Sri Shanmugha College of Engineering and Technology

Sankari Salem – 637304

ENVIRONMENT AUDIT REPORT 2019

Project Report Title	**:**	**Environmental Audit**
Client Name	**:**	**Sri Shanmugha College of Engineering and Technology**
Plant Location	**:**	**Pullipalayam,** **Sankari,** **Salem,-637 304.**
Date of Audit	**:**	**04th February 2019**
Environmental Audit done by:		**Internal Audit Team**
Environmental Audit Team	**:**	**Dr. K.B. Nagashanmugham Prof/Chemistry** **Mr. R.Boopathi AP/Mechanical** **Mr. A.Muruganandam AP/AGRI** **Mr. K.Mohan AP/CIVIL**

ENVIRONMENT AUDIT REPORT
SRI SHANMUGHA COLLEGE OF ENGINEERING AND TECHNOLOGY SALEM

1. Introduction:

Sri Shanmugha College of Engineering and Technology aims at producing awareness about the environment consciousness. The institute takes initiatives to organize different events of green practices to percolate the knowledge amongst students, teachers, and non- teaching staff. This green message being transferred along with its practical dimensions among the families, societies and thereby to the stakeholders, forms a chain and network to spread the message at large. College is also aimed at giving solution to the different burning topics related to the environment, its awareness as well as its protection. As the government is taking initiative to sensitize mass with environment protection, newer concepts are being introduced to make college eco-friendly. To create and conserve the environment within the campus and to solve the environmental problems such as promotion of the energy savings, energy conservation, water reduction, water harvesting, solid waste management, improvement in the air quality of the campus, control on noise pollution, and minimizing the use of Plastic, etc. is one of the prime objective of the college.

Environment audit report is one such initiative that has been introduced to make the educational institute environmentally sustainable and active in spreading the education about the same. It is a tool to assess general practices implemented by the organization in terms of the impact on environment. The report also aims to spread the awareness on the adverse practices that are responsible for the degradation of the environment and how strongly the institute is involved in curtailing those practices. It helps in recognizing the need of a college to work around the year for environment sustainability. Thus, Environment audit forms the base line survey to decide for the Green policy.

1.1. Environment audit: An Hour of Need

Environment auditing is the process of identification and determination of the institution's practices in creating awareness and practicing the environment friendly measures. Over the period of time over exploitation of resources like energy, water, etc. have resulted in the environmental degradation. It is necessary to check whether our way of living and handling resources is not going to cause detrimental effects in our surroundings. Environment audit Report aims at summarizing the college's contribution and its activeness in creating awareness and consciousness in practically applying the environmental friendly measures towards an institute.

1.2. Goals of Environment audit:

Sri Shanmugha College of Engineering and Technology conducted a Environment auditing survey for the year 2018-2019. Following were the goals:

1. A baseline survey to know the real status of green practices.
2. Identification of the problems faced while practicing green practices in the college campus.
3. Examination of the current practices that have impact on the environment such as resource utilization, waste management, energy conservation etc.
4. Analysis and suggestion for the plausible solutions for problems identified from Audit Report.
5. Increasing and spreading the awareness for environmental consciousness and sustainable use of resources amongst the students, teaching and non-teaching staff members.
6. Identification and assessment of any environmental risk if any inside the college campus.
7. Giving direction and guidance working on local environmental issues.

2. Methodology:

The present study is based on throughout visit of the college, personal observations, data's that were collected using sets of questionnaires and other survey tools. In the meetings organized by Principal, SSCET, need for an Environment audit report to raise the awareness was kept. The audit report was divided in to different areas (I) Carbon footprint (ii) Electricity and Energy audit (iii) water and water management audit and (IV) waste management audit. For proper survey whole campus was divided in to different sections, based on data requirement, sets of questionnaires about electricity consumption, water consumption, fuel waste, solid waste collection etc.

3. Analysis:

The data prepared were put to statistical analysis for Environment audit. The surveys from each group were tabulated in excels spreadsheets. The tabulated data's were further analyzed through statistical analysis and computing by Dr. Nagashanmugham and Team. For the better understanding of the results and to avoid complications, averages and percentages of the tables were taken. Graphical representation of these results was made to give a summarized picture of the status. Final outcome was interpreted with the overall consequences, conclusion and plausible solutions or steps for them.

4. Environment audit Analysis:

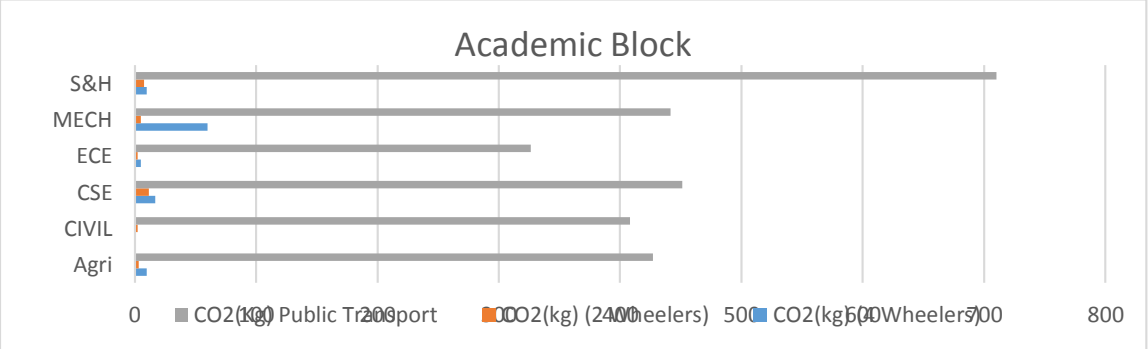
4.1. Carbon Footprint

A carbon footprint is the total greenhouse gas emissions caused directly and indirectly by an individual, organization, event or product. It is calculated by summing the emissions resulting from every stage of a product or service's lifetime. The calculations for CO2 emission was done using method reported earlier.

The college was divided into four regions (I) academic section, (ii) administrative building, (iii) canteen area and (IV) Guards, gardeners and sanitary workers. Data were collected and calculations were done for each departments in the academic sections.

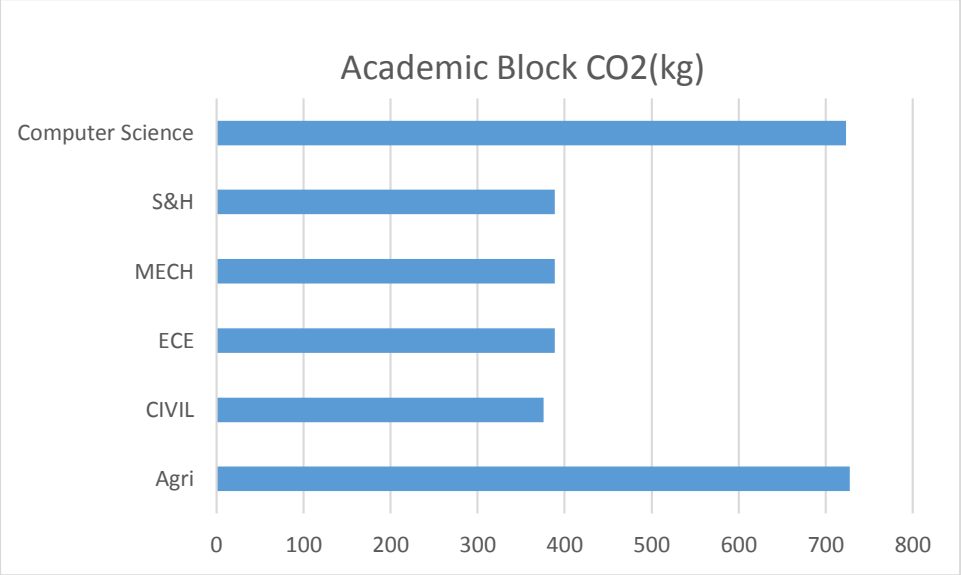
(I) Academic Block

Department	CO2(kg) (4 Wheelers)	CO2(kg) (2 Wheelers)	CO2(Kg) Public Transport
Agri	9.6	3	427.2
CIVIL	0.4	2.4	408
CSE	16.7	11.5	451.2
ECE	4.8	2.4	326.4
MECH	59.8	5.1	441.6
S&H	9.6	7.8	710.4



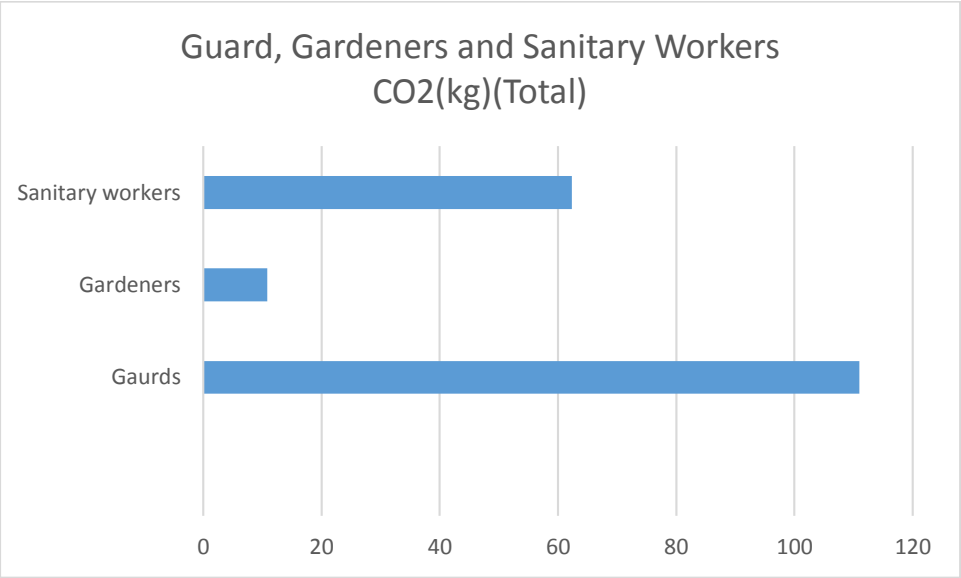
Aggregate of all the wheelers:

Academic Block	
Department	CO2(kg)
Agri	727.742
CIVIL	375.548
ECE	388.464
MECH	388.464
S&H	388.464
Computer Science	723.5838

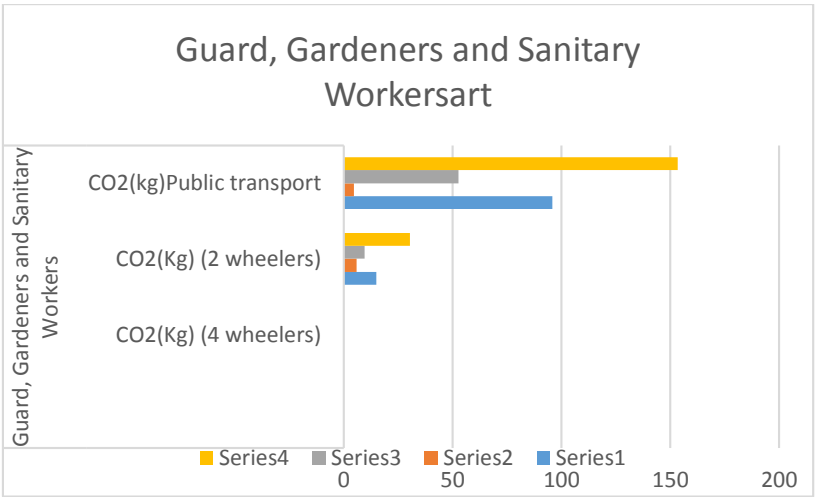


Guard, Gardeners and Sanitary Workers

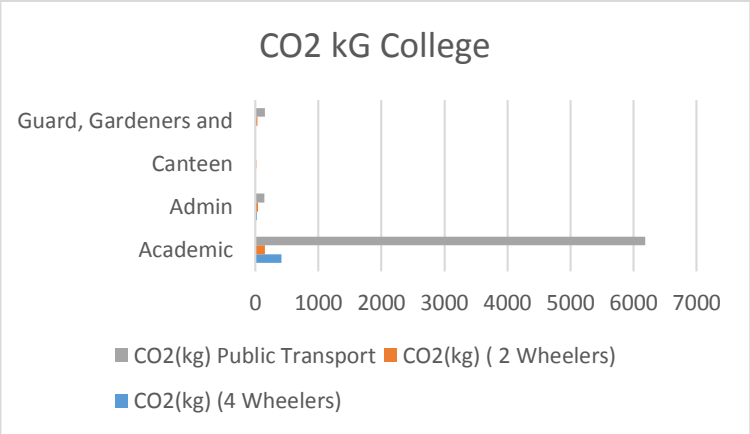
Guard, Gardeners and Sanitary Workers	
CO2(kg)(Total)	
Gaurds	110.95
Gardeners	10.78
Sanitary workers	62.368



Guard, Gardeners and Sanitary Workers			
	CO2(Kg) (4 wheelers)	CO2(Kg) (2 wheelers)	CO2(kg)Public transport
Gaurds	0	14.95	96
Gardeners	0	5.98	4.8
Sanitary workers	0	9.568	52.8
		30.498	153.6



College	CO2(kg) (4 Wheelers)	CO2(kg) (2 Wheelers)	CO2(kg) Public Transport
Academic	414.8396	154.9418	6187.2
Admin	21.528	44.6108	144
Canteen	0	13.156	2.4
Guard, Gardeners and	0	30.498	153.6



Tree Cover:

College has a total area of 304,068.7 sq m. Out of this 115,750 sq m is uncovered/non-cemented region. Approximately 65 % i.e. 10,237.5 sq m of this uncovered region is occupied by trees and forms the part of green cover of the campus.
Students were motivated and sensitized by 'adopting' trees, taking care of them that was made part of their project work.

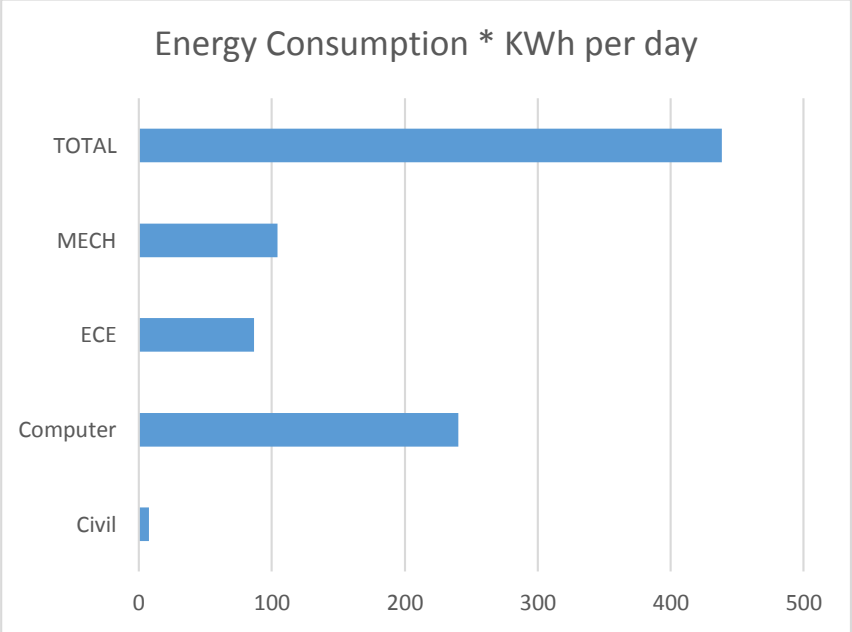
4.2. Energy Audit Report

As per the Energy Conservation Act, 2001, Energy Audit is defined as "the verification, monitoring and analysis of use of energy including submission of technical report containing recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption".

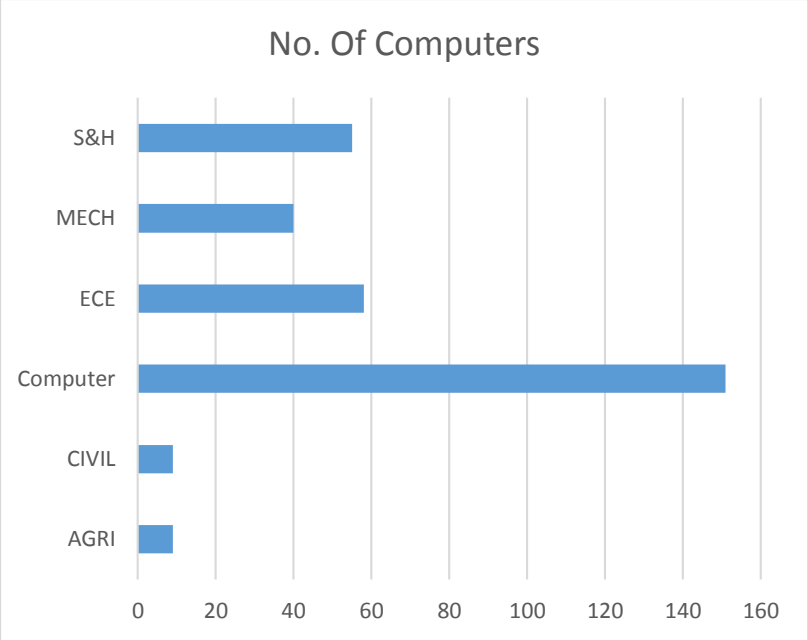
Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment. An old incandescent bulb uses approximately 60W to 100W while an energy efficient light emitting diode (LED) uses only less than 10 W. Energy auditing deals with the conservation and methods to reduce its consumption related to environmental degradation. It is therefore essential that any environmentally responsible institution examine its energy use practices.

I. Analysis of Energy Consumption in KWh per day in various departments of the college.

Department	Energy Consumption * KWh per day
Civil	7.544
Computer	240.232
ECE	86.59192
MECH	104.28
TOTAL	**438.64792**



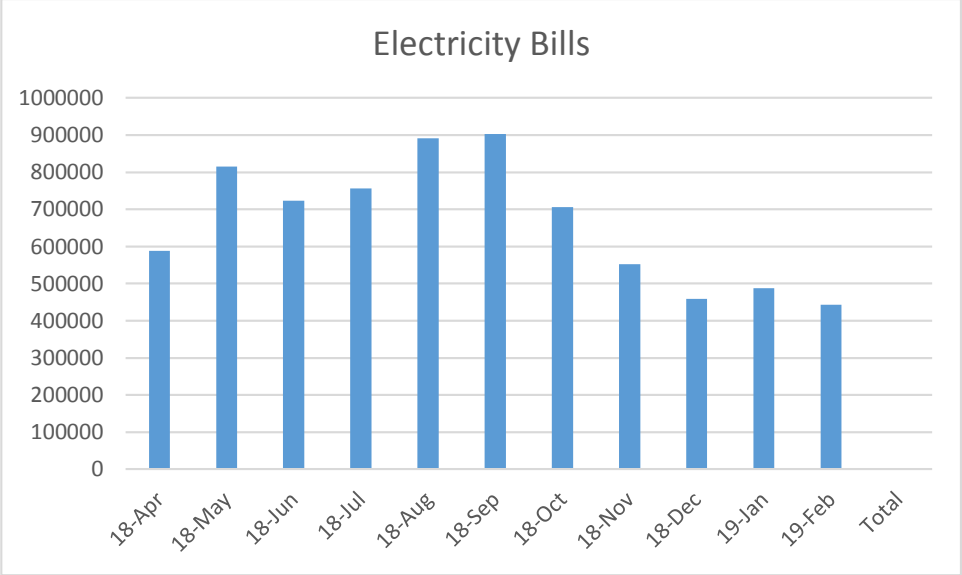
Department	No. Of Computers
AGRI	9
CIVIL	9
Computer	151
ECE	58
MECH	40
S&H	55



The major difference in Energy consumption of various departments is due to the usage of various electronic and electrical equipment. Data is shown in the table above for comparison of no. of computers in each Department. The difference in no. of computers used is reflected in their respective energy consumption.

II. Analysis of Electricity bills of the college (excluding hostel) month wise across the year

Electricity bills for college	
Month	Bill in rupees
Mar-18	1,38,977
Apr-18	588140
May-18	815190
Jun-18	722640
Jul-18	756620
Aug-18	891170
Sep-18	902920
Oct-18	705480
Nov-18	552650
Dec-18	458700
Jan-19	488280
Feb-19	442600
Total	74,63,367



The above graph is showing a comparative study of electricity bills of college (excluding hostel) month wise. The major difference is coming because of usage of air conditioners. The peaks can be seen in summer season in the months of May, August and September. For the month of June and most of July, teaching is suspended and that is reflected in electricity bills.

There are total of 200 VRV air conditioners in college and there energy consumption in KWh per day is 3580.8

III. Rain Water Harvesting

There are total of 7 pits for rain water harvesting which utilize the water for increasing ground water level.

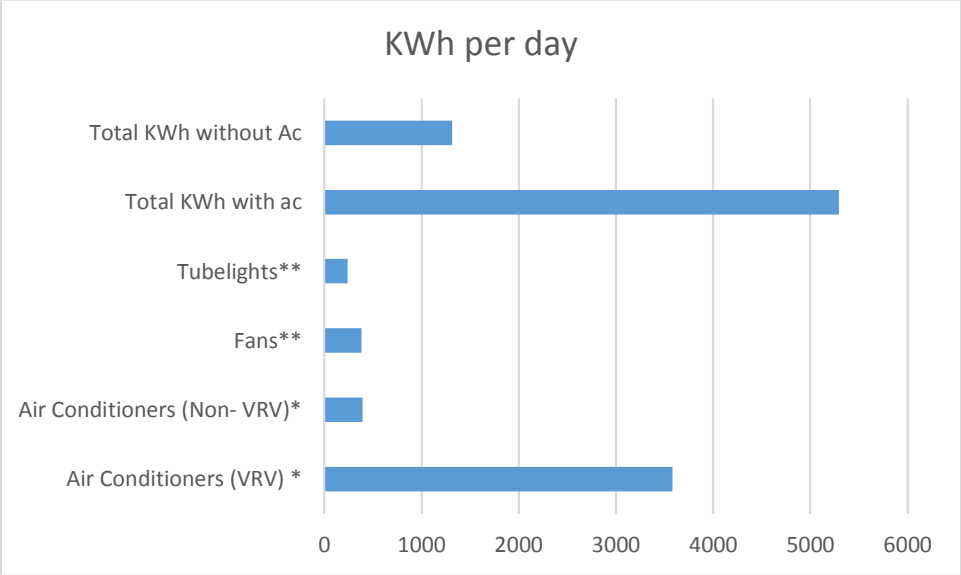
IV. Solar Panel

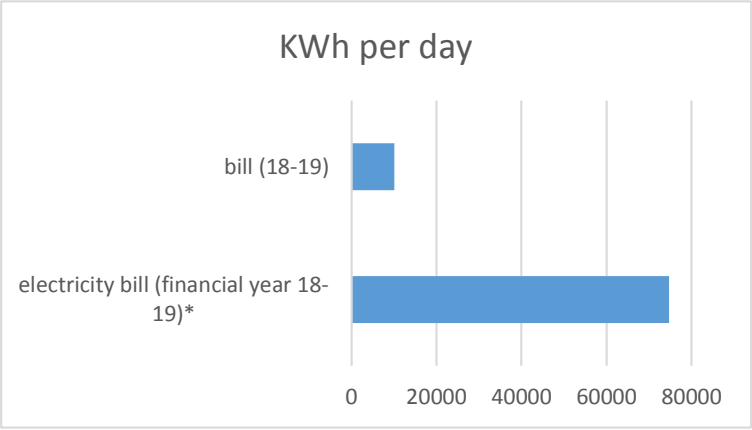
Solar plant installed capacity in the institution is 100 kWh. Average energy generated from the solar plant is around 11390 kWh/month. Around 65.1% of the total electricity consumption was generated with solar energy and 34.9 % from wind energy adjustment. Overall efficiency of the solar generation system is nearly 91.8%. (0.881 lakhs kWh generated against 0.96 lakhs kWh).

Heads	KWh per day
Air Conditioners (VRV) *	3580.8
Air Conditioners (Non-VRV)*	396
Fans**	382.72
Tubelights**	242.496
Total KWh with ac	5294.31892
Total KWh without Ac	1317.51892
electricity bill (financial year 18-19)*	74717.62
bill (18-19)	10134.65
	for financial year april 2018- march 2019

* For Adminstrative and Academic Block

** For Administrative, Academic Block and Hostel





4.3. Water and water management:

Data related to water audit was collected by circulating a proforma based on water user profiles. The college has roughly 700 students enrolled in 5 different courses, and more than 90 employees.

The assessment of water requirement comprises of sanitation, laboratory, kitchen, drinking, washing, etc.

For assessment of water management, the college has been divided into four blocks: administrative block, academic block, hostel, residing on and

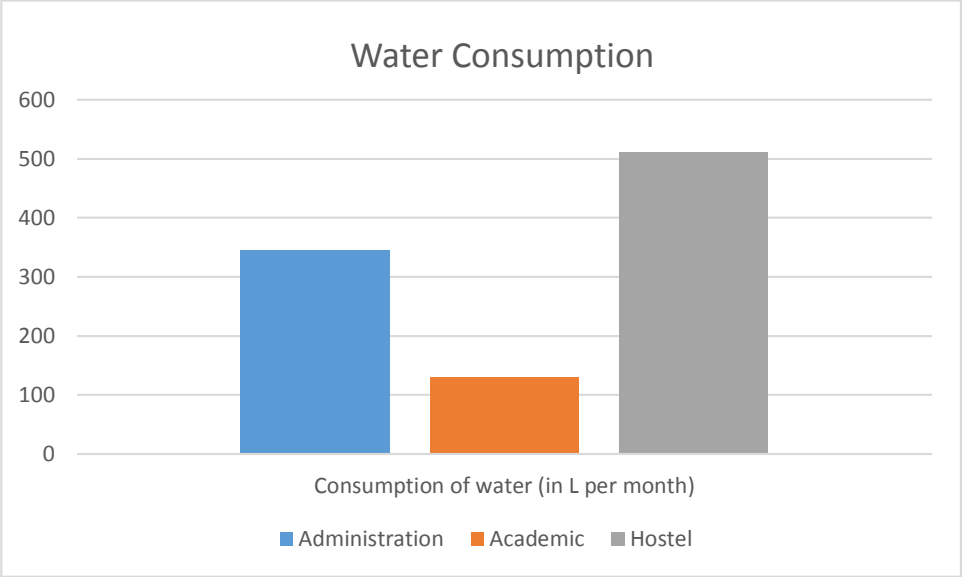
The details of various blocks are as under:

- The administrative block comprises Principal's office, accounts section and library.
- The academic block comprises of the students, teaching and non-teaching staff of the 5 departments, and canteen.
- The hostel comprises of roughly 108 students, and there are roughly 12 members comprising of teaching and non-teaching staff residing on campus.

Consumption of water by the four blocks: a comparison

Details of water consumption by the four blocks are tabulated as under:

S.No	Name of the block	Consumption of water (in L per month)
1	Administration	345
2	Academic	130
3	Hostel	511



Water consumption by the four blocks is compiled as under:

Administration: 3.76%

Academic: 14.18%

Hostel (comprising of students): 55.72%

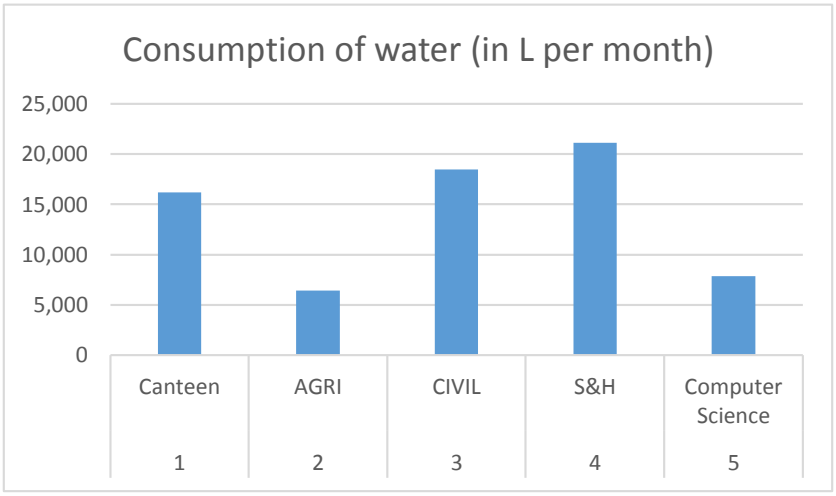
Water consumption by administration and academic block comprises of sanitation, drinking purpose, laboratory usage, washings and for cooking purpose in canteen. For hostel and teaching and non - teaching staff it comprises of sanitation, drinking purpose, washings, cooking, bathing, etc.

Consumption of water by academic block:

Details of water consumption by academic block are tabulated as under:

S.No.	Name of the department	Consumption of water (in L per month)
1	Canteen	16,200
2	AGRI	6,405
3	CIVIL	18,446
4	S&H	21,091
5	Computer Science	7,866

Graphical representation



As it can be seen, the consumption of water by canteen is 1.76 % as compared to 12.41% for the academic departments. The major consumers are Agri and CIVIL departments.

The consumption of water by the 5 academic departments (including students, teaching and non - teaching staff) is further divided into requirements for sanitation, drinking purpose, laboratory and miscellaneous (washing, etc.). Details are tabulated as under:

Audit Report

We have conducted the Environmental audit at all important areas up to our maximum possible extend. Overall performance of college is found satisfactory.

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AP/AGRI

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