

# GREEN & ENERGY AUDIT

(2019 – 2020)



Women's College, Tinsukia  
Durgabari, P.O. Tinsukia

**Auditor:** Er. M. K. Bora

Regd. Designer

Panel Designer:

Assam State Housing Board, Guwahati.

**1. INTRODUCTION:**

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of institute. It aims at analyzing environmental practices within the institution place, which have an impact on the environment, positively or adversely. Women's College, Tinsukia, though is an academic institution offering higher education basically in Arts and Commerce streams; we believe that daily functioning of an institution with more than 1000 members would definitely have adverse impact on the environment.

The sole objective of the Audit has been to identify sectors in which we have been exerting pressure on the environment and to sort out a way to minimize it in days to come.

Principal

Women's College, Tinsukia

<b>COLLEGE PROFILE</b>
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- |   |  |
|---|--|
| i. NAME OF THE COLLEGE (With full Address):                                   | Women's College, Tinsukia<br>Durgabari, P.O. Tinsukia - 786125, Assam                      |
| ii. AFFILIATING UNIVERSITY:   | Dibrugarh University   |
| iii. YEAR OF GREEN AUDIT:   | <b>2019-2020</b>   |
| iv. COLLEGE INFORMATION   |  |
| a) Date of establishment of the College                                       | : 09/07/1966   |
| b) College belongs to Rural/ Urban Area                                       | : Urban Area   |
| c) Whether recognized by UGC under 2f & 12B?<br>(If yes give details)         | : Yes<br>Letter No.:F.No.8-406/2015 (CPP-1/C), Date: Sept. 2015                            |
| d) Number of Students   | : 1401   |
| e) Total individuals in the college including Teaching & Non-teaching staff : | <b>1465</b>  |
| f) Streams/ Faculties   | : Arts and Commerce  |
| g) E-Mail ID & Phone Number:  | : <a href="mailto:wcttsk@gmail.com">wcttsk@gmail.com</a> ,<br>0374-2338826, +91 8721877856 |
| h) College Web site   | : <a href="http://www.wcttsk.ac.in">www.wcttsk.ac.in</a>                                   |

**2. PROCEDURE:**

Under this Green cum Energy Audit, the institution, as a consumer of energy and the consequential pressure that it has been exerting on the Environment by the virtue of that has been evaluated in all India perspectives. Data collection and analysis are done under the following categories:

- ❖ CATEGORY – A: Electrical Consumption.
- ❖ CATEGORY – B: Paper Consumption
- ❖ CATEGORY – C: Water Consumption
- ❖ CATEGORY – D: Fossil Fuel Consumption
- ❖ CATEGORY – E: Consumption of Chemicals.

In this audit data have been compiled and analyzed for the period July-2019 to June-2020 as the academic Session of the college falls in this period.

- Data on electricity consumption have been collected from records kept in the form of electricity bills for each month.
- Paper consumption by the College for official and academic purposes has been evaluated from office records and is authentic to our satisfaction.
- Amount of paper consumed by students have been evaluated from a random sample survey and is believed to be reasonably acceptable.
- Amount of water consumption has been calculated by taking into account the total capacity of all overhead water tanks and duration for which the water pumps have to operate per day to fill the tanks.
- Data of Fuel and Chemical consumptions are obtained from official records.

### 3. DATA COMPILATION & ANALYSIS:

#### 3.1 CATEGORY – A: Electricity Consumption by the College

Sector	Months	Units/Month	Unit Consumption per year	Av. Unit Consumption per Month
• Administrative Block	July- 2019	6796 Unit	47908 Units	3993 Units
	Aug- 2019	7874 Unit		
	Sep- 2019	7459 Unit		
• Academic Blocks	Oct- 2019	1590 Unit		
	Nov- 2019	4575 Unit		
	Dec- 2019	2261Unit		
• Auditorium	Jan- 2020	3907 Unit		
	Feb- 2020	3452 Unit		
• Hostel & Staff Quarter	March- 2020	3397 Unit		
	April-2020	2424 Unit		
	May-2020	2118 Unit		
	June-2020	2055 Unit		

Hence, Per Capita electricity consumption (2019-20): 32.70 kWh (Units).

### 3.2 CATEGORY - B: PAPER CONSUMPTION BY THE SYSTEM

**TABLE - 2**

Pressure exerted to the Environment in the form of Paper Consumed: 2019-20)

Sl. No.	Type of Paper		Amount used	Total Weight in Kg
1	Copier Paper		A 4:39Pckt	141.18
			Legal:25Pckt	442.00
2	Duplicating Paper		NIL	NIL
3	Foolscap Paper		2 Ream	6.00
4	Answer Script	Internal Exam.	7371 Copies (@ 0.024 gm. per Script)	176.90
		External Exam.	6419 (@ 0.033 gm. per Script)	211.83
5	Additional Sheets		12100 Nos (@ 0.012 gm. per Sheet)	145.20
6	Assignment Copy		15000 Copies	300.00
7	Consumption by students		23904 Copies (@178 gms per copy)	4254.91
8	Consumption by the office (register, board files etc.)			278.30
<b>TOTAL</b>				<b>5956.32</b>
<b>Per Capita Paper Consumption in kg:</b>				<b>4.07</b>
<b>Per Capita Paper Consumption (National average in kg):</b>				<b>14</b>

### 3.3 CATEGORY - C: WATER CONSUMED BY THE SYSTEM

**TABLE - 3**

(Pressure exerted to the Environment in the form of Water Consumed: 2019-20)

No.	Sl. Sector	Water Pump Specification	Water Reservoir capacity (in lt.)	Pump used per day	Average water used per day
1	Academic	1 hp	4000 lt.	1 time	4000.00 lt.
		0.5 hp	1000 lt.	1 time	1000.00 lt.
2	Administrative	1 hp	1000lt.	1 time	1000.00 lt.
3	Auditorium	1 hp	500 lt.	0.3time	142.86 lt.
<b>TOTAL</b>					<b>6142.86lt.</b>
<b>Average water consumed in the College per person per day:</b>					<b>4.19 lt</b>
4	Hostel	3 hp	6000 lt.	3 times	*17000.00 lt.
<b>Average water consumed in the Hostel per person per day:</b>					<b>113.3 lt.</b>

\* It is assumed that as per normal practice there remains about 10% water in each reservoir at the time of refilling.

\* Total person in the College = 1465

\*Total boarder in the Hostel = 150

### 3.4 CATEGORY - D: FUELS CONSUMED BY THE SYSTEM

**TABLE - 4**

(Pressure exerted to the Environment in the form of Fuels Consumed: 2019-20)

Sl. No	Category	Month	Amount used per month (Lt.)	Av. Use per month	Remarks
1	Diesel for Generators	July-19	NIL	53 lt.	Per Capita Consumption of Diesel in the College during the assessment year = 0.43 Lit. Financial burden on the College = Rs. 49,000.00
		Aug-19	198.41 lt.		
		Sept.-19	85.49 lt.		
		Oct.-19	NIL		
		Nov-19	86.83 lt.		
		Dec-19	85.05 lt.		
		Jan-20	85.08 lt.		
		Feb-20	NIL		
		Mar-20	91.28 lt.		
		April-20	NIL		
		May-20	NIL		
		June-20	NIL		
	<b>Total</b>	<b>632.14 lt</b>			
2	LPG for College Canteen	July-19	14 kg.	5 kg.	Financial burden = Rs. 33,00.00
		Aug-19	14 kg.		
		Sept.-19	14 kg.		
		Oct.-19	14 kg.		
		Nov-19	NIL		
		Dec-19	NIL		
		Jan-20	NIL		
		Feb-20	NIL		
		Mar-20	NIL		
		April-20	NIL		
		May-20	NIL		
		June-20	NIL		
	<b>Total</b>	<b>56 kg.</b>			

3	Hostel (Pipe line gas)	July	334 SCUM	297.4 SCUM	Financial burden = Rs. 82,236.00
		Aug	334 SCUM		
		Sept.	334 SCUM		
		Oct.	334 SCUM		
		Nov	334 SCUM		
		Dec	334 SCUM		
		Jan	334 SCUM		
		Feb	607 SCUM		
		March	334 SCUM		
		April	NIL		
		May	NIL		
		June	290 SCUM		
		<b>Total</b>	<b>3569 SCUM</b>		

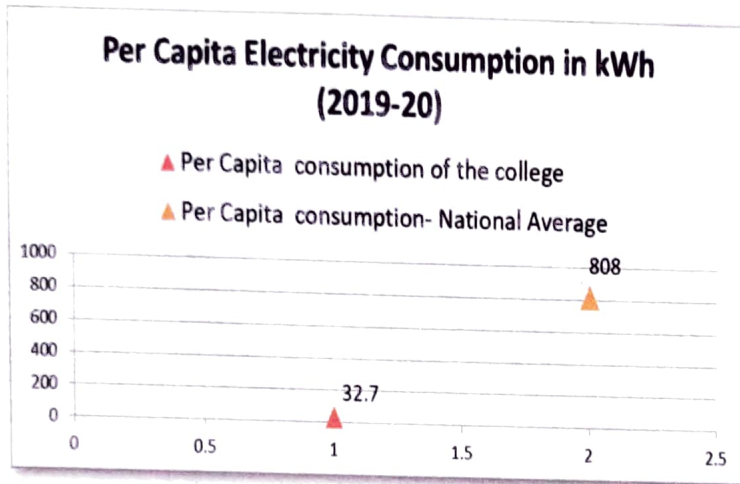
- SCUM – Standard Cubic Metre

### 3.5 CATEGORY – E: CHEMICALS CONSUMED BY THE SYSTEM

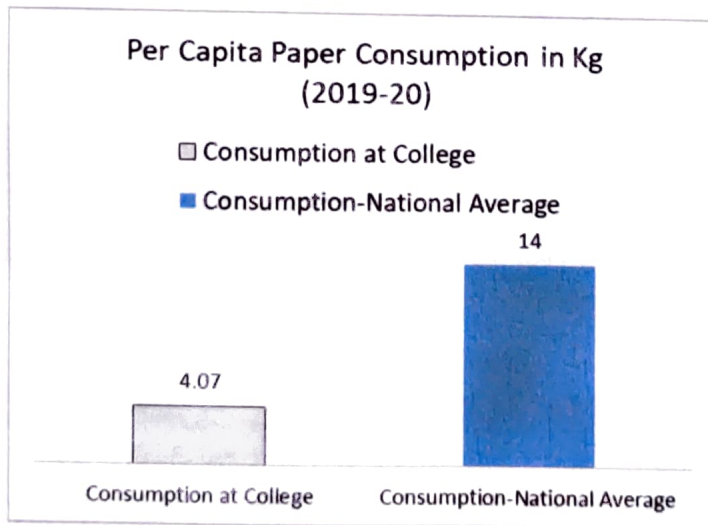
Sl. No.	Category	Sector	Amount used per month	Market Cost	Environmental Cost
1	Bleaching Powder	College	7 kg.	Rs.960.00	These chemicals mostly pollute water and affects aquatic lives.
		Hostel	5Kg		
2	Phenyl	College	8 lt	Rs.2040.00	
		Hostel	4 lt		
3	Herpic	College	5 lt	Rs.1100.00	
		Hostel	5 lt		

### 4. OBSERVATIONS & CONCLUDING REMARKS:

- 4.1 **CATEGORY – A:** Electricity Consumption in the college is found to be well below the national average. However there is scope for improvement in this regard. More use of Solar Powered lights can be explored as an option. It is to be noted that in a year per capita consumption of Electricity in India is around 808 kWh and that of the college during the audit period is 32.70 kWh.

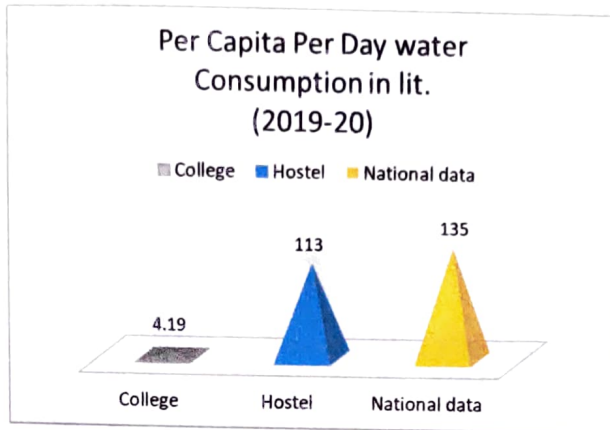


4.2 **CATEGORY – B:** Per Capita Paper consumption by the college is 4.07 kg, which is well below the national average i.e. 14 kg. Total paper consumed by the system.

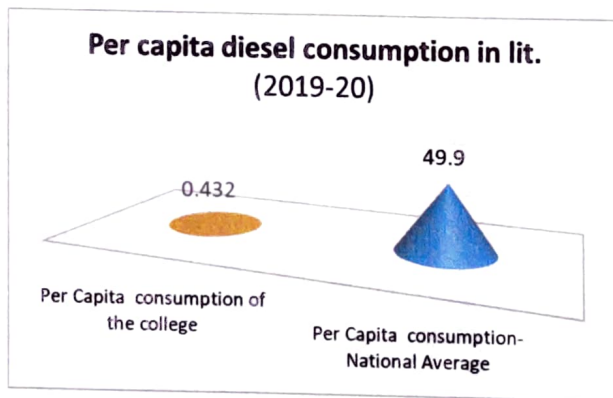


**IMPACT ON THE ENVIRONMENT:** Approximately 25 full grown trees are needed to produce 1000 kg of paper. From that count, the college is responsible for destruction of 149 full grown trees per year.

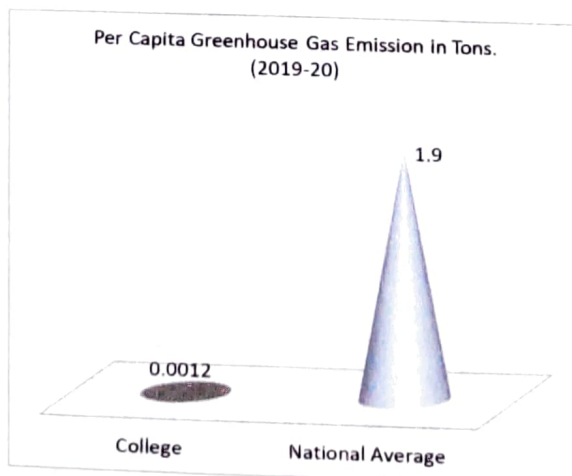
4.3 **CATEGORY – C:** In the College, it has been found that, per capita water consumption is 4.19 lit. per day. And that in the Hostel is around 113 lit. per day.



4.4 CATEGORY –D: Per Capita Fossil Fuel used in India is 6262 Kwh per year (One litre of diesel fuel is equivalent to 10 kWh). In the college, it is found that it uses 0.432 litres of diesel per capita per year. This is clearly below the national average.



**EMISSION OF GREENHOUSE GAS BY THE COLLEGE** On the average a diesel generator emits 2.7 kg of CO<sub>2</sub> per liter consumption of diesel. From that data it can be said that the college emits 1706 kg (~1.7 tons) of CO<sub>2</sub> gas to the atmosphere during the period under consideration. Hence, per capita emission of CO<sub>2</sub> in the college is 0.0012 tons. Per Capita CO<sub>2</sub> emission in India in a year is around 1.90 tons. From this data it can be observed that the college as a whole emits less CO<sub>2</sub> than per capita national value.





4.5 **CATEGORY –E:** As the College is an Arts faculty institution, there is minimum use of chemical, which is necessary for cleaning purposes to maintain hygiene standard. The pandemic of COVID-19 has compelled the institution to maintain optimum use of Sanitizers, which is a chemical having adverse effect on environment.

**5. CONCLUDING REMARKS & CERTIFICATE OF THE AUDITOR:**

This to certify that the Green cum Energy Audit of Women's College, Tinsukia for the period 2019-2020 has been completed as per norm and guidelines set for energy consumption calculations and analysis. The College Authority has provided all necessary data required for the audit. Records have been thoroughly checked and verified and found to be true and genuine. It is believed that this audit will help the authority in its future plan to reduce the Carbon Footprint of the College.

It is suggested to the college authority to opt for more Solar powered lights in the campus, instead of Hydro-electric sources of electricity.

Paper consumption in the official works should be minimized in order to reduce its carbon footprint.

1. Date: 17-08-2020

2. Place: Tinsukia

Signature:

Name:

Er. M. K. Bora  
Regd. Designer  
Panel designer:

Seal:

Assam State Housing Board, CH  
UCO Bank, Jorhat Zone