps in the premise.

6.5 Survey Results

Note about the review-rating survey

The Participants were asked to review (Though an online mode) the practice on a scale of 1-5 with scale components as follows:

- Scale 1 – Poor
- Scale 2 – Satisfactory
- Scale 3 – Good
- Scale 4 – Very good
- Scale 5 – Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)

Rating for the views regarding the Water management practices adopted in College, following is the result received.

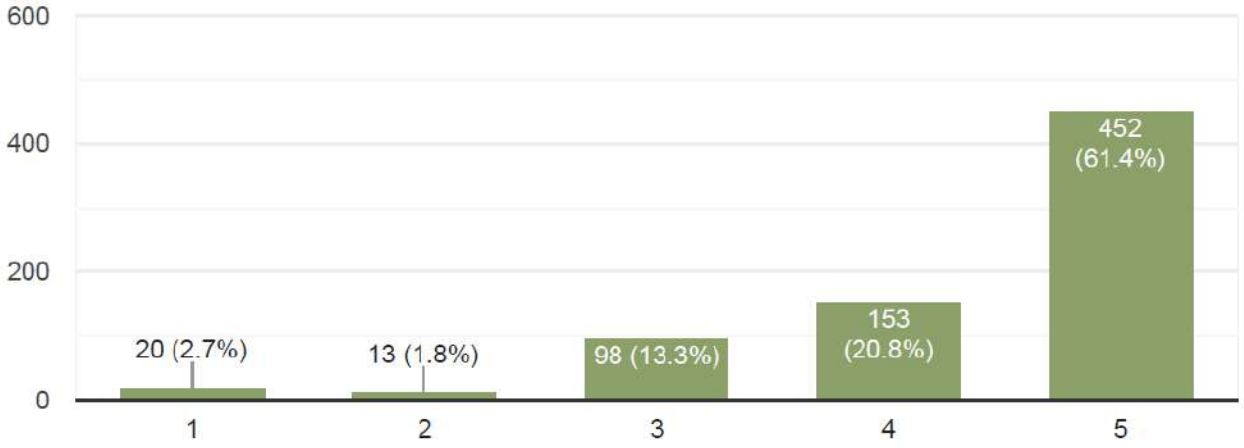

Figure 7: Water management practices in College

There were mixed responses received the highest was for **rating 5 (Excellent) at 61%** followed by **21% for rating 4 (Very Good).**

6.6 Recommendations for a Sustainable Habitat

The premise has excellent features in terms of water management, additionally only the following provisions can be undertaken.

a) Universal Toilet

At least 1 toilet should be made for specially abled as per universal design norms.

b) Waste water from toilets

This should be collected and a waste water treatment plant can be installed in the open space wherein this water can be treated and reused for gardening and toilet flushing.

c) Waterless urinals

There can be provision of waterless urinals as a Green Building initiative in the premise, either the existing ones can be replace with such a facility of new toilets can be constructed in this manner.


Drinking Water
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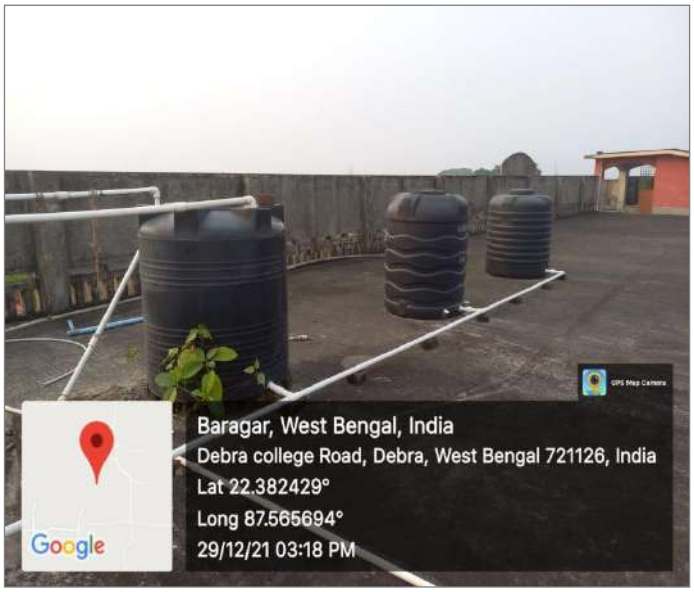
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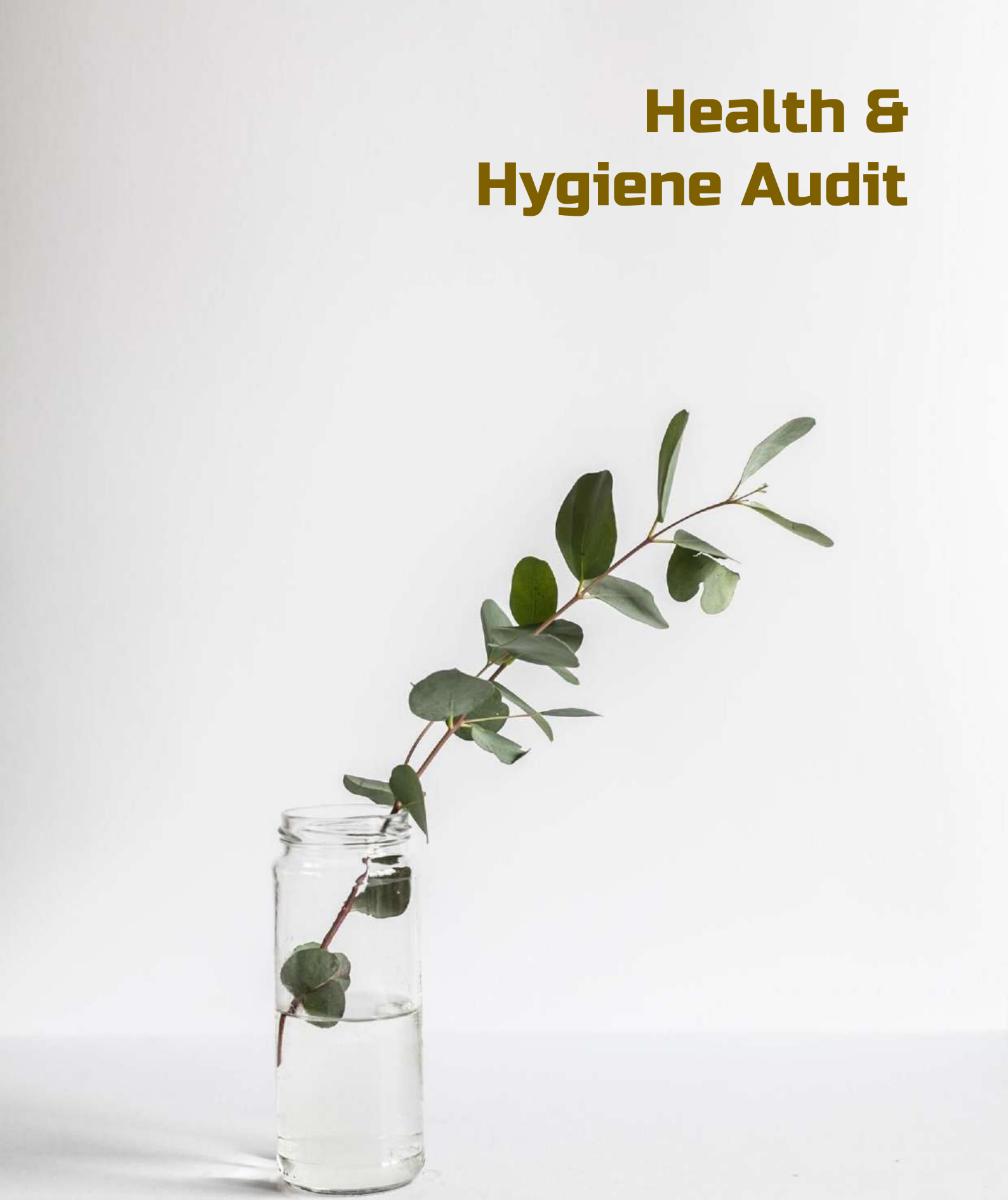
Health & Hygiene Audit



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Greenvio Solutions

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 the following facilities as part of the premise.

- Washroom facility in each of the Building.
- Hand wash facility
- Drinking water facility in the form of Water coolers and taps
- Ample number of dustbins in the premise

7.2 Smoke Exposure

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

- The college has No Smoking on its compound wall as part of the awareness.
- Canteen uses Gas cylinders for cooking, there is no utilisation of fire wood. Thus **there is no smoke from burning of fire wood and any health issues related to the same.**
- The **garbage in premise is not burnt** and there is not air pollution because of it.
- The Institution is a tobacco and smoke free campus which helps in adapting to a Healthy Institution
- There is parking provision inside the campus there is slight issue of dust owing to the same but it is **balanced with the good vegetation in the premise.**

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 ground floor, hand wash. The hygiene of toilet areas is well maintained. **The entire campus is cleaned twice on a daily basis. It is very appreciating that there are only few Maintenance staff who strive their best to take care of the entire premise in the most excellent way possible.**
- There staff 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 and no mosquito breeding spots are there.
- There are pest controls program practiced with appropriate sanitation facilities and Annual Maintenance Contract for pest control is done once a year by professional Pest control units
- The food premises and equipments are cleaned as per schedule with special care taken to avoid any water stagnation. The food waste and other refuse are removed periodically from food handling areas to avoid accumulation.
- As part of Tree Plantation programme the initiative of **Swachh Bharat Abhiyan of Govt. of India** is undertaken during various occasions.
- There are appropriate storage areas which are well maintained.

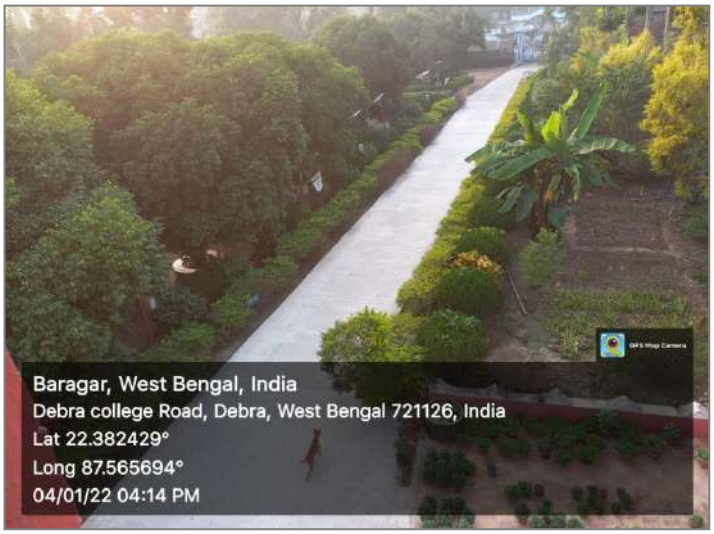
7.4 On-site investigation

During the physical verification of the site, the following points were noted.

- All the facilities are cleaned on a daily basis.
- The Maintenance staffs are allotted the responsibility of the washroom hygiene and they do a very commendable and excellent job to maintain hygiene of the premise.

7.5 Recommendations for a sustainable habitat

As per the data verification for this audit the efforts of the College are highly appreciable as they are very well maintained, hence additional recommendations are excluded for this section.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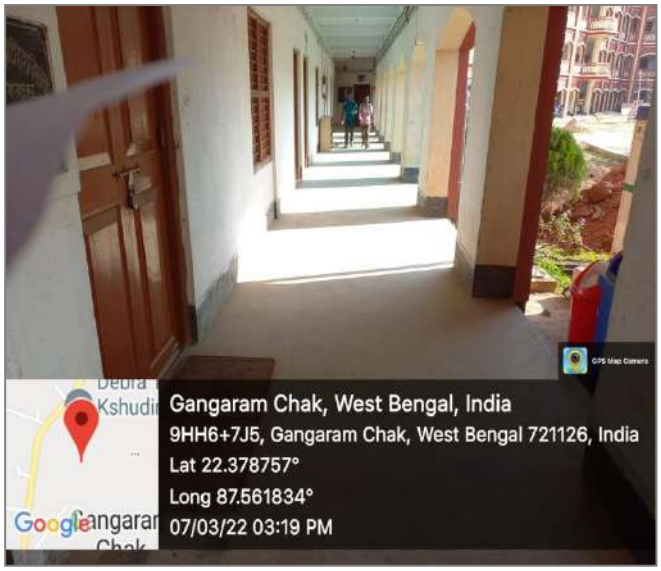
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8. Towards a Healthy & Sustainable Institution

8.1 Inputs by Greenvio Solutions

Based on the analysis of the study of premises in addition to the recommendations provided in each section of Ecological, Water, Waste and Energy Audit the College can adopt the following strategies towards a Healthy and Sustainable Institution practices.

a) **Kitchen garden -** There can be provision of kitchen garden practices in a designated area of the open space this would enhance the biodiversity and be useful in training students and staff about the healthy practices and vegetables grown which would be used in Canteen. It helps in capacity building. The smaller steps taken have huge impacts when each student would adopt these practices in their homes or societies and grow kitchen garden, terrace garden there will be a long term benefit for the environment as a whole.

b) **Cutlery in the Canteen –** The regular plastic and steel plates, spoons used in Canteen can be replaced with eco-friendly and organic leaves, paper straw, disposable plates, edible spoons and tables made out of sugarcane waste or bamboo. This will be first of its kind initiative to be adopted and practiced thus also inculcating the healthy practices in students.

c) **Signages –** In addition to the signages being in regular language there can be additional signages in braille language for the specially abled students.

8.2 Survey Results

An online survey was conducted to analyse the student and staff views about what changes according to you can be undertaken for Green audit improvement in College premises and activity, some of the key responses are listed below. Whereas many responses **stated there were no changes requires because the present practices are excellent.**

- There is no need to change anything.
- I think all have been done by our college, but if they maintain and continue this type of programme, then improvement will gradually increase.

Some of the suggestions by the Students and staff are listed below:

- Minimizing usage of papers, ban of polythene and plastic inside the campus, use of emitting free vehicles etc.
- Must have one dustbin in every 10 m.
- The environment and study ,and the others is good but in our college there is no nearby playground in our college .so we have to cross the road for playing outdoor games and the road crossing is too much risky. So it is my earnest request to our principal ma'am to solve this problem
- Tree plantation program or cleaning activity.
- Extension of solar power grid, plantation.
- Use of more sensors to reduce electricity use.

However, it should be noted that the College has taken up multiple initiatives and because of Pandemic the students have not practically visited the campus so many of these points are not mandatory at the moment.

9. References

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6. 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.

ENERGY AUDIT

2019-20 & 2020-21

AUDIT REPORT

Studied for

Debra Thana Sahid
Kshudiram Smriti Mahavidyalaya

Gangaramchak, P.O.: Chakshyampur,
District: Paschim Medinipur, Pin: 721124, West Bengal, India

Analysed by

Greenvio Solutions

15 March 2022

Background reference image Janko Ferlic on pexels

Disclaimer

The Audit Team has prepared this report for the **Debra Thana Sahid Kshudiram Smriti Mahavidyalaya** located at *Gangaramchak, P.O.: Chakshyampur, District: Paschim Medinipur, Pin: 721124, West Bengal, India* 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.

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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 has completed audits of multiple Institutes including Technical, State University, Private University and Single Faculty Colleges for a total of more than 45 lakhs+ sq. ft. of Built-up area audited till date Pan India 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

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Acknowledgement

The Audit Assessment Team thanks the **Debra Thana Sahid Kshudiram Smriti Mahavidyalaya, West Bengal** 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 **Dr. Humayun Kabir,** President; **Dr. Rupa Dasgupta,** Secretary; **Sri Vivekananda Mukherjee,** State Government nominee; **Smt. Rekha Hui,** State Government nominee; **Prof. Chandradipa Ghosh,** University nominee; **Dr. Partha Pratim Chakraborty,** University nominee; **Prof. Saikat Chakrabarti,** Teacher's Representative; **Prof. Soumya Kanti Hota,** Teacher's Representative; **Prof. Partha Pratim Pramanik,** Teacher's Representative; **Sri. Barun Chakraborty,** Non-Teaching Representative and **everyone from the Management.**

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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

Contents

1. Introduction

1.1 About the foundation of the Institution

The Foundation Stone of Debra Thana S.K.S. Mahavidyalaya was laid on 17 November 2005 and the classes of the newly admitted students were started from 15 September 2006. Since then the College is striving towards its goal of providing access to higher education to the students of this area. Since its initiation the college has recorded notable growth in terms of infrastructure, subjects offered and also in student strength. There are tough challenges ahead but we are determined that this institution will progress steadily towards its desired goal.

Debra Thana Sahid Kshudiram Smriti Mahavidyalaya is established with a motto 'educate, empower and emancipate students and making them capable not only for individualistic growth but for financial independence and making them responsible citizens of India.' Its chief objective is to kindle a light in the darkness of mere being.

1.2 Statements of the College

Vision - To transform our college into a Centre of excellence in the arena of higher education and contribute to the inclusive development of the country by generating quality human resources. The college aims at the holistic development of the young learners and hopes they are young citizens of the nation who are dependable, honest, committed and possess a sound value system. To build a young generation who can act as essential components in the process of cultural, socio-economic and environmentally sustainable development as individuals, communities and a nation is also our vision. The college is fully aware of educating not only the registered student but also a whole family. With this in mind, Debra Thana S.K.S. Mahavidyalaya aims at imparting an education that not only propels the students up the career ladder, but also empowers rural people including women and makes them independent and successful citizens. It is our vision to ensure a democratic, secular, cultured and intellectual environment so that students of all caste and creed can exchange their views and build themselves up to operate not only as responsible individuals but also as a productive, efficient and conscientious team.

Mission

- To disseminate Higher Education to a large regional hinterland.
- To promote inclusive education and development amongst all economic sections of the society without gender bias.
- To provide an ambience that makes our students ethically strong and professionally competent and, thereby, contributing to a healthy and prosperous society.
- To encourage innovative thinking and creativity and inculcate research skills in our students.
- To optimize the use of available infrastructure for sustained development of the college.
- To supplement and enrich the existing curriculum through seminars.
- To propagate higher education amongst women.
- To equip and empower students with relevant knowledge, competence and creativity to face global challenges.
- To emphasize value education to create human resources with modern view and foresight who can contribute to the national development by catering to the needs of the economy, society and country as a whole.
- To restrain brain drain by gradually increasing the intake capacity in higher education in order to cope with the rapid increase in aspiring students in a scenario characterized by universalization and globalization of education.
- To promote analytical and empirical study in basic and social sciences, and humanities leading to contribution in higher level of research amongst the faculty members and students.

1.3 About the Institution

The aim of the college is to continuously enhance the teaching methods in order to provide students with an opportunity for their all-round development. It also strives for excellence in academics and makes an effort to induce passion for learning along with the inspiration for decisive thinking and assessment, thereby helping them to become the best professionals in their chosen careers.

The Institution offers the following courses affiliated to Vidyasagar University, West Bengal.

- **Graduation** – It offers the following Undergraduate courses.
  - Faculty of Humanities (General) - Bachelor of Arts (B.A.) in Bengali, English, History, Sanskrit, Political science, Education, Music, Santali and Physical Education
  - Faculty of Humanities (Honors) - Bachelor of Arts (B.A.) in Bengali, English, History, Sanskrit, Political science, Philosophy, Education and Santali
  - Faculty of Science & Technology (General) - Bachelor of Science (B. Sc) – Physics, Chemistry, Mathematics, Geography, Botany, Physiology, Nutrition and Computer science
  - Faculty of Science & Technology (Honors) - Bachelor of Science (B. Sc) – Physics, Chemistry, Mathematics, Geography, Nutrition and Computer science
  - Professional courses - Bachelor Of Computer Application (B.C.A.) and Bachelor in Medical Laboratory Technology (B.M.L.T.)
- **Post-Graduation** – It offers the following Post Graduation courses.
  - Faculty of Humanities - Masters of Arts (M.A.) in English Literature,
- **Diploma Programs -** It offers the following courses
  - 1 year Advanced Diploma in Hardware, Networking and Information Security(recognised by UGC)
  - 1 year Certificate course in Spoken English
  - Certificate course in Mushroom Cultivation
  - Certificate Course in Self Defence
  - Certificate course in Hands on Computer
- **Vocational Courses -** It offers B .Voc in Automobile

The College works towards training young women and men to be competent, committed and compassionate, and lead in all walks of life. It has the following aims and objectives.

- To ensure quality in education.

- To inculcate self-confidence and morality through value based education.
- To make our students energetic and vigorous to face the challenges to come.
- To make them socially committed and flexible to global changes.
- To make them confident and self-sufficient.

1.4 The surrounding premises around the Institution

The Premises is situated amidst the landscape serene of **Paschim Medinipur district of West Bengal State** with immense peace and calmness in the surroundings. The College is surrounded by Educational Buildings on the North side, Residential and Commercial areas on the macro front from all the sides. There is a frontal approach which provides quite a beautiful appreciation space while approaching the premises; this area is surrounded by huge trees which positively complement the background-foreground aspect in terms of Natural space and built-form Architecture. It also provides ample shade which enhances the micro climate of the region. The location of College is feasible to the nearby essential amenities such as Public Health Center, Fire Station, Civic body-Public administrative buildings, Recreational gardens and Police Station.

1.5 Assessment of the College

1.5.1 Establishment

The College was **established in 2006** Vide G.O. No 618 Edn(CS), DT 24 Aug'2006 and No 855 Edn(CS) , DT 27.10.2006 and **it is constituted by Department of Higher Education, Govt. of West Bengal.**

1.5.2 Affiliations and approvals

The college is **permanently affiliated to Vidyasagar University, West Bengal**: VU/R/5EC/50/Affi/(New College)/851/06 DT 6.9.06.

1.5.3 Certification

The institute is listed on the AISHE or All India Survey on Higher Education which was established by the Ministry of Human Resource Development, its code is **C-19090-2020.**

1.5.4 Accreditation

NAAC - The College received a CGPA of 2.01 with a B Grade in its first cycle of Accreditation. The College is due to enter its second cycle of NAAC soon.

1.5.5 Recognitions

The college has achieved the University Grant Commission (UGC) recognition

- 2(f) Memo No- F.No. 8-367/2011(CPP-I/C) December 2012
- 12(B) Memo No- F.No-8-367/2011(CPP-I/C) December 2013

2. Institution overview

2.1 Populace analysis for Academic year 2019-20

2.1.1 Students data

The student data (shared by the College) shows there were a total of **1,590 Boys and 2,183 Girls** students thus **a total of 3,773 students** in the premises.

2.1.2 Staff data

Type	Male	Female	Total
Admin Staff	15	3	**18**
Teaching Staff	65	29	**94**
Non-Teaching Staff	25	6	**31**
Total Staff Members	**105**	**38**	**143**

Table 1: Staff data of the Institution for 2019-20

The staff data shows the premises had a total of **143** Staff Members.

2.2 Populace analysis for Academic year 2020-21

2.2.1 Students data

The student data (shared by the College) shows there were a total of **1,397 Boys and 2,299 Girls** students thus **a total of 3,696 students** in the premises.

2.2.2 Staff data

Type	Male	Female	Total
Admin Staff	15	3	**18**
Teaching Staff	66	29	**95**
Non-Teaching Staff	25	5	**30**
Total Staff Members	**106**	**37**	**143**

Table 2: Staff data of the Institution for 2020-21

The staff data shows the premises had a total of **143** Staff Members.

2.3 Total College Area & College Building Spread Area

The **total site area is 5.23 Acres** and the **total Built-up area of College is 52,000 sq. ft.** for **a total of 3,839 footfalls.**

2.4 College Infrastructure

2.4.1 Establishment

The College was established in 2006. The college is located pretty close to nature and hence has very fresh environment which is absolutely pollution free and healthy. The Building is a Reinforced Cement Concrete (RCC) framework building. **Overall the Infrastructure of the Building is excellent in terms of the Architecture Design and Green Building Design. The Premises covers quite a few of the requirements for a Green Habitat.**

2.4.2 Spatial Organisation

The overall ambience of the College is warm and inviting. The classrooms and other spaces have ample natural ventilation in the form of clear glass windows with fresh air ventilation. The architecture of the building is quite well designed. The colour palette not just helps the building to stand out but also provides an Institutional arena. It balances with the local architecture with the natural landscapes of huge trees all around. The design emphasis on providing calmness to the built form and gradually merges with the serene landscape.

The floor to floor height is more than 10 feet. There is no provision for lifts in the premises, whereas there are amenities such as CCTV, Fire extinguishers, Library and first aid box.

2.4.3 Operation and Maintenance of the premises

The interview session with the staff regarding the operation and working hours is summarized in the table. The Institutions are open Monday to Saturday for full day. Sunday is an off for all. Below mentioned in the table are the average working hours. The detail wise timing for each is mentioned below.

S. No.	Section	Spaces	Time	Hours/ day	Days in a year
1	Main Institutional College	Student areas and Teaching faculty	Monday to Friday (10:15 a.m. to 05:15 p.m.) Saturday (10:15 a.m. to 03:15 p.m.)	7 (Average)	172
2	General areas	Admin areas and library, Passage, staircase, toilet	Monday to Friday (09:15 a.m. to 05:15 p.m.) Saturday (09:15 a.m. to 03:15 p.m.)	8(Average)	200

Table 3: Schedule of the timings of the premises


Gangaram Chak, West Bengal, India
9HH6+7J5, Gangaram Chak, West Bengal 721126, India
Lat 22.378591°
Long 87.561579°
07/03/22 03:25 PM


Baragar, West Bengal, India
Debra college Road, Debra, West Bengal 721126, India
Lat 22.382429°
Long 87.565694°
04/01/22 04:14 PM


Gangaram Chak, West Bengal, India
9HH6+7J5, Gangaram Chak, West Bengal 721126, India
Lat 22.378719°
Long 87.561803°
07/03/22 03:18 PM

3. Green Building Study Audit

3.1 About the Green Building Study Audit

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

3.2 Analysis for the Green Building Study Audit

The procedure included detailed verification for the following:

Energy Audit

- Analysis of the Lights, Fans, AC, Equipment
- Renewable energy
- Scope for reducing the current energy bills if any
- Improvement in the thermal comfort of the campus

Green Audit

- Green initiatives
- Hygiene audit
- Water Audit - Analysis of the current water consumption of campus; Scope to include Rain water harvesting and Waste water treatment in campus
- Waste Audit - Current waste produced, its segregation and usage; Strategies to be adopted for waste management and awareness

Environmental Audit

- Analysis of the current landscape + hardscape of campus
- Analysis of the flora and fauna of campus
- Strategies adopted at present to enhance vegetation
- Measures that can be adopted for ecological improvement of the premises.

3.3 Strategy adopted for Green Building Study Audit

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

3.4 Timeline of the activities for Green Building Study Audit

- 21 February 2022 – Discussion with the College
- 22 February 2022 – Allotment and Initiation by the College
- 01 March 2022 – Survey of the Student and staff submitted
- 09 March 2022 – Data submitted by College
- 15 March 2022 – Submission of the Report

4. Energy Audit

The premise uses following sources of energy consumption.

4.1 Primary sources of Energy consumption

1. **Electrical (Metered) –** Light, Fans, AC, Equipments, Pumps consume approximately 2,922 units per month (average).
2. **Electricity (Solar - Photovoltaic cells are used for solar energy) –** There are solar panels available in premise at present.

4.2 Secondary sources of Energy consumption

1. **UPS –** There are 2 UPS connected as a backup for the computer systems in the premises used on a monthly basis.
2. **Gas cylinders –** There are 1 gas cylinders in the premises used on a monthly basis.

4.3 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.
- There are **display boards encouraging staff and students to save energy are put up in the classrooms and laboratories**.
- There are **no Ultra-violet lights and any other harmful lights used** in the premise.

4.4 Actual Electrical Consumption as per Bills

The admin department had shared the bills for Meter which is connected to all Buildings and is main source of energy supply. The supplier is West Bengal State Electricity

Distribution Company Limited. analysis of actual electrical energy consumption is summarised below. The solar panels were installed in recently post which the cost of electricity has been reduced. The details of unit consumption meter wise is as follows.

S. No.	Month	Year	Units
1	January- March	2020	8,315
2	April-June	2020	11,405
3	July-September	2020	10,406
4	October-December	2020	4,937
Total			**35,063**

Table 4: Study of the electricity consumption of the meters in premise

The summary of the above study shows the average consumption varies for each month.

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 conditioners and equipment. The inventory and data collection for sources of energy consumed in the premise in summarised in the following sections.

Note: The following analysis is combined for entire premise taking into considerations the duration before pandemic to understand the consumption pattern as post pandemic the premise is used only for a few hours.

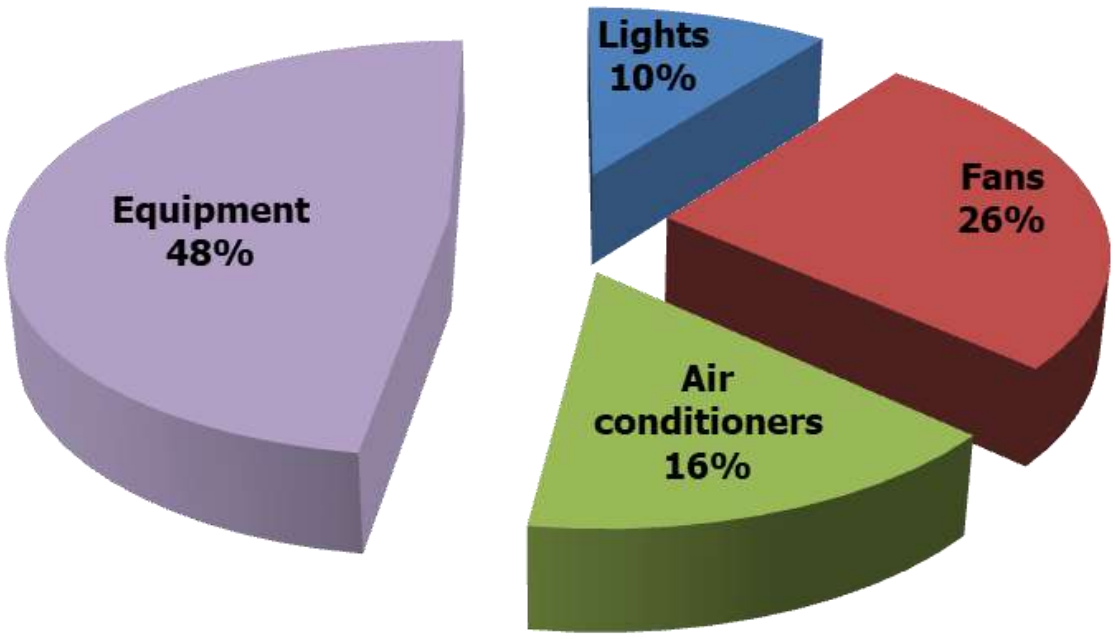

Figure 1: Summary of the Calculated Electrical Consumption as per inventory

The above graph shows that equipment consumes 48% followed by fans at 26% the air conditioners at 16% and the lights at 10% of the total calculated electrical energy.

4.6 Lights

4.6.1 Types of lights

There are a total of **553 LED Lights in the premises.**

4.6.2 Section-wise consumption analysis

The energy consumption of Lights is **9,696 kWh** of energy; the following graph shows the floor wise consumption. This section analysis constitutes all buildings as a single entity.

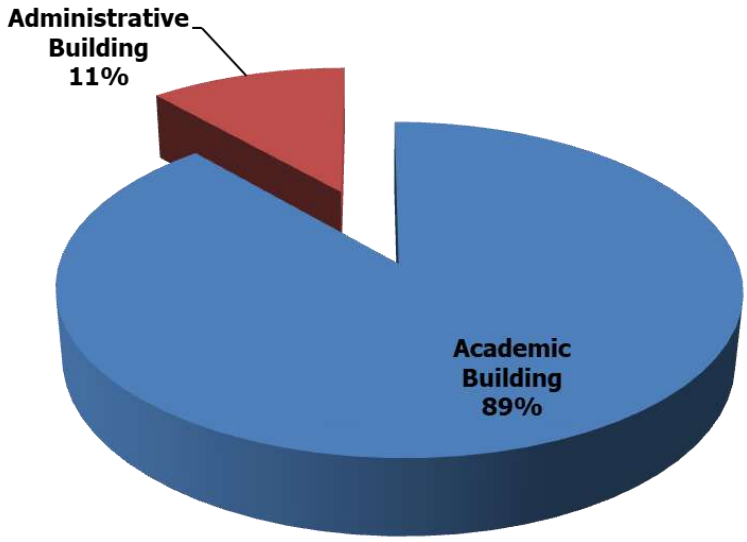

Figure 2: Energy consumed by Lights section wise

The above analysis shows the Lights in the **Academic building consume 89% of the total power whereas the ones in Administrative building consume 11% power.**

4.6.3 Floor-wise consumption analysis

4.6.3.1 Academic building

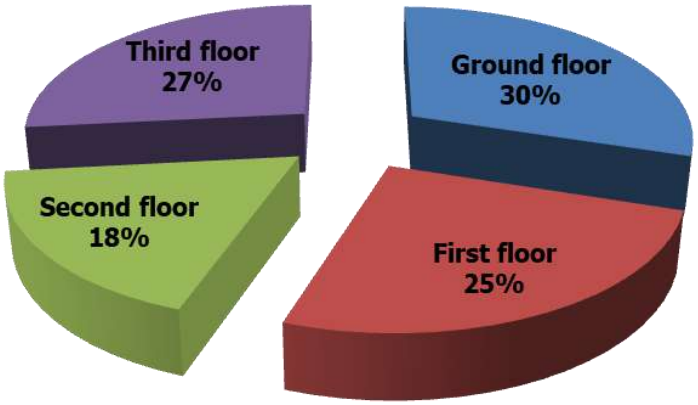

Figure 3: Energy consumed by lights floor wise – Academic building

The above analysis shows the **lights in the ground floor consume 30% followed by first floor at 25%; the third floor consumes 27% and the second consumes only 18% of the total power. We observed there is no major variation in the floor wise consumption.**

4.6.3.2 Administrative building

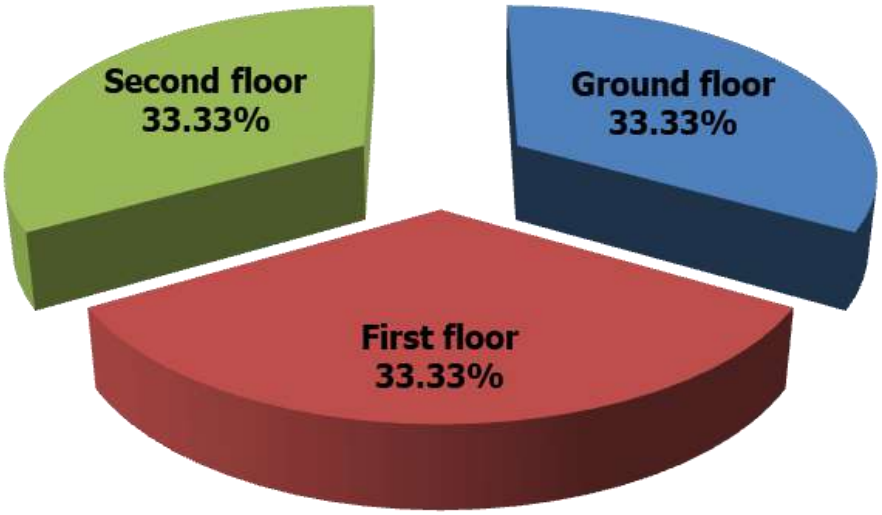

Figure 4: Energy consumed by lights floor wise – Administrative building

The above analysis shows the **lights in all the floors consume an equal amount of energy at 33.33% each.**

4.6.4 Requirement of NAAC

4.6.4.1 Alternative Energy Initiative

Percentage of power requirement met by renewable energy sources – There are solar panels available in premise at present. **100% of the energy produced is given back to grid.**

4.6.4.2 Percentage of lighting power requirement met through LED bulbs

The premise has LED Lights contribute to 100% in terms of number and **100% of the power requirement** is met through the same. As per our study we could conclude that both of these are highest contributions among all the types of lights.

4.6.5 Site investigation observations

Some of the points noticed are as follows:

1. All lights are in working conditions
2. Daily monitoring and check is done by the maintenance staff.
3. There was no fuse defect observed.

4.6.6 About the replacement of lights

Since all the lights are LED there is not requirement to replace the lights, in future the college may plan for sensor based lighting.

4.7 Fans

4.7.1 Types of fans

There are a total of **433 Ceiling fans in the premises.**

4.7.2 Section-wise consumption analysis

The energy consumption of fans is **24,317 kWh** of energy; the following graph shows the floor wise consumption. This section analysis constitutes all buildings as a single entity.

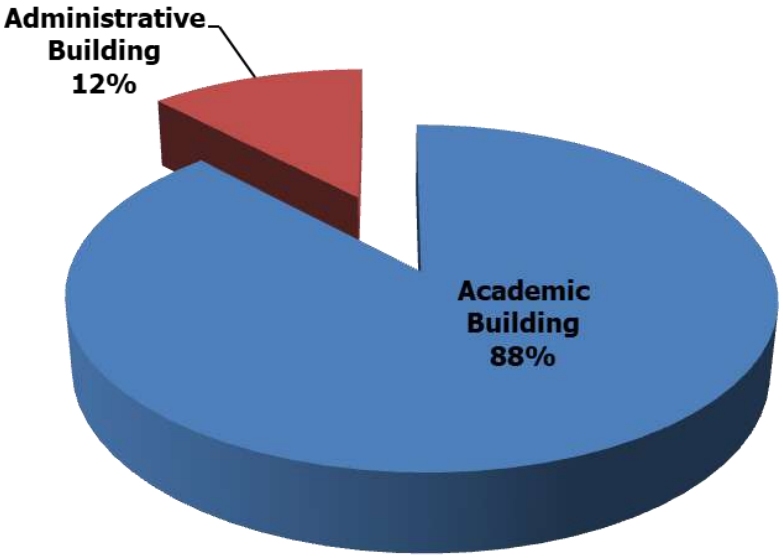

Figure 5: Energy consumed by fans section wise

The above analysis shows the fans in the **Academic building consume 88% of the total power whereas the ones in Administrative building consume 12% power.**

4.7.3 Floor-wise consumption analysis

4.7.3.1Academic building

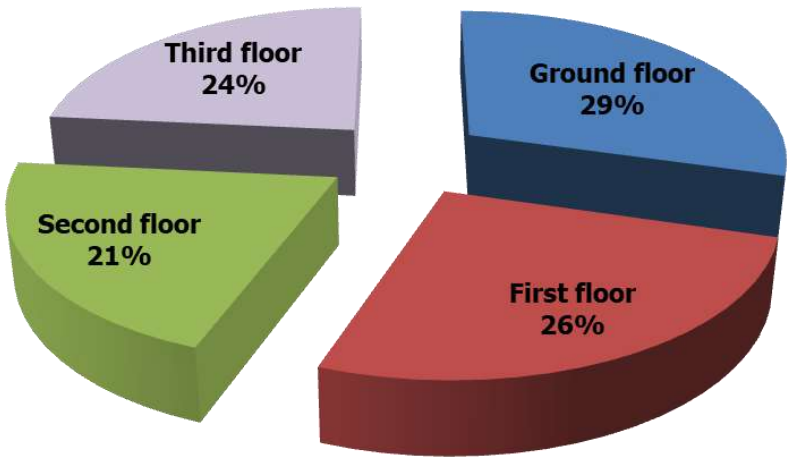

Figure 6: Energy consumed by fans floor wise – Academic building

The above analysis shows the **fans in the ground floor consume 29% followed by first floor at 26%; the third floor consumes 24% and the second floor consumes 21% of the total power. We observed there is no major variation in the floor wise consumption.**

4.7.3.2 Administrative building

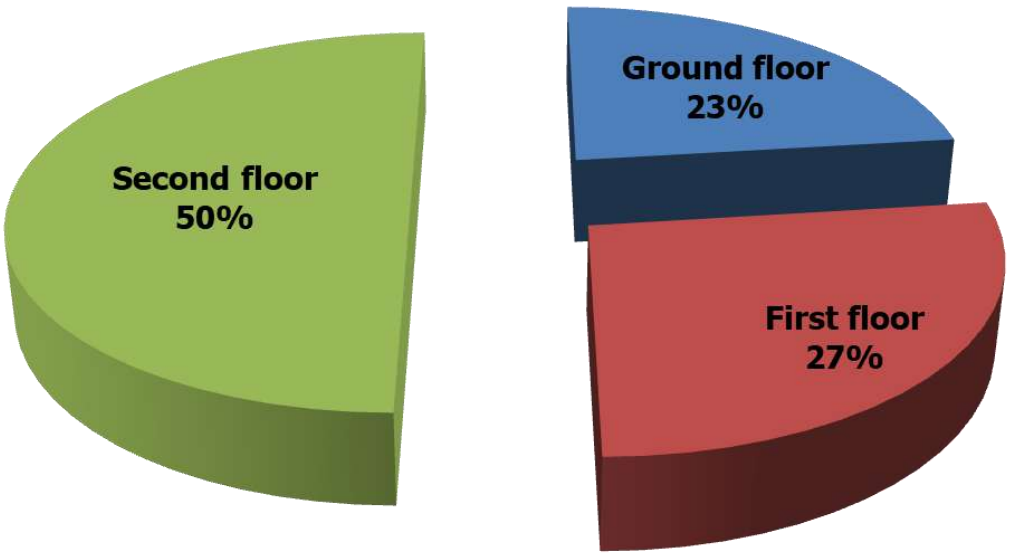

Figure 7: Energy consumed by fans floor wise – Administrative building

The above analysis shows the **fans in the second floor consume 50% followed by first floor at 27%; the ground floor consumes 23% of the total power. We observed the Second floor consumes more energy as compared to the other floors, in terms of replacement in future the second floor should be considered as a first option.**

4.7.4 Site investigation observations

Some of the points noticed are as follows:

1. All fans are in working conditions
2. Daily monitoring and check is done by the maintenance staff and admin staff in an excellent manner.

4.8 Air conditioners

4.8.1 Types of air conditioners

There are **11 air conditioners** in the entire premise. The Hi-tech Building does not have any air conditioner. The details are further studied and mentioned as follows.

Sr.No	Room Name	Building	Floor	AC Nos.
1	E learning lab-G6	Academic Building	Ground floor	1
2	Language lab-G11	Academic Building	Ground floor	1
3	Central library	Academic Building	Ground floor	3
4	Seminar hall-101	Academic Building	First floor	4
5	Office	Administrative Building	Ground floor	1
6	123	Administrative Building	First floor	1
Total				**11**

Table 5: Details of the air-conditioner in premise

4.8.2 Section-wise consumption analysis

The energy consumption of air conditioners is **14,387 kWh** of energy; the following graph shows the floor wise consumption. This section analysis constitutes all buildings as a single entity.

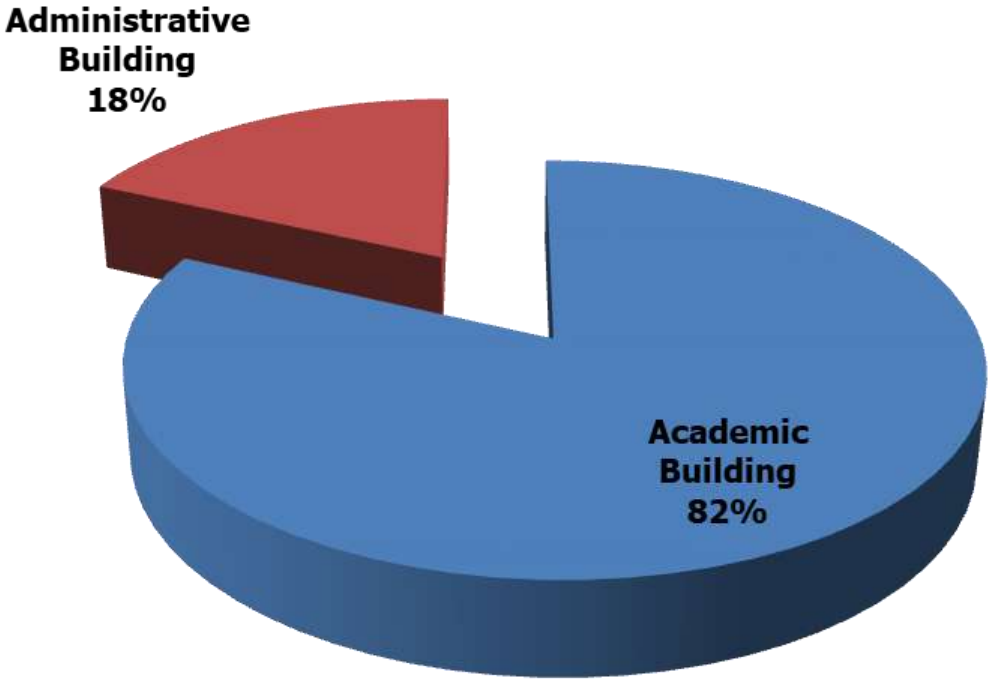

Figure 8: Energy consumed by air conditioners section wise

The above analysis shows the air conditioners in the **Academic building consume 82% of the total power whereas the ones in Administrative building consume 18% power.**

4.8.3 Floor-wise consumption analysis

4.8.3.1 Academic building

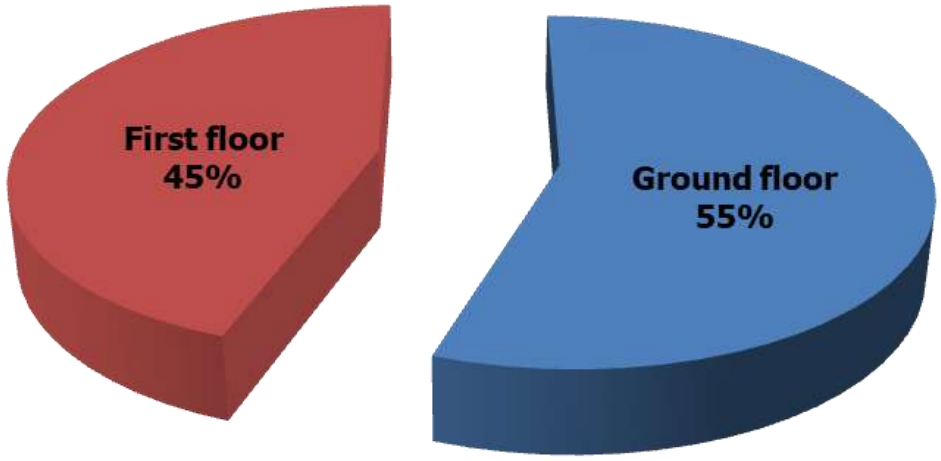

Figure 9: Energy consumed by air conditioners floor wise – Academic building

The above analysis shows the **air conditioners in the ground floor consume 55% followed by first floor at 45%. We observed there is no major variation in the floor wise consumption.**

4.8.3.2 Administrative building

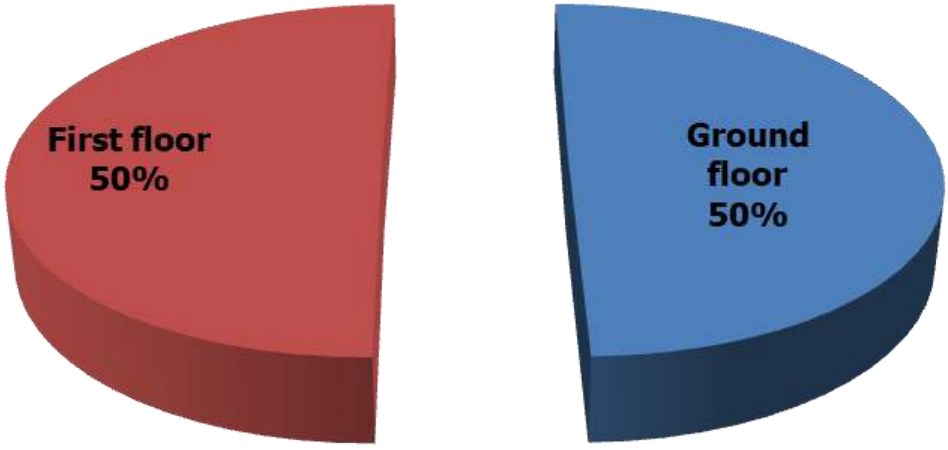

Figure 10: Energy consumed by air conditioners floor wise – Administrative building

The above analysis shows the **air conditioners in all the floors consume an equal amount of energy at 50% each.**

4.8.4 Site investigation observations

Some of the points noticed are as follows:

1. Daily monitoring and check is done by the maintenance staff and admin staff in an excellent manner.
2. The Outdoor Unit is properly cleaned and maintained well.
3. The Outdoor Unit does not have any dust collection problem.

4.8.5 About the replacement of current air conditioners

The current air conditioners are well maintained, through there is not an immediate requirement for replacement however, whenever the college undergoes redevelopment or a new block is constructed there can be provisions for replacement with energy efficient appliances or new air conditioners that require less power consumption

4.9 Equipment

4.9.1 Section-wise consumption analysis

The energy consumption of equipment is **44,166 kWh** of energy; the following graph shows the floor wise consumption.

4.9.2 Type-wise study

The educational sector was briefly subdivided into for major subsectors depending on their usage these are listed as follows along with the type of equipment which fall under this category.

- **Infrastructure mandatory usage** – Water pumps, purifier and refrigerator
- **Scientific usage** – All the equipment used in various laboratories.
- **Administrative and regular usage** - Desktop Computer, Projector, Printer and Xerox machine
- **Occasional usage -** Tread Mill

a) Types of equipment as per their energy contribution

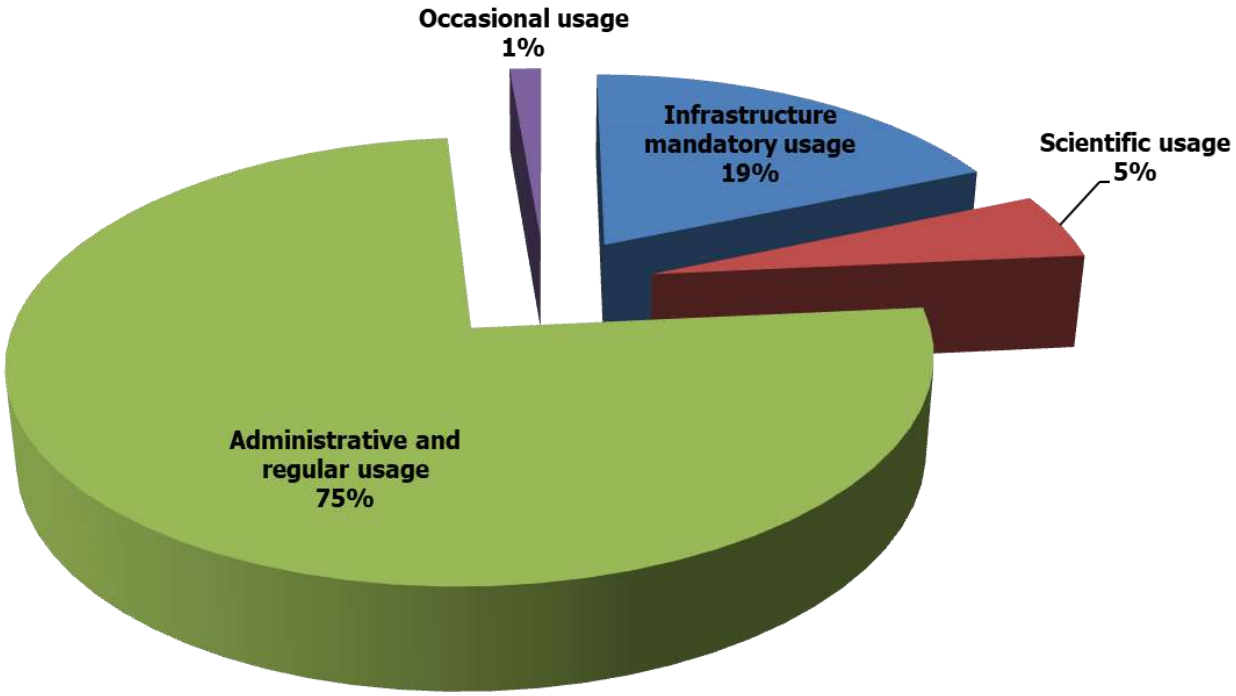

Figure 11: Energy consumed by types of equipment in the educational sector based on the usage study

The analysis of the types of equipment in premises of Educational sector shows **Administrative and regular usage areas consume 75% which is the highest; the areas with infrastructure mandatory usage consume 19%; the areas where scientific equipments are used consume 5%; and the occasional usage areas consume 1%**

b) Infrastructure mandatory usage

There are 8 equipments under this sector; the number wise details are as follows:

Type	Nos
Water pump	4
Water purifier	7
Refrigerator	3
Total	**14**

Table 6: List of equipment in Infrastructure mandatory usage

All of the above equipments consume around 8,508 kWh of power, the details of power wise consumption is as follows:

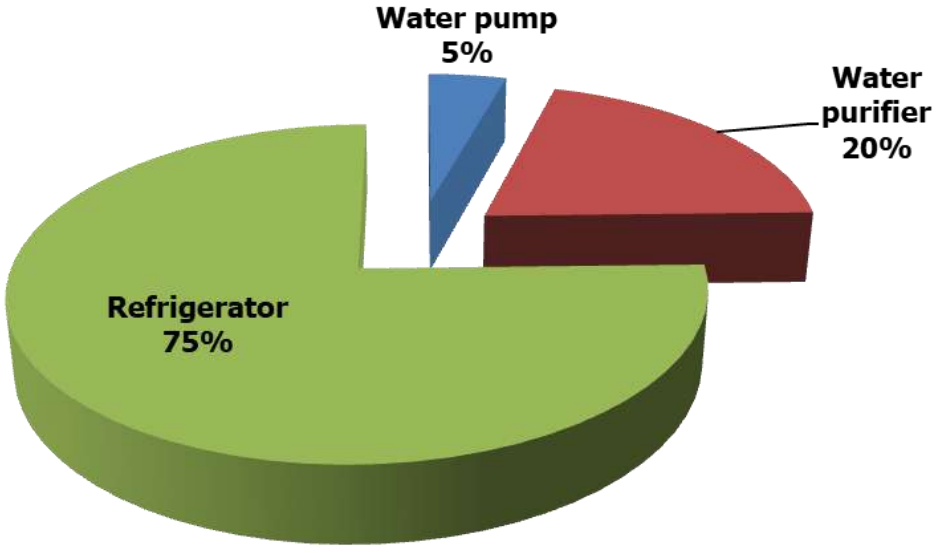

Figure 12: Energy consumed by equipments under Infrastructure mandatory usage

The above analysis shows the **Refrigerator consumes the major power under this section around 75%** and the other equipment contribute to a total of 25%

c) Scientific usage

There are 10 equipments under this sector; the number wise details are as follows:

Type	Nos
Hot air oven	2
Hot plate	2
Semi auto analyser	1
Elisa reader	1
Autoclave	1
Laminar Airflow	1
Incinerating	1
Incubator	1
Total	**10**

Table 7: List of equipment in Infrastructure mandatory usage

All of the above equipments consume around 1,899 kWh of power, the details of power wise consumption is as follows:

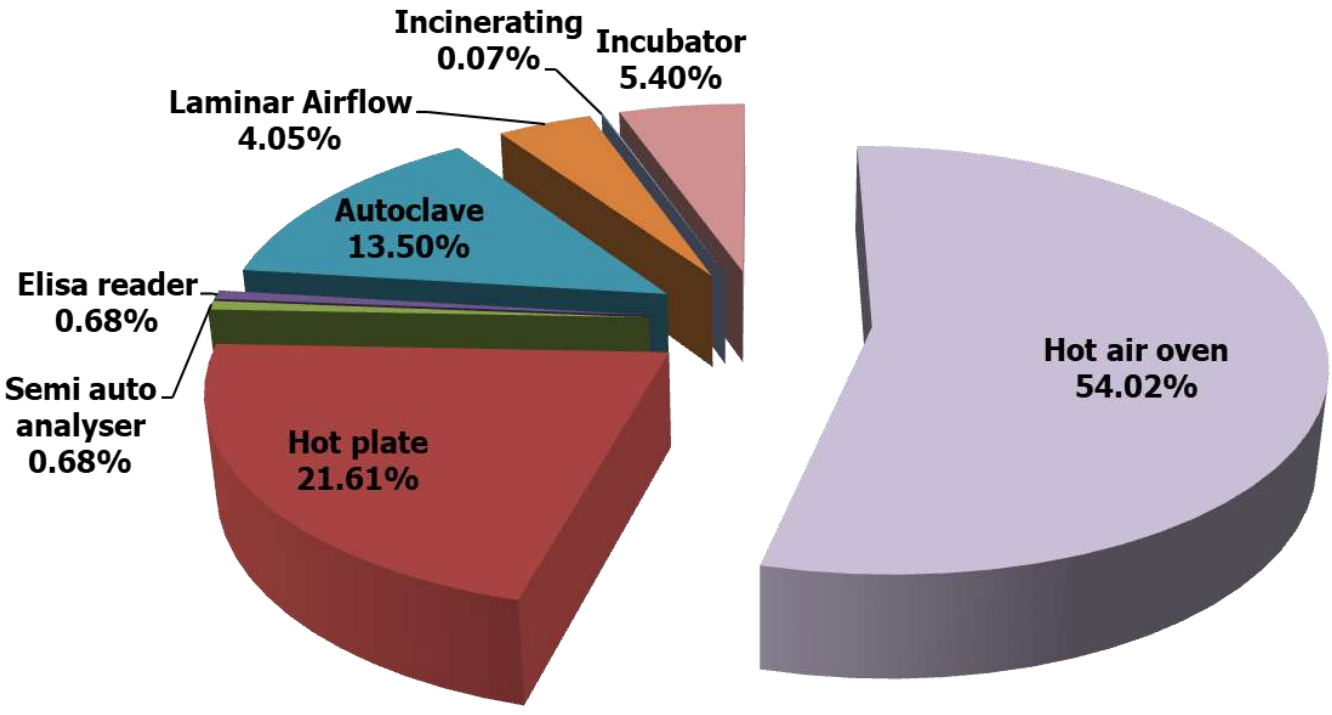

Figure 13: Energy consumed by equipments under scientific usage

The above analysis shows the **Hot air oven consumes the major power under this section around 54.02%** and the other equipment contribute to a total of 46%

d) Administrative and regular usage

There are 163 equipments under this sector; the number wise details are as follows:

Type	Nos
Desktop Computer	169
Projector	12
Printer	11
Xerox machine	1
Total	**193**

Table 8: List of equipment in Administrative and regular usage

All of the above equipments consume around 33,254 kWh of power, the details of power wise consumption is as follows:

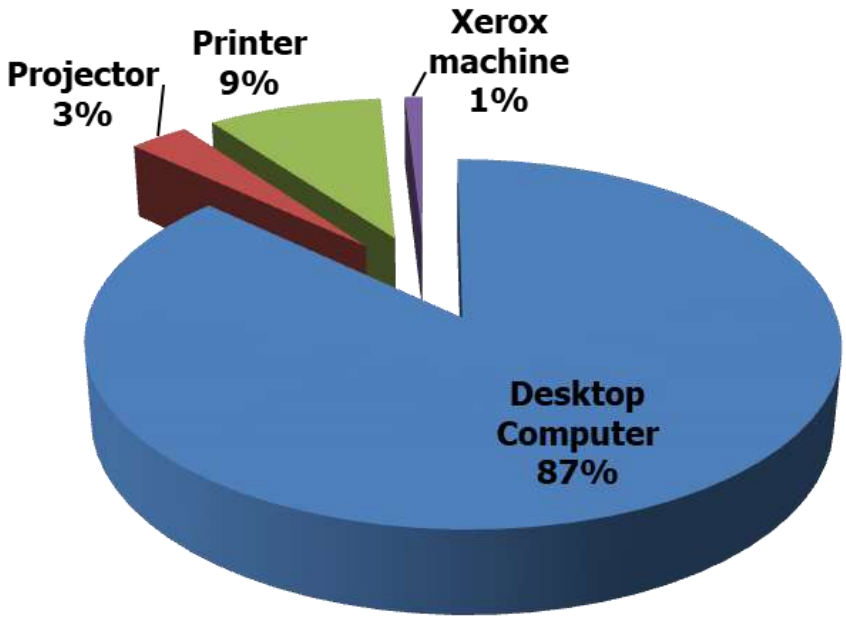

Figure 14: Energy consumed by equipments under Administrative and regular usage

The above analysis shows the **Desktop computer consumes the major power under this section around 87%** and the other equipment contribute to a total of 13%

e) Occasional usage

As per the data shared by the Team only Treadmill falls under this category based on our study. There is availability of only 1 treadmill in the premises which consumes 504 kWh.

4.9.3 Site investigation observations

Some of the points noticed are as follows:

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.

4.10 Recommendations for a Sustainable Habitat

Over the time energy efficient appliances have been a boon not only to the energy saving parameters they adhere to but also the eco-friendly habits it helps to inculcate. The Institution such as Schools and Colleges are the best way to implement these initiatives. It creates awareness among the students at a young age. The Institutions also act as a symbol and representative of being an energy efficient premise.

Following the analysis we found are some of the suggestions which can be implemented for an energy efficient Institution. This would help in reduction of the current electrical consumption by a major percentage.

4.10.1 Electromechanical systems – Electrical and Lighting

Section 1 – Fans

Ceiling fans

The current Fans are in proper working conditions and maintained well. The ceiling fans are in more quantity and consume at least 60W when in use. These should be replaced with energy efficient fans consuming 32W when in use. Our detailed study states that is all the **ceiling fans in all Buildings** if replaced with star rated appliance results in a reduction of average of **47% 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 2 – Equipment

Desktop computers to laptops

Among all equipment it suggested to replace the desktop computers with laptops as this would be energy efficient. A normal desktop computer consumes on an average 250W and it is to be connected all time when it has to be used. On the contrary a laptop consumes 40W and has a battery backup which lasts up to 4 hours.

There is **an average 84% reduction** in energy consumption if replaced with energy efficient appliance which is a laptop in all the areas of Educational and Residential areas.

This replacement is however is dependent on a variety of factors as follows.

- Some of the senior staff members may be more convenient with computers, replacement with laptop might result in a change of the working patterns and hours which may affect the productivity.
- Laptops – in case are not handled with care such as if dropped unintentionally might result in data imbalance.
- Students who are not day scholars can use laptop as per their own convenience, whereas in common areas there can a monitoring about the usage hours hence computers may be a preferable option then laptop in certain spaces.
- Similarly depending on the pandemic situation in case it might be possible due to irregular usage the device might have issues while functioning.

Thus the University should analyse the above points and then devise a strategy about the replacement, essentially when the devices get damaged or are not in working condition they can surely be replaced.

As well as once they are not in working condition the proposed strategy should be linked towards e-waste management as well.

4.10.2 Building management systems

The college has extreme potential to become 100% energy efficient premises. In addition to provisions in the electromechanical system some facilities can be introduced towards building management systems as well. These can be undertaken equally for educational and residential sections.

- Set the BMS time of day schedules to suit the minimum occupancy periods of the areas served and implement optimum start stop incorporating a night purge cycle, session and holiday scheduling.
- Space temperature Setback - A temperature setback is a simple strategy to help save utility cost by reducing how often your heating or cooling system operates. *(morrisseyengineering)*
- Timer control of air conditioners.
- Timer control of personal heaters - Install push button timer control of personal heaters in Residential areas.

4.10.3 Facility management systems and controls

(Includes electromechanical systems – Electrical, Water)

a) Common facilities for Residential and Educational areas

- Install PIR control of the lighting in the toilet areas.
- Install low flow taps with automatic shut off in the toilets.
- Install push button timer control in all rooms lighting and ceiling fans.

b) Specific facilities for Residential areas

- Additional security lighting in Residential areas.
- Install PIR control of the lighting in the shower area.
- Install time of day control on the domestic hot water circulating pump

c) Specific facilities for Educational areas

- Install audible alarms on the laboratory doors to ensure doors remain closed at all times.
- Install Power Electronics control of the Foyer notice board lighting.
- Install reduced voltage control of the high bay lights.
- Install access lighting laboratories and Engineering Blocks and operate the high bay lighting only when required.


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5. Towards a Healthy & Sustainable Institution

5.1 Inputs by Greenvio Solutions

Based on the analysis of the study of premises in addition to the recommendations provided in each section of Ecological, Water, Waste and Energy Audit the College can adopt the following strategies towards a Healthy and Sustainable Institution practices.

a) **Kitchen garden -** There can be provision of kitchen garden practices in a designated area of the open space this would enhance the biodiversity and be useful in training students and staff about the healthy practices and vegetables grown which would be used in Canteen. It helps in capacity building. The smaller steps taken have huge impacts when each student would adopt these practices in their homes or societies and grow kitchen garden, terrace garden there will be a long term benefit for the environment as a whole.

b) **Cutlery in the Canteen –** The regular plastic and steel plates, spoons used in Canteen can be replaced with eco-friendly and organic leaves, paper straw, disposable plates, edible spoons and tables made out of sugarcane waste or bamboo. This will be first of its kind initiative to be adopted and practiced thus also inculcating the healthy practices in students.

c) **Signages –** In addition to the signages being in regular language there can be additional signages in braille language for the specially abled students.

5.2 Survey Results

An online survey was conducted to analyse the student and staff views about what changes according to you can be undertaken for Green audit improvement in College premises and activity, some of the key responses are listed below. Whereas many responses **stated there were no changes requires because the present practices are excellent.**

- There is no need to change anything.
- I think all have been done by our college, but if they maintain and continue this type of programme, then improvement will gradually increase.

Some of the suggestions by the Students and staff are listed below:

- Minimizing usage of papers, ban of polythene and plastic inside the campus, use of emitting free vehicles etc.
- Must have one dustbin in every 10 m.
- The environment and study ,and the others is good but in our college there is no nearby playground in our college .so we have to cross the road for playing outdoor games and the road crossing is too much risky. So it is my earnest request to our principal ma'am to solve this problem
- Tree plantation program or cleaning activity.
- Extension of solar power grid, plantation.
- Use of more sensors to reduce electricity use.

However, it should be noted that the College has taken up multiple initiatives and because of Pandemic the students have not practically visited the campus so many of these points are not mandatory at the moment.

6. References

1. Uniform Plumbing Code – India, 2008
2. IGBC Green Existing Buildings – Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013
3. IGBC Green Landscape Rating system, March 2013
4. BOMA Canada Waste Auditing Guide, Best Environmental Standards, BOMA BEST - Canada
5. Climate data https://www.indianclimate.com/show-data.php?request=EVA2NMBWJI
6. 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.