Green Audit Report
2020-21

Dayanand Education Society's

Dayanand College of Pharmacy, Latur

Barshi Road, Latur - 413531 (Maharashtra)

Green Audit report Submitted by

KEDAR KHAMITKAR & ASSOCIATES

Energy Auditor Empanelled Mahaurja, Govt. of Maharashtra

M: 9850244701 Email. : urjabachat@gmail.com

Green Audit Certificate

This certificate has been awarded to
Dayanand College of Pharmacy
Latur
in recognition of the organizations efforts for sustainable development.

Empaneled Energy Auditor & Planner
Reg no. MEDA/ECN/CR-14/2020-21/EA-17
महाराष्ट्र ऊर्जा विकास अभिकरण
(Govt. of Maharashtra Institution)

Kedar C. Khamitkar Regn. No. EA-8287 Certified Energy Auditor

Kedar Khamitkar
Energy Auditor CEA-8287
Certified by BEE,
Ministry of Power, Govt. of India

Kedar Khamitkar & Associates, Latur
Empanelled with Mahaurja, Govt of Maharashtra Institution

Issued Date : 27/03/2021

Kedar Khamitkar & Associates, Latur
Empanelled with Mahaurja, Govt of Maharashtra Institution

ऊर्जा संवर्धन धन... इंधन.... पर्यावरण...

Note : Certificate is based on organisation compliance on green audit recommendations and continual maintenance of the system & conduction of surveillance audit

Index

ACKNOWLEDGEMENT

We express our sincere gratitude to the management of Dayanand College of Pharmacy, Latur for awarding us the assignment of Green Audit of their Latur Campus.

We are thankful to: **Honorable Principal Dr. K.L. Satpute Madam for giving opportunity to conduct audit.**

we are also thankful to various Head of Departments & other Staff members for helping us during the field measurements.

Kedar Khamitkar
Energy Auditor
(Certified by Bureau of Energy Efficiency, Ministry of Power, Gov. of India)
Empanelled Consultant MAHAURJA (Govt. of Maharashtra Institution)
Date : 27.03.21 Place : Latur

Green Audit Team:

SN	Name of Auditor	Area of Expertise	Qualification	Designation
1	**Kedar Khamitkar**	Energy Audit	B.E. (Mechanical)	Energy Auditor
2	**Kishore Khamitkar**	Green Audit	B.E. (Chemical)	Sr. Engineer

EXECUTIVE SUMMARY: The following data collected for the following areas during the assessment.

1. Environment & Waste Management
2. Energy Management
3. Water Management

Objective	Observation	Remarks / Recommendation
Green Cover - Plantation of Trees	Plantation of trees is started in the campus and the green cover is extended every year in the campus. At Present **22%** area campus is having the Green cover.	It is recommended to increase the Green Cover Further.
Use of Renewable Energy	Institute has been installed Solar power generation & Solar water heater in the campus.	Good initiative for sustainable development.
Water Conservation	Recommended to Install Sign Boards. Awareness for Water Conservation.	It is recommended to install taps with Reduced water flow.

Rain Water harvesting	Institute has been installed rainwater harvesting system.	Institute has been taken good initiative for Water Conservation.
Avoid Misuse/ wastage of water	Encourage to reduce the water usage. Institute is taking care to reduce water wastage.	Recommended Water Sprinkler system to save water.
Non Bio Waste	Non Bio Waste – Plastic Bottles / Paper Waste Metals waste is being collected in the dust bins placed in the college building.	Single use Plastic can be banned in the campus.
E Waste	E Waste – All Electronic Junk is generated in the campus in the form of Used Computer key boards/ Mouse/ CPU's/ Damaged Printers etc.	Very least quantity of E waste generated in the campus, it can be recycled.
Purification of Sewage water and reuse	College has been installed sewage treatment plant (STP)	**This is very Good Initiative for Sustainability.**
Transportation	Most of the Students & Staff commute in the college City - Buses.	Found Very Good Awareness

Chapter No.1 Scope of work and Green Audit Methodology

Dayanand College of Pharmacy, Latur entrusted the work of conducting a detailed Green Audit of campus with the main objectives are as bellows:

Objectives of Green Audit:

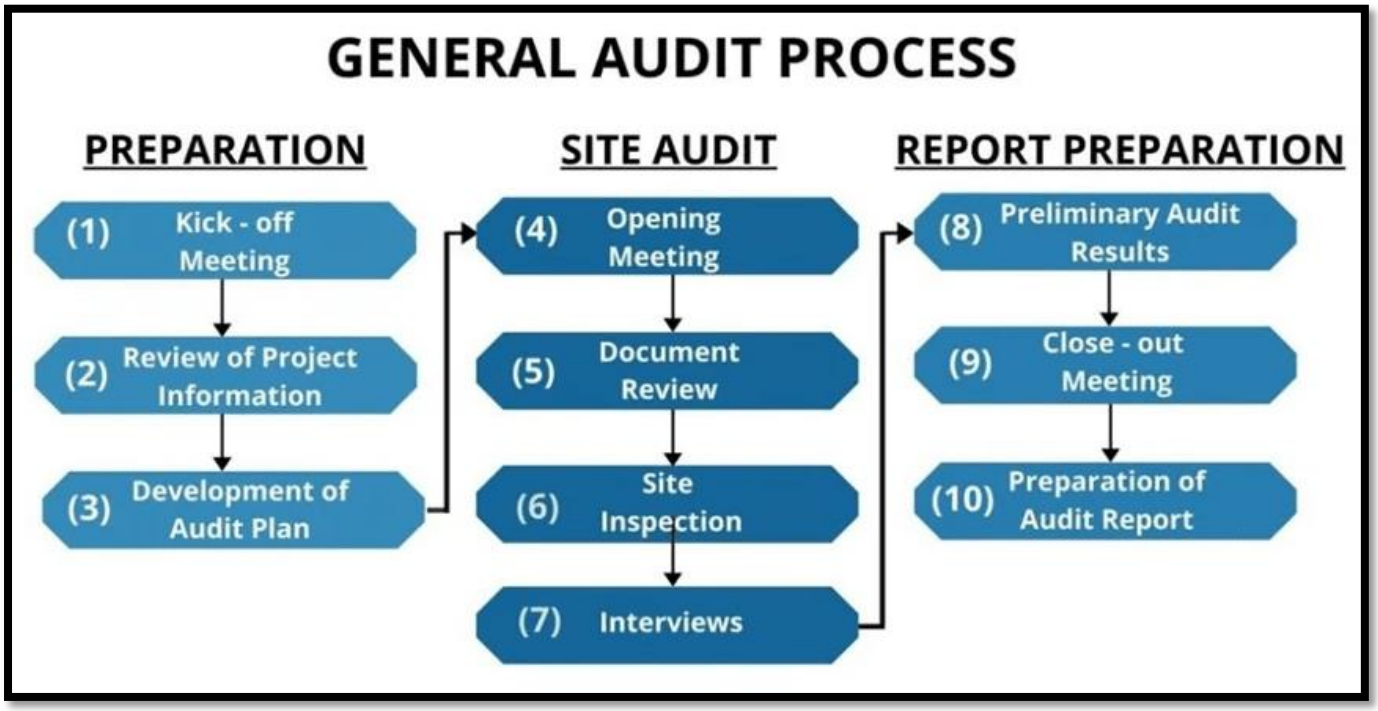
1. To examine the current practices, which can impact on environment such as of resource utilization, waste management etc.
2. To identify and analyze significant environmental issues.
3. Setup goal, vision, and mission for Green practices in campus.
4. Establish and implement Environment Management in various departments.
5. Continuous assessment for betterment in performance in green

Need of Green Audit:

Green auditing is the process of identifying and determining whether institutions practices are eco-friendly and sustainable. Green audit regulates all such practices and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion it is necessary to verify the processes and convert it in to green and clean one. Green audit provides an approach for it. It also increases overall consciousness among the people working in institution towards an environment.

Methodology of Green Audit:

Green Audit of Dayanand College of Pharmacy, Latur Campus has been conducted a with specific methodology as follows:



Goals of Green Audit:

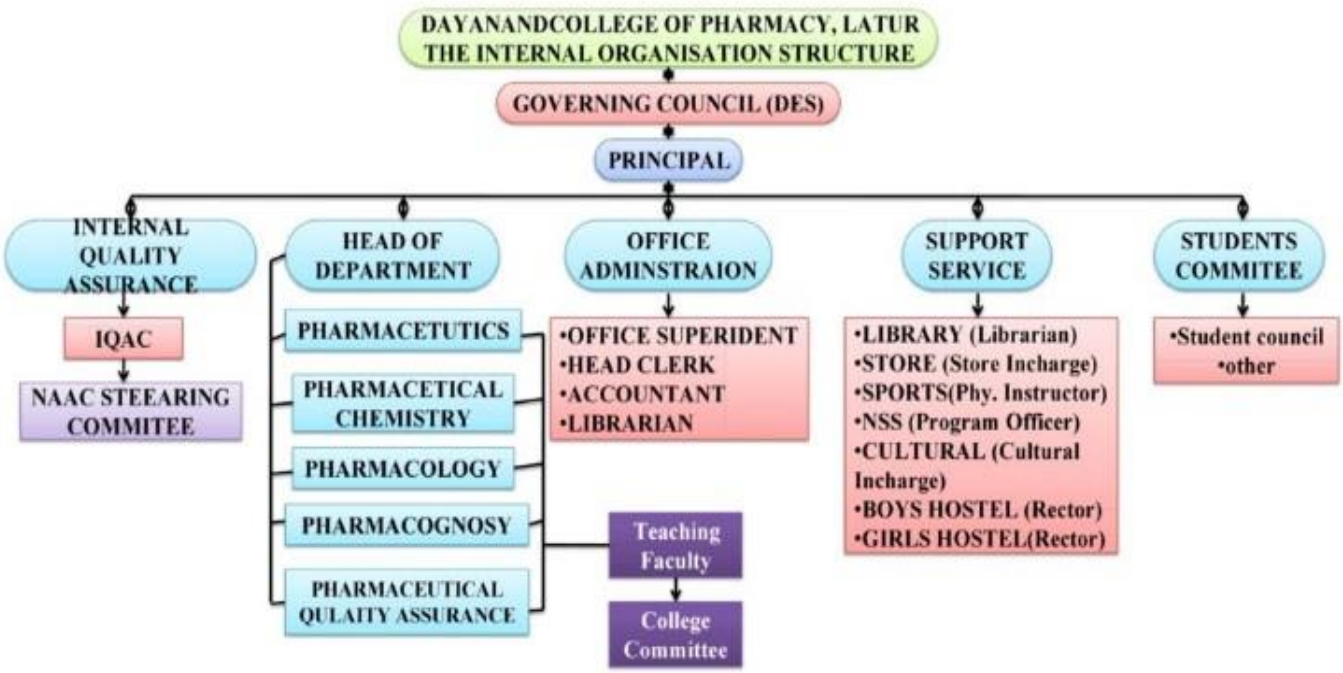
Conducted a green audit of Dayanand College of Pharmacy, Latur Campus with specific goals as:

1. Identification and documentation of green practices practiced by the Institute.
2. Identify strength and weakness in green practices.
3. Analyze and suggest solution for problems identified.
4. Assess facility of different types of waste management.
5. Increase environmental awareness throughout campus.
6. Identify and assess environmental risk.
7. Motivate staff for optimized sustainable use of available resources.
8. The long-term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental Issue before it become problem.

Chapter No.2 **Introduction about the Institute**

Dayanand education society's Dayanand college of Pharmacy was established in the year 2009.

Location: The college is situated at a place which is in the heart of Latur, in a beautiful and spacious campus of 22.5 acres about 100 meters away from Shivaji Chowk and 1.5 km from Bus stand and 5.0 km from Railway station.



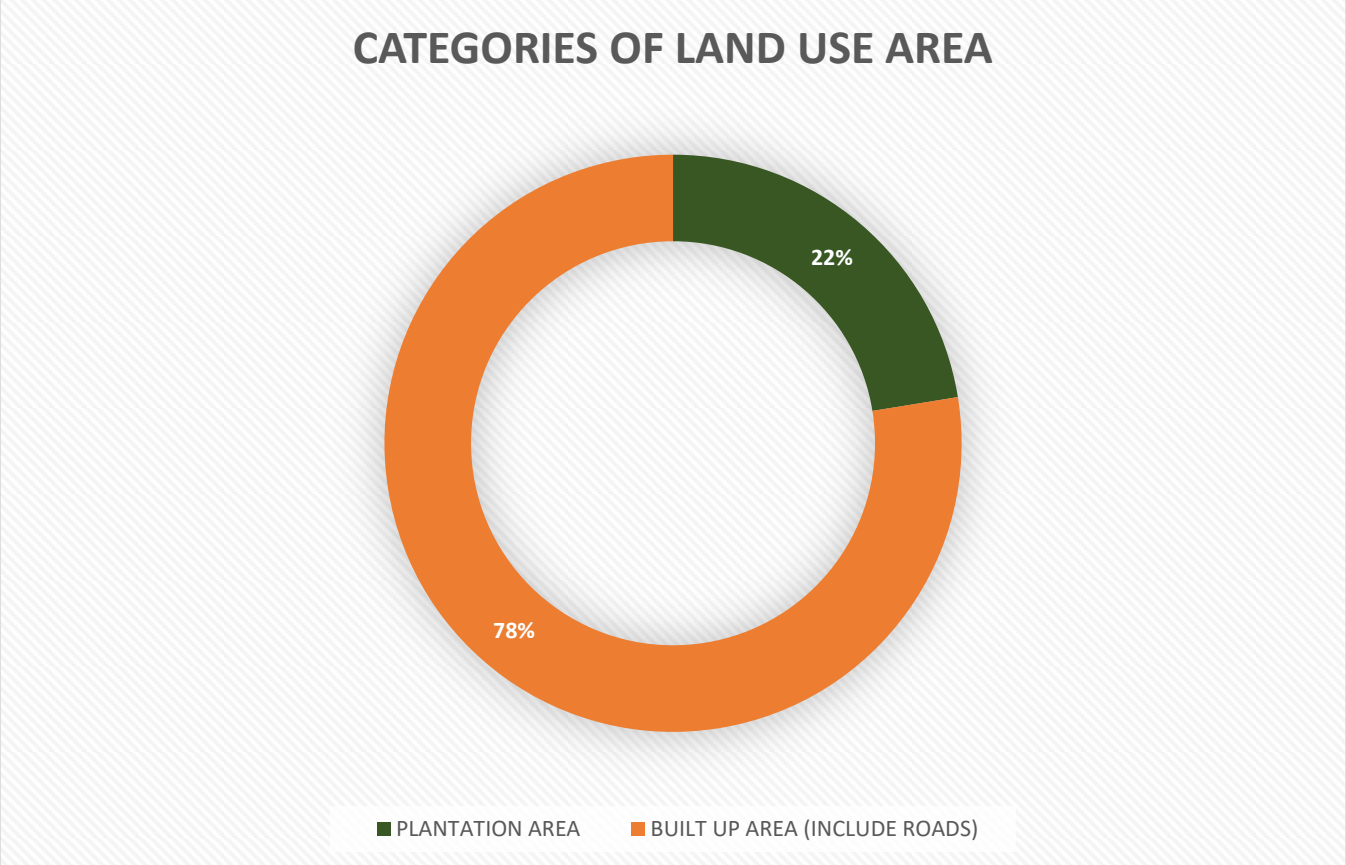
Sr.	Head	Particulars
1.	Name	Dayanand College of Pharmacy
2.	Address	Barshi Road, Latur (M.S.)
3.	Courses Offered	Diploma, Degree, PG in Pharmacy

Chapter No.3 Categories of land use

Plantation of trees is continuously in progress at the campus and the green cover is extended every year. At Present **22%** area of campus is having the Green cover.

Audit Framework and detailed findings of the Audit:

CATEGORIES OF LAND USE AREA	Sq. Feet
PLANTATION AREA	750
BUILT UP AREA (INCLUDE ROADS)	2592



Observations : Found 22% Plantation area in the Campus.

Chapter No. 4 **Green Cover - Plantation of Trees**

Plantation of Trees: The college management is practicing the tree plantation across the campus to enhance greenery. Tree plantation is carried out every year with an aim to increase the Green cover within the campus. The Following are the objectives kept in mind for increasing the Green Area coverage inside the campus and building.

Tree Plantation at Dayanand Pharmacy Campus

Tree Plantation at Dayanand Pharmacy Campus

List of Trees at Dayanand Pharmacy Campus (2020-21)

SN	Common name of plant	Botanical name	Quantity
1	Limbu	Citrus aurantifolia	2
2	Tamarind	Tamarindus indica	1
3	Mango	Mangifera indica	1
4	Bamboo	Bambusoideae	1
5	Sururu	Casuarina equiseti folia	1
6	Nandurki	Toona ciliate	2
7	Nivdung	Cacti species	1
8	Takli	Silene conoidea L	2
9	Aapta	Bauhinia racemosa	2
10	Jaswand	Hibiscus rosasinensis	1
11	Ruchik	Calotropis gigantean	2
12	Adulsa	Justicia adhatoda	1
13	Chafa	Plumeria	2
14	Kektad	Agave Americana	2
15	Necha	Acorus calamus	3
16	Bogan Vel	Bouglanvillea glabra	1
17	Limbu	Citrus aurantifolia	1
18	Buch	Millingtonia hortensis	2
19	Subabhul	Leucaena leucoCephala	4
20	Gulmohar	Delonix regia	26
21	Peepal	Ficus religiosa	1
22	Ashok	Saraca asoca	2
23	Umbar	Ficus racernosa	1
24	Mahogani	Swietenia mahagoni	2
25	-Subäbhul Karanji	Leucaena leucocephala	2
26	Karanji	Millettia pinnata	1
27	Badam	Terminalia kattppa	3

Sr. No.	Common name of Plant	Botanical name	Quantity
1	Jambhul	Syzygium cumini	2
2	Mahogani	Swietenia mahagoni	2
3	Limboni	Limoni acidsSima L	1
4	Jaswand	Hibiscus rosasinensis	5
5	Peepal	Ficus religiosa	1
6	Parijatak	Nyctanthes arbor-tristis	3
7	ChristmasTree	Araucaria columoaris	2
8	Ramfal	Annona reticulata	1
9	SwastiK	Tabernae montana	2
10	Adulsa	Justicia adhatoda	1
11	Sagwan	Tectona grandis	16
12	Shevga	Moringa oleifera	4
13	Dalimb	Punica granatum	2
14	Peru	Psidium guajava	2

Sr. No.	Common name of plant	Botanical name	Quantity
1	Kadam	Neolamarckia cadamba	2
2	Gulmohar	Delonix regia	2
3	Sitafal	Annona squamosa	1
4	Jaswand	Hibiscus rosasinensis	1
5	Adulsa	Justicia adhathoda	1
6	Jambhul	Syzygium cumini	1
7	Limbu	CitruS aurantitolia	1
8	Karanji	Millettia pinnata	1
9	Ghaneri	Lamtana Camplra Linn	1
10	Mahagoni	Swietenia mahagoni	2
11	Shevaga	Moringa olifera	2
12	Kadulimb	Azadirachta indica	4
13	Bor	Ziziphus mauritiana	1
14	Sonmohar	Peltophorum pterocarpum	1
15	Arjun	Terminalia arjuna	1
16	Awala	Phyllanthus emblica	1
17	Others		17

Green landscaping in college campus

Chapter No. 5: **Use of Clean & Green Energy**

Dayanand College of Pharmacy, Latur has been installed Solar Power Plant of capacity 18 KW capacity

Observations : As per data supplied by Institute

Electricity Generated **27938** Units/Year

Electricity Exported **18299** Units/Year

Chapter No. 6 : Carbon Footprinting

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities. The College Imports Electrical Energy during Night for various Electrical gadgets.

Basis for computation of CO2 Emissions:
The basis of Calculation for CO2 emissions due to Electrical Energy are as under, 1 Unit (kWh) of Electrical Energy releases **0.8 Kg of CO2** into atmosphere .
Based on the above data we have computed the CO2 emissions which is being released in to the atmosphere by the college during daily operations.

Month wise Electricity Import details:

SN	Month	IMPORT KWH	EXPORT KWH	GENERATION KWH
1	April 20	NA	NA	NA
2	May 20	NA	NA	NA
3	June 20	1850	7293	6000
4	July 20	727	1875	1330
5	August 20	450	1407	1704
6	September 20	444	610	6524
7	October 20	577	1014	1676
8	November 20	706	1755	2480
9	December 20	705	627	746
10	January 21	915	1522	3203
11	February 21	524	920	1641
12	March 21	949	1276	2634
		7847	**18299**	**27938**

Observations: The College Imports Electrical Energy during Night for various Electrical gadgets. Annual Import = 7847 KWH/year
Calculated 6.15 Kg/Year
Electricity: **Input value (in KWh/Yr) X 0.85 (Emission Factor)**
= Output value in (Kg of CO_2)
= 6533.95 Kg of CO_2

Suggestions:

Reduce the Electricity Import during Night, install Solar Streetlights.
Install Occupancy Sensors to minimize losses in Lighting System

Chapter No. 7: Study of Waste Management

The internal communication within the staff members at the college is through Internet. There are hardly any Drives, CDs used for day to day operations. Hence as far as the e-waste is concerned hardly any waste is generated during the day to day operations. It is recommended to the College authorities to establish tie up with e-Waste management agency to dispose or sell the old equipments.

Sr.	Waste	Quantity Generated/ Month
1	Plastic/ glass Waste	Avg. 2-3 Kg
2	Chemical Waste	2-3 Ltr
3	Plant leaves and Wooden Waste	Avg. 6-7 Kg
4	Metal Waste	Avg. 10 Kg
5	Food waste	Food Waste 10 Kg
6	E- waste	5-7 kg /year

Separation of waste

Observations:

Daily garbage is collected and segregated into degradable and non-degradable waste.

Suggestions:

Institute can make an agreement is in place with local Company to pick up the E waste every two months.

Waste water treatment Plant at campus

Chemical waste management:

Faculty members and lab technicians guide all the students for handling chemicals properly. Fuming chamber is available at the laboratories for handling hazardous chemicals. The water soluble chemicals are solubilized in water and disposed through the sewage system. Various laboratories generate organic and inorganic waste. Inorganic waste is disposed off with water, while organic waste is burned out.

Organic Compost prepared in College Campus

Observations : Institute has proper management for the various types of degradable and non-degradable waste.

RAIN WATER HARVESTING:

Rain water harvesting and its utilization in the campus and college building:
1. Rain water harvesting is very important step for proper utilization of water. For the effective and better use of water, rain water is recycled, reused and conserved in the college campus. This helps to enrich the ground water level.
2. Rain water harvesting improves ground water level effectively. To enhance ground water recourses water harvesting pits are created at the campus.
3. Rain water from the terrace of various colleges, administrative buildings, Hostels is collectively sent to the pits for harvesting.
4. For enhancing and maintaining ground water level this step has been initiated by Dayanand education society and college.
5. Water is distributed separately by constructing water tanks at various places for smooth distribution of water and for avoiding wastage of water.
6. Water used in the mess for cleaning vegetables and grain is being used for watering trees nearby hostel.
7. Pipelines, taps at the college campus is repaired periodically to avoid wastage of water.
8. Waste water from distillation assembly is reused for washing glassware's during the practical's and experiments.
9. Students and employees at the college campus are encouraged to save water.
10. 11473 Sq. Ft. top roof area of Dayanand College of Pharmacy is collected through 110 mm diameter pipe and is attached with the casing of bore well.

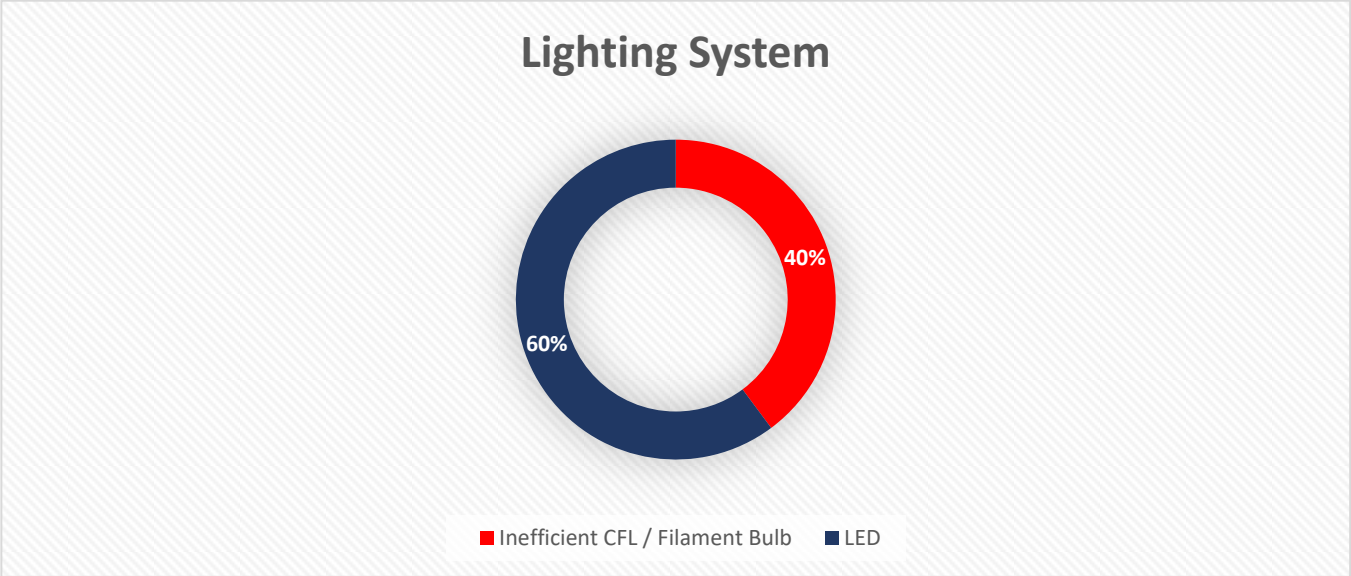
Chapter No. 8: Green Initiatives: Energy Conservation

Institute has been installed Efficient Lighting system.

Annual Lighting power requirement met through LED Bulbs

(Current Year Data 2020-21)

Type	Wattage
Inefficient CFL / Filament Bulb	2250
LED	3400



Observations:

Annual lighting power requirement met through LED Bulbs is **60** %

Lighting System	Total Watts
LED Fittings	**3400**

Suggestions:

Use of energy efficient light-emitting diode (LED) bulbs instead of Incandescent and CFL bulbs.

Chapter No. 9 : Requirements for the NAAC

Best Practices & Activities

1. Percentage of Annual Power requirements met through renewable energy Sources Current year data is**75**%
2. Annual Lighting power requirement met through LED Bulbs is **60** %

MEDIA REPORT: 1. Planatation

Campaigns: Nature camps, tree plantation drive, field trips like activities are organized at college for environmental protection. students and faculties participate in these events with great enthusiasm.

MEDIA REPORT : 2. STP Plant