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# GREEN AUDIT REPORT FY 2019-20

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**Sagar Mahavidyalaya, Harinbari, Sagar Island, South 24 Parganas, West  
Bengal, India**



**MARCH 12, 2020**

**Techno Consultant**

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**TECHNO CONSULTANT**  
*DNam*  
Proprietor

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### 1 ACKNOWLEDGEMENT

TECHNO CONSULTANT thanks the management of Sagar Mahavidyalaya for assigning work of Green, Environment, Energy Audit. We appreciate the co-operation extended to us for completion of the green audit. Our special thanks are extended to:

TECHNO CONSULTANT  
  
 Proprietor

Principal- Mr. Pradip Kumar Khatua (TIC)  
IQAC Co-Ordinator– Mr. Shivdayal Chaudhari

Also, our sincere thanks to teaching & supporting Staff of College for giving us necessary inputs to carry out this very vital exercise of Green Audit. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements.

## 2 DISCLAIMER

TECHNO CONSULTANT Green Audit Team has prepared this report for Sagar Mahavidyalaya based on input data submitted by the representatives of college complemented with the best judgment capacity of the audit team. It is further informed that the conclusions are arrived following best estimates and no representation, warranty or undertaking, express 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. If you wish to distribute copies of this report external to your Institute, then all pages must be included. TECHNO CONSULTANT, its staff and auditors shall keep this report confidential and shall not disclose any such information to any third party, except that in the public domain or required by law or relevant accreditation bodies. TECHNO CONSULTANT also confirms that during this audit, no environmental monitoring was done with the help of instruments.

The entire report is compiled by Mr. Dev Deepta Nandy, Lead Auditor-ISO 14001:2015 (Environment Management System) IRCA Certificate No. 11606 dated 13<sup>th</sup> November 2006 & Team Member. On Site audit was conducted on 5<sup>th</sup> & 6<sup>th</sup> March 2020.

## 3 ABOUT SAGAR MAHAVIDYALAYA

Sagar Mahavidyalaya played the role of a trailblazer in the field of higher education for Sagar Island. Sagar Islanders found an outlet to peep into the wider world of education as soon as Sagar Mahavidyalaya started its dream journey from Sundarban Janakalyan Sangha Vidyaniketan, Rudranagar with some budding students on and from 12th Sept. 1998.

Despite the remoteness and the transportation inaccessibility to Sagar Island, Sagar Mahavidyalaya sailed off through uncharted sea with flying colours opening its door to welcome the students to flutter their wings freely in order to achieve perfection in their respective fields and to reach the pinnacle of success in a congenial atmosphere.

In spite of the constant dearth of permanent faculty members, we have been striving to provide quality education to the students and trying to equip them with practical skills necessary for leading an honest and successful professional life and a decent and committed personal as well as social life. Keeping in mind the demands and needs of the pupils of the Islands, we are trying to introduce new courses of study which would be of benefit both to the students and the Islanders.

We made a commendable mark in games and sports for the last few years. We regularly celebrate Annual Social programme (Aswamedh), Independence Day, Republic Day and Saraswati Puja with due pomp and grandeur and in colourful manner. We have introduced Smart Class Room, Career Counselling Cell, Multigym, Virtual Class Room and other technological accessories for the betterment of the students. It is worth mentioning that our dream has been translated to reality with the opening

of a new science faculty and Sanskrit Honours in the year 2015. We are really grateful to the hon'ble Chief Minister of West Bengal - Ms. Mamata Banerjee, for her benevolent hands for opening the new science faculty as well as the erection of new science building. We actually believe in holistic development of the students. Sagar Mahavidyalaya has successfully opened Netaji Subhas Open University 'Study centre' to pursue M.A. in English, Bengali, History, Education, Political Science and Social Work. Students can also pursue BLIS and MLIS.

We now need the co-operation and encouragement from the parents and guardians of the students and the other Islanders so that we can continue our efforts for providing proper academic atmosphere and opportunities to our students in spite of our infrastructural constraints. We know that whatever has been achieved is 'petty' compared to the 'undone vast but let us hope and strive together. Where there is a will, there is a way. So let us take inspiration from the great poet, Tennyson and pledge to "To strive, to seek, to find, and not to yield".

### 3.1 Vision

The motto of Sagar Mahavidyalaya; "Knowledge is Freedom", is indeed the guiding force behind the policies taken by the institute in order to uphold the mission and vision of the college. The governance and decision making in this college is based on participative management and democratic views. The Governing Body of the college cooperates with the Teacher-in-Charge in every matter to establish and regulate a cordial and scholastic environment in the college. The Teacher-in-Charge personally communicates with the teaching and non-teaching staff members to ensure they are not facing any incongruities in their work. The academic and co-curricular activities of the college are regularly discussed in the Teachers' Council and Academic Sub- Committee meetings which are held regularly. The institution strictly adheres to the Academic calendar.

The administration of this college is very student friendly. In cases of emergency and natural calamities, the college is always quick to take necessary official actions like reducing the admission and semester fee or arrange books for the students. All faculty members actively participate in designing and implanting strategic plans and also collaborate with the students in arranging functions and fests.

### 3.2 Mission

- ✓ To provide quality education to the students irrespective of caste, creed, religion, and diverse socio-economic status
- ✓ To nurture a sense of inclusiveness and ensure equity
- ✓ To promote a culture which is sensitized properly about sensitive issues like gender equality, climate change, freedom of speech, creativity
- ✓ To stimulate an academic environment where young minds can thrive on individuality, experimentation and innovation and become intellectually sound, empathetic and self-reliant.

### 3.3 The student and faculty strength of the college

Number	Gents	Ladies	Total
No of students	751	939	1690
No of teachers	7	3	10
No of Non-teaching staffs	7	3	10

### 3.4 Physical Structure

The college is located in about 2.9 acres of land. The built-up area of the college is 14000 Sq. ft.

Departments' Room	8
Classrooms	30
Girl's common room	1
Gymnasium	1
Staff Room	1
Principal Room	1
Smart Class Room	1
Boys Toilets	5
Ladies Toilets	4
Male Staff Toilet	4
Female Staff Toilet	3
Laboratories	4
Conference Hall/Seminar Hall	1
Meeting room	1
IQAC Room	1
Office Room	1
Guest Room	2
Library Reading room	1
Library Stock Room	1
Union room	1
NSOU Office	1
NCC Office	1
Canteen	1
Garbage collection bins	
Store Room	1
Generator Room	1

### 3.5 List Of Departments

- Bengali
- English
- Sanskrit
- Physical Education
- Political Science
- History
- Geography
- Education
- Physics
- Chemistry
- Mathematics
- Botany
- Zoology

### 3.6 Course Offered

#### Subjects offered by the Faculty of Arts:

- Advanced (Honours) Courses in Bengali, English, History, Geography, Political Science, Sanskrit and Education.
- General Degree Courses in Bengali, English, Geography, History, Political Science, Sanskrit, Physical Education and Education.

#### Subjects offered by the Faculty of Science:

- General Degree Courses in Physics, Chemistry, Zoology, Botany and Mathematics.

## 4 SCOPE OF AUDIT

- To identify opportunities to sustainable development practices
- Assessment of environmental aspects within the facility
- Material management, savings and alternatives,
- Energy management and savings,
- Water management and economy of use,
- Waste generation, management, and disposal,
- Noise reduction, evaluation, and control,
- Air emissions and indoor air quality,
- Environmental emergency prevention and preparedness.

## 5 NAME OF AUDITEE

Sl. No.	Name of Auditee	Position/Department
1	Mr. Prabir Kumar Khatua	TIC
2	Dr. Shivdayal Chaudhari	IQAC Co-ordinator
3	Mr. Avishek Mistry	IQAC Member
4	Mr. Hafijul Haque	IQAC Member

## 6 GREEN AUDIT & ITS OBJECTIVES

A Green audit is an audit, in which one assesses campus performance in complying with applicable environmental laws and improving environment management system through awareness & systematic approach. Though a helpful benchmark, the audit almost immediately becomes outdated unless there is some mechanism in place to continue the effort of monitoring environmental compliance. The main objective of the green audit is to promote the Environment Management and Conservation in the College Campus. The purpose of the audit is to identify, quantify, describe, and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green Audit are:

- To introduce and create awareness among stakeholders to the real concerns of environment and its Sustainability.
- To secure the environment and cut down the threats posed to human health by analysing the pattern and extent of resource use of the campus.
- To establish a baseline data to assess future sustainability by avoiding the interruptions in environment that are more difficult to handle and their corrections requiring high cost.
- To bring out a status report on environmental compliance.

Sagar Mahavidyalaya has already done internal green assessment and annual reports published for continual improvements. This audit report contains observations and recommendations for improvement of environmental consciousness.

## 7 METHODOLOGY

To perform green audit, the methodology included different tools such as preparation of questionnaire, physical inspection of the campus, observation, and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. The study covered the following areas to summarise the present status of environment management in the campus:

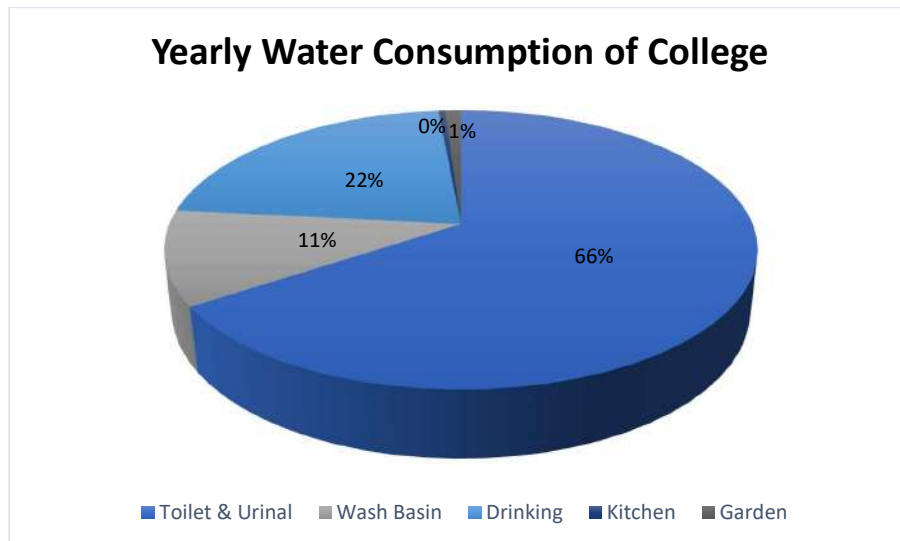
- Water Management
- Waste Management (solid, liquid & e-waste)
- Energy Management
- Management on Carbon Foot-print
- Ambient Air & Noise Monitoring
- Green area management

## 8 OBSERVATIONS & RECOMMENDATIONS

### 8.1 Water Conservation

**Water sources:** 2 nos bore well, 2 no of motors are installed & 7 nos Water tank with 1000 ltr. capacity installed on roof for storage of water.

Sl. No.	Sector	Total day consumption (litre)	Total monthly consumption (litre)	Total yearly use (litre)
1	Toilet & Urinal	3600	86400	756000
2	Wash Basin	600	14400	126000
3	Drinking	2400	28800	252000
4	Kitchen	10	240	5040
5	Garden	100	1200	12000
	<b>Total</b>	<b>6710</b>	<b>131040</b>	<b>1151040</b>

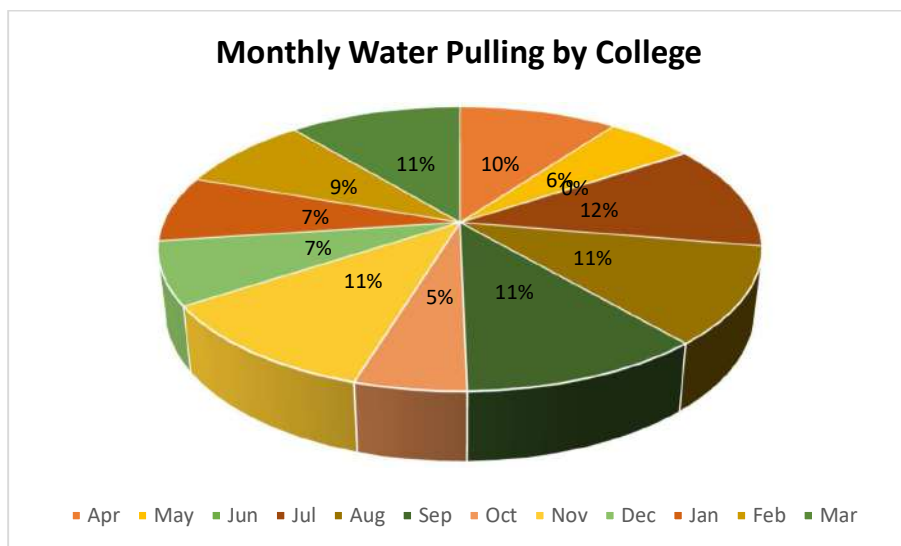


#### Monthly water pulling at college:

Sl. No	Month	Water Pulling by pump (litre)
1	April	99000
2	May	54000
3	June	1000
4	July	117000
5	August	108,000
6	September	108000
7	October	49500
8	November	108000
9	December	70000
10	January	73500



11	February	84000
12	March	108000
	<b>Total</b>	<b>1584000</b>



## Recommendations

- College should take responsibility to built "Rain Water Harvesting" management system.
- Advise to built Soak Pit to avoid waste of water overflowed by tank.
- Gardens should be watered by using drip/sprinkler irrigation system to minimise water use.
- Half Yearly 1 camp/Program should be done to spread awareness for water conservation.
- Drinking water should tested from recognized laboratory.
- Pipes, overhead tanks and plumbing system should be maintained properly to reduce leakages and wastages of water.

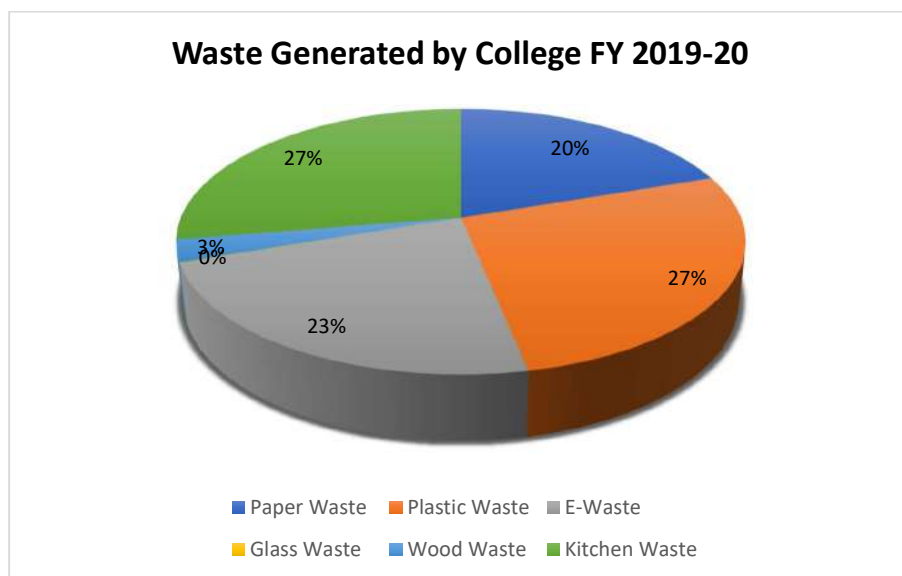
## 8.2 Waste Management (Waste Generation and Disposal)

Waste management is important for an eco-friendly & healthy campus. Regular basis waste collection makes the institute clean and safe. In an institute, different types of wastes are generated. Like- Paper Waste, Food Waste, Wood Waste, Plastic Waste, E-Waste, Bio Medical Waste, Chemical Waste which collection and management are very difficult.

The following data provide the details of the waste generated and the disposal method adopted by the college.

### Category wise solid waste generation at college (kg/year)

Category of waste	Paper waste	Plastic waste	E waste	Glass waste	Wood waste	Kitchen waste	Total waste kg/year
Quantity kg	160	220	185	0.5	22	224	811.5



### Quantity of waste generated

- Biodegradable – 406 kg/year
- Non-biodegradable – 405.5 kg/year

### Type of waste particulars and disposal method in college:

Types of waste	Particulars	Disposal method
E-Waste	Computers, electrical and electronic parts	Direct selling
Plastic waste	Pen, Refill, Plastic water bottles and other plastic containers, wrappers etc	Direct selling
Wood wastes	Damaged furniture	Direct Selling
Paper Waste	Banners, examination papers, paper plates, useless official papers	Direct Selling
Food Waste	Rotten Vegetables, Vegetables Peel, Rotten food, fruits	Vermicomposting in college premises
Chemical wastes	Laboratory waste	Direct draining without treating
Wastewater	Washing, urinals, bathrooms	Septic tank then outside drain.
Glass waste	Broken glass wares from the labs	Direct selling

### Recommendation

- Reduce the absolute amount of waste that is produced from college staff offices.
- Vermicomposting should be adopted at the earliest.
- Waste Bin should be placed at different places of college campus.
- Advised to check quality of chemical waste from laboratory then treat as per requirement and then drain to local drainage system

## 8.3 Energy management

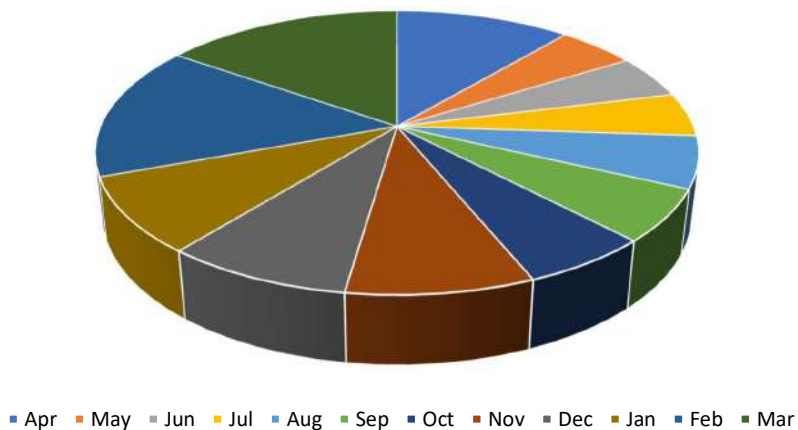
### Source of Power

Power supplied by WBSEDCL (West Bengal State Electricity Distribution Company Limited).

### Electricity Consumption details

Sl. No	Month	Electric power consumption
1	April	3437.5
2	May	1522.5
3	June	1522.5
4	July	1522.5
5	August	1805.67
6	September	1821.17
7	October	1823.17
8	November	2612.67
9	December	2612.67
10	January	2631.67
11	February	4702.50
12	March	4701
	<b>Total</b>	<b>30715.50</b>

**Electricity Consumption by College FY 2019-20**



### Details of major Fuel consuming Machines in college campus

Sr. no	Equipment	Number/year	Consumption/year
1	LPG for Lab	5 cylinders	71 Kg
2	LPG for canteen	10 cylinders	142 Kg
3	Two-wheeler	9 nos	13.5 litres
4	DG set	1 nos	204

### Recommendation

- Energy Consumption for each building / departments should be monitored by installing sub meter to design the energy conservation plan.
- Energy saving awareness spread among the students & staffs by displaying boards at appropriate place.
- Installation of solar power system
- Gradual replacement of existing non-LED based lights to LEDs & Electric fans to BLDC fan to reduce electricity consumption.

### 8.4 Analysis of carbon footprint

The most common greenhouse gases are carbon dioxide, water vapour, methane, nitrous oxide and ozone. Of all the greenhouse gases, carbon dioxide is the most prominent greenhouse gas, comprising 402 ppm of the Earth's atmosphere. Each human being is contributing towards adding green-house gases to the atmosphere depending upon their day-to-day activities and usage of instruments and machineries for different purpose.

Release of carbon dioxide gas into the Earth's atmosphere through human activities is commonly known as carbon footprint. An understanding about the same of any institute where large number of anthropogenic activities are happening is important to assess the contribution of emission of gases that are responsible for Green House Effect. Auditing for carbon footprint of this College Campus was done using a detailed questionnaire, so that the impact of the community on global environment can be assessed.

#### Data required for carbon footprint

- No. of working days= 210
- College working time= 8 hours
- Total number of people per day (approx.) = 1200
- No. of two wheelers used= 9
- No. of LPG cylinders used in Labs= 5
- No. of LPG cylinders used in canteen= 10

Emission factor	Emission CO <sub>2</sub>	Annual emission CO <sub>2</sub> (kg)
Human factor	1.043 kg/day	262836 kg
Petrol	2.3 kg / ltr	724.5 kg
Diesel	2.7 kg/ltr	550.8
LPG	2.98 kg/ltr	634.74 kg
<b>Total</b>	-	<b>264746.04 kg</b>

## 8.5 Ambient Air Management & Noise Monitoring

- No ambient air monitoring done by college. It is advised to start monitoring the quality of college air.
- Noise level is not monitored by college. Advise to start monitoring the noise inside the college premises.

## 8.6 Green Area Management

In college campus there are different types of flora, fauna, medicinal plants, seasonal flowering & vegetable plants. Various tree plantation programs are being organized yearly at college campus and surrounding villages through NSS team which helps in encouraging eco-friendly environment which provides pure oxygen within the institute and awareness among villagers.

### List of Trees in college campus:

Common Name	English Name	No. of Trees
Ghritokumari Plant	Aloe vera	25
Anantamul Plant	Hemidesmus indicus	16
Gurmar Plant	Gymnema sylvestre	15
Shewt Cheta	Plumbago zeylanica	17
Sorogondha Plant	Rauvolfia serpentina	12
Lemon Grass Plant	Cymbopogon nardus	21
Sweet Tulsi Plant	Stevia rabaudiana Bertoni	33
Ayapan plant	Ayapana triplinervis	19
Basak Plant	Justicia adhatoda	26
Aswagandha Plant	Withania Somnifera	12
Ajwain Plant	Trachyspermum ammi	22
Sotomuli Plant	Asparagus racemosus	26
Golap plant	Rosa rubiginosa	2
Neem Tree	Azadirachta indica	2
Coconut Tree	Cocos nucifera	12
Banyan Tree	Ficus benghalensis	1
Chinarose Plant	Hibiscus rosa-sinensis	2
Banana Tree	Musa spp	11
Mango Tree	Mangifera indica	4
Java apple Tree	Syzygium samarangense	3
Papaya Tree	Carica papaya	2
Tomato Plant	Solanum lycopersicum	2
Horitoki Plant	Terminalia chebula Retz	3
Araucaria Tree	Araucaria araucana	10
Box wood	Buxus Sempervirens	24
Screw Pine	Pondonus veitchii	120

Water Canna	Canna glauca	55
Sayo Palm	Sycas revoluta	8
Areca Palm	Dypsis lutescens	32
Good Luck Plant	Cordyline fruticosa	120
Mauritius hemp	Fureraea foetida	12
Cactus Plant	Opantia dillenii	1
Guava Plant	Psidium guajava	1
Panthpadap Plant	Ravenala madagascariensis	3
Chatim Tree	Alstonia scholaris	3
Seasonal Plant	-	18
Miscellaneous Plant	-	110

### Recommendations

- Prepare an environment policy.
- Create awareness of environmental sustainability and take actions to ensure environmental sustainability.
- Watering schedule to be planned according to the season.
- Spread awareness through campus to save environment.

## 9 EMERGENCY PREPAREDENESS

- There was no emergency preparedness procedure, neither any emergency numbers displayed at prominent locations.
- Emergency numbers, like nearest police station, nearest hospital, ambulance, nearest fire brigade can be displayed at various strategic locations in the institute.

10 SOME PHOTOGRAPHS



## 11 CONCLUSIONS

As part of green audit of campus, we carried out the environmental audit of campus including Illumination and Ventilation of the classroom. It was observed that Illumination and Ventilation is adequate considering natural light. Report compiled & prepared by Mr. Devdepta Nandy.

## 12 REFERENCES:

- ❖ The Environment [Protection] Act – 1986 (Amended 1991) & Rules-1986 (Amended 2010)
- ❖ ISO 14001:2015 standard.



\*\*\*\*END OF REPORT\*\*\*\*