



Policy Document on Environment and Energy Usage

Sarojini Naidu Vanita Pharmacy Maha Vidyalaya: Environment and Energy Management Policy

Vision:

To establish a sustainable and environmentally conscious institution by minimizing our environmental impact and promoting responsible energy usage.

Policy:

Sarojini Naidu Vanita Pharmacy Maha Vidyalaya (SNVPMV) is committed to fostering a culture of environmental awareness and responsible resource management. This policy outlines a comprehensive framework to achieve this vision:

Energy Efficiency:

- We will actively assess our energy consumption and implement strategies to reduce overall energy usage.
- We will explore and adopt renewable energy sources, such as solar panels, to lessen our reliance on traditional energy sources.
- Upgrading to energy-efficient appliances (LED lighting) across the campus will be a priority.
- Sustainable Practices:
- We will implement a systematic waste management program to minimize waste generation and promote responsible disposal and recycling.
- Rainwater harvesting will be actively pursued to conserve water resources.
- Tree plantation drives will be conducted regularly to enhance the campus environment and mitigate air pollution.

Continuous Improvement:

We are dedicated to continuously improving our environmental performance. This includes:

- Monitoring and responding to emerging environmental and energy challenges.
- Engaging in dialogue with relevant authorities and local organizations to foster collaboration on environmental initiatives.
- Educating and empowering our employees and students through environmental awareness programs, training opportunities, and participation in sustainability projects.

PRINCIPAL

Sarojini Naidu Vanita Pharmacy Maha Vidyalaya
Vijayapuri Colony, S.Lalaguda, Tarnaka
Secunderabad-500 017.



SAROJINI NAIDU VANITA PHARMACY MAHA VIDYALAYA

(Sponsored by the Exhibition Society), Tamaka, Secunderabad

Affiliated to Osmania University, Approved by AICTE & PCI

ISO 9001: 2015 Certified Institution, NBA Accredited B. Pharmacy Course

Stakeholder Engagement:

- This policy applies to all faculty, staff, and students of SNVPMV.
- We are committed to communicating this policy effectively through various internal channels.
- We encourage active participation from our community in implementing and upholding this policy.

Review and Updates:

The Principal will regularly review the Environment and Energy Policy and its objectives to ensure its effectiveness and adapt to evolving needs.

PRINCIPAL

Sarojini Naidu Vanita Pharmacy Maha Vidyalaya
Vijayapuri Colony, S.Lalaguda, Tamaka
Secunderabad-500 017.

Environment Audit Certificate *(As per Green Building Parameters)*

The study is conducted as per Indian and International Green Building Standards initiated in the capacity of an Accredited & Certified Green Building Professional

It is awarded for **2021-2022 and 2022-2023** to the Esteemed Institution

(Analysed for 2 years and extended validity for 1 year, thus total 3 years)

The Exhibition Society's

Sarojini Naidu Vanita Pharmacy Maha Vidyalaya

12-5-31/32, Vijayapuri Colony, Tarnaka, Secunderabad – 500017, Telangana, India

(Site visit held on 07 November 2023)

As part of the Institution's initiatives for a Healthy & Sustainable Institute the audit was conducted. We appreciate the immense efforts taken by Staff and students towards the Environment Protection and Conservation.

Issued on **Wednesday, 08 November 2023** and valid till **31 October 2024**

Nahida
Ar. Nahida Abdulla Shaikh

"Elite 100 Green Architects of India" Econaur, 2022

Certified Green Building Professional (Registration. No. 22/718)

Project Head and Green Building Professional-Consultant

Sustainable Academe I Sustainability Department of Greenvio Solutions, Naigaon

An environment Design and Consultancy developing Healthy and Sustainable Environments

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ENVIRONMENT AUDIT

STUDY PERIOD (TWO YEARS) 2021 – 2022 & 2022 - 2023

Sustainability study
AUDIT REPORT

Studied for

The Exhibition Society's

Sarojini Naidu Vanita

Pharmacy Maha Vidyalaya

12-5-31/32, Vijayapuri Colony, Tarnaka,
Secunderabad – 500017, Telangana, India

Studied in the capacity of

Accredited and Certified

Green Building Professional



Studied by

Greenvio
Solutions

Website: <https://thegreenviosolutions.co.in/>

Email: greenviosolutions@gmail.com

Evidence documents for Site visit of external audit team

Audit team headed by external expert - Ar. Nahida Abdulla
 Accredited & Certified Green Building Professional, ISO IA (IMS)
 Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: Sarojini Naidu Vanitha pharmacy Mahavidyalaya Date: 7 Nov. 2023

Document objective: Inferences of the Site visit

| Observations (Positive aspects) | Suggestions (Improvement aspects) |
|---|--|
| Green Audit | |
| <ul style="list-style-type: none"> - Water recycling through Air conditioner pipes is practiced - Environmental initiatives taken | <ul style="list-style-type: none"> - Waste management practices can be improved |
| Energy Audit | |
| <ul style="list-style-type: none"> - Renewable energy systems are utilised to the maximum extent | <ul style="list-style-type: none"> - Smart energy systems can be adopted. |
| Environment Audit | |
| <ul style="list-style-type: none"> - Good green pockets are available with radiation absorbing plantation cover | <ul style="list-style-type: none"> - Documentation of reflectance can be done |



Signature & round seal
 Name: Dr. T. Saritha Tyostna
 Designation: PRINCIPAL
For the said Institute



Signature & round seal
 Name: Mrs. F. A. Shaikh
 Designation: Project Coordinator
For The Greenvio Solutions

Sarojini Naidu Vanitha Pharmacy Maha Vidyalyaya
 Vijayapuri Colony, 8, Lalaguda, Tumakuru,
 SECUNDERABAD-509 017.

Website: thegreenviosolutions.co.in Email: greenviosolutions@gmail.com



Evidence documents for Site visit of external audit team

Audit team headed by external expert - Ar. Nahida Abdulla
Accredited & Certified Green Building Professional, ISO 1A (IMS)
Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: Sarojini Naidu Vanitha Pharmacy, Maha Vidyalaya Date: 7 Nov. 2023

Document objective: Proof of the Site visit



Meeting with the core team



Investigation of the systems

T. Saritha Tyostna

Signature & round seal

Name: Dr. T. Saritha Tyostna

Designation: PRINCIPAL

For the said Institute

Sarojini Naidu Vanitha Pharmacy Maha Vidyalaya
Vijayapuri Colony, S. Lakshada, Tarnaka,



Signature & round seal

Name: Mrs. E. A. Shaikh

Designation: Project Coordinator

For The Greenvio Solutions

Disclaimer

The Audit Team has prepared this report for **The Exhibition Society's Sarojini Naidu Vanita Pharmacy Maha Vidyalaya** located at 12-5-31/32, Vijayapuri Colony, Tarnaka, Secunderabad – 500017, Telangana, India based on input data submitted by the Institute analysed by the team to the best of their abilities.

The details have been consolidated and thoroughly studied as per the various guidelines for Green Buildings available in National and International Standards; the report has been generated based on comparative analysis of the existing facilities and the prerequisites formulated by various standards. The inputs derived are a result of the inspection and research. These will further enhance and develop a Healthy and Sustainable Institution.

These can be implemented phase wise or as a whole depending on the decision taken by the internal team. The warranty or undertaking, expressed or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

The audit is a thorough study based on the inspection and investigation of data collected over a period of time and should not be used for any legal action. This is the property of Greenvio Solutions and should not be copied or regenerated in any form.

The Report is prepared by the Team of Greenvio Solutions under their brand and department – Sustainable Academe as Consultancy firm with the Project Head - Ar. Nahida Shaikh who is as an Accredited and Certified Green Building Professional-Architect. Green Building consultancy is her forte and she is one of the most sought after names when it comes to providing excellent quality services within the stipulated time frame.

The Study is conducted in capacity of Accredited & Certified Green Building Professional with extensive experience.

Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

Sustainable Academe is our department for conducting Audits

Palghar District, Maharashtra- 401208

sustainableacademe@gmail.com

Acknowledgement

The Audit Assessment Team extends its appreciation to **The Exhibition Society's Sarojini Naidu Vanita Pharmacy Maha Vidyalaya, Telangana** for assigning this important work of Environment Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are extended are due to everyone from the Management.

Our heartfelt thanks are extended to the Chairpersons of the entire process for valuable inputs - **Dr. N. Srinivas**, (Professor & Director) and **Dr. T. Saritha Jyostna**, (Principal).

We are also thankful to Institute's Task force who have played a major role in data collection.

- ➔ Faculty members – **Dr. Vivek Sagar** (*Special mention for the excellent coordination*), **Mrs. RVS Latha Sree, Mrs. R. Prashanthi, Mrs. V. Uma and Mrs. G.T. Jyothsna**
- ➔ Non-teaching staff members – **Mr. P. Sridhar**
- ➔ Admin staff members – **Mrs. S. Navaneetha, Mrs. B. Vanaja, Mrs. S. Neeraja and Mrs. M. Kameswari**

We highly appreciate the assistance of the **entire Teaching, Non-teaching, and Admin staff** for their support while collecting the data.

Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

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1. Introduction

1.1 About the Institute

Sarojini Naidu Vanita Pharmacy Maha Vidyalaya, sponsored by The Exhibition Society and established as a Women's College. It offers the following courses:

- ⇒ *B.Pharmacy*
- ⇒ *Pharm D*
- ⇒ *M.Pharmacy (Pharmaceutics)*
- ⇒ *M.Pharmacy (Pharm.Analysis)*
- ⇒ *M.Pharmacy (Pharm.Quality Assurance)*
- ⇒ *M.Pharmacy(Pharmacology)*
- ⇒ *M.Pharmacy(Regulatory Affairs)*
- ⇒ *Pharm D (Post Baccalaureate)*

The end objective of the endeavor is to provide the best of facilities meeting international standards within the norms of the Government and University recommended fees. structure, to students from moderate backgrounds, to which it is a dream come true.

The Institute's students have bagged university ranks at both undergraduate and postgraduate level. The merit percentage has been always 95 plus.

Moreover, the first and second Ranks at PGCET-2013 were from the college.

1.2 Statements of the Institute

1.2.1 Vision

The Institute proposes "To be an institution of Excellence for Pharmaceutical Education, a leading knowledge and networking platform for young women aspirants to make a change as accountable healthcare professionals – pharmacists and pharmaceutical scientists – engaged in health promotion, disease prevention; assessment, monitoring, initiation and modification of medication usage to assure safe and effective drug therapy regimens."

1.2.2 Mission

The Institute adheres and focuses towards - Formidable role for women in pharmaceutical industry, by preparing them for competitive positions at all levels through research-oriented education, extensive training, skill development, talent management, community reach and develop core values of excellence, Innovation, team work, trust and accountability.

- M1: To have qualified students with profound knowledge in various fields of Pharmaceutical sciences to meet the requirements of the Pharmaceutical Industry, Community and Hospital Pharmacy.
- M2: To provide quality pharmaceutical care to the society in a judicious, coordinated and dynamic way and develop ethical and moral attitude to meet the real-world requirements of society.
- M3: Acquire professional skills in making the products and providing services in health care system.

1.2.3 Aim

The College has formulated the following aim to achieve its mission:

- To provide outstanding pharmaceutical education and create a prominent knowledge and networking platform for aspiring young women in the field.
- To empower them to become responsible healthcare professionals, specifically pharmacists and pharmaceutical scientists, who play a pivotal role in health promotion, disease prevention, and ensuring the safe and effective use of medications.

1.2.4 Objective

It is the objective of the College is

- to empower women to play a significant and competitive role in the pharmaceutical industry and achieve the same through research-focused education, comprehensive training, skill enhancement, talent nurturing, community engagement, and the cultivation of core values such as excellence, innovation, teamwork, trust, and accountability.
- to prepare women to excel at all levels within the pharmaceutical field.

1.2.5 Motto

The College channelizes its efforts towards the motto of "We excel."

1.3 Assessment of the Institute

1.3.1 Affiliations

The technical course provided by the College is affiliated to **a collegiate public state university located in Hyderabad, Telangana, India**. Mir Osman Ali Khan, the 7th Nizam of Hyderabad, issued a firman calling for its creation on 29 August 1917.

1.3.2 Certification

The College has received the following Certifications

- **AISHE** – The All India Survey of Higher Education code is C-25626.
- **ISO** – The 9001:2015 Quality Management System has been achieved

1.3.3 Approvals

The technical courses provided by the College have taken required approvals as follows:

- Approved by **All India Council for Technical Education (AICTE), New Delhi**.
- Approved by **Pharmacy council of India (PCI), New Delhi**.

1.3.4 Accreditation

The Four Year B. Pharm degree program is accredited by National Board of Accreditation (NBA), Govt. of India.

1.4 Facilities of the Institute

The campus has state of the art infrastructure to supports its endeavours:

INFRASTRUCTURE

- *13 well-ventilated and spacious classrooms with LCD projector & screen and computer& 5 tutorial rooms with computers and LCD projectors*
- *21 modern modular laboratories with attached preparation rooms having concealed piping for gas, water and drain lines. Convenient faculty rooms are provided.*
- *State-of-the-art equipment is available for preparing simple dosage forms to advanced novel drug delivery systems using rotary tablet machine, coating pan, triple roller mill, colloid mill, Tray dryer, homogenizers & Ultrasonicator.*
- *High-precision analytical instruments are available for analyzing various dugs & their dosage forms using ATR FTIR, HPLC,UV-Visible spectrophotometer, electrophoresis, pH meters among others*
- *Convenient faculty rooms are provided*
- *Computer Laboratory equipped with high end computers and printers for computer practical sessions and preparation for seminars, conferences and presentations. It also has Language Laboratory tool to train students in English language skills. The lab has 80 systems, with the following configurations:*
 - *20 HP Desktops DX 2480 Intel core 2Duo 2.53 Ghz Processor*
 - *20 Dell-Vostro 3800 I3 Processor/4GB/500/DVD/Wi-Fi*
 - *20 Dell Vostro 3800 I5 Processor/4GB/500/DVD/W-iFi*
 - *20 I5 Processor/8 GB RAM/1 TB HDD/256 GB SSD*

ANIMAL HOUSE

- *In compliance with CPCSEA norms, we have established state-of-art animal house facility, in which every student will get hands-on training on animal handling, drug administration and blood withdrawal techniques.*
- *Every M.Pharm dissertation work will be supported with in vivo studies which will enable the research work to be published in peer reviewed journals*

VIRTUAL PHARMACY

- *Virtual Pharmacy was inaugurated by Sri Navin Mittal, IAS, Commissioner of Technical Education, Govt. of Telangana and Prof. C. K. Kokate, former Vice Chancellor K.L.E. Deemed University, former Vice Chancellor Kakatiya University, and former President, Pharmacy Council of India, on 12th July, 2021.*
- *The Virtual Pharmacy facility is first of its kind in the Country as it familiarizes the students with all the logistics of drug store management.*
- *Virtual pharmacy provides real-time order verification, patient counselling in various therapeutic segments and check the drug – drug interactions of the prescriptions*
- *Students learn to perform the role of Pharmacist, vital sign measurements, monitoring and auditing of drug store activities*
- *Virtual pharmacy provides a unique opportunity to know therapeutic segment-wise brand names of drug products and their manufacturers apart from understanding the inventory management principles.*

LIBRARY

- *A well-stacked library on the top floor with ample ventilation convenient for effective study/ reading.*
- *It is well spread out over a plinth area of 150 sq. mt.*
- *Houses a reading room, reference section,*
- *Has 1203 titles, 12732 volumes, 24 national and 16 international journals.*
- *The digital library gives student access to E-journals*
- *Internet facility for staff and students.*
- *Can seat 75 students at a time.*

OTHER FEATURES

- *An air-conditioned auditorium with a 250 seating capacity and a seminar hall that accommodates a hundred.*
- *Computer Laboratory.*
- *Wi-Fi connectivity*
- *A Board Room.*
- *Girls Common Room*
- *2 lifts and 3 wide stairways*
- *An elegant hallway and a spacious room for Principal and Chairman-cum-Secretary.*
- *Efficiently planned Office and Administrative wing*
- *Attractive facade with glass panelling*
- *30,000 sq. ft. cellar parking*

2. Overview

2.1 Summarised Populace analysis for 2022-2023

2.1.1 Students data

The data shared by Institute shows there were **589 female students**.

2.1.2 Staff data

| S. No. | Type | Male | Female | Total |
|----------------------------|--------------------|-----------|-----------|-----------|
| 1 | Admin staff | 01 | 08 | 09 |
| 2 | Teaching staff | 07 | 50 | 57 |
| 3 | Non-Teaching staff | 08 | 24 | 32 |
| Total Staff Members | | 16 | 82 | 98 |

Table 1: Staff data of the Institution for 2022-2023

The staff data shows the Institute premises had a total of **98 Staff Members**.

2.2 Summarised Populace analysis for 2021-2022

2.2.1 Students data

The data shared by Institute shows there were **524 female students**.

2.2.2 Staff data

| S. No. | Type | Male | Female | Total |
|----------------------------|--------------------|-----------|-----------|-----------|
| 1 | Admin staff | 01 | 05 | 06 |
| 2 | Teaching staff | 03 | 40 | 43 |
| 3 | Non-Teaching staff | 07 | 15 | 22 |
| Total Staff Members | | 11 | 60 | 71 |

Table 2: Staff data of the Institution for 2021-2022

The staff data shows the Institute premises had a total of **71 Staff Members**.

2.3 Site & Institute Building Spread Area

The Institute is spread over **1 acre** with a built-up area comprising of **1,00,000+ sq. ft.** designed into multiple blocks for educational and residential purposes for a populace of 687 stakeholders (Students and staff members).

2.4 Institute Infrastructure

2.4.1 Establishment

The Institute was established in **1997**.

2.4.2 Spatial Organisation

The Institute is located in a pollution free and healthy environment. The Building is a Reinforced Cement Concrete (RCC) framework building. There are provisions for staircase for accessibility on the premises, whereas there are amenities such as CCTV, a first aid room, etc.

2.5 Operation and Maintenance of the premises

The interview session was held with the staff regarding the operation and working hours. The Institution is open from Monday to Saturday with the timings being 10:00 to 17:00 hours.

3. Research

3.1 About the Green Building Study Audit

It is a systematic study of the aspects which make the Institution sustainable and healthy premises for its inhabitants.

3.2 Analysis of the Green Building Study Audit

The procedure included detailed verification as follows:

- Investigation
- Technical discussion with team
- Observations
- Inferences

3.3 Strategy adopted for Green Building Study Audit

The strategies included data collection from the admin department, actual inventory, investigation to check the operation and maintenance, analysis of the data collection, and preparation of the Report.

3.4 Activities undertaken for the Green Building Study Audit

- Discussion with the Institute
- Allotment and Initiation by the Institute
- Data collection
- Submission of the files

Evidence documents for Site visit of external audit team

Audit team headed by external expert - Ar. Nahida Abdulla
 Accredited & Certified Green Building Professional, ISO IA (IMS)
 Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: SAROJINI NAIDU VANITA PHARMACY MAHAVIDYALAYA Date: 7 Nov 2023

Document objective: Induction Meeting attendance sheet

| S. No. | Name | Committee | Designation | Signature |
|--------|------------------------|-----------|----------------------------|-----------|
| 1. | Mrs. F. A. Shaikh | External | Project Coordinator | |
| 2. | Ar. Nahida Abdulla | External | Project Head | |
| 3. | Dr. N. Srinivas | INTERNAL | Professor & Director | |
| 4. | Dr. T. Saritha Jyostna | INTERNAL | Professor & Principal | |
| 5. | Dr. T. Mamatha | INTERNAL | Professor & Vice Principal | |
| 6. | Dr. Vivek Sagar | INTERNAL | Professor & HOD | |
| 7. | Mrs. R.Vs Latha Devi | INTERNAL | Associate Professor | |
| 8. | Mrs. P. Uma | INTERNAL | Assistant Professor | |
| 9. | Mrs. G.T. Jyostna | INTERNAL | Assistant Professor | |

Signature & round seal
 Name: Dr. T. Saritha Jyostna
 Designation: PRINCIPAL

For the said Institute
Sarojini Naidu Vanita Pharmacy Maha Vidyalaya
Vijayapuri Colony, S. Lakuguda, Tam. Ins.
SECUNDERABAD-505 017



Signature & round seal
 Name: Mrs. F. A. Shaikh
 Designation: Project Coordinator

For The Greenvio Solutions



Evidence documents for Site visit of external audit team

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Institute: SAROJINI NAIDU VANITA PHARMACY MAHA VIDYALAYA Date: 7 NOV 2023

Document objective: Exit Meeting attendance sheet

| S. No. | Name | Committee | Designation | Signature |
|--------|------------------------|-----------|----------------------------|-----------|
| 1. | Mrs. F. A. Shaikh | External | Project Coordinator | |
| 2. | Ar. Nahida Abdulla | External | Project Head | |
| 3. | DR. N. SRINIVAS | | Professor & Director | |
| 4. | DR. T. Saritha Tyostna | | Professor & Principal | |
| 5. | Dr. T. Mamatha | | Professor & Vice-Principal | |
| 6. | Dr. Vivek Sagar | | Professor & HOD | |
| 7. | Mrs. RVS Latha Sree | | Associate Professor | |
| 8. | Mrs. P. Uma | | Assitant Professor | |
| 9. | Mrs. G.T. Tyostna | | Assistant Professor | |

Signature & round seal

Name: Dr. T. Saritha Tyostna

Designation: PRINCIPAL

For the said Institute
Sarojini Naidu Vanita Pharmacy Maha Vidyalaya
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Name: Mrs. F. A. Shaikh

Designation: Project Coordinator

For The Greenvio Solutions

Website: thegreenviosolutions.co.in Email: greenviosolutions@gmail.com



4. Observation

A site visit was conducted at the site on **07 November 2023** and the following observations were noted as part of the physical investigation.

The following points were observed during the investigation and are documented for being '**POSITIVE ASPECTS**' that are beneficial to the stakeholder and the campus.

4.1 Actual positive points based on the site visit

The following points are based on the site visit observations:

- ➔ Less noise pollution and silent as compared with the outside areas and helps to concentrate on studies highlighting the calm atmosphere.
- ➔ Architectural landscape and streetscape features such as:
 - Dedicated paved setback areas with light colored flooring pattern used.
 - Suggestion box
 - First aid box



Plate 1: on-site discussion with the stakeholders

4.2 General positive points w.r.t sections

The following points are based on the general observations of the visit and the detailed discussions undertaken.

4.1 Site beautification

This section studies aspects that add to the beauty of the existing contextual parameters.



Plate 2: Green cover of the site

4.2 Heat island reduction

This section studies aspects that help to keep the micro temperature of the site under control for comfort levels of the stakeholders.



Plate 3: Heat island measures on site

4.3 Life safety

This section studies aspects related to fire and life safety provisions available in the premises.



Plate 4: Fire and Life safety practices in the premises

4.4 Pollution Control

This section studies aspects that help to keep the pollution levels under control for a healthy and safe environment.

Observation:

Biometric system for students related to attendance – Highlights the paperless technologies

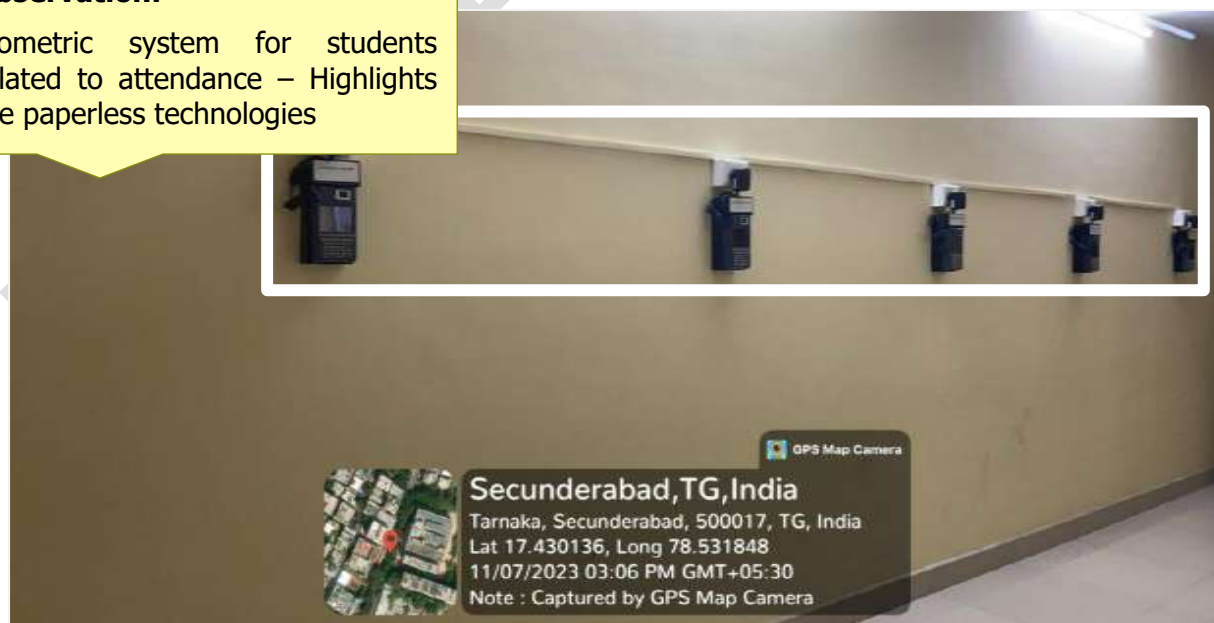


Plate 5: Digital Campus facilities – Biometric system

5. Documentation

5.1 Site beautification

5.1 Open Spaces

There is scope to improve the ecological cover and introduce organic farming, vertical gardening etc. in the premises.

5.2 Flora audit

A survey was carried out to identify ecological footprint of site as documented below:

| S. No. | Plant name | Type | Nos. |
|--------|---------------------------------|----------|------|
| 1 | <i>Dwarf Umbrella</i> | Herb | 3 |
| 2 | <i>Ti (Cordyline Fruticosa)</i> | Herb | 3 |
| 3 | <i>Screw Pine</i> | Herb | 4 |
| 4 | <i>Seebum</i> | Herb | 2 |
| 5 | <i>Areca Palm</i> | Shrub | 7 |
| 6 | <i>Aparanjitha</i> | Herb | 1 |
| 7 | <i>Oleander</i> | Tree | 1 |
| 8 | <i>Delonix Regia Gulmohar</i> | Tree | 3 |
| 9 | <i>Tulasi</i> | Herb | 2 |
| 10 | <i>Glossy Privet</i> | Tree | 5 |
| 11 | <i>Muringa Tree(Drum Stick)</i> | Tree | 1 |
| 12 | <i>Tylophora</i> | Creepers | 4 |
| 13 | <i>Paeoniamascula</i> | Herb | 1 |
| 14 | <i>Schefflera Actionophylla</i> | Tree | 7 |
| 15 | <i>Khaya Senagalensis</i> | Tree | 3 |
| 16 | <i>Crosso Stephium</i> | Herb | 1 |
| 17 | <i>Hydrocotyle Vulgaris</i> | Herb | 1 |
| 18 | <i>Ficus Squamosa</i> | Plant | 1 |
| 19 | <i>Chamaeceostus Cuspibatus</i> | Herb | 1 |
| 20 | <i>Artemesia Vulgaris</i> | Herb | 1 |
| 21 | <i>Siboulet</i> | Herb | 1 |

| | | | |
|----|-------------------------|-------|---|
| 22 | <i>Murraya Koenigii</i> | Plant | 1 |
| 23 | <i>Stereo Spermum</i> | Plant | 1 |
| 24 | <i>Mango</i> | Plant | 4 |
| 25 | <i>Mango</i> | Tree | 1 |
| 26 | <i>Boue</i> | Tree | 1 |
| 27 | <i>Hibiscus</i> | Tree | 4 |
| 28 | <i>Lemon</i> | Plant | 1 |
| 29 | <i>Tamaarind</i> | Plant | 1 |
| 30 | <i>Curcuma</i> | Tree | 3 |
| 31 | <i>Henna</i> | Plant | 1 |
| 32 | <i>Almond</i> | Tree | 2 |
| 33 | <i>Guava</i> | Tree | 1 |
| 34 | <i>Jacropa Curcus</i> | Tree | 1 |
| 35 | <i>Deloria Belpatra</i> | Plant | 1 |
| 36 | <i>Cynomepras</i> | Herb | 1 |
| 37 | <i>Kapebonavista</i> | Herb | 4 |
| 38 | <i>Tamarind</i> | Tree | 1 |

Table 3: Details of the Flora in the premises

At present there are 82 nos. of plantations in the premises. All of these are planted by the on various occasions and some have grown naturally. Timely maintenance with sufficient care has resulted in positive benefits for the surroundings.

Being a pharmacy Institute as per the syllabus requirement there is availability of pharmacognosy garden as well in the premises.

5.2 Heat island reduction

The external temperature is well under control due to:

- Light colored facades
- Light colored paving blocks in outdoor areas
- Buildings on all four sides provide shade to the campus

5.3 Life safety

Fire and life safety are an important consideration of the National Building Code 2016.

This aspect is touched upon as part of this study in the capacity of an Architect registered with the Council of Architecture. As part of the research, fire safety audit was considered from the 'Building systems' perspective. All provisions are documented below:

- **Fire hose reel** – Near the appropriate duct areas
- **Fire extinguisher** – In spaces that have air conditioners
- **Sand buckets** - Near the life and general areas with large footfalls
- **Fire sprinkler and alarm system** – This is available in the cellar areas as there is underground parking provision provided.
- **Fire resistant door** – These are available in the fire exit point on all floors
- **Fire hydrant cabinet** – This is available on every floor and Staircase mid-landing.

5.4 Pollution Control

5.4.1 Noise Audit

On a macro level the Institute is surrounded by educational and residential blocks **thus there is a peaceful and noise free arena observed within the premises.**

5.4.2 Eco-friendly Commuting Practices

- The site is located in an urban locality.
- Overall, the carbon footprint is well under control.
- Students and staff members commute using public transport.
- There are no major fossil fuels used inside the premises.

5.4.3 Outdoor Light Pollution Study

The Institute compound lights are not upward looking thus, these do not cause light pollution. However, there is certain landscape lights designed for upward facing upwards but the extent is under control thereby not leading to any environmental degradation.

6. Investigation

The following results are based on the investigation carried out during the site visit.

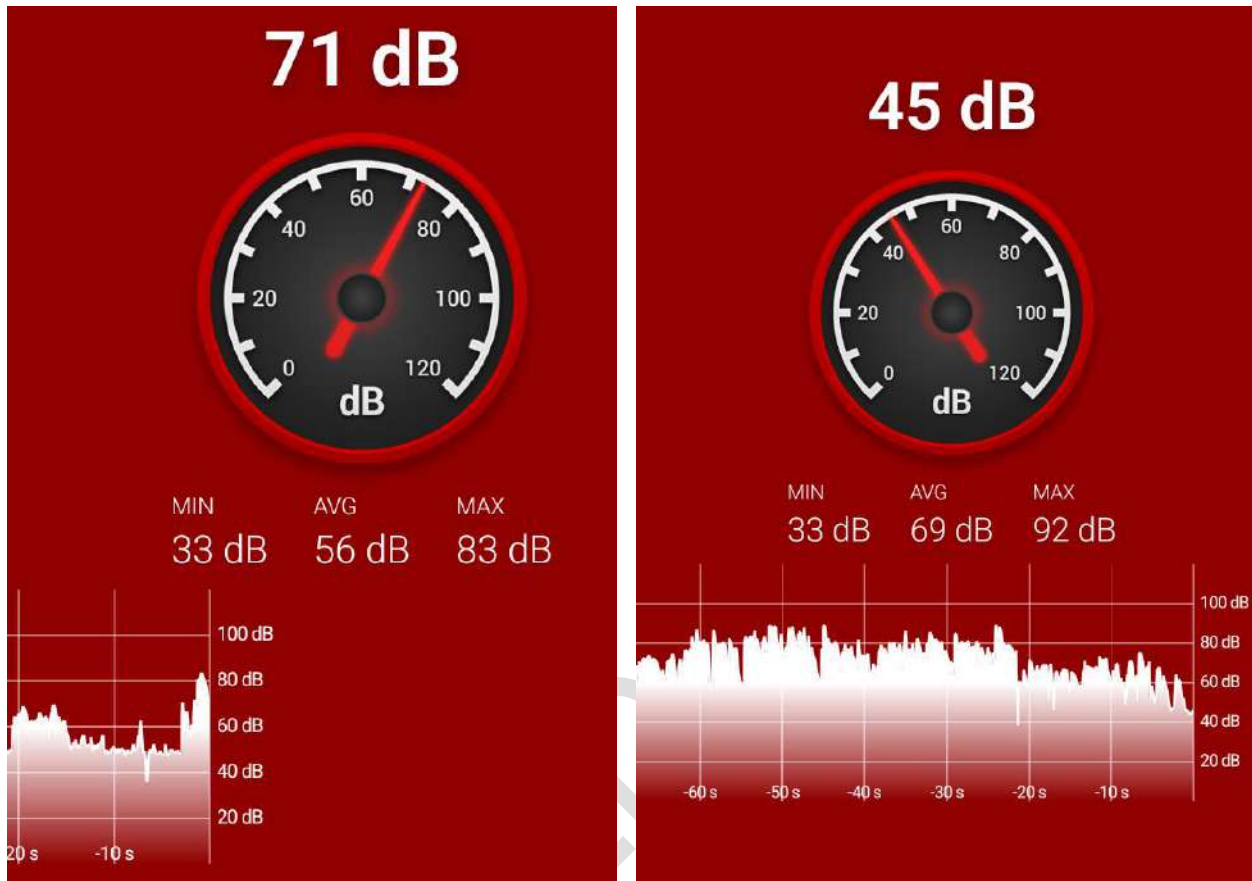


Figure 1: Sound level study in outdoor and indoor areas

7. Exhortation

7.1 Site suggestions

The following suggestions are to be considered as a ***first priority*** and should be **executed within the next 1.5 to 2.5 years from the date of the Report submission**. The Institute can execute a plan after discussion with Project Head.

| S. No. | Space | Comment | Action to be taken |
|--------|---|-----------------------------------|--|
| 1. | Entire campus Electrical aspects | Documentation | Name the switch boards as SB or MB (Main board) with numbering Conceal the wirings wherever available |
| 2. | Fire & Life safety General aspects | Documentation | <ul style="list-style-type: none"> ➤ Include a bigger display about floor ➤ Mark the Fire Resistant Door ➤ Include fire safety signages ➤ Include PASS and RACE boards ➤ Every Fire Hydrant Cabinet should have a display board on how to use it? |
| 3. | Fire & Life safety Chemical Lab aspects | Documentation and safety measures | <ul style="list-style-type: none"> ➤ Introduce rubber flooring ➤ Introduce MSDS for toxic chemicals as display board, book for less toxic chemicals ➤ Lab safety chart should be displayed in every lab |
| 4. | Fire & Life safety Electrical Lab aspects | Documentation | The server room should have any one of the following to balance the cooling loads <ul style="list-style-type: none"> ➤ 3 table fans ➤ One 0.75ton air conditioner ➤ One air cooler |
| 5. | Fire & Life safety Increase provision | Spaces – safety | Increase fire extinguisher/ sand buckets in: <ul style="list-style-type: none"> ➤ Seminar hall ➤ Auditorium ➤ Laboratories |
| 6. | Lift | Documentation | Include the following signages/ display <ul style="list-style-type: none"> ➤ Do not use life in case of fire ➤ Fire escape route |

Table 4: Site suggestions

7.2 Section-wise suggestions

The following suggestions are ***not an urgent priority*** and **can be executed in 5 years from the date of the Report submission.**

7.2.1 Site beautification

- **Bird house/ Feeders** - At appropriate locations there can be provisions for drinking water and some grains for birds as they visit the site much frequently.
- **Garden development** - The existing open space should be designed as an Architectural landscape.
 - *Nursery documentation, expansion and beautification* – The premises should have a nursery, details can be decided as per the landscape beautification.
 - *Scientific name plates and QR codes* – The team should undertake a project to have name plates with QR codes on every plant of the premises.
 - *The landscape redesign and ecological redesign* – This should be done to increase the shade cover in the entire premises.
- **Architectural landscape and streetscape features such as:**
 - *Parking mirror*
 - *Bollards with lighting for safety and landscape*
 - *No parking signboards at dedicated locations*
 - *Direction sign board*
 - *Post box*
 - *Suggestion box*
 - *First aid box*
 - *Seating area as breakout zones*
 - *Vertical plantations (potted) to beautify blank spaces*
 - *Signboard about specific space*
 - *Signboard about the various blocks*

7.2.2 Heat island reduction

Cool rooftops - The Terrace rooftops should be painted with Cooltop – reflective materials to reflect the harsh sun rays and reduce the heat absorption in the top most floor and surrounding areas of the building.

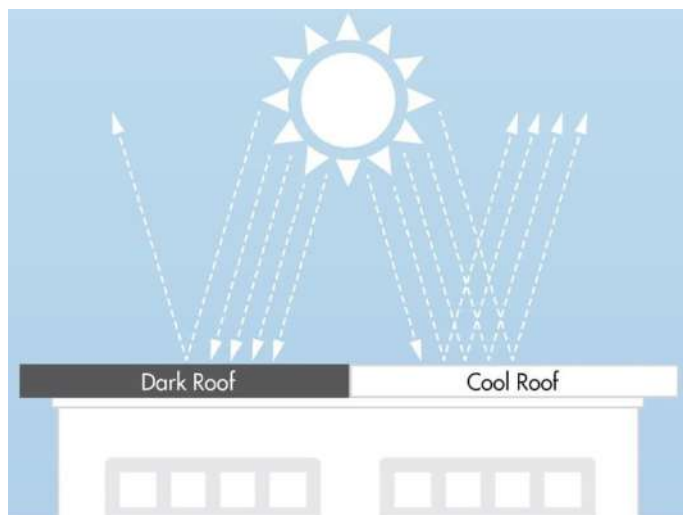


Plate 6: Cool roof comparative analysis (For reference purpose only)

Source: Image by <https://www.gaf.com/en-us/blog/six-truths-about-cool-roofs-281474980105387>

7.2.3 Life safety

- ➔ **Mandate fire extinguisher in spaces** - One fire extinguisher should mandatorily be there in every space which has an air conditioner/ gas cylinder.
- ➔ **Combustible equipment** - Every space which has a gas cylinder or combustible equipment should have a provision for the barricade around the gas cylinders, appropriate safety board's mentioning 'danger sign' and 'Do not touch' with an additional small fire extinguisher close by.
- ➔ **Awareness** - Fire layouts in immediate spaces outside the lift, on the staircase landing, signages mentioning 'Do not use lift in case of fire' additionally fire exit signages, boards should be put up at all possible locations.

7.2.4 Pollution Control

- ➔ **Specific area designated for E-vehicles** – There should be designated area dedicated to E-vehicles parking and charging and this zone should be demarcated as 'Eco-Zone'
- ➔ **Promote the use of Eco-friendly vehicles** - There can be student and staff sensitization program on eco-friendly and battery-operated vehicles/ low emission vehicles for daily use.
- ➔ **Bicycles as a gift** - As an appreciation gesture maybe the student's toppers/ staff best performers can be awarded a bicycle occasionally.
- ➔ **Paperless technologies for offices** - The Institute can go technology-friendly and go paperless in the functioning of premises to a certain extent maybe not fully.
- ➔ **Plant more radiation absorbing plants** - The following flora helps in reducing the harmful effects to a certain extent, the Institute can develop a radiation free zone and take to planting these through potted plants or permanent planting:
 - a. Spider plant
 - b. Rubber plant
 - c. Asparagus fern
 - d. Snake plant
 - e. Nelumbo nucifera (Includes colourful flowers)
 - f. Cactus
 - g. Areca palm
 - h. Mustard green
 - i. Betel
 - j. Aloe vera
 - k. Sprengers asparagus
 - l. Fiddle fig

On-site investigation and physical verification
Audit Team during the visit and other photos collected during data documentation



Meeting and group photo with the team



On-site investigation parameters – Cellar, Office, Laboratories and Library areas



Seminar on 'Trash to treasure' to the stakeholders

8. Compilation

The study is based on the data collected, analyzed, rechecked, and confirmed through multiple modes. For the quality study, some standards/ notes have been referred to. These are listed and noted below. However, no direct references have been used anywhere. These are used as a base to analyze and study the data collected.

National references

- ➔ Uniform Plumbing Code – India, 2008
- ➔ IGBC Green Existing Buildings – Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013
- ➔ IGBC Green Landscape Rating system, March 2013

International references

- ➔ BOMA Canada Waste Auditing Guide, Best Environmental Standards, BOMA BEST – Canada
- ➔ Used only for understanding Universal design - Universal Accessibility Guidelines for Pedestrian, Non-motorized vehicle and Public Transport Infrastructure – Report guidelines by Samarthyam (National center for Accessible Environments) – an initiative supported by Shakti Sustainable Energy Foundation and www.umassd.edu
- ➔ The city of Cheyenne, Streetscape/ Urban Design elements - Wyoming Planning Association, Gillette, Wyoming, United States
- ➔ Streetscape elements – Chapter 6 on San Francisco
- ➔ American lung association <https://www.lung.org/>
- ➔ Study related to air pollution <https://www.airgle.com/>
- ➔ Exploring the light pollution <https://education.nationalgeographic.org/>
- ➔ Accessibility study <https://www.washington.edu/>
- ➔ Urban heat island effect <https://www.epa.gov/heatislands/what-you-can-do-reduce-heat-islands>

ENERGY AUDIT

STUDY PERIOD (TWO YEARS) 2021 - 2022 & 2022 - 2023

Sustainability study
AUDIT REPORT

Studied for
The Exhibition Society's
**Sarojini Naidu Vanita
Pharmacy Maha Vidyalaya**
12-5-31/32, Vijayapuri Colony, Tarnaka,
Secunderabad – 500017, Telangana, India

Studied in the capacity of
Accredited and Certified
Green Building Professional



Website: <https://thegreenviosolutions.co.in/>

Email: greenviosolutions@gmail.com

Evidence documents for Site visit of external audit team

Audit team headed by external expert - Ar. Nahida Abdulla
 Accredited & Certified Green Building Professional, ISO IA (IMS)
 Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: Sarojini Naidu Vanitha pharmacy Mahavidyalaya Date: 7 Nov. 2023

Document objective: Inferences of the Site visit

| Observations (Positive aspects) | Suggestions (Improvement aspects) |
|---|--|
| Green Audit | |
| <ul style="list-style-type: none"> - Water recycling through Air conditioner pipes is practiced - Environmental initiatives taken | <ul style="list-style-type: none"> - Waste management practices can be improved |
| Energy Audit | |
| <ul style="list-style-type: none"> - Renewable energy systems are utilised to the maximum extent | <ul style="list-style-type: none"> - Smart energy systems can be adopted. |
| Environment Audit | |
| <ul style="list-style-type: none"> - Good green pockets are available with radiation absorbing plantation cover | <ul style="list-style-type: none"> - Documentation of reflectance can be done |



Signature & round seal
 Name: Dr. T. Saritha Tyostna
 Designation: PRINCIPAL
For the said Institute



Signature & round seal
 Name: Mrs. F. A. Shaikh
 Designation: Project Coordinator
For The Greenvio Solutions

Sarojini Naidu Vanitha Pharmacy Maha Vidyalyaya
 Vijayapuri Colony, 8, Lalaguda, Tumakuru,
 SECUNDERABAD-509 017.

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Evidence documents for Site visit of external audit team

Audit team headed by external expert - Ar. Nahida Abdulla
Accredited & Certified Green Building Professional, ISO 1A (IMS)
Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: Sarojini Naidu Vanitha Pharmacy, Maha Vidyalaya Date: 7 Nov. 2023

Document objective: Proof of the Site visit



Meeting with the core team



Investigation of the systems

T. Saritha Tyostna
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Name: Dr. T. Saritha Tyostna

Designation: PRINCIPAL

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Sarojini Naidu Vanitha Pharmacy Maha Vidyalaya
Vijayapuri Colony, S. Lakshada, Tarnaka,



Signature & round seal

Name: Mrs. E. A. Shaikh

Designation: Project Coordinator

For The Greenvio Solutions

Disclaimer

The Audit Team has prepared this report for **The Exhibition Society's Sarojini Naidu Vanita Pharmacy Maha Vidyalaya** located at 12-5-31/32, Vijayapuri Colony, Tarnaka, Secunderabad – 500017, Telangana, India based on input data submitted by the Institute analysed by the team to the best of their abilities.

The details have been consolidated and thoroughly studied as per the various guidelines for Green Buildings available in National and International Standards; the report has been generated based on comparative analysis of the existing facilities and the prerequisites formulated by various standards. The inputs derived are a result of the inspection and research. These will further enhance and develop a Healthy and Sustainable Institution.

These can be implemented phase wise or as a whole depending on the decision taken by the internal team. The warranty or undertaking, expressed or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

The audit is a thorough study based on the inspection and investigation of data collected over a period of time and should not be used for any legal action. This is the property of Greenvio Solutions and should not be copied or regenerated in any form.

The Report is prepared by the Team of Greenvio Solutions under their brand and department – Sustainable Academe as Consultancy firm with the Project Head - Ar. Nahida Shaikh who is as an Accredited and Certified Green Building Professional-Architect. Green Building consultancy is her forte and she is one of the most sought after names when it comes to providing excellent quality services within the stipulated time frame.

The Study is conducted in capacity of Accredited & Certified Green Building Professional with extensive experience.

Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

Sustainable Academe is our department for conducting Audits

Palghar District, Maharashtra- 401208

sustainableacademe@gmail.com

Acknowledgement

The Audit Assessment Team extends its appreciation to **The Exhibition Society's Sarojini Naidu Vanita Pharmacy Maha Vidyalaya, Telangana** for assigning this important work of Energy Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are extended are due to everyone from the Management.

Our heartfelt thanks are extended to the Chairpersons of the entire process for valuable inputs - **Dr. N. Srinivas**, (Professor & Director) and **Dr. T. Saritha Jyostna**, (Principal).

We are also thankful to Institute's Task force who have played a major role in data collection.

- Faculty members – **Dr. Vivek Sagar** (*Special mention for the excellent coordination*), **Mrs. RVS Latha Sree, Mrs. R. Prashanthi, Mrs. V. Uma and Mrs. G.T. Jyothsna**
- Non-teaching staff members – **Mr. P. Sridhar**
- Admin staff members – **Mrs. S. Navaneetha, Mrs. B. Vanaja, Mrs. S. Neeraja and Mrs. M. Kameswari**

We highly appreciate the assistance of the **entire Teaching, Non-teaching, and Admin staff** for their support while collecting the data.

Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

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1. Introduction

1.1 About the Institute

Sarojini Naidu Vanita Pharmacy Maha Vidyalaya, sponsored by The Exhibition Society and established as a Women's College. It offers the following courses:

- ⇒ *B.Pharmacy*
- ⇒ *Pharm D*
- ⇒ *M.Pharmacy (Pharmaceutics)*
- ⇒ *M.Pharmacy (Pharm.Analysis)*
- ⇒ *M.Pharmacy (Pharm.Quality Assurance)*
- ⇒ *M.Pharmacy(Pharmacology)*
- ⇒ *M.Pharmacy(Regulatory Affairs)*
- ⇒ *Pharm D (Post Baccalaureate)*

The end objective of the endeavor is to provide the best of facilities meeting international standards within the norms of the Government and University recommended fees. structure, to students from moderate backgrounds, to which it is a dream come true.

The Institute's students have bagged university ranks at both undergraduate and postgraduate level. The merit percentage has been always 95 plus.

Moreover, the first and second Ranks at PGECET-2013 were from the college.

1.2 Statements of the Institute

1.2.1 Vision

The Institute proposes "To be an institution of Excellence for Pharmaceutical Education, a leading knowledge and networking platform for young women aspirants to make a change as accountable healthcare professionals – pharmacists and pharmaceutical scientists – engaged in health promotion, disease prevention; assessment, monitoring, initiation and modification of medication usage to assure safe and effective drug therapy regimens."

1.2.2 Mission

The Institute adheres and focuses towards - Formidable role for women in pharmaceutical industry, by preparing them for competitive positions at all levels through research-oriented education, extensive training, skill development, talent management, community reach and develop core values of excellence, Innovation, team work, trust and accountability.

- M1: To have qualified students with profound knowledge in various fields of Pharmaceutical sciences to meet the requirements of the Pharmaceutical Industry, Community and Hospital Pharmacy.
- M2: To provide quality pharmaceutical care to the society in a judicious, coordinated and dynamic way and develop ethical and moral attitude to meet the real-world requirements of society.
- M3: Acquire professional skills in making the products and providing services in health care system.

1.2.3 Aim

The College has formulated the following aim to achieve its mission:

- To provide outstanding pharmaceutical education and create a prominent knowledge and networking platform for aspiring young women in the field.
- To empower them to become responsible healthcare professionals, specifically pharmacists and pharmaceutical scientists, who play a pivotal role in health promotion, disease prevention, and ensuring the safe and effective use of medications.

1.2.4 Objective

It is the objective of the College is

- to empower women to play a significant and competitive role in the pharmaceutical industry and achieve the same through research-focused education, comprehensive training, skill enhancement, talent nurturing, community engagement, and the cultivation of core values such as excellence, innovation, teamwork, trust, and accountability.
- to prepare women to excel at all levels within the pharmaceutical field.

1.2.5 Motto

The College channelizes its efforts towards the motto of "We excel."

1.3 Assessment of the Institute

1.3.1 Affiliations

The technical course provided by the College is affiliated to **a collegiate public state university located in Hyderabad, Telangana, India**. Mir Osman Ali Khan, the 7th Nizam of Hyderabad, issued a firman calling for its creation on 29 August 1917.

1.3.2 Certification

The College has received the following Certifications

- **AISHE** – The All India Survey of Higher Education code is C-25626.
- **ISO** – The 9001:2015 Quality Management System has been achieved

1.3.3 Approvals

The technical courses provided by the College have taken required approvals as follows:

- Approved by **All India Council for Technical Education (AICTE), New Delhi**.
- Approved by **Pharmacy council of India (PCI), New Delhi**.

1.3.4 Accreditation

The Four Year B. Pharm degree program is accredited by National Board of Accreditation (NBA), Govt. of India.

1.4 Facilities of the Institute

The campus has state of the art infrastructure to supports its endeavours:

INFRASTRUCTURE

- *13 well-ventilated and spacious classrooms with LCD projector & screen and computer& 5 tutorial rooms with computers and LCD projectors*
- *21 modern modular laboratories with attached preparation rooms having concealed piping for gas, water and drain lines. Convenient faculty rooms are provided.*
- *State-of-the-art equipment is available for preparing simple dosage forms to advanced novel drug delivery systems using rotary tablet machine, coating pan, triple roller mill, colloid mill, Tray dryer, homogenizers & Ultrasonicator.*
- *High-precision analytical instruments are available for analyzing various drugs & their dosage forms using ATR FTIR, HPLC,UV-Visible spectrophotometer, electrophoresis, pH meters among others*
- *Convenient faculty rooms are provided*
- *Computer Laboratory equipped with high end computers and printers for computer practical sessions and preparation for seminars, conferences and presentations. It also has Language Laboratory tool to train students in English language skills. The lab has 80 systems, with the following configurations:*
 - *20 HP Desktops DX 2480 Intel core 2Duo 2.53 Ghz Processor*
 - *20 Dell-Vostro 3800 I3 Processor/4GB/500/DVD/Wi-Fi*
 - *20 Dell Vostro 3800 I5 Processor/4GB/500/DVD/W-iFi*
 - *20 I5 Processor/8 GB RAM/1 TB HDD/256 GB SSD*

ANIMAL HOUSE

- *In compliance with CPCSEA norms, we have established state-of-art animal house facility, in which every student will get hands-on training on animal handling, drug administration and blood withdrawal techniques.*
- *Every M.Pharm dissertation work will be supported with in vivo studies which will enable the research work to be published in peer reviewed journals*

VIRTUAL PHARMACY

- *Virtual Pharmacy was inaugurated by Sri Navin Mittal, IAS, Commissioner of Technical Education, Govt. of Telangana and Prof. C. K. Kokate, former Vice Chancellor K.L.E. Deemed University, former Vice Chancellor Kakatiya University, and former President, Pharmacy Council of India, on 12th July, 2021.*
- *The Virtual Pharmacy facility is first of its kind in the Country as it familiarizes the students with all the logistics of drug store management.*
- *Virtual pharmacy provides real-time order verification, patient counseling in various therapeutic segments and check the drug – drug interactions of the prescriptions*
- *Students learn to perform the role of Pharmacist, vital sign measurements, monitoring and auditing of drug store activities*
- *Virtual pharmacy provides a unique opportunity to know therapeutic segment-wise brand names of drug products and their manufacturers apart from understanding the inventory management principles.*

LIBRARY

- *A well-stacked library on the top floor with ample ventilation convenient for effective study/ reading.*
- *It is well spread out over a plinth area of 150 sq. mt.*
- *Houses a reading room, reference section,*
- *Has 1203 titles, 12732 volumes, 24 national and 16 international journals.*
- *The digital library gives student access to E-journals*
- *Internet facility for staff and students.*
- *Can seat 75 students at a time.*

OTHER FEATURES

- *An air-conditioned auditorium with a 250 seating capacity and a seminar hall that accommodates a hundred.*
- *Computer Laboratory.*
- *Wi-Fi connectivity*
- *A Board Room.*
- *Girls Common Room*
- *2 lifts and 3 wide stairways*
- *An elegant hallway and a spacious room for Principal and Chairman-cum-Secretary.*
- *Efficiently planned Office and Administrative wing*
- *Attractive facade with glass panelling*
- *30,000 sq. ft. cellar parking*

2. Overview

2.1 Summarised Populace analysis for 2022-2023

2.1.1 Students data

The data shared by Institute shows there were **589 female students**.

2.1.2 Staff data

| S. No. | Type | Male | Female | Total |
|----------------------------|--------------------|-----------|-----------|-----------|
| 1 | Admin staff | 01 | 08 | 09 |
| 2 | Teaching staff | 07 | 50 | 57 |
| 3 | Non-Teaching staff | 08 | 24 | 32 |
| Total Staff Members | | 16 | 82 | 98 |

Table 1: Staff data of the Institution for 2022-2023

The staff data shows the Institute premises had a total of **98 Staff Members**.

2.2 Summarised Populace analysis for 2021-2022

2.2.1 Students data

The data shared by Institute shows there were **524 female students**.

2.2.2 Staff data

| S. No. | Type | Male | Female | Total |
|----------------------------|--------------------|-----------|-----------|-----------|
| 1 | Admin staff | 01 | 05 | 06 |
| 2 | Teaching staff | 03 | 40 | 43 |
| 3 | Non-Teaching staff | 07 | 15 | 22 |
| Total Staff Members | | 11 | 60 | 71 |

Table 2: Staff data of the Institution for 2021-2022

The staff data shows the Institute premises had a total of **71 Staff Members**.

2.3 Site & Institute Building Spread Area

The Institute is spread over **1 acre** with a built-up area comprising of **1,00,000+ sq. ft.** designed into multiple blocks for educational and residential purposes for a populace of 687 stakeholders (Students and staff members).

2.4 Institute Infrastructure

2.4.1 Establishment

The Institute was established in **1997**.

2.4.2 Spatial Organisation

The Institute is located in a pollution free and healthy environment. The Building is a Reinforced Cement Concrete (RCC) framework building. There are provisions for staircase for accessibility on the premises, whereas there are amenities such as CCTV, a first aid room, etc.

2.5 Operation and Maintenance of the premises

The interview session was held with the staff regarding the operation and working hours. The Institution is open from Monday to Saturday with the timings being 10:00 to 17:00 hours.

3. Research

3.1 About the Green Building Study Audit

It is a systematic study of the aspects which make the Institution sustainable and healthy premises for its inhabitants.

3.2 Analysis of the Green Building Study Audit

The procedure included detailed verification as follows:

- Investigation
- Technical discussion with team
- Observations
- Inferences

3.3 Strategy adopted for Green Building Study Audit

The strategies included data collection from the admin department, actual inventory, investigation to check the operation and maintenance, analysis of the data collection, and preparation of the Report.

3.4 Activities undertaken for the Green Building Study Audit

- Discussion with the Institute
- Allotment and Initiation by the Institute
- Data collection
- Submission of the files

Evidence documents for Site visit of external audit team

Audit team headed by external expert - Ar. Nahida Abdulla
 Accredited & Certified Green Building Professional, ISO IA (IMS)
 Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: SAROJINI NAIDU VANITA PHARMACY MAHAVIDYALAYA Date: 7 Nov 2023

Document objective: Induction Meeting attendance sheet

| S. No. | Name | Committee | Designation | Signature |
|--------|------------------------|-----------|----------------------------|-----------|
| 1. | Mrs. F. A. Shaikh | External | Project Coordinator | |
| 2. | Ar. Nahida Abdulla | External | Project Head | |
| 3. | Dr. N. Srinivas | INTERNAL | Professor & Director | |
| 4. | Dr. T. Saritha Jyostna | INTERNAL | Professor & Principal | |
| 5. | Dr. T. Mamatha | INTERNAL | Professor & Vice Principal | |
| 6. | Dr. Vivek Sagar | INTERNAL | Professor & HOD | |
| 7. | Mrs. R.Vs Latha Devi | INTERNAL | Associate Professor | |
| 8. | Mrs. P. Uma | INTERNAL | Assistant Professor | |
| 9. | Mrs. G.T. Jyostna | INTERNAL | Assistant Professor | |

Signature & round seal
 Name: Dr. T. Saritha Jyostna
 Designation: PRINCIPAL

For the said Institute
Sarojini Naidu Vanita Pharmacy Maha Vidyalaya
Vijayapuri Colony, S. Lakuguda, Tam. Ind.
SECUNDERABAD-505 017



Signature & round seal
 Name: Mrs. F. A. Shaikh
 Designation: Project Coordinator

For The Greenvio Solutions












Evidence documents for Site visit of external audit team

Audit team headed by external expert - Ar. Nahida Abdulla
Accredited & Certified Green Building Professional, ISO IA (IMS)
Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: SAROJINI NAIDU VANITA PHARMACY MAHA VIDYALAYA Date: 7 NOV 2023

Document objective: Exit Meeting attendance sheet

| S. No. | Name | Committee | Designation | Signature |
|--------|-----------------------|-----------|----------------------------|---|
| 1. | Mrs. F. A. Shaikh | External | Project Coordinator |  |
| 2. | Ar. Nahida Abdulla | External | Project Head |  |
| 3. | DR. N. SRINIVAS | | Professor & Director |  |
| 4. | DR-T. Saritha Tyostna | | Professor & Principal |  |
| 5. | Dr. T. Mamatha | | Professor & Vice-Principal |  |
| 6. | Dr. Vivek Sagar | | Professor & HOD |  |
| 7. | Mrs. RVS Latha Sree | | Associate Professor |  |
| 8. | Mrs. P. Uma | | Assitant Professor |  |
| 9. | Mrs. G.T. Tyostna | | Assistant Professor |  |



Signature & round seal

Name: Dr. T. Saritha Tyostna

Designation: PRINCIPAL

For the said Institute
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Signature & round seal

Name: Mrs. F. A. Shaikh

Designation: Project Coordinator

For The Greenvio Solutions

Website: thegreenviosolutions.co.in Email: greenviosolutions@gmail.com



4. Observation

A site visit was conducted at the site on **07 November 2023** and the following observations were noted as part of the physical investigation.

The following points were observed during the investigation and are documented for being 'POSITIVE ASPECTS' that are beneficial to the stakeholder and the campus.

4.1 Facilities analysis

- **Lights** - All lights are in working conditions. There was **no fuse defect observed**.
- **Fans** - All fans are in working conditions. Windows **do not** have cracks and are caulked appropriately.
- **Air conditioners** - The systems were cleaned maintained and had **no dust collection problems**.
- **Equipment** - All equipments are in working conditions and **daily monitoring is done by the maintenance staff** and admin staff in an excellent manner.
- **General** - **No defect** was found in any appliance of electrical consumption.

4.2 System analysis

The premise has the following features that are excellent:

4.2.1 Air Conditioning

Institute requires air conditioners because, in summers, classrooms can get unbearably hot. In this case, instead of focusing on learning, the brain would rather focus on keeping the body cool. As a result, students won't be able to perform their best academically. Air conditioners help improve air quality by removing dust, pollen, and other particles from the air.

They come with a filtration system that helps keep the air clean & free from allergens. A comfortable classroom environment is essential for learning.

Not only is a cool temperature important for learning but for health too. When anyone is exposed to hot temperatures for a long time it can lead to dehydration, heat stroke and more. Air conditioning is an essential for Institutes in hotter climates.



Plate 1: Air conditioning system in Campus

4.2.2 Solar Panels

Solar energy is obtained from the sun's rays. We know that the Sun is a powerful source of energy and it can be properly utilized by installing solar energy. We convert solar energy from the sun into electricity and use it. There is some pollution during electricity generation or other sources of energy and it damages the environment due to pollution. On the other hand, there is no such difficulty in the origin of solar energy.

After solar energy came into existence and its increased use, the pressure on other energy sources has come down, which is a good sign for both the ecosystem and the environment. Since you will meet all your energy needs with electricity generated from solar energy, you will get relief from the huge cost of the electricity bill. **Solar energy is clean & green energy, Non-maintenance, Safer than Other.**



Plate 2: Solar panels in the premises

4.2.3 D.G Sets

A diesel generator is used to generate electric energy by using a diesel engine along with an electric generator. A diesel generator can be used as an emergency power supply in case of power cuts or in places where there is no connection with the power grid. Power outages at an educational institute don't simply mean the lights go out for a while. It can also mean an unsafe environment for students and staff without the heating system, security systems, air conditioning, internet and more.

Outages can even cause safety and housing equipment to fail, which can cause flooding or compromise fire safety. For higher education Institutes a loss of power can also lead to serious data loss. For institutions with laboratories, data centers, computer systems or other critical facilities that rely on power systems, a loss of power can have long-lasting consequences. Institute also have medical facilities – whether onsite medical centers or medical school facilities. In the case of a power outage, emergency care, outpatient equipment, research labs and more could be affected. Life-saving equipment often needs electricity and power to function, and even things like ventilation in chemical labs and sample refrigerators will fail without access to electricity.

Power loss during exam season is another concern for Institute, particularly during finals and end of year examinations; it's a good idea for administrators to consider a source of backup power for computer networks and internet access. Power loss and the way it's handled can have a real impact on the reputation of Institute.

4.2.4 UPS

An education UPS solution can also help keep teachers and students safe, as this can help ensure that all electronic attendance systems, CCTV & security systems and even lights and such, are kept up and running during a mains failure. It is vital that the critical infrastructure in a school or university is supported with a dependable UPS system.

In terms of IT equipment, there is the risk that important work and data could be lost. Now that many admissions and examinations are processed electronically, a loss in power could have a significant, long-lasting impact on a student's education and future. Having a reliable UPS for Institute is of utmost importance, as many Institutes have specialist laboratories, dedicated to essential research. A loss of power, or even a slight fluctuation in power, could result in lost or damaged research findings and ultimately years of hard work.

5. Documentation

5.1 Primary sources of energy consumption

- ➔ **Electrical (Metered)** – Light, Fans, Equipments, Pumps comprise these sources.
- ➔ **Alternate sources of energy** – The following systems are available:

| S. No. | Nos. |
|---------------------|------------------------------|
| Solar panels | 152 nos. currently available |
| | 30 nos. order given |

Table 3: Primary sources of energy consumption

5.2 Secondary sources of energy consumption

The solar panels are made of photovoltaic cells – semiconductor layers of gallium arsenide or crystalline silicon. Once the sun shines, these layers absorb energy from the PV cells. The energy moves between positive and negative layers to produce a direct current. Once the energy gets in the inverter, it runs through the transformer and splits out an AC output. Technically, the inverter tricks the transformer to think that DC is AC

The energy is either sent to the battery or directly to the inverter – it depends on the inverter system you have. Most units are designed to run direct current through transistors that turn on and off fast. If your solar power system produces more energy than what you need, a photovoltaic inverter can feed it back into the grid. But again, if the inverter is not producing enough power to meet your home needs, it mixes it with the grid power.

Since solar panels don't produce energy at night, you rely 100% on the grid. Some inverters can mix the grid power with the energy from the solar batteries. With grid tie inverters, you won't notice a change as it switches between the two. The details of the existing sources are documented below:

| Name | Nos. |
|----------------------|------|
| UPS | 12 |
| Inverters | 2 |
| Batteries | 32 |
| Gas cylinders | 3 |

Table 4: Details of secondary sources of energy consumption

5.3 Actual Electrical Consumption as per Bills

The details are documented below:

| S. No. | Month | Year | Amount | Units consumed | Solar units generated | Gross units consumed after deduction |
|------------------------|-----------|------|----------|----------------|-----------------------|--------------------------------------|
| Academic year 1 | | | | | | |
| 1 | June | 2021 | 36,316 | 1,392 | 2,419 | -1,027 |
| 2 | July | 2021 | 44,825 | 3,557 | 997 | 2,560 |
| 3 | August | 2021 | 36,859 | 6,979 | 5,000 | 1,979 |
| 4 | September | 2021 | 1,05,071 | 8,162 | 0 | 8,162 |
| 5 | October | 2021 | 79,438 | 7,778 | 939 | 6,839 |
| 6 | November | 2021 | 84,894 | 7,701 | 471 | 7,230 |
| 7 | December | 2021 | 85,448 | 7,609 | 320 | 7,289 |
| 8 | January | 2022 | 68,506 | 5,917 | 613 | 5,304 |
| 9 | February | 2022 | 43,054 | 4,292 | 1,323 | 2,969 |
| 10 | March | 2022 | 99,665 | 9,253 | 362 | 8,891 |
| 11 | April | 2022 | 1,18,322 | 11,080 | 201 | 10,879 |
| 12 | May | 2022 | 1,54,220 | 12,766 | 177 | 12,589 |
| Academic year 2 | | | | | | |
| 13 | June | 2022 | 1,47,065 | 11,424 | 184 | 11,240 |
| 14 | July | 2022 | 1,71,125 | 14,612 | 60 | 14,552 |
| 15 | August | 2022 | 1,40,646 | 10,954 | 110 | 10,844 |
| 16 | September | 2022 | 1,71,022 | 14,360 | 145 | 14,215 |
| 17 | October | 2022 | 93,987 | 7,734 | 735 | 6,999 |
| 18 | November | 2022 | 1,10,752 | 9,128 | 536 | 8,592 |
| 19 | December | 2022 | 1,43,039 | 12,140 | 312 | 11,828 |
| 20 | January | 2023 | 1,27,256 | 10,882 | 579 | 10,303 |
| 21 | February | 2023 | 1,35,582 | 11,616 | 448 | 11,168 |
| 22 | March | 2023 | 1,55,099 | 13,176 | 219 | 12,957 |
| 23 | April | 2023 | 76,530 | 6,634 | 129 | 6,505 |
| 24 | May | 2023 | 1,84,301 | 16,228 | 0 | 16,228 |

Table 5: Details of the electrical consumption

5.4 Calculated Electrical Consumption as per inventory

The electricity bills provide actual consumption data. The following is the calculated consumption. It is done to understand the percentage of energy usage in the premises by various applications. It is based on the inventory collected and interviews with the staff.

The additional data such as wattage is taken from market research. In terms of electrical consumption, the main sources are lights, fans, air conditioner, and equipment. The inventory and data collection for sources of energy consumed in the premise is summarised in the following sections.

The following documentation is based on the consumption practice of the premises on a regular working day.

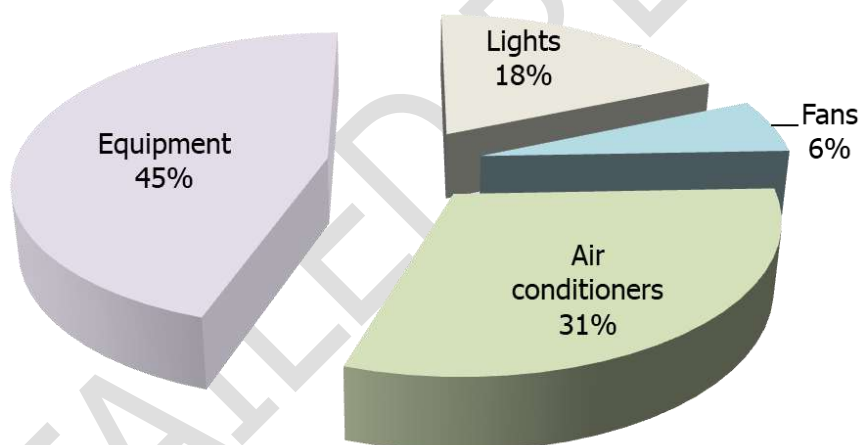


Figure 1: Summary of the calculated electrical consumption as per inventory

The above graph shows that equipment consumes 45% whereas the air conditioners consume 31% while the lights consume 18% and the fans consume 6% of the total calculated electrical energy.

5.5 Lights

5.5.1 Types of lights based on the numbers

There are a total of **2,817 lights on the premises**; the following table shows the various types of lights on the premises.

| S. No. | Type | Nos. |
|--------|---|-------|
| 1 | LED lights (Energy efficient appliance) | 2,652 |
| 2 | Non-LED (Non-Energy efficient appliance) | 165 |

Table 6: Summary of the types of lights on-premise

5.5.2 Types of lights based on the power consumption

The energy consumption of lights is **81,191 kWh** of energy.

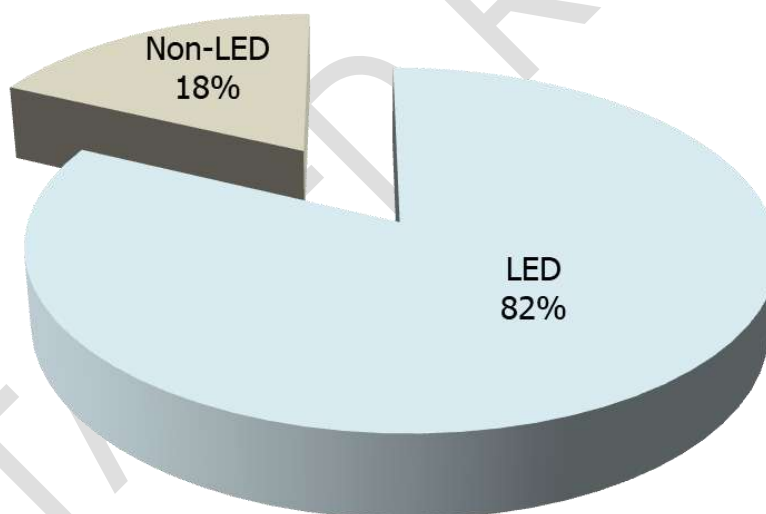


Figure 2: Energy consumed by types of lights in the premise based on the usage study

The analysis of the types of Lights on-premises shows **LED lights consume 82%** whereas the **Non-LED lights consume 18%** of the total power consumed by lights.

5.6 Fans

5.6.1 Types of fans based on the numbers

There are a total of **254 fans** on the premises as follows:

| S. No. | Type | Nos. |
|--------|-------------------|------|
| 1 | Ceiling fans | 211 |
| 2 | Exhaust fans | 5 |
| 3 | Table fans | 5 |
| 4 | Wall mounted fans | 33 |

Table 7: Summary of the types of fans in the premises

5.6.2 Types of fans based on the power consumption

The energy consumption of fans is **25,572 kWh** of the energy.

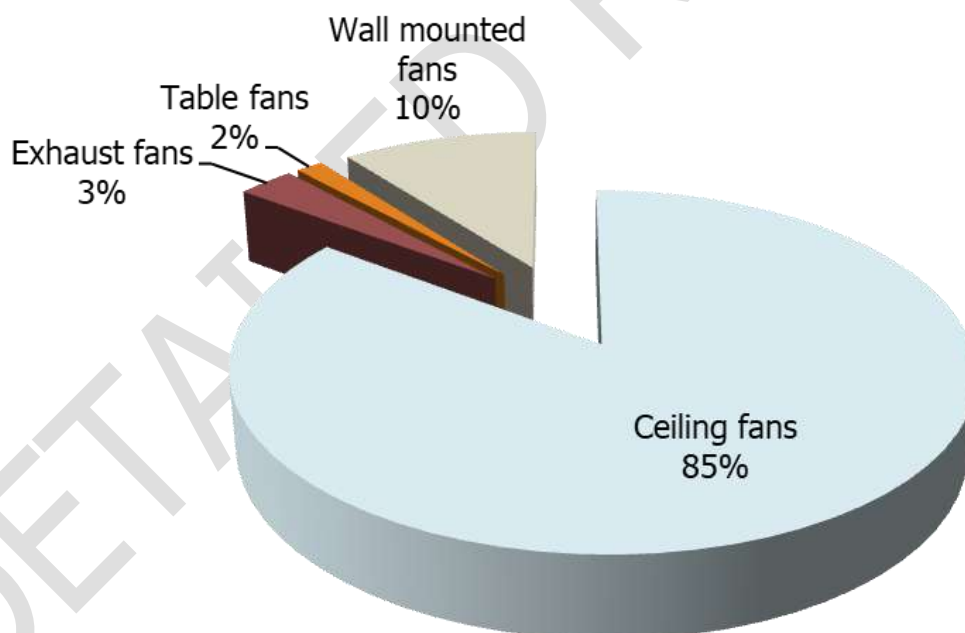


Figure 3: Types of fans based on power consumption

The above analysis shows Ceiling fans consume 85% whereas the wall mounted fans consume 10% while the exhaust fans consume 3% and the table fans consume 2% of the total power consumed by fans.

5.7 Air conditioners

The main purposes of a Heating, Ventilation and Air-Conditioning (HVAC) system are to help maintain good indoor air quality (IAQ) through adequate ventilation with filtration and provide thermal comfort. A well-functioning HVAC system can improve air circulation and reduce the risk of airborne illnesses in commercial buildings, scientific labs, and Institutes.

The importance of indoor air quality frequently goes unnoticed despite its profound impact on our daily lives. While individuals may notice uncomfortable temperatures or unpleasant odors, the quality of indoor air are frequently neglected HVAC systems are present in all buildings. While we commonly associate heating and cooling systems with adjusting temperatures in households and offices, refrigeration and HVAC systems serve a multitude of critical roles beyond these contexts. For instance, refrigeration systems are indispensable in preserving food freshness in grocery stores and restaurants, while HVAC systems promote energy efficiency in large commercial and industrial establishments. Additionally, HVAC systems play a critical role in establishing and maintaining a healthy indoor environment in sensitive spaces.

HVAC systems maintain a comfortable and healthy indoor environment by bringing in fresh, outside air and circulating it. This exchange of air is a crucial factor in maintaining healthy oxygen levels and reducing indoor air pollutants in indoor work environments.

5.7.1 Types of air conditioners based on the numbers

There are **28 split and 4 centralized air conditioners** on the entire premises.

5.7.2 Building-wise consumption analysis

The energy consumption of air conditioners is **1,33,958 kWh** of energy.

5.7.3 About the replacement of current air conditioners

- The current air conditioners are well maintained.
- Though there is not an immediate requirement for replacement.
- Whenever the Institute undergoes redevelopment there can be provisions for replacement with energy-efficient appliances or new air conditioners that require less power consumption.

5.8 Equipment

5.8.1 Types of Equipment

There are **286 nos. of equipment** in the premises.

5.8.2 Types of equipment as per their energy contribution

The energy consumption of equipment is **1,96,541 kWh** of energy.

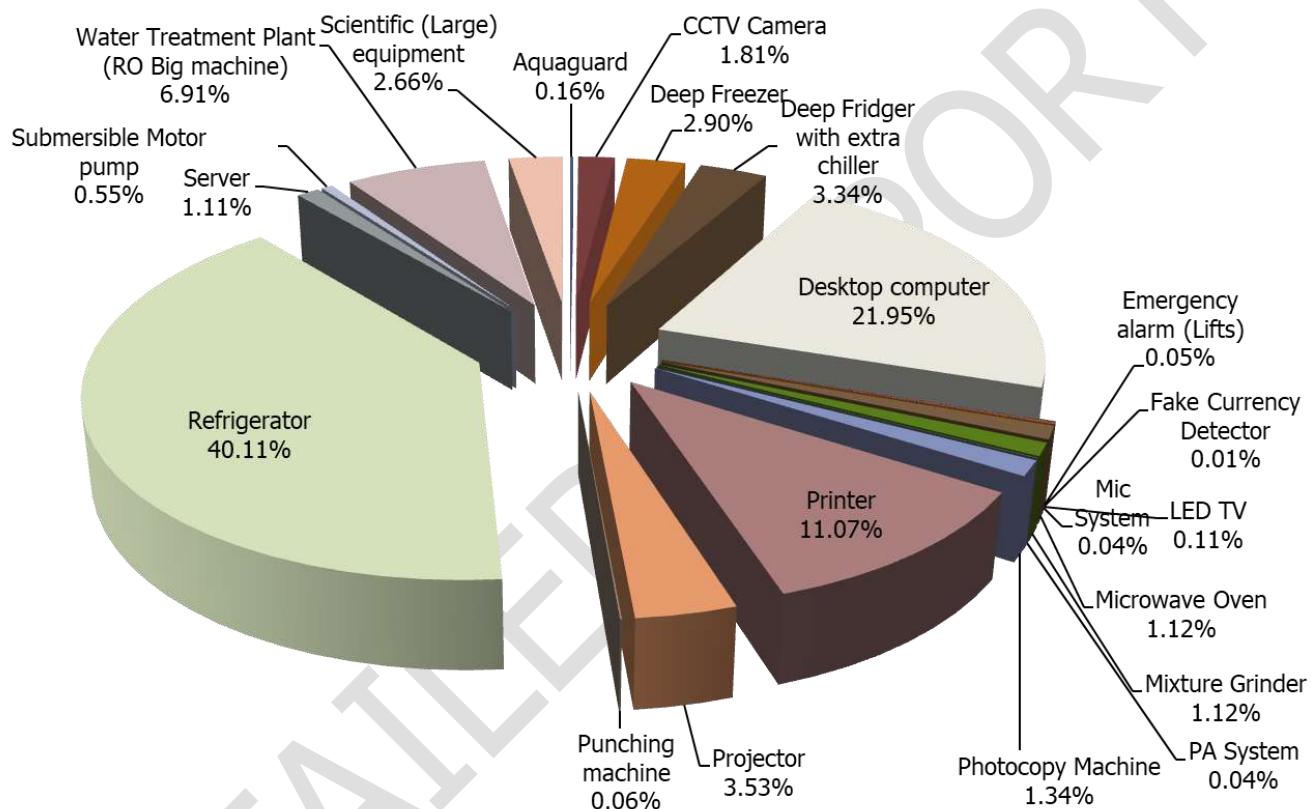


Figure 4: Energy consumed by types of equipment in the educational sector based on the usage study

The above summary shows that the **refrigerator consumes more energy at 40.11%** while the **desktop computer consumes 21.59%** whereas the **printer consumes 11.07%** and the **water treatment plant (RO Big machine) consumes 6.91%** these are the maximum consumers as compared to other equipment.

6. Investigation

The following results are based on the investigation carried out during the site visit.



Figure 5: Energy and environmental parameters investigation study

The comfort levels as per investigation were good.

7. Exhortation

7.1 Site suggestions

The following suggestions are to be considered as a ***first priority*** and should be **executed within the next 1.5 to 2.5 years from the date of the Report submission**. The Institute can execute a plan after discussion with Project Head.

| S. No. | Space | Comment | Action to be taken |
|--------|--|--|--|
| 1. | Terrace | Dust accumulation | Clean the rooftop solar panels once in a month or week |
| 2. | Outdoor and terrace areas | Air conditioners outdoor units exposed to direct sun | Have a temporary or tensile covering to make the appliance more energy efficient |
| 3. | Indoor spaces | Documentation | Include 'Digital classroom' signs in all spaces that have a projector |
| 4. | Room no. 406 Toilet close to auditorium | Fabrication work | The wall facing the corridor has some paint withering out and door area require civil work |

Table 8: Site suggestions

7.2 Section-wise suggestions

The following suggestions are ***not an urgent priority*** and **can be executed in 5 years from the date of the Report submission.**

Electromechanical systems - Electrical and Lighting

Section 1 - Non-LED lights

The current light analysis shows that Non-LED lights consume anywhere between 50W to 54W and even more when in use; these should be replaced with LED lights which consume on an average 12-16W when in use.

Our technical research shows that there would be a reduction of an average of **67% reduction** in energy consumption through lights specifically as a part of the electro - mechanical system if all **Non-LED lights on all floors** are replaced with an energy efficient appliance whenever the College undergoes renovation.

The replacement can be done when fans get damaged or are not in working condition (NOT URGENTLY).

Section 2 - Ceiling fans

The current Fans are in proper working conditions and maintained well. The ceiling fans are in more quantity and consume at least 45W when in use. These should be replaced with energy efficient fans consuming 14W when in use.

Our technical research states that is all the **ceiling fans on all floors** if replaced with star rated appliance results in a reduction of average of **69% reduction** in energy consumption if replaced with energy efficient appliance. It will be suggested to either replace these now if College can have certain plans else the replacement can be done when fans get damaged or are not in working condition.

The replacement can be done when fans get damaged or are not in working condition (NOT URGENTLY).

7.3 General suggestions

7.3.1 Alternatives to increase renewable energy – Solar tree

Since there is availability of space; the solar trees can be installed in multiple places as they will provide dual benefits of aesthetic and energy reduction.



Plate 3: Solar tree concept for the Institute (For reference purpose only)

Source: Image by <https://timesofindia.indiatimes.com/india/cmeri-installed-the-worlds-largest-solar-tree-at-durgapur/articleshow/77856790.cms>

7.3.2 Alternatives towards Smart premises mechanisms

7.3.2.1 Smart gardening

The Institute can undertake a Smart Gardening system using IoT Technology. This will result in saving time by scheduling time for watering; saving money through automated water schedules tracking dampness of soil to know when, how much water garden needs.



Plate 4: Solar farm concept for the Institute (For reference purpose only)

Image source: <https://housing.com/news/smart-gardening/>

Data source: <https://www.happysprout.com/inspiration/what-is-smart-gardening/>

7.3.2.2 Facility management systems, controls

(Includes electromechanical systems – Electrical, Water)

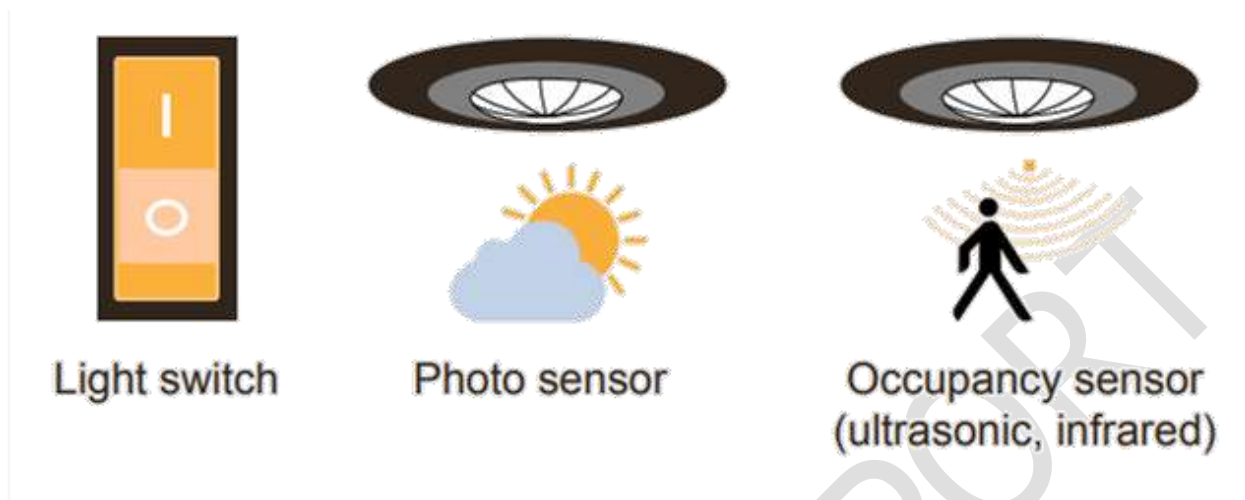


Plate 5: Understanding the lighting concepts

Source: https://seors.unfccc.int/applications/seors/attachments/get_attachment?code=NG125PFE4WHMWSYAK8TCAKIHMWX0F4QD

The above diagram provides a detailed study of how the system controls should be incorporated in the premises as far as lighting systems are considered.

- ➔ Install PIR control of the lighting in the toilet areas.
- ➔ Install low flow taps with automatic shut off in the toilets.
- ➔ Install push button timer control in all rooms lighting and ceiling fans.
- ➔ Install Power Electronics control of the Foyer notice board lighting.
- ➔ Installation of intelligent lighting controller will help in controlling the lighting energy.
- ➔ Use of photo sensor switch for street light controlling helps in conserving the lighting energy.

On-site investigation and physical verification
 Audit Team during the visit and other photos collected during data documentation



Meeting and group photo with the team



On-site investigation parameters – Cellar, Office, Laboratories and Library areas



Seminar on 'Trash to treasure' to the stakeholders

8. Compilation

The study is based on the data collected, analyzed, rechecked, and confirmed through multiple modes. For the quality study, some standards/ notes have been referred to. These are listed and noted below. However, no direct references have been used anywhere. These are used as a base to analyze and study the data collected.

Specific references for study related to energy

- ➔ <https://www.energy.gov/eere/buildings/zero-energy-buildings>
- ➔ <https://www.dsaarch.com/zero-net-positive-energy>
- ➔ U.S. Energy Information Administration
- ➔ <https://www.happysprout.com/inspiration/what-is-smart-gardening/>
- ➔ IGBC Green Campus rating system Abridged Reference Guide
- ➔ GEM Sustainability Certification Rating Program
- ➔ Inference study reference images
 - https://seors.unfccc.int/applications/seors/attachments/get_attachment?code=NG125PFE4WHMWSYAK8TCAKIHMWX0F4QD
 - <https://housing.com/news/smart-gardening/>
 - <https://solarpowerproject.in/solar-panels-for-parking-lots.php>
 - <https://timesofindia.indiatimes.com/india/cmeri-installed-the-worlds-largest-solar-tree-at-durgapur/articleshow/77856790.cms>

