

GREEN & ENERGY AUDIT

(2018 – 2019)



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

COLLEGE PROFILE

- | | |
|---|--|
| i. NAME OF THE COLLEGE (With full Address): | Women's College, Tinsukia
Durgabari, P.O. Tinsukia - 786125, Assam |
| ii. AFFILIATING UNIVERSITY: | Dibrugarh University |
| iii. YEAR OF GREEN AUDIT: | 2018-2019 |
| 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?
(If yes give details) | : Yes.
Letter No.:F.No.8-406/2015 (CPP-I/C), Date: Sept. 2015 |
| d) Number of Students | : 1380 |
| e) Total individuals in the college including Teaching & Non-teaching staff | : 1442 |
| f) Streams/ Faculties | : Arts and Commerce |
| g) E-Mail ID & Phone Number: | : wcttsk@gmail.com ,
0374-2338826, +91 8721877856 |
| h) College Web site | : www.wimcol.org |

2. PROCEDURE:

Under this Green/ Energy Audit, it has been decided to evaluate the institution as a consumer of energy of different forms and the pressure that it has been giving to the Environment by the virtue of that. Data collection and analysis of energy consumption has been done under the following categories:

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

Data are compiled and analyzed for the period July-2018 to June-2019 (the academic Session of the college falls in this period).

- Data on electricity consumption have been collected from electricity bills.
- Paper consumption by the College for official and academic purposes has been evaluated from office records.
- Amount of paper consumed by students have been evaluated from a random sample survey.
- 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 operate per day.
- 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	Average Unit Consumption Per Month
Administrative Block	July- 18	5089	54340	4528.33
	Aug-18	8271		
	Sept-18	7615		
Academic Blocks	Oct-18	4592		
	Nov-18	3691		
	Dec-18	1977		
Auditorium	Jan-19	2918		
	Feb-19	3704		
	March-19	3836		
	April-19	3399		
Hostel and Staff Qtr	May-19	5913		
	June-19	3335		

Observation: Per Capita electricity consumption (2018-19): 37.68 kWh (Units).

3.2 **CATEGORY - B: PAPER CONSUMPTION BY THE COLLEGE**

TABLE - 2

Pressure exerted to the Environment in the form of Paper Consumed: 2018-19)

Sl. No.	Types of Paper		Amount (used during the period)	Weight in Kg
1	Copier Paper		A-4:46 Pckt(@500 Pcs)	166.52
			Legal:14Pckt (@500 Pcs)	247.52
2	Duplicating Paper		NIL	NIL
3	Foolscap Paper		2 Reams	6.00
4	Answer Script	Internal Exam.	6944 Copies (@ 0.024 gm. per Script)	166.67
		External Exam.	7205 Copies (@ 0.033 gm. per Script)	237.77
5	Additional Sheets		11600 Nos. (@ 0.012 gm. per Sheet)	139.20
6	Assignment Copy		3000 Copies	60.00
7	Consumption by students		22800 Copies (@178 gms per copy)	4058.40
8	Consumption by the office (register, board files etc.)			269.00
TOTAL (Kg)				5351.08
Per Capita Paper Consumption (Kg):				3.71
Per Capita Paper Consumption (National average in kg):				14

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

TABLE - 3

(Pressure exerted to the Environment in the form of Water Consumed: 2018-19)

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.
TOTAL					6142.86lt.
Average water consumed in the College per person per day:					4.26lt.
4	Hostel	3 hp	6000 lt.	3 times	*17000.00 lt.
Average water consumed in the Hostel per person per day:					113.3 lt.

* 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 = 1442

* Total boarder in the Hostel = 150

3.4 **CATEGORY - D: FUELS CONSUMPTION**

TABLE - 4

(Different types of Fuels Consumed: 2018-19)

Sl. No	Category	Month	Amount used per month (Lt.)	Av. Use per month	Financial pressure on the college
1	Diesel for Generators	July-18	84.71	72.31 Lt.	Financial burden= Rs. 62,500.00
		Aug-18	181.08		
		Sept-18	90.13		
		Oct-18	160.56		
		Nov-18	NIL		
		Dec-18	NIL		
		Jan-19	103		
		Feb-19	NIL		
		Mar-19	87.75		
		Apr-19	67.27		
		May-19	NIL		
		June-19	93.19		
	Total	867.69			
2	LPG for College Canteen	July-18	14 kg	14 kg.	Financial burden= Rs. 9,300.00
		Aug-18	14 kg		
		Sept-18	14 kg		
		Oct-18	14 kg		
		Nov-18	14 kg		
		Dec-18	14 kg		
		Jan-19	14 kg		
		Feb-19	14 kg		
		Mar-19	14 kg		
		Apr-19	14 kg		
		May-19	14 kg		
		June-19	14 kg		
	Total	168 kg			

3	Hostel (Pipe line gas)	July-18	327 SUCM	328.75	Financial burden = Rs. 93,892.00
		Aug-18	327 SUCM		
		Sept-18	327 SUCM		
		Oct-18	327 SUCM		
		Nov-18	327 SUCM		
		Dec-18	327 SUCM		
		Jan-19	327 SUCM		
		Feb-19	327 SUCM		
		Mar-19	327 SUCM		
		Apr-19	334 SUCM		
		May-19	334 SUCM		
		June-19	334 SUCM		
		Total	3945 SUCM		

- SCUM – Standard Cubic Metre

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

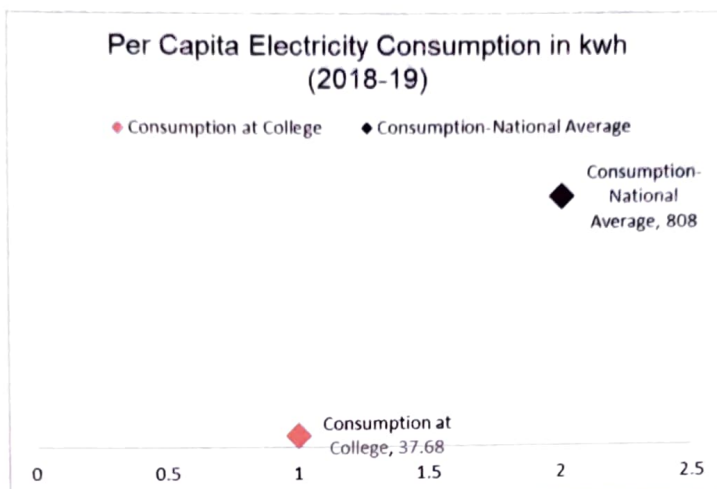
TABLE - 5

(Pressure exerted to the Environment in the form of Chemicals Consumed: 2018-19)

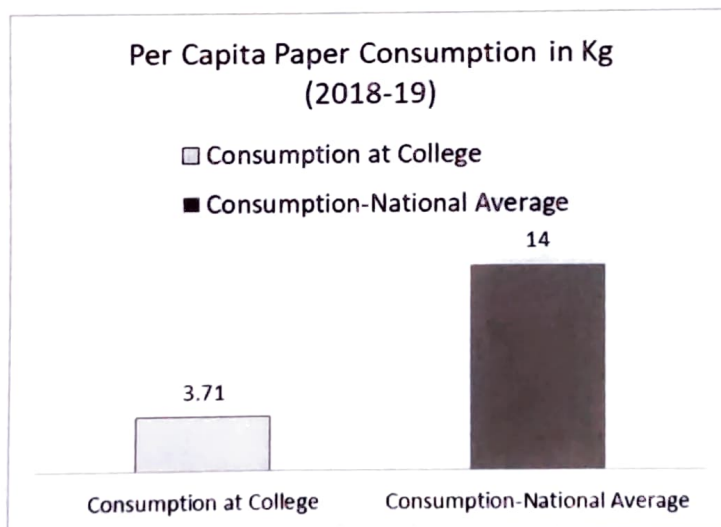
Sl. No.	Category	Sector	Amount used per month	Market Cost	Environmental Cost
1	Bleaching Powder	College	7 kg.	Rs.960.00	These chemicals mostly pollute water and affects aquatic lives.
		Hostel	5Kg		
2	Phenyl	College	8 lt	Rs.2040.00	
		Hostel	4 lt		
3	Herpic	College	5 lt	Rs.1100.00	
		Hostel	5 lt		

4. OBSERVATIONS:

- 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.

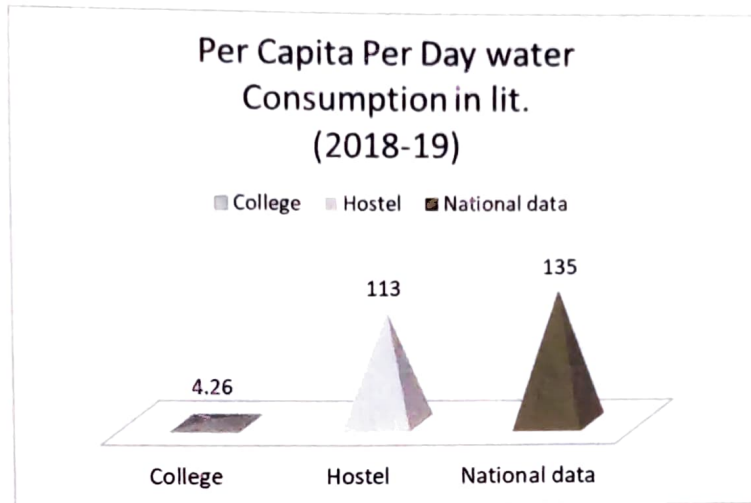


4.2 **CATEGORY – B:** Per Capita Paper consumption by the college is 3.71 kg, which is well below the national average i.e. 14 kg. Total paper consumed by the system.

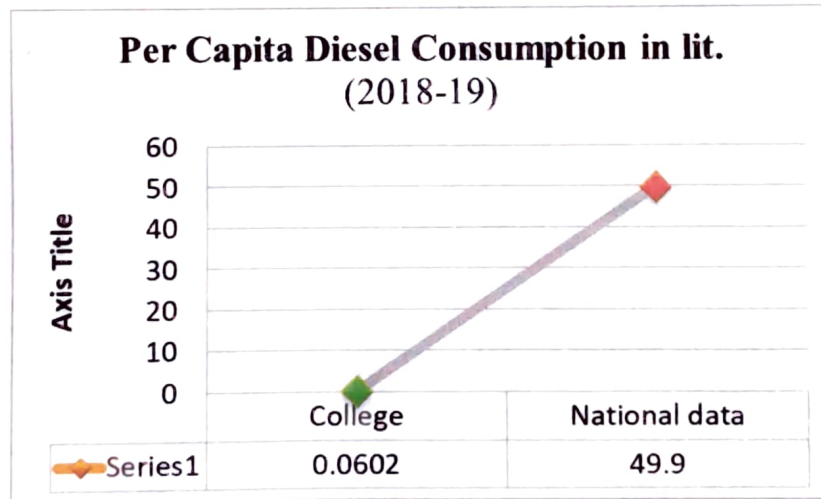


IMPACT ON THE ENVIRONMENT: Approximately 25 full grown trees are needed to produce 1000 kg of paper. From that count, the college is responsible for destruction of 134 full grown trees per year.

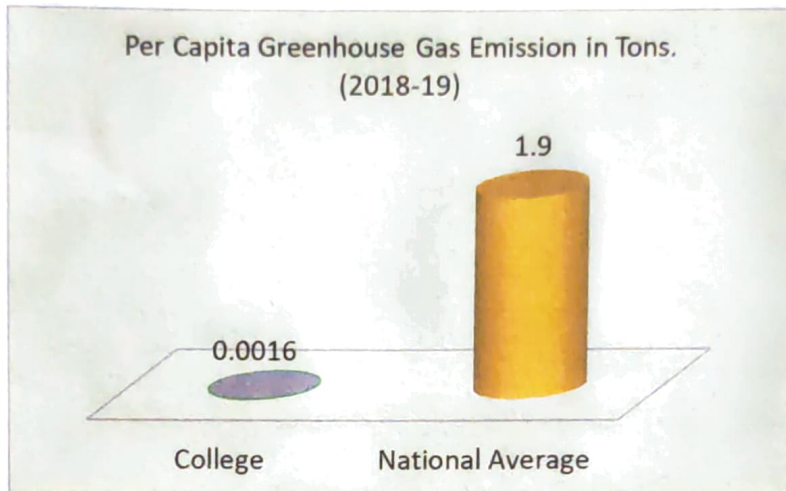
4.3 **CATEGORY – C:** In the College it has been found that, per capita water consumption is 4.26 lit. per day. And that in the Hostel is around 113 lit. per day.



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 0.602 litres of diesel per capita per year (equivalent to 6.02 Kwh). This is clearly far below the national average.



EMISSION OF GREENHOUSE GAS BY THE COLLEGE: On the average a diesel generator emits 2.7 kg of CO₂ per liter consumption of diesel. From that data it can be said that the college emits **2342.7 kg (~2.34 tons)** of CO₂ gas to the atmosphere during the period under consideration. Hence, per capita emission of CO₂ in the college is 0.0016 tons. Per Capita CO₂ 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 CO₂ 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.

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

This to Certify that the Green cum Energy Audit of Women's College, Tinsukia for the period 2018-2019 has been completed to my satisfaction. The College Authority has provided all necessary data required for the same. Records have been thoroughly checked and verified and found to be true and genuine. It is believed that this audit on the pressure exerted by the college on the Environment will help the college authority plan, in a fruitful way to reduce the Carbon Footprint of the College in future by adopting means to optimize use of renewable energy sources.

1. Date: 05.08.2019

2. Place: Tinsukia

Signature:

Name: Er. M. K. Bora
Regd. Designer

Panel designer:
Assam State Housing Board, CHY
UCO Bank, Jorhat Zone