

**ENVIRONMENTAL AUDIT OF S.S.MANIYAR LAW COLLEGE,
JALGAON**

AFFILIATED TO NORTH MAHARASHTRA UNIVERSITY



Project Submitted

By

**Prof. Sanjay R. Kumawat
M.Sc., M.Tech., B.Ed.**

Project Submitted

To

**PRINCIPAL
S.S.MANIYAR LAW COLLEGE, JALGAON**

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ENVIRONMENTAL AUDIT OF S.S.MANIYAR LAW COLLEGE, JALGAON

Abstract: - Environmental audits are tools which can quantify an organizational environmental performance and position. There are three main types of audits which are environmental compliance audits, environmental management audits to verify whether an organization meets its stated objectives, and, functional environmental audits such as for water and electricity.

These are used to help improve existing human activities, with the aim of reducing the adverse effects of these activities on the environment. There are many reasons for undertaking an environmental audit, which include issues such as environmental legislation and pressure from customers.

The S.S. Maniyar law College is expected to provide the students and teachers an understanding about the environment in which they are working. They sensitize teachers about the student's expectations and perceptions.

Keywords: Environmental Audit, quantify, understanding, human activities etc...

INTRODUCTION

Environmental audits are tools which can quantify an organizational environmental performance and position. There are three main types of audits which are environmental compliance audits, environmental management audits to verify whether an organization meets its stated objectives, and, functional environmental audits such as for water and electricity.

Environmental auditing is essentially an environmental management tool for measuring the effects of certain activities on the environment against set criteria or standards. Depending on the types of standards and the focus of the audit, there are different types of environmental audit. Organisations of all kinds now recognize the importance of environmental matters and accept that their environmental performance will be scrutinized by a wide range of interested parties. Environmental auditing is used to

- Investigate
- Understand
- Identify

These are used to help improve existing human activities, with the aim of reducing the adverse effects of these activities on the environment. An environmental auditor will study an organization's environmental effects in a systematic and documented manner and will produce an environmental audit report. There are many reasons for undertaking an environmental audit, which include issues such as environmental legislation and pressure from customers.

Benefits vary depending on the objectives and scope of the audit. Environmental auditing benefits include:

- Organizations understand how to meet their legal requirements;
- Meeting specific statutory reporting requirements;
- Organizations can demonstrate they are environmentally responsible;
- Organizations can demonstrate their environmental policy is implemented;
- Understanding environmental interactions of products, services & activities,
- Knowing their environmental risks are managed appropriately;
- Understanding how to develop and implement an ISO 14001
- Improving environmental performance and saving money.

STUDY AREA

S.S.Maniyar Law College, Jalgaon:-

S.S. Maniyar Law College is established in 1970, it is constructed on 10 acre land. Our institution is located in the semi urban area of the Khandesh region in Maharashtra. With the excellent vision and mission we are imparting quality legal education and providing opportunity to ensure fundamental rights of the people of region. Our institution is one of the pioneer legal institution in the Khandesh region with NAAC reaccredited 'A' grade. We have qualified teaching staff and well furnished infrastructure with regular use of ICT. We consider the local need and global challenges in education system and imparting accordingly.

Educational Gadgets

The college has developed its two Conference Rooms, which are well equipped with Audio-Visual facilities, multi-media projection systems, tape-recorder and conference systems. The teacher-learners are exposed to the educational facilities not in theory but also in practice through different exercises. An intensive use of multi-media projector (compatible with computer), VCR and VCD, LCD, Web Camera, Digital Camera, Eduset), overhead projector, computer, slide projector, VCR, tape-recorder etc. adds a new dimension to the whole activity.

IT Lab and Edusat

The S.S.Maniyar Law College has established a modern state-of-the-art IT/Language lab with capacity of 44 computers. It has VSAT and inflibnet available on these intra networked computers. The KCES is also having the facility of EDUSAT which is utilized for inter institutional tele-conference.

Performance of S.S. Maniyar Law College

It is noted with great satisfaction that S.S.Maniyar Law College has one of the oldest law college in this region and till now 43 batches of law students are passed out from this institution. The institution and its alimony have contributed lot in the field of law like our alimony Adv. Ujjawl Nikam, Justice Bhangale (TADA Court Justice) etc. The analysis of the feedback shows that these programmes have been very useful.

The S.S. Maniyar law College is expected to provide the students and teachers an understanding about the environment in which they are working. They sensitize teachers about the student's expectations and perceptions. These students and teachers are the future managers of the education enterprise. Therefore, they must develop an insight into the dynamics of working in

the educational system. They inculcate appropriate teaching and research skills among the teachers.

OBJECTIVE

- ✓ To introspect the practices that have impact on environmental degradation
- ✓ To catapult the green practices in college campus for conservation of natural resources.
- ✓ Monitor the temporal changes in green practice and
- ✓ To prepare a green report for enhancing value added academic, research and administrative activities.

METHODOLOGY

The objectives for green audit have been slated in the preceding chapter and that the present exercise is a maiden attempt with no baseline data and it is envisaged to cover the following:

- Assessing of the Institution of Critical natural resources, their developmental and management in the most comprehensive method.
- Formulating strategies and plans that would be the principles for recommendations and advising various bodies that include universities, institutions and colleges, Internal-Quality Assessment Cell's for green policy.
- Spreading the gospel of Green-Growth with Resource Enhancement for Environment and Nature (Green).
- Assessing and sensitizing the challenges of integrating environmental issues with university development.

For the purpose, the present investigation is based on various inventories through a questionnaires formulated for conducting the green audit. The questionnaire incorporates various facets/guidelines prepared by MoEF, New Delhi, Central and State pollution control boards and various research institutions. At some places of questionnaire modifications was

necessitated due to the local scenario. Annexure 1, 2, and 3 enclosed are for Solid Waste, Water and Electricity audit, respectively.

All infrastructures and amenities were scrupulously inspected by the teams and the conditions therein checked with the help of the questionnaire. The net picture is not very inspiring overall, even though in some areas, the results produced appear very encouraging. The usefulness of the present attempt consists not only in assessment of the past but a rigorous estimation of where we are going on the basis of current trends. It is needless to state, any projection far into the future, as in this case, is fraught with uncertainty. S.S. Maniyar Law College being at its infancy, projections into the distance future is beheld with uncertainty. However, “Sustainable Development” has been the catch words for the institution.

2.4 ANNEXURE – 1

Energy Audit

Electricity Use Survey

Name of Department / School:

Any other/Notes: -.....

Sr. No.	Check list ✓	Equipments'	Total No.	In use		Working hours	
				Day Time	Night Time	Day Time	Night Time
1		Tube light					
2		Fan					
3		PC					
4		AC					
5		Power Point					
6		Plug Point					
Total							

2.5 ANNEXURE – 2

Water Audit
 Sample questioner

Following questions were asked during auditing:

1. How many times & how much water you drink?
2. How many times you wash your hands and mouth?
3. How many times you use washrooms?
4. How many taps are there in :-
 - i) Bathroom
 - ii) Toilet
 - iii) Laboratory
5. How much water is supplied daily?
6. What is capacity of the tank?
7. How much water is required in canteen for drinking?
8. How much water is required for washing utensils in canteen?
9. How many basins are there in laboratory?

Observations:-

Name of the department:-

Month and year:-

Water user profile:

- a. Total no. of water users-.....
- b. Number of employee-.....
- c. Number of students-
- d. Number of guests per day-.....
- e. Average working days in a month-.....
- f. Office timing -.....
- g. Area of rooftops/terrace-.....
- h. Area of unpaved surface-
- i. Area of paved surface-
- j. Rainwater harvesting system availability YES/NO
- k. is rain water harvesting system working YES/NO
- l. Daily water supply (litres) -.....

Calculation-

Formula:-

Total daily use:-

rate of discharge X average duration of use = average quantity per use
 average #quantity per use X no. of uses = total use

#No. of uses=number of time used X number of student user

Sr.	Site	Measurement of water uses (Daily)
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No		Total no. Of sources	Rate of discharge(lit/min)	Average duration of use(min)	Average quantity per use(litre)	No. Of uses(no.)	Total daily use(litre)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Bathroom	-	-	-	-	-	-
2	Toilet						
3	Laboratory						
4	Kitchen						
5	Garden						
6	Shower						
7	Drinking						
	Total						

Water storage-

Storage tanks	Capacity(litre)	Number	No. Of time it is topped daily	Average time of water overflowing	Flow rate of water inlet/overflow
Overhead 1					
Overhead 2					
Overhead 3					
Overhead 4					
Overhead 5					
Overhead 6					
Overhead 7					
Total					

Sr. No	Site	Total no. Of leakages	Measurement of water uses		
			Rate of discharge(litre/min)	Daily loss (litres)	Total loss (litres)
1	Bathroom				
2	Toilet				
3	Laboratory				
4	Kitchen				
5	Garden				
6	Shower				
7	Other				

2.5 ANNEXURE – 3

Solid Waste Audit
Questionnaire on Solid waste

School / Department of

School / Departmental Information:

Name of the School / Department:.....

Month:.....

Year:.....

- 1. Total no. Of students:.....
- 2. Total no. Of employees:.....
- 3. Visitor:.....
- 4. Events (Workshops, Conferences, Competitions etc.)
 - a. No. Of visitors and duration of event:
 - i.
 - ii.....

1. Form for maintaining records of solid waste handled (Roughly in kg/month):

Month:.....

Year:.....

- 1. Paper waste:.....
- 2. Plastic waste:
 - a. Hard plastic:.....
 - b. Soft plastic:.....
 - c. Carry bags:.....
 - d. Other:.....
- 3. Biodegradable waste:.....(Kitchen, garden etc.)
- 4. Construction waste:.....
- 5. Grass waster :.....(Bottles, glass-wares etc)
- 6. Other:.....

2. Form for maintaining record of disposal of solid waste

Sr. No.	Specification	Yes	No	NA
1	Are the solid wastes generated at the facility segregated and stored in designated accumulation areas?			
2	Are street sweepings burned and stored on pavement?			
3	Are solid wastes properly stored / containerized for offsite disposal? (trash stored in a covered dumpster)?			
4	Is there evidence of improper disposal in the trash dumpster (batteries, lumps, waste oil, etc.)?			
5	Are solid waste accumulation areas labelled?			
6	Do the accumulation areas have clearly marked boundaries?			
7	Are empty containers (containing less than 1/2 inch of residues) labelled with the word "EMPTY"?			
8	Are empty drums returned to the district stockroom ro vendor			

9	Are empty compressed gas cylinders labelled "EMPTY"?			
10	Does the facility call the distributor to pick up the transport cylinders?			

3. Form for maintaining records of solid waste recovery

Sr. No	Specification(Y/N)	Segregated(Y/M)	Recycled(Y/N)	Reuse(Y/N)	Other (Specify)
1	Paper				
2	Cardboard				
3	Scrap wood				
4	Wood pellets				
5	Scrap metal				
6	Plastic scrap				
7	Glass				
8	Laboratory rags				
9	Fluorescent lamps				
10	Air filters				
11	Waste oil				
12	Waste oil filters				
13	Empty drums				
14	Used tires				

RESULT AND DISCUSSION

Electricity Audit

The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect.

"The judicious and effective use of energy to maximize profits (minimize costs) and enhance competitive positions"

"The strategy of adjusting and optimizing energy, using systems and procedures so as to reduce energy requirements per unit of output while holding constant or reducing total costs of producing the output from these systems"

(Cape Hart, Turner and Kennedy, Guide to Energy Management Fairmont press inc. 1997)

Energy Audit is the key to a systematic approach for decision-making in the area of energy management. It attempts to balance the total energy inputs with its use, and serves to identify all the energy streams in a facility. It quantifies energy usage according to its discrete functions.

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".

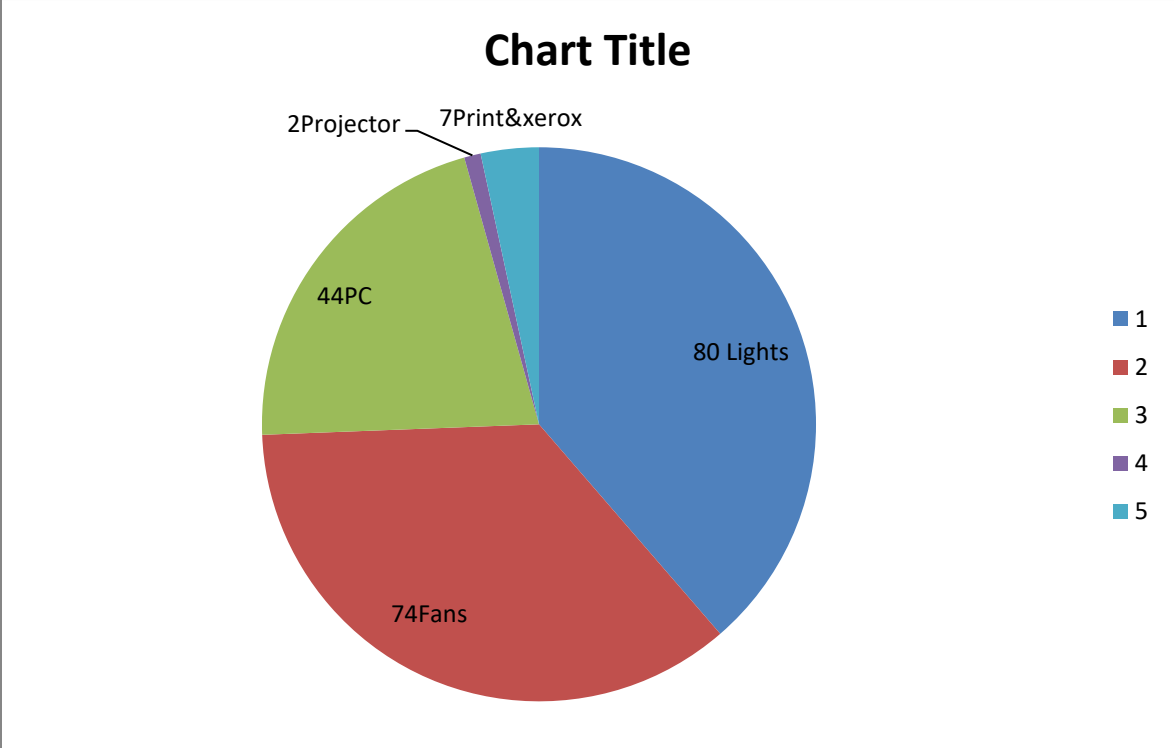
The electricity audit is envisaged to make S.S. Maniyar Law College, campus energy efficient. Campus community uses a huge amount of energy and it is very obvious that we waste quite a sizable chunk of it. Making S.S. Maniyar Law College campus energy efficient will not only help it reduce its expenses but helps us in fulfilling our moral responsibility of saving the precious resource.

The S.S. Maniyar Law College has made a humble beginning in developing a framework for conducting an electricity audit. Various steps in the audit are data collection that includes questionnaire method, data analysis and development of action plan for energy consumption. During the data collection and analysis care was taken to account for

1. The type of electrical appliances or device used in each section.
2. The level of awareness regarding energy conservation among the beneficiaries of institution which include students, teachers, non-teaching employee and administration.
3. Abuse of electricity.

Comparative statement for temporal variation of Electrical Load

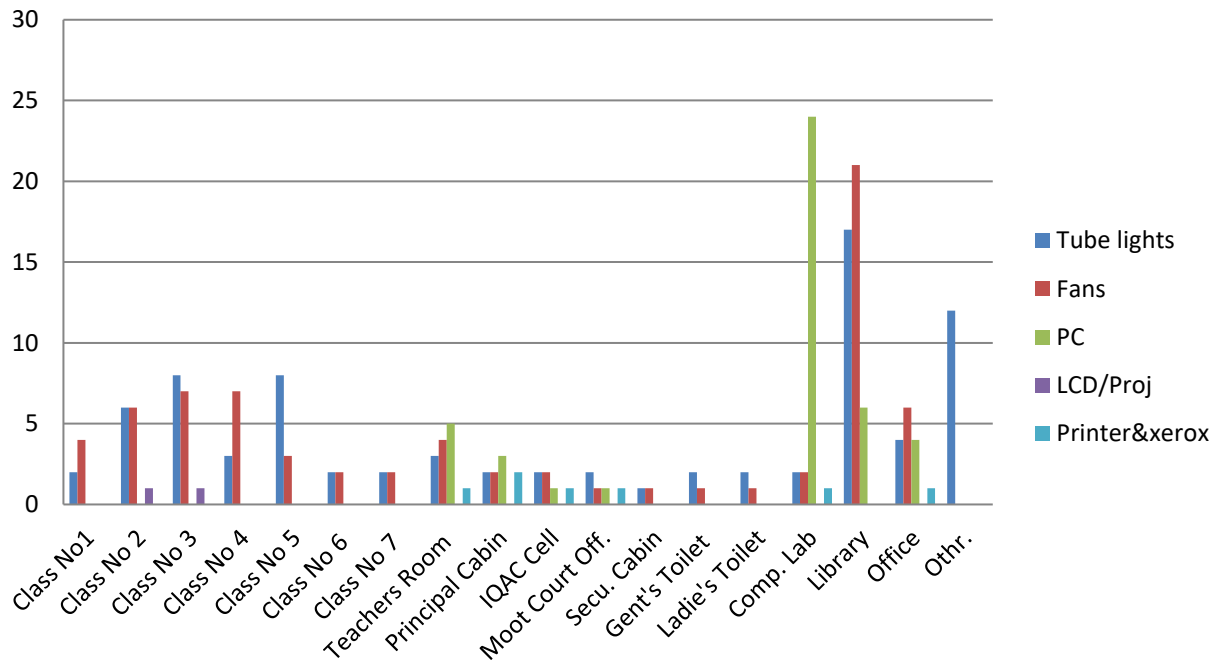
Most of the electrical energy is consumed by computers, fans and Tube lights. The highest energy consumed by Computers.



Energy consumption in various rooms of the S.S. Maniyar Law College campus

Sr. No.	Name of Rooms	Tube Light (1@40W)	Fans (1@100W)	PC (1@250W)	AC/Heater (1@2000W)	LCD/Projector (1@200W)	Printer 1@200W / Xerox 1@650W
	Class Room 1 (RM 10)	2	4	0	0	0	0
	Class Room 2 (RM 15)	6	6	0	0	1	0
	Class Room 3 (RM 16)	8	7	0	0	1	0
	Class Room 4 (RM 116)	3	7	0	0	0	0
	Class Room 5 (RM 115)	8	3	0	0	0	0
	Class Room 6 (RM 218)	2	2	0	0	0	0
	Class Room 7 (RM 219)	2	2	0	0	0	0
	Teacher's Room	3	4	5	0	0	1
	Principal Cabin	2	2	3	0	0	2
	IQAC Cell	2	2	1	0	0	1
	Moot court Society Office	2	1	1	0	0	1
	Security Cabin	1	1	0	0	0	0
	Gent's Toilet	2	1 EX	0	0	0	0
	Ladies Toilet	2	1 EX	0	0	0	0
	Computer Lab	2	2	24	0	0	1
	Library	17	21	6	0	0	0
	Office	4	6	4	0	0	1
	Others	12	0	0	0	0	0
	Total	80	74	44	0	2	7
	Watt	3,200 W	7,400 W	11,000W	000 W	400 W	1400+650= 2050W

Energy Consumption in Various Rooms of the S.S.Maniyar Law college Campus.



CONCLUSION

Most of the electrical energy is consumed by Tube lights and fans only then computer Lab for computers but most of the electrical energy is consumed during Summer time by fans.

Notable point:- This institution does not use single AC or Coolers during in this Hottest region of Maharashtra, it's one of the initiative to save the Energy and protect Environment.

RECOMMENDATION

As most of the electrical energy is used by PC, Fan and tube lights only so we recommend use of CFLs or LED bulbs instead of tube lights which will save most of the energy. Current consumption of 80 tube lights is 3,200 W, if same number of means 80 CFLs used of 20 W which is equal to 40 W of one tube light 50% Energy will be saved, Again recent technology of LED bulbs of 7 W for each LED bulbs which is equal to one 40 W of tube light more than 80% of energy will be saved.

REFERENCES

- Green Audit by Department of Environmental Sciences, School of Earth Sciences, Solapur University Solapur Maharashtra 413255
- Environmental Audit Report by Ministry of Environmental and Forest
- https://en.wikipedia.org/wiki/Environmental_audit
- http://www.soas.ac.uk/cedep-demos/000_P508_EAEMS_K3736-Demo/unit1
- <http://www.epa.vic.gov.au/our-work/environmental-auditing>
- BS EN ISO 14001: "Environmental management systems. Requirements with guidance for use" (2004)
- BS EN ISO 19011: "Guidelines for auditing management systems" (2011)