

# Green Audit Report

(2020-21)



Panchakshari Shivacharya Trust

**Channabasweshwar Pharmacy College (Degree)**

Basweshwar Chowk, Maharashtra Latur 413512 (Maharashtra)



Green Audit report Submitted by



**KEDAR KHAMITKAR & ASSOCIATES**

Energy Auditor Empanelled Mahaurja, Govt. of Maharashtra

M: 9850244701 Email. : [urjabachat@gmail.com](mailto:urjabachat@gmail.com)

## INDEX:

Sr.	Titles/Topics	Page
1	Acknowledgement	3
2	Executive Summary	4
3	Chapter No. 1: Scope of work & Methodology	5
4	Chapter No. 2: Introduction about Institute	7
5	Chapter No. 3: Categories of Land use	8
6	Chapter No. 4: Green Cover - Plantation of Trees	9
7	Chapter No. 5: Study of Waste Management	11
8	Chapter No. 6: Study of Carbon Footprint	13
9	Chapter No. 7: Best Practices & Activities	14



## ACKNOWLEDGEMENT

We express our sincere gratitude to the Principal Sir & Management of Channabasweshwar Pharmacy College (Degree), Latur for awarding us the assignment of Green Audit of their Latur Campus.

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)

## प्रतिज्ञा

हम सत्यनिष्ठा से प्रतिज्ञा करते हैं कि अपने सभी कार्यों में पेट्रोलियम उत्पादों के संरक्षण हेतु सतत प्रयासरत रहेंगे, ताकि देश की प्रगति के लिए आवश्यक इन सीमित संसाधनों की आपूर्ति अधिक समय तक सम्भव हो सके। आदर्श नागरिक होने के नाते हम लोगों को पेट्रोलियम पदार्थों के व्यर्थ उपयोग से बचने तथा पर्यावरण संरक्षण हेतु स्वच्छ ईंधन का प्रयोग करने के लिए जागरूक करेंगे।

**EXECUTIVE SUMMARY:**

<b>Objective</b>	<b>Observation</b>	<b>Remarks / Recommendation</b>
<b>Green Cover - Plantation of Trees</b>	Green cover is extended every year in the campus. At Present 15% area campus is having the Green cover.	It is recommended to increase the Green Cover Further.
<b>Use of Renewable Energy</b>	Institute is planning to install Roof - top Solar Power Plant.	Found maximum use of Natural Day Light in building.
<b>Water Conservation</b>	Recommended to Install Sign Boards. Conduct Awareness Training Program.	It is recommended to install taps with reduced water flow
<b>Rain Water harvesting</b>	Rainwater Harvesting has been installed.	Institute has been taken good initiative.
<b>Bio Waste Management</b>	The Bio Waste – Food Waste generated in the campus is proposed to be feed stock for Bio Gas plant	
<b>Non Bio Waste</b>	Non Bio Waste – Plastic Bottles / Paper Waste Metals waste is being collected in the dust bins placed across the campus.	
<b>E Waste</b>	E Waste – All Electronic Junk is generated in the campus in the form of Used Computer key boards/ Mouse/ CPU's/ Damaged Printers etc.	An agreement is in place with local Company to pick up the E waste every six month
<b>Carbon Foot Print</b>	Mostly staff commute in the Mahanagar Palika Buses -	Found Awareness in the Staff



## Chapter No.1 Scope of Work & Green Audit Methodology

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

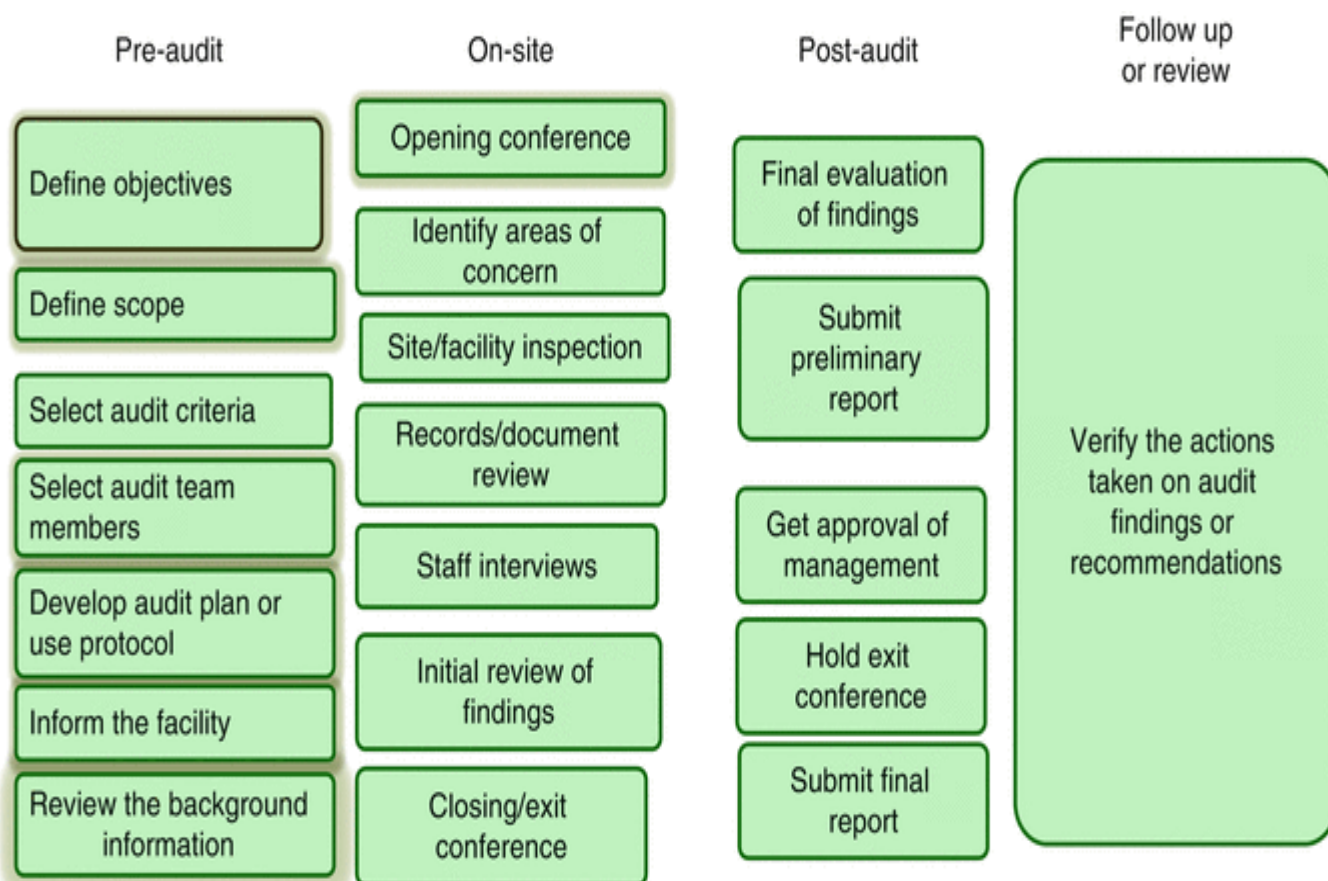
### Objectives of Green Audit:

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:



## Goals of Green Audit:

Conducted a green audit of Channabasweshwar Pharmacy College(Degree), Latur Campus with specific goals as:

1. Identification and documentation of green practices followed 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. Motivates 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 they become problem.





## Chapter No.2 Introduction about the Institute

Panchakshari Shivacharya Trust, Channabasweshwar Pharmacy College (Degree), Latur was established in the year 2010. “Panchakshari Shivacharya Trust” is a charitable trust registered under Bombay act 1950. It undertakes educational and social activities. This trust has started Channabashweshwar Pharmacy Polytechnic in Latur in 1980. After realizing the prospects and potential of the course in the emerging scenario of global pharmaceutical industry and education, the trust further started Channabasweshwar Pharmacy College (Degree) with Bachelor of Pharmacy in 2010. Thereafter postgraduate course M. Pharmacy (Pharmaceutics and Pharmaceutical Quality Assurance) in 2012. College is having its own well-structured building, well equipped laboratories, and library with number of reference books, international journals with e-library, good computing facility and research laboratory. The College is promoting green initiatives to make positive environment within the campus.

Sr. No.	Head	Particular
1	Name	<b>Channabasweshwar Pharmacy College (Degree)</b>
2	Address	<b>Basweshwar Chowk, Kava Road, Latur (M.S.)</b>
3	Course Offered	<b>B. Pharm. &amp; M. Pharm.</b>

Address: Kava Road, Latur 413531 (Maharashtra)



### ARIAL VIEW OF COLLEGE CAMPUS (SOURCE GOOGLE EARTH)

**Location:** The College is situated at kava road, in most beautiful and spacious campus, 50 meters away from Basweshwar Chowk, 1.0 km from bus stand and 5.0 km from railway station.

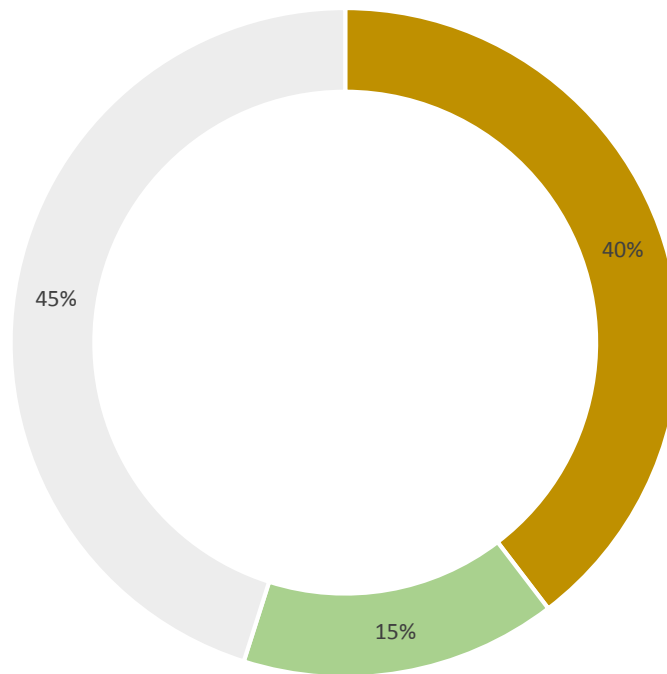
### Chapter No.3 CATEGORIES OF LAND USE

Plantation of trees is started in the campus and the green cover is extended every year in the campus. At Present **15%** area campus is having the Green cover.

#### Audit Framework and detailed findings of the Audit:

<b>Built up Area</b>	3625	SQM
<b>Plantation Area</b>	1398.86	SQM
<b>Open Area</b>	4126.14	SQM
<b>Total</b>	9150	SQM

Use of Land (2020-21)



■ Built up Area ■ Plantation Area ■ Open Area

#### Observations : Plantation area 15%





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

### List of Plants in the Campus:

Sr.	Botanical Name	Family	Common Name	Total
1	Aloe barbadensis miller	Liliaceae	Aloe	01
2	Ocimum sanctum Linn	Lamiaceae	Tulsi	01
3	Asparagus racemosus	Liliaceae	Shatavari	01
4	Tinospora cordifolia	Menispermaceae	Gulvel	01
5	Santalum album	Santalaceae	Chandan	01
6	Prunus amygdalus	Rosaceae	Almond	01
7	Azadirachta indica	Meliaceae	Neem	05
8	Mangifera indica	Anacardiaceae	Mango	03
9	Embllica Officinalis	Euphorbiaceae	Amla	01
10	Momordica charantia	Cucurbitaceae	Karala	01
11	Eugenia jambolana	Myrtaceae	Jambul	01
12	Curcuma longa Linn	Zingiberaceae	Turmeric	01
13	Gymnema sylvestre	Asclepidaceae	Gymnema	01
14	Withania somnifera	Solanaceae	Ashwandha	01
15	Datura metal var	Solanaceae	Datura	08
16	Adhathoda vasica Nees	Acanthaceae	Vasaka	01
17	Catharanthus roseus	Apocyanaceae	Vinca	04
18	Capsicum annum	Solanaceae	Capsicum	01
19	Foeniculum vulgare Mill	Umbelliferae	Fennel	01
20	Coriandrum sativum	Umbelliferae	Coriander	01
21	Eugenia caryophyllus	Myrtaceae	Clove	01
22	Eucalyptus globulus	Myrtaceae	Nilgiri	01
23	Saraca INDICA	Leguminosae	Ashoka	05
24	Aegle marmelos	Rutaceae	Bael	01
25	Tamarindus indica	Leguminosae	Tamarind	02
26	Citrus lemonis	Rutaceae	Lemon	01
27	Allium sativum	Liliaceae	Garlic	01
28	Cocos nucifera	Palmae	Coconut	03
29	Brassica nigra	Cruciferae	Black Mustard	01
30	Solanum tuberosum	Solanaceae	Potato	01

31	<i>Urginea indica</i>	Liliaceae	Squill	01
32	<i>Rosa sericea</i>	Rosaceae	Rose	01
33	<i>Terminalia catappa</i>	Combretaceae	Badam	06
34	<i>Ficus religiosa</i>	Moraceae	Peepal	01
35	<i>Ficus benghalensis</i>	Moraceae	Wad	01
36	<i>Annona reticulata</i>	Annonaceae	Ramfal	01
37	<i>Plumeria alba</i>	Rauvolfioideae	Chafa	03
38	<i>Nerium oleander</i>	Apocynaceae	Kanheri	04
39	<i>Pithecellobium dulce</i>	Leguminosae	Manila Tamarind	02
40	<i>Sesbania bispinosa</i>	Fabaceae	Shevari	04
41	<i>Calotropis gigantea</i>	Apocynaceae	Ruchik	04
42	<i>Ziziphus mauritiana</i> ,	Rhamnaceae	Bori	01
43	<i>Jasminum sambac</i>	Oleaceae	Mogara	01
44	<i>Murraya koenigii</i>	Rutaceae	Kadipatta	01
45	<i>Syzygium cumini</i>	Myrtaceae	Jambhul	01
46	<i>Clitoria ternatea</i>	Fabaceae	Gokarni	02
47	<i>Ficus elastica</i>	Moraceae	Rubber	01
48	<i>Plumeria pidice</i>	Apocynaceae	Nagchampa	17
49	<i>Santalum alum</i>	Santalaceae	Chandan	01
50	<i>Moringa oleifera</i>	Moringaceae	Shevga	01
<b>Total number of plants</b>				<b>107</b>



## Chapter No. 5: Study of Waste Management

### Environmental consciousness and sustainability friendly initiatives



**Observations:** Institute has been done Good Management of the various types of degradable and non-degradable waste

#### 1. Solid waste management

- The college is taking utmost care of cleanliness and hygiene. Daily waste is collected by the cleaning staff and segregated into degradable and non-degradable waste.
- Solid waste is generated in the form of plastic, glass, metal, newspapers, lab manuals, etc. is stored at one place and scrapped periodically for recycling.
- Non degradable waste (Dry and wet) is collected separately empty bottles, cartons are collected regularly at one place and handed over to the municipal vehicle for collection and proper disposal.
- Use of paper printed on one side is encouraged for printing drafts before final document, meeting minutes, and institute level notices in office practices reducing paper based waste.

#### 2. Liquid Waste Management

Liquid waste is generated in the form of solvents, solutions, reaction mixtures, preparations, etc. It is scientifically disposed as per waste management norms. The liquid waste generated during practical is disposed through well-constructed drainage system which is flushed with water from wash basins.

#### 3. Biomedical waste management

Biomedical waste is generated in the form of animal experimentation, bioassays, micro biological cultures, fluid and blood at the institute. Waste like cotton gauze, bandage, textiles, syringes, needles, blades and lancets are disposed along with degradable waste. Sanitary incineration machine is available in the girl's common room for the management of sanitary pads.



#### **4. E-waste management**

The college is having facility to collect and disposed off periodically the e-waste from institutes, E-wastes such as old computers, printers, laptops, scanner, CD's etc. batteries are collected centrally. E-waste is given to authorized vendors for possible recycling. We have put the collection box in the institute, where e-waste is collected. Students are also made aware of E-waste issues and its safe disposal.

#### **5. E. Hazardous chemicals and radioactive waste management**

Hazardous chemicals like strong acids, strong alkalis and oxidizing agents are used in restricted and small quantities during practical's and research. Separate space is provided for storage of hazardous chemicals with highly visible sign. Chemicals are diluted sufficiently and then released into soak pits. Use of hazardous liquid chemicals generating hazardous fumes is carried out strictly in fuming cupboard to avoid spread of fumes.

#### **6. Compost Prepared in College Campus**

The leaves, all non-toxic and biodegradable waste, are collected and used to make compost through the microbial composting process, for which 4.36M x 1.31M x 1.13M pits was made in the campus. Vermicomposting is the process of turning organic debris into worm castings. The content of the earthworm castings, along with the natural tillage by the worms burrowing action, enhances the permeability of water in the soil. Worm castings can hold close to nine times their weight in water "Vermiconversion," or using earthworms to convert waste into soil additives.

#### **7. Water Management**

##### **Institute has been taken good initiative for water conservation.**

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.

## Chapter No. 6 : Study of Carbon Foot printing

**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.

### 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:** The College Imports Electrical Energy during Night for various Electrical gadgets.

Month	610550188492	610550207241	610557505868	KWH
April 2020	30	97	309	436
May 2020	30	97	309	436
June 2020	800	119	911	1830
July 2020	304	50	146	500
August 2020	150	36	112	298
September 2020	234	19	247	500
October 2020	314	13	201	528
November 2020	266	14	212	492
December 2020	805	52	271	1128
January 2021	0	47	98	145
February 2021	62	25	95	182
March 2021	322	23	36	381
			<b>Total</b>	<b>6856</b>

**Observations:** The College Imports Electrical Energy during Night for various Electrical gadgets. Annual Electricity Import = **6856** KWH/year

Calculations:

Electricity: **Input value (in KWh/Yr) X 0.85 (Emission Factor)**

**= Output value in (Kg of CO<sub>2</sub>)**

**Calculation for CO2 emissions due to Electrical Energy = 5827.6 Kg of CO<sub>2</sub> /year**

### Suggestions:

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

## Chapter No. 7 : Best Practices & Activities

### Green Initiative: Why online learning beneficial for the environment:

To reduce the amount of paper consumed using handouts, textbooks, homework, projects in face to face lessons considering the pandemic situation of Covid-19. Channabasweshwar Pharmacy College (Degree), Latur has implemented the cloud based online teaching and learning methodology during academic year 2020-21.

Institute subscribed the cloud based learning platform Vmedulife software, academic software solutions, Pune. It was possible to conduct the classes and exams by the use of software as greener initiative.

### Vmedulife Portal screenshot

Several significant and fruitful awareness programs both students and staff of the Campus are arranged every year in the campus. Reflections from students are Evident how effective such awareness programs conducted in the campus.

### Environmental education through systematic environmental management approach.

On the occasion of Mazi Vasundhara (My earth) Abhiyan, for protection against environment and climate change, Harith Pledge was taken at Channabasweshwar Pharmacy College (Degree), Latur on 11<sup>th</sup> January 2021 at College campus. On that occasion NSS Coordinator and non-teaching staff members were actively participated.



**Mazi Vasundhara Abhiyan Pledge**



**On the occasion of Van Mahotsav, Trees are planted Channabasweshwar Pharmacy College, Latur on 05/07/2020. Secretary of the institute Mr. Bhimashankar Devnikar, Principal Dr. Vijayendra Swamy S.M., teaching, non-teaching staff and students were present.**

