Green Audit Report
2021-22

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

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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
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Energy Auditor CEA-8287
Certified by BEE,
Ministry of Power, Govt. of India
ISO 9001:2015
ISO 9001-2015 Certified
Kedar Khamitkar & Associates, Latur
Empanelled with Mahaurja, Govt of Maharashtra Institution
Issued Date : 28/03/2022
Kedar Khamitkar & Associates, Latur
Empanelled with Mahaurja, Govt of Maharashtra Institution
ऊर्जा संवर्धन
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 us an 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)

EXECUTIVE SUMMARY:

Objective	Observation	Remarks / Recommendation
Green Cover - Plantation of Trees	Plantation of trees is increasing in the campus and the green cover at the campus is extended every. At Present 31% area of campus is having the Green cover.	It is recommended to increase the Green Cover in future.
Use of Renewable Energy	Institute has been installed 18KW Solar Power Plant.	Institute has taken good initiative for sustainability.
Water Conservation	Recommended to Install Sign Boards and necessary measures to increase the awareness for Water Conservation.	It is recommended to install taps with reduced water flow or sensor system.
Rain Water harvesting	Rainwater Harvesting has been installed at the college building and campus.	Institute has been taken good initiative for water conservation

Avoid Misuse/ wastage of water	RO water providing safe drinking water, this may generate waste water.	Waste water is being used for gardening, for cleaning at college building.
	To promote to reduce the water usage	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 across the campus.	It is proposed to install plastic bottle crusher, which can be sold as a Feed stock for the Plastic industry.
Waste	E Waste – Very less electronic Junk is generated in the campus in the form of used Computer, key boards/ Mouse/ CPU's/ Damaged Printers etc.	It is recommended to college to create an agreement with local company to pick up the E waste.
Transportation/ Carbon Foot Print	Most of the staff and students commute in the Mahanagar Palika Buses.	Staff and students have the awareness to save fuel and energy.
	For energy conservation petrol/ diesel vehicles can be replaced with e-vehicles.	Students & Staff can switch to E Vehicles.

Chapter No.1 Scope of Work & 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:

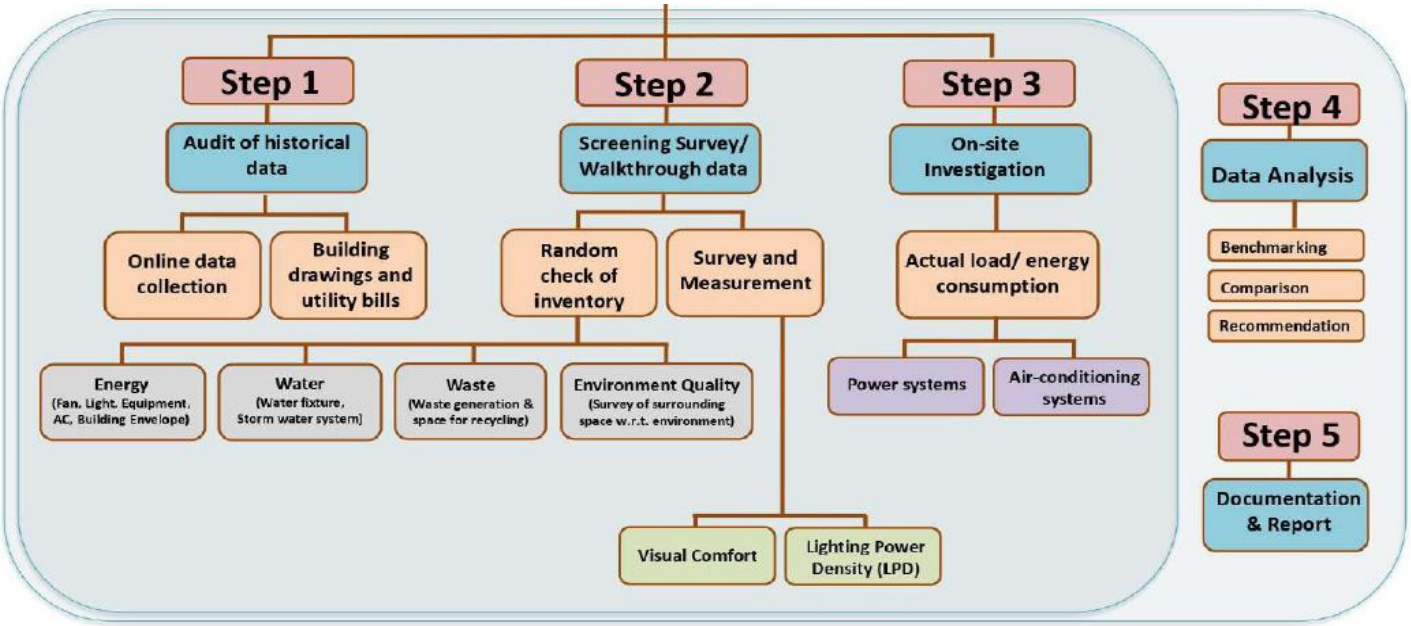
1. To examine the current practices, which can influence on environment such as resource utilization, waste management etc.
2. To identify and analyze significant environmental issues.
3. To Setup goal, vision, and mission for Green practices at the campus.
4. To establish and implement Environment Management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

Need of Green Audit:

Green auditing is the process of identify and determine, whether institution 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. Green audit provides an approach for it. It increases environmental consciousness among the people working and studying in the institution .

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 carried out by the Institute.
2. Identify strength and weakness in the green practices.
3. Analyze and suggest solution for problems identified.
4. Assess facility of different types of waste management.
5. Increase environmental awareness among students and staff.
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 to resolve environmental issues before it become problem.

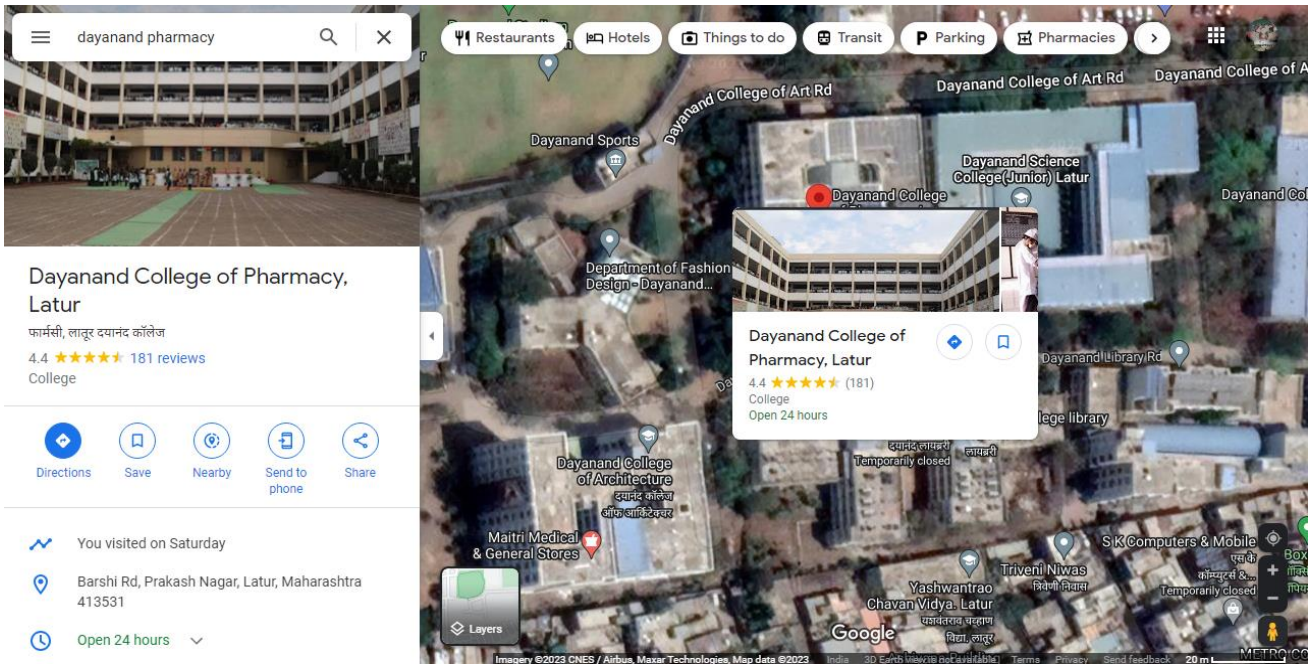
Chapter No.2 **Introduction about the Institute**

Dayanand education society's Dayanand college of Pharmacy was established in the year 2009 in the heart of the city. Dayanand education societies President Shri. Laximramn Lahoti and secretary Shri. Rameshji Biyani have taken huge efforts to impart the Quality Education. Dayanand College of Pharmacy is affiliated to SRTMU, Nanded , approved by AICTE, PCI and is situated in pollution free sprawling campus spread over 22.5 acres, with the latest equipment, spacious air-conditioned smart lecture halls, computer lab and seminar hall along with good library facilities. DCOP is successfully providing and maintaining high quality of teaching-learning in the Pharmaceutical Sciences. The college has committed to become a center for excellence in pharmaceutical education and research and future leader in pharmaceutical sciences with an objective to serve the quality education.

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

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

AERIAL VIEW OF COLLEGE CAMPUS (SOURCE GOOGLE EARTH)



Address: Barshi Road, Latur (Maharashtra) 413531

Environment & Energy usage Policy:

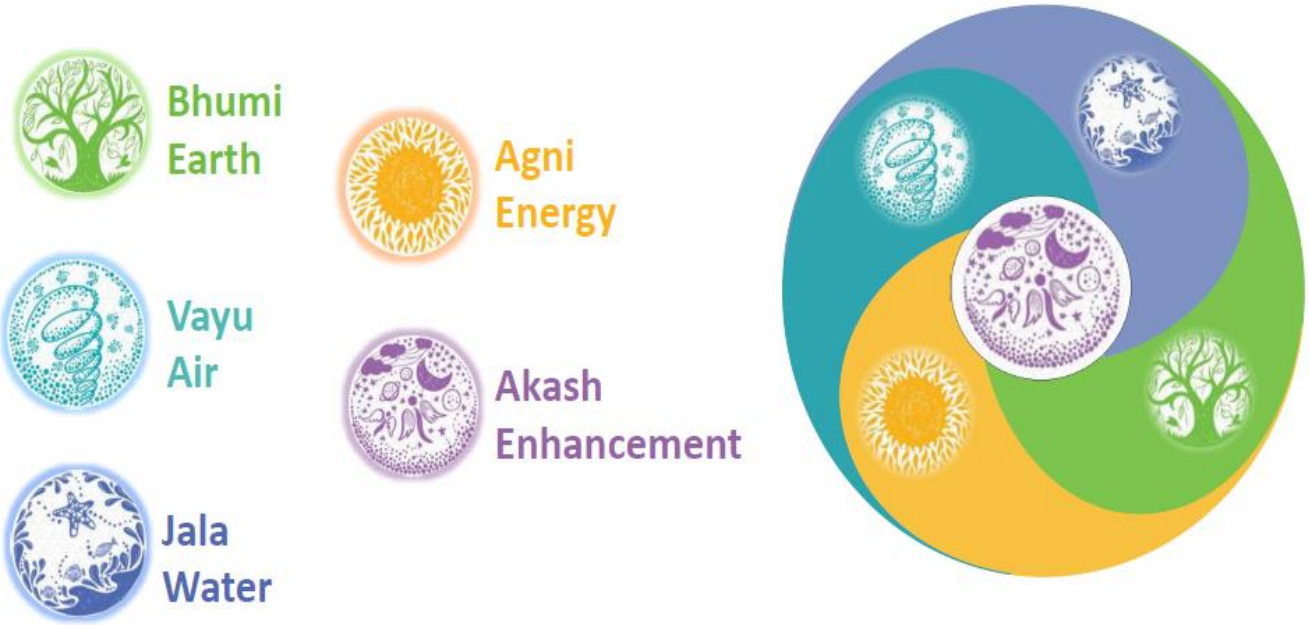
Institute has been declared Environment Policy

Policy Document on Environment & Energy usage

1. To install LED bulbs in the complete campus to save energy.
2. To undertake tree plantation drive.
3. To maximize the use of renewable energy.
4. To encourage a culture of energy conservation in the campus.
5. To encourage use of Advanced technologies to minimize energy consumption.
6. To provide information, training opportunities and innovative programs to encourage energy conservation.
7. To develop systematic waste management method.
8. To get connect with the government agencies, municipal corporation, local organizations , the affiliating university and actively work with them in the areas of environment, energy efficiency and sustainable development.
9. To observe and respond to rising environmental and energy issues. To strengthen our employees' and students' environmental knowledge and skills to improve our own environmental performance.
10. To take additional measures to continuously improve our energy consumption.

Majhi Vasundhara Abhiyan: Green Landscaping with Trees and Plants – the campus is beautifully landscaped. Dayanand College of Pharmacy has been received appreciation Certificates from Government of Maharashtra. College has take e-pledge that,

1. We will formulate and implement our institute's, "Don't print every email/ document policy and print all documents double sided if only required".
2. We will install solar panels on our building rooftop as an alternative source of energy.

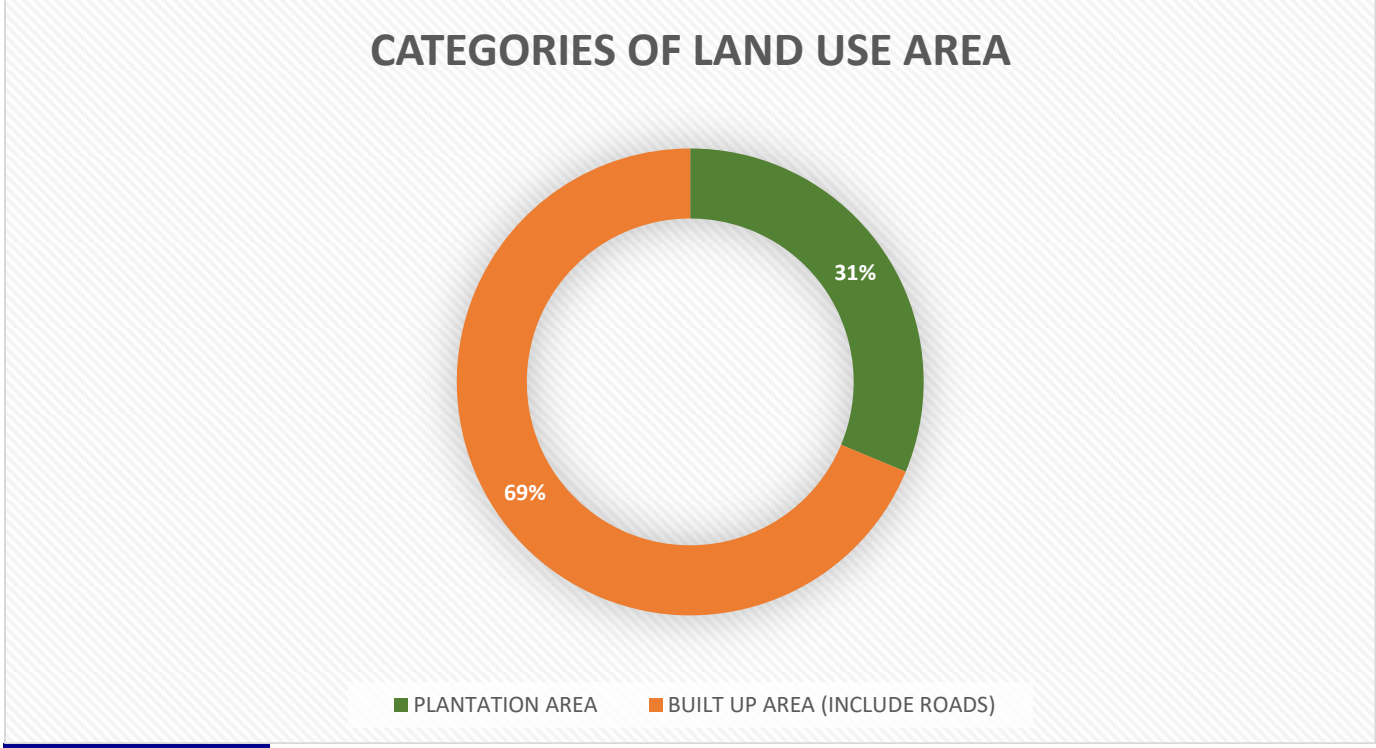


Chapter No.3 Categories of Land use

Plantation of trees is started in the campus and the green cover is extended every year in the campus. At Present **31%** area campus is having the Green cover.

Audit Framework and detailed findings of the Audit:

CATEGORIES OF LAND USE AREA	Sq. Feet
PLANTATION AREA	1180
BUILT UP AREA (INCLUDE ROADS)	2592
TOTAL AREA	**3775**



Observations : Plantation area 31%

Chapter No. 4 Green Cover - Plantation of Trees

Sr. No.	Common name of plant	Botanical name	Quantity
1	Palm (large)	Roystonea regia	3
2	Palm (small)	Roystonea regia	22
3	Supari	Aareca catechu	1
4	Ashok	Saruca asoca	7
5	Mahogani	Swietenia maha goni	2
6	Sagwan	Tectona grandis	2
7	Peepal	Ficus religi osa	1
8	Gulmohar	Delonix regia	2
9	Badam	Terminalia kattppa	3
10	Subabhul	Leucaena leucocephala	2
11	Limbu	Citrus aurantifolia	2
12	Tamarind	Tamarindus indica	1
13	Mango	Mangifera indica	1
14	Bamboo	Bambusoideae	1
15	Sururu	Casuarina equiseti folia	1
16	Nandurki	Toona ciliate	2
17	Nivdung	Cacti species	1
18	Takli	Silene conoidea L	2
19	Aapta	Bauhinia racemosa	2
20	Jaswand	Hibiscus rosasinensis	1
21	Ruchik	Calotropis gigantean	2
22	Adulsa	Justicia adhatoda	1
23	Chafa	Plumeria	2
24	Kektad	Agave Americana	2
25	Necha	Acorus calamus	3
26	Bogan Vel	Bouglanvillea glabra	1
27	Limbu	Citrus aurantifolia	1
28	Buch	Millingtonia hortensis	2
29	Subabhul	Leucaena leucoCephala	4
30	Gulmohar	Delonix regia	26
31	Peepal	Ficus religiosa	1
32	Ashok	Saraca asoca	2
33	Umbar	Ficus racernosa	1
34	Mahogani	Swietenia mahagoni	2
35	-Subäbhul Karanji	Leucaena leucocephala	2
36	Karanji	Millettia pinnata	1
37	Badam	Terminalia kattppa	3
38	Chafa	Plumeria	7
39	Swastik	Tabernaemcntana divaricata	1

Girls Hostel Area

Sr. No.	Common name of Plant	Botanical name	Quantity
1	Bakuli	Minusops elengi	4
2	Shirish Gulabi	Albizia Lebbeck	10
3	Chafa	Plumeria	3
4	Limbu	Citrus aurantiifolia	2
5	Kadam	Neolamarckia cadamba	5
6	Sitafal	Annona squamosa	3
7	Limbu	Citrus aurantiifolia	2
8	Wad	Ficus benghalensis	1
9	Palm	Roystonea regia	14
10	Mango	Mangifera indica	10
11	Jambhul	Syzygium cumini	2
12	Mahogani	Swietenia mahagoni	2
13	Limboni	Limoni acidsSima L	1
14	Jaswand	Hibiscus rosasinensis	5
15	Peepal	Ficus religiosa	1
16	Parijatak	Nyctanthes arbor-tristis	3
17	ChristmasTree	Araucaria columoaris	2
18	Ramfal	Annona reticulata	1
19	SwastiK	Tabernae montana	2
20	Adulsa	Justicia adhatoda	1
21	Sagwan	Tectona grandis	16
22	Shevga	Moringa oleifera	4
23	Dalimb	Punica granatum	2
24	Peru	Psidium guajava	2
Canteen (behind meeting hall):			
Sr. No.	**Common name of plant**	**Botanical name**	**Quantity**
1	Badam	Millettia pianata	8
2	Subabhul	Leucaena leucocephala	2
3	Umbar	Ficus racemosa	2
4	Peepal	Ficus religiosa	2
5	Kadam	Neolamarckia cadamba	3
6	Limbil	Citrus aurantiifolia	1

Sr. No.	Common name of plant	Botanical name	Quantity
1	Ashoka	Sarucu asoca	1
2	Badam	Terminalia catapa	6
3	Subabul	Leucaena leucocephala	1
4	Mango	Mangifera indica	4
5	Palm	Roystonea regia	2
6	Peepal	Ficus relogiosa	2
7	Buch	Milingtonia horténsis	1
8	Chafa	Plumeria	2
9	fan palm	Livistona chipennensis	2
10	Bakuli	Minussops elngi	6
11	Kadam	Neolamarckia cadamba	2
12	Gulmohar	Delonix regia	2
13	Sitafal	Annona squamosa	1
14	Jaswand	Hibiscus rosasinensis	1
15	Adulsa	Justicia adhathoda	1
16	Jambhul	Syzygium cumini	1
17	Limbu	CitruS aurantitolia	1
18	Karanji	Millettia pinnata	1
19	Ghaneri	Lamtana Camplra Linn	1
20	Mahagoni	Swietenia mahagoni	2
21	Shevaga	Moringa olifera	2
22	Kadulimb	Azadirachta indica	4
23	Bor	Ziziphus mauritiana	1
24	Sonmohar	Peltophorum pterocarpum	1
25	Arjun	Terminalia arjuna	1
26	Awala	Phyllanthus emblica	1
27	Others		17

Boys' hostel:			
Sr. No.	**Common name ofplant**	**Botanical name**	**Quantity**
1	Ashoka	Saruca asoca	6
2	Badam	Terminalia catapa	3
3	Bakuli	Minusops elengi	5
4	Kadulimb	Azadirachta indica	1
5	Mango	Mangifera indica	2
6	Apta	Bauhinia racemosa	1

Indoor stadium area:			
Sr. No.	**Common name of plant**	**Botanical name**	**Quantity**
1	Naral	Coco nucifera	5
2	Bakuli	Minusops elengi	15
3	Ashoka	Saruca asoca	1
4	Rubber	Hevea brasiliensis	1
5	Jambhul	Syzygium cumini	2
6	Ruchik	Calotropis gigantean	1
7	Shisham	Dalbergia $issoo	1
8	Saptparni	Alstonia schoaris	1

Boys' hostel (back area):			
Sr. No.	**Common name ofplant**	**Botanical name**	**Quantity**
1	Palm	Roystonea regia	20
2	Subabhul	Leucaena leucocephala	2
3	Bamboo	Bambusoidea	2
4	Arjun	Terminalia arjuna	5
5	Mango	Mangifera indica	3
6	Chafa	Plumeria	1
7	Papaya	Carica Papaya	1
8	Peepal	Ficus relogiosa	2
Well Area			
Sr. No.	**Common name of plant**	**Botanical name**	**Quantity**
1	Umbar	Ficus racernosa	1
2	Bakuli	Minusops elengi	9
3	Nandurki	Toona ciliate	1
Cricket ground:			
Sr. No.	**Common name of plant**	**Botanical name**	**Quantity**
1	Bakuli	Minusops eléngi	7
2	Kadulimb	Azadirachta indica	3
3	Mahogani	Swietenia mahagöni	1
4	Shami	Prosopis cineraria	1
5	Vada	Ficus benghalensis	6
6	Peepal	Ficus relogiosa	6
7	Subabhul	Leucaena leucocéphala	10
8	Mango	Mangifera indica	1
9	Others		12

Carbon Sequestration					
Sr. No.	**Common name of plant**	**Botanical name**	**Qty.**	**Kg CO2 sequestration/year**	**Total Kg CO2 sequestration**
1	Ashoka	Saruca asoca (E.)	7	1675.36	11727.5
2	Badam	Terminalia catapa	6	419.22	2515.32
3	Subabhul	Leucaena leücocephala	2	3976	7952
4	Mango	Mangifera indica	4	2012.3	8049.2
5	palm	Roystonea regia	2	925	1850
6	Peepal	Ficus relogiosa	2	1630	3260
7	Buch	Millihgtonia hortensis	2	142	284
8	Chafa	Plumeria	7	50	350
9	Fah palm	Livistona chinensis	2	14	28
10	Bakuli	Minussops elngi	6	3	18
11	Kadam	Neolamackia cadamba	2	50	100
12	Gulmohar	Delonix regia	4	5705.37	22821.5
13	Sitafal	Annona squatnosa	1	16	16
14	Jaswand	Hibiscus rosasinensis	6	3	18
15	Adulsa	Justicia adhalhoda	3	25	75
16	Jambhul	citrus aurantifolia	6	299	1794
17	Limbu	Citriisourahtifolia	1	835.87	835.87
18	Karanji	Millettia pinnata	1	217.2	217.2
19	Ghaneri	Lantana camara linn	1	3	3
20	Mahagoni	Swietenia mahagoni	2	803.8	1607.6
21	Shevaga	Moringa olifera	2	37	74
22	Kadulimb	Azadirachta indica	4	517.51	2070.04
23	Bor	Ziziphus mauritiana	1	280	280
24	Sonmohar	Peltophorum terocarpm	1	145	145
26	Arjun	Terminalia ariuana	1	10	10
28	Awala	Phyllanthus emblica	1	671.38	671.38

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

Dayanand College of Pharmacy, Latur has been installed 18KW Capacity Solar power plant.

Percentage of Annual Power requirements met through renewable energy Sources Current year data is**75**%

Observations :

Electricity Generated **25503** Units/Year

Electricity Exported **15162** Units/Year

Electricity Imported **7687** Units / Year

Suggestions : Install Occupancy Sensors to minimize losses

Install Solar Street Lights to Minimize Electricity Import during Night.

Chapter No. 6: Study of Waste Management

Environmental consciousness and sustainability and divyangjan friendly initiatives

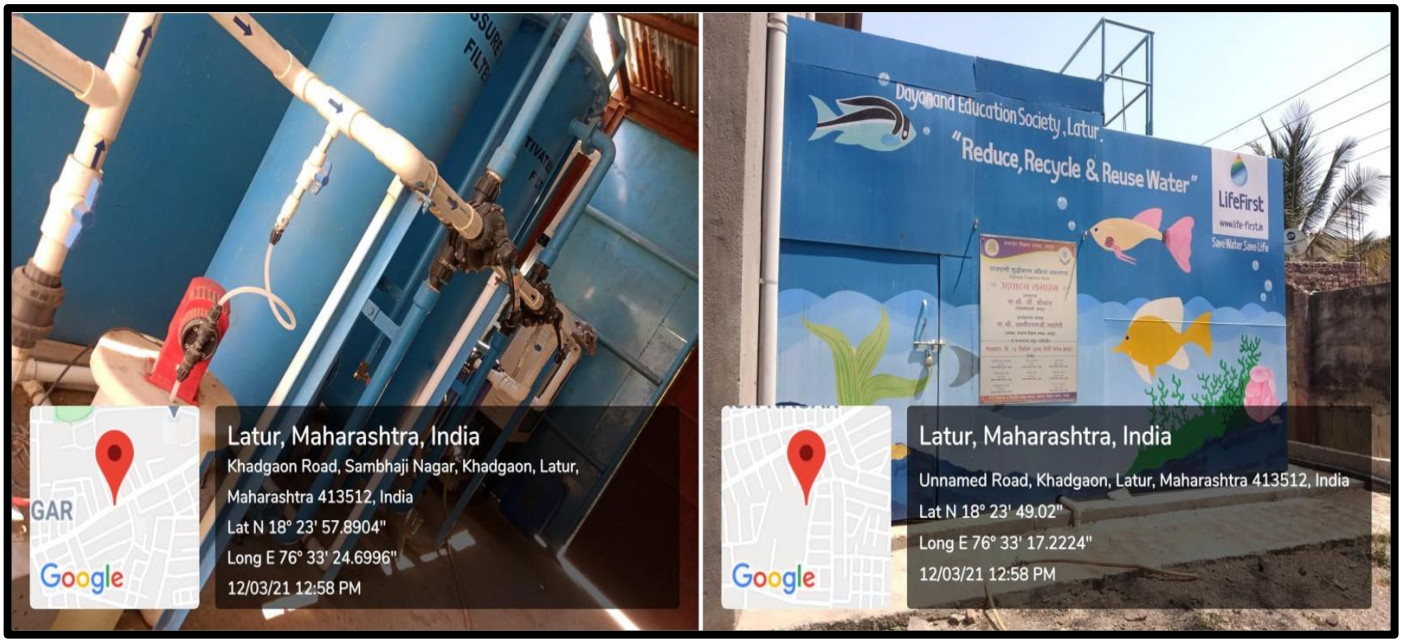
Solid Waste management:

1. The college is taking care of cleanliness and hygiene every time. Daily garbage is collected and segregated into degradable and non-degradable waste by housekeeping personnel.
2. Plant leaves, all the non-toxic, biodegradable waste is collected and used for making compost through the Vermicompost process for which pits having size 5.5 x 1.7 x 0.6 have been made in the campus.
3. Waste material like plastic, papers, glass, metal, newspapers etc. are collected and sold out to to authorize scrap vendors for its recycling from time to time.
4. Non-degradable waste is collected separately. Dayanand education society has tied up with the local Municipal Committee for the disposal of non-degradable solid waste. This waste is collected in the vehicle and handed over to the Latur Municipal Corporation garbage collecting unit.
5. College is adopting almost paperless concept by digitization of office procedures through tally ERP, examination work and daily attendance is maintained using Vm edulife software, thus, reducing paper-based waste.
6. One side printed papers are reused for printing drafts before final document, circulating notice, meeting minutes, and notes in office practices. This reduce paper usage and paper wastage.
7. Sanitary incineration machine is available in the girl's hostel for the management of sanitary pads.

Separation of waste

Collection of solid waste from college building by municipal corporation vehicle

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 been done Good Management of the various types of degradable and non-degradable waste

E-waste Management

Negligible E-waste is generated due to proper maintenance of electronic devices. E-waste is segregated and given to approved venders for possible recycling. Facility for collection of e-waste like scanners, printers, key boards, monitors etc. is available, It is disposed off accordingly.

The internal communication of the college is through Internet within the staff members. 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. In addition to this it is recommended to the college to make tie up with e-Waste management agency to recycle the e-waste.

RAIN WATER HARVESTING:

Water scarcity is serious problem throughout the world for both urban & rural community. Urbanization, industrial development & increase in agricultural field & production has resulted in overexploitation of groundwater & surface water resources and resultant deterioration in water quality. The conventional water sources namely well, river and reservoirs, etc. are inadequate to fulfill water demand due to unbalanced rainfall. While the rainwater harvesting system investigate a new water source.

Rainwater Harvesting Recharge Points:

Rainwater percolation pits were built in the campus to recharge bore well and help the water infiltration.

Chapter No. 7: Green Initiatives during Last Five Years

Expenditure: from 2018 -2022

Financial Year	Tree plantation	Gardening & lawn Work	Water Conservation	LED	Solar Power Plant	Total (Rs)
2017-18	Rs. 4800/-					Rs. 4800/-
2018-19			Plumbing Work Rs.1.67 /- Lakhs			Rs.1.67 /- Lakhs
2019-20			STP plant Rs. 7.5/- Lakh	Rs.63855/-	Rs.8.93 lakh	Rs. 17.06/- Lakh
2020-21		Rs. 3410/-			Rs. 88444/-	Rs. 91,854/-
2021-22	Rs. 6120/-					Rs. 6120/-
					Total Amount	Rs. 19.75 /- Lakh

Observations:

Institute has been taken Green initiative for Sustainable developments.

Expenditure excluding salaries is @19.75 Lakhs.

Suggestions:

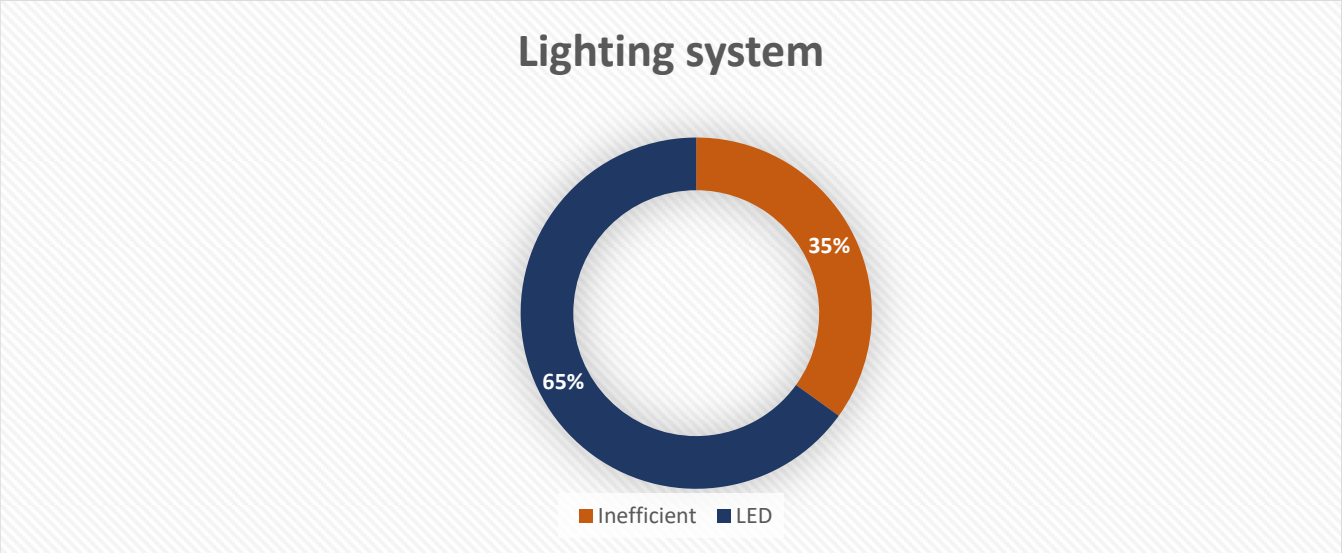
Institute can take initiatives for Fuel Conservation by promoting use of EV Vehicle.

Chapter No. 8 :

Annual Lighting power requirement met through LED Bulbs

(Current Year Data 2021-22)

Type	Wattage
Inefficient CFL / Filament Bulb	1750
LED	3260



Observations:

Annual Lighting power requirement met through LED Bulbs is **65** %

Lighting System	Total Watts
LED Fittings	**3260**

Suggestions:

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

Chapter No. 9 : CARBON FOOTPRINTING

A Carbon Foot print is defined as the total greenhouse gas emissions, emitted due to various activities. In this we have computed the emissions of Carbon-Di-Oxide, by considering various forms of energy used by the College for performing its daily 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 compute the CO2 emissions which are being released in to the atmosphere by the College due to its Day to Day operations

Month wise Electricity Import details:

SN	Month	IMPORT KWH	EXPORT KWH	GENERATION KWH
1	April 21	694	2352	3225
2	May 21	273	1155	1468
3	June 21	527	1345	2159
4	July 21	569	944	1736
5	August 21	574	1095	2068
6	September 21	741	973	1792
7	October 21	574	1387	2250
8	November 21	728	1458	2325
9	December 21	690	886	1766
10	January 22	648	1278	2164
11	February 22	502	1313	2245
12	March 22	1167	976	2305
		7687	**15162**	**25503**

Observations: The College Imports Electrical Energy during Night for various Electrical gadgets. Annual Import = 7687 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. 10 :

Best Practices & Activities

Environmental education through systematic environmental management approach.

Several significant and fruitful awareness programs both students and staff of the Campus are recommended to organize every year in the campus.

Campaigns: Nature camps, field trips, tree plantation drive, cleaning drive and other related activities are being organized at college. It is recommended and planned to arrange institutional training programme by PCRA at college.

Environment science subject in the syllabus:

Dayanand College of Pharmacy is offering Environment science subject in the syllabus, this subject can help the students to understand importance of environmental issues. This promotes conservation and sustainability. In this curriculum students are learning environmental issues and various initiative to prevent environment. This create the awareness about environmental problems among learners. This course build up an attitude of concern for the environment among students. This encourage students to participate in the environment protection and environment improvement. Assignment and project is given to the students to understand the environmental issues and enhance their knowledge.

College has planned the awareness programme and workshop on energy conservation.

Campaign : Save Energy for Benefit of Self & Nation

Awareness 'Save Energy Sign board'

Awareness 'avoid plastic use'

Observations:

Institute has been installed Signboards for Efficient use of Energy & Resources. Near lift area, sign board is placed. Near light switches, save electricity like instructions are placed. Near the water cooler and taps, slogans like save water, save life have been placed at the college building.