ENERGY AUDIT

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

Disclaimer

The Audit Team has prepared this report for the **Pune District Education Association's Mahatma Phule Institute of Management and Computer Studies** located at _Annasaheb Magar College Campus, Manjari Road, Pune, Pin code-412307 State-Maharashtra_ 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 **Pune District Education Association's Mahatma Phule Institute of Management and Computer Studies, Maharashtra** 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 **Hon'ble Ajit Pawar,** (President); **Hon'ble Rajendra Ghadage,** (Vice President); **Hon'ble Sandeep Kadam** (Secretary) and everyone from the Management.

Our heartfelt thanks are extended to the Chairperson of the entire process **Dr. Sachin Bharadwaj,** (Principal) for the valuable inputs.

We are also thankful to Institute's Task force the faculty members who have played a major role in data collection – **Asst. Professor Madhuri Bhise**, Criteria 7 head *(Special mention for the excellent coordination)*; **Mrs. Shubhangi Yadav,** (Non-teaching staff) **and Mrs. Rehena Kotwal,** (Administrative staff).

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

Contents

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1. Introduction

1.1 About the Institution

Mahatma Phule Institute of Management and computer studies was established keeping in view the industry's and society's need for management professionals.

MBA programme emphasizes to learn diversity, culture, sharing knowledge, with in-depth interaction with participants who have a diverse experience of various diversified fields.

MPIM gives lead start in career to students, helps to re-invent the future and equips to emerge as a leader with thorough understanding of business.

MPIM emphasizes on a constantly evolving curriculum which is at par with the full time educational programmes and meets the latest needs of a fast growing economy and progressive society.

The institute is gearing up to meet the aspirations of the industries in all the possible ways, when the need arises and to this end is not leaving any stones unturned.

1.2 Statements of the Institution

1.2.1 Vision

The Institute proposes *"To be quality Management institute of masses."*

1.2.2 Mission

The Institute adheres and focuses:

➲ *To create intellectual capital.*

➲ *To foster a culture of academic excellence and social sensitivity based management education through teaching, research, case studies, industry-institute interface and pedagogy of learning, empowering masses.*

1.3   Assessment of the Institute

1.3.1 Affiliation

The Institute is affiliated to **Savitribai Phule Pune University**, one of the premier universities in India, is positioned in the North-western part of Pune city.

1.3.2 Certification

The College has received the code under **All India Survey of Higher Education** (AISHE) wherein the code is C-41697.

1.3.3 Approval

The technical courses provided by the College are approved by **All India Council for Technical Education (AICTE), New Delhi**.

1.4   Facilities

The team emphasize on latest technological advancement through its educational initiatives. Some of the key facilities are listed below.

- ⮑ Well-equipped classrooms
- ⮑ Well stocked library
- ⮑ Computer laboratory with latest softwares
- ⮑ Outdoor sports facilities

2. Overview

2.1 Summarised Populace analysis for 2022-2023

2.1.1 Students data

The data (shared by the Institute) shows there were a total of **120 male and 79 female students in the premises.**

2.1.2 Staff data

S. No.	Type	Male	Female	Total
1	Admin staff	00	02	**02**
2	Teaching staff	06	07	**13**
3	Non-Teaching staff	03	01	**04**
Total Staff Members		**09**	**10**	**19**

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

The staff data shows the Institute premises had a total of **19 Staff Members.**

2.2 Summarised Populace analysis for 2021-2022

2.2.1 Students data

The data (shared by the Institute) shows there were a total of **110 male and 76 female students in the premises.**

2.2.2 Staff data

S. No.	Type	Male	Female	Total
1	Admin staff	00	02	**02**
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Total Staff Members		**09**	**10**	**19**

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

The staff data shows the Institute premises had a total of **19 Staff Members.**

3. Research

3.1 Site Area & Institute Building Spread Area

The **site area is 1.25 acre** with a built-up area of **2,923 sq. m or 31,451 sq. ft.** for an **approx. 218 footfalls.**

3.2 Institute Infrastructure

3.2.1 Establishment

The Institute was established in **1990 & the MBA programme was introduced in 1994**.

3.2.2 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.

4. Investigation

4.1   Observations

The following points were observed during the investigation.

- **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 Outdoor units 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   Energy efficiency analysis

4.2.1 Energy efficient practices for alternative sources

Additional provisions that can be introduced in the near future are noted below:

- Solar tree
- Solar parking

4.2.2 Energy efficient equipment

- The premise has LED Lights in multiple spaces.

- The air conditioners are BEE star labelled appliances, the old ones are supposed to be replaced soon.

- There are no energy efficient fans in the premises.

5. Documentation

5.1 Primary sources of energy consumption

- **Electrical (Metered) –** Light, Fans, Equipments, Pumps comprise these sources.

- **Renewable energy –** There are **'NO' sources of renewable energy** available.

5.2 Secondary sources of energy consumption

The details of the existing sources are documented below:

S. No.	Name	Nos.
1	UPS	2
2	Inverters	2
3	Batteries	19

Table 3: Details of secondary sources of energy consumption

5.3 Actual electrical consumption as per bills

The Institute does not have sources of alternate sources of energy consumption and ends up spending a huge amount on the electricity bills every month.

S. No.	Month	Year	Amount
1	September	2022	8,980
2	October	2022	7,770
3	November	2022	8,450
4	December	2022	10,200
5	January	2022	8,760
6	February	2022	7,830
7	April	2022	9,150
8	May	2022	11,370
9	December	2022	20,320
10	February	2022	10,410
11	March	2022	10,910

Table 4: Details of the electrical consumption

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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 in summarised in the following sections.

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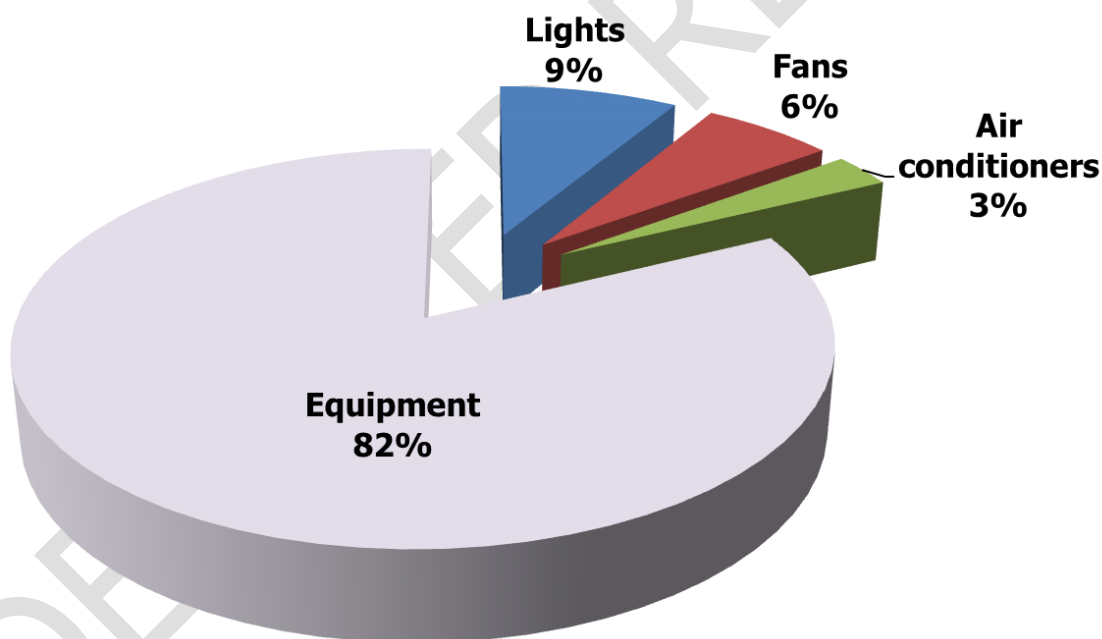

Figure 1: Summary of the calculated electrical consumption as per inventory

The above graph shows that equipment consume 82% whereas the lights consume 9% while the fans consume 6% and the air conditioners consume 3% of the total calculated electrical energy.

5.5   Lights

5.5.1   Types of lights based on the numbers

There are a total of **178 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)	72
2	**CFL lights** (Non-Energy efficient appliance)	64
3	**Non-LED lights** (Non-Energy efficient appliance)	42

Table 5: Summary of the types of lights on-premise

5.5.2   Types of lights based on the power consumption

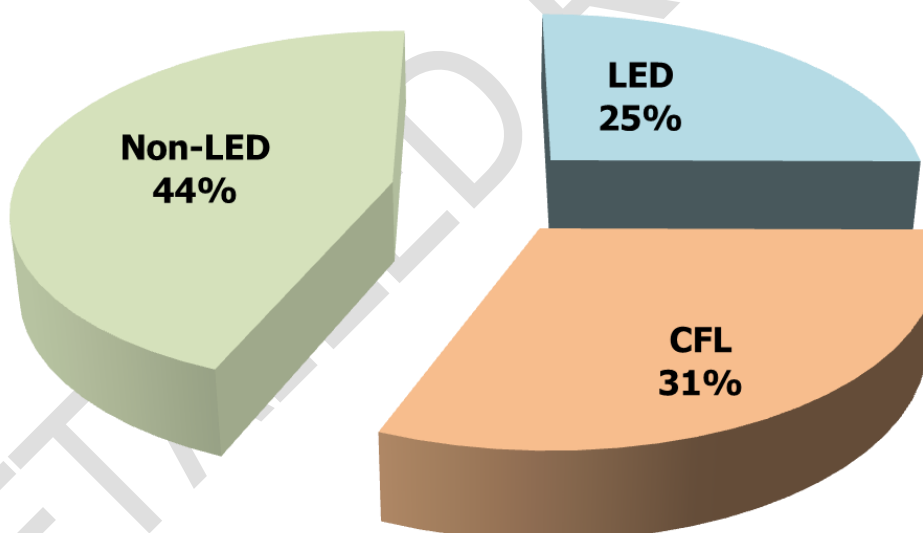The energy consumption of lights is **5,538 kWh** of energy.

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 **Non-LED lights consume 44%** whereas the **CFL lights consume 31%** while the **LED lights consume 25%** 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 **74 fans** on the premises as follows:

S. No.	Type	Nos.
1	Ceiling fans	58
2	Pedestal fans	3
3	Wall mounted fans	13

Table 6: Summary of the types of fans in the premises

5.6.2 Types of fans based on the power consumption

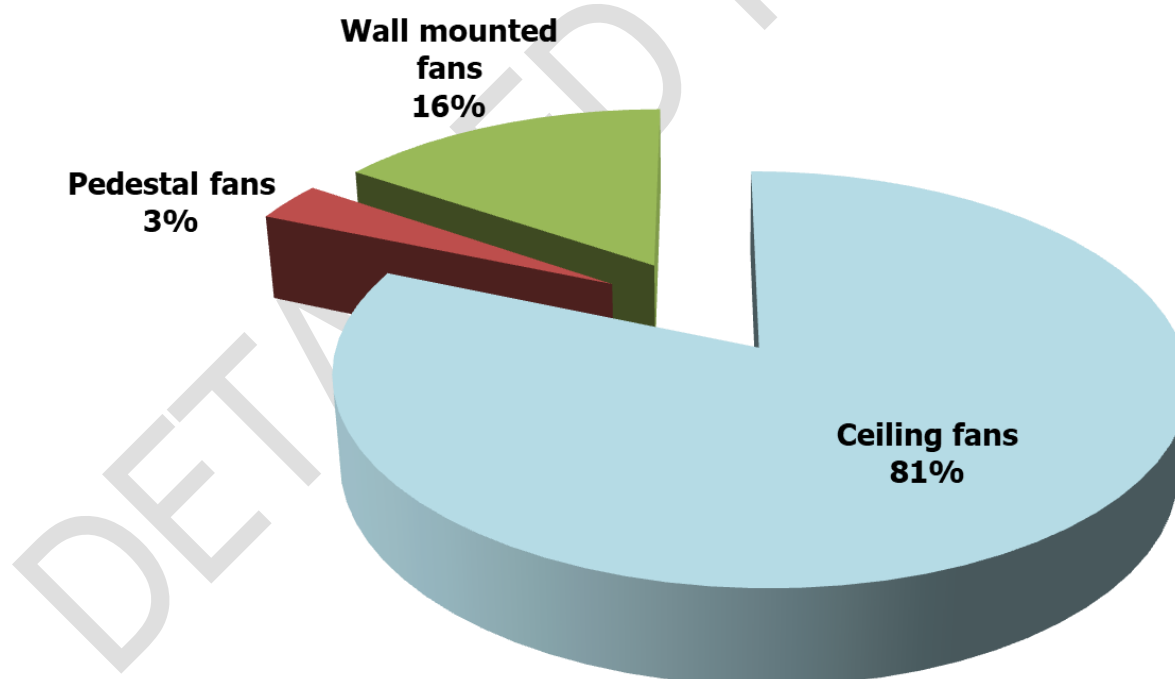The energy consumption of fans is **4,067 kWh** of the energy.

Figure 3: Types of fans based on power consumption

The above analysis shows **Ceiling fans consume 81%** whereas the **wall mounted fans consume 16%** while the **pedestal fans consume 3** of the total power consumed by fans.

5.7 Air conditioners

5.7.1 Types of air conditioners based on the numbers

There is **only one air conditioner** in the entire premises**.**

5.7.2 Building-wise consumption analysis

The energy consumption of air conditioners is **1,857 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 **151 nos. of equipment** in the Educational sector.

5.8.2 Types of equipment as per their energy contribution

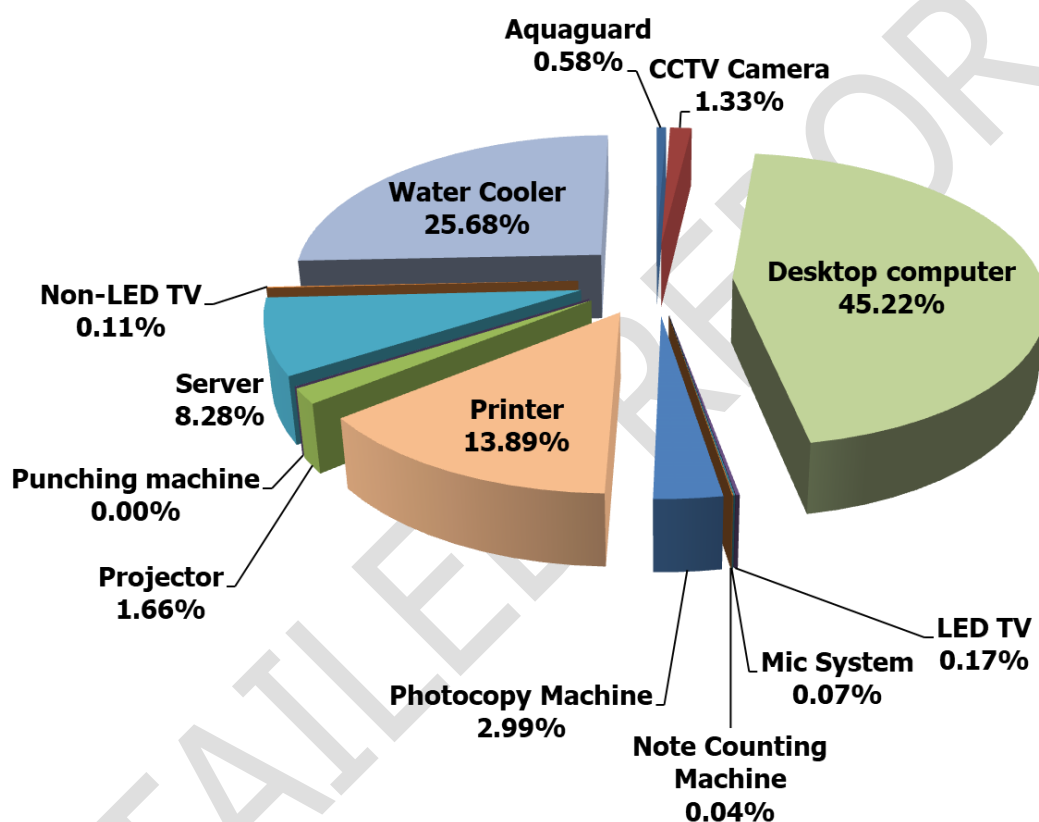The energy consumption of equipment is **52,884 kWh** of energy.

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

The above summary shows that the **desktop computer consumes more energy at 45.22%** while the **water cooler consumes 25.68%** whereas the **printer consumes 13.89%** and the **server consumes 8.28%** these are the maximum consumers as compared to other equipment.

6. Suggestion

6.1   Section-wise suggestions

The following suggestions are to be considered as a ***first priority*** for implementation. These **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.

6.1.1 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 if replaced with energy efficient appliance.

It will be suggested to either replace these now if the Institute can have certain plans else the replacement can be done when fans get damaged or are not in working condition.

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 shows that there would be a reduction of an average of **69% reduction** in energy consumption if replaced with energy efficient appliance.

It will be suggested to either replace these now if the Institute can have certain plans else the replacement can be done when fans get damaged or are not in working condition.

6.2   General suggestions

The following are consolidated study related to 'entire Institute' should be considered as **second priority** once section wise recommendations are implemented.

6.2.1 Alternatives towards Smart premises mechanisms

6.2.1.1.   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 1: 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/

On-site investigation parameters about the premises

7. 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/

- ⮂ https://housing.com/news/smart-gardening/

- ⮂ Inference study reference image

  https://seors.unfccc.int/applications/seors/attachments/get_attachment?code=NG125P FE4WHMWSYAK8TCAKIHMWX0F4QD

ENVIRONMENT AUDIT

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Sustainability study

AUDIT REPORT

Studied for

Pune District Education Association's

Mahatma Phule Institute of Management and Computer Studies

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Studied in the capacity of

Accredited and Certified

Green Building Professional

Studied by

Greenvio
Solutions

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

Email: greenviosolutions@gmail.com

Valid till **July 2024**

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3.2.2 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.

4. Investigation

4.1 Scope for improvement aspects

⮂ **Messages on the beam area**

Include quotes and messages from eminent personalities all over the premises on beam for inspiration and beautification.

⮂ **General aspects (Outdoor areas)**

- o Increase in green cover on rooftop

- o Placards and manuals for awareness

- o Dedicated reserved parking for physically disabled

- o Development of breakout zones at relevant locations

- o Introduce information boards everywhere

- o Increase sensitization programmes

- o Upgrade the website w.r.t. green initiatives

5. Documentation

5.1   Open Spaces

There is an open space in the adjacent plot which is known as 'Colgate ground' it is a public space which balances the ecological footprint of the site.

5.2   Flora audit

A flora survey was carried out to identify the total numbers of plants and trees. The landscape area has a variety of plantations the details of the same are documented below.

S. No.	Plant name	Type	Nos.
1	*Palm*	Plant	11
2	*Screw Pine*	Tree	8
3	*Saraca Asoca*	Tree	13
4	*Cyparis*	Tree	8
5	*Norfollc Island Pine*	Plant	2
1	*Crown Of Thorns*	Flowering plant	1
2	*Blue Pea*	Flowering plant	1

Table 3: Details of the Flora in the premises

At present there are 44 numbers of plantations in the premises. All of these are planted by the on various occasions and some have grown naturally.

5.3   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   Carbon Footprint Audit

5.4.1 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.

5.4.2 Heat Island Reduction

The external temperature is well under control owing to shaded walkways and huge nos. of plantations all over the premises.

5.4.3 Outdoor Light Pollution Study

The Institute compound lights are not upward looking thus, these do not cause light pollution.

5.5 Universally accessible premises

As per World Report on Disability, 2011 there are 180 million approx. Persons with Disabilities that makes it 15% of total population of India.

The following facilities are available on the premises for the specially-abled as part of universally accessible premises initiatives.

- Low height risers in the staircases
- Non-slippery floor surfaces
- Ramps at the entrance of blocks with Handrails for support
- Universally accessible toilets with appropriate amenities

5.6 Fire 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 such as extinguishers, sand buckets have been undertaken.**

6. Suggestions

The following suggestions are section-wise recommendations and are supposed to be considered as a *first priority* for implementation. These **should be executed within the next 2.5 years from the date of the Report submission.** The Institute can execute a plan after discussion with Project Head.

6.1 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.

- *Introduce various types of gardens inside the premises* – The examples such as Flower gardens, Woodland gardens, Rock gardens, Water gardens, Vegetable and herb gardens, Roof gardens, Scented gardens, Medicinal gardens and Botanical gardens can be practiced.

6.2 Universally accessible premises

➲ **Provisions for visually impaired - Signages –** In addition to the signages being in regular language there should be additional signages in braille language for the specially-abled students.

➲ **Provisions for visually impaired - Tactile flooring** – The indoor and outdoor of the premises should have dedicated tactile flooring for the visually impaired.

➲ **Provisions for visually impaired - Audio Visual Section** – There should be dedicated section for the visually impaired students to listen to the audio books; Abrar the audio book reader should be available.

6.3   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.

6.4   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.

➲ **Battery charging points for Eco-friendly vehicles -** There can be provision for battery charge points, this would inspire students to change their mode of transportation and adopt sustainable practices.

➲ **Bicycles as a gift -** As an appreciation gesture maybe the student's toppers/ staff best performers can be awarded a bicycle occasionally.

On-site investigation parameters about the premises

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- 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

- BOMA Canada Waste Auditing Guide, Best Environmental Standards, BOMA BEST – Canada

- Used only for understanding Universal design - Universal accessibility Guidelines for Pedestrian, Non-motorizes vehicle and Public Transport Infrastructure – Report guidelines by Samarthyam (National centre for Accessible Environments) – an initiative supported by Shakti Sustainable Energy Foundation.

- Reference images for suggestions:

  - https://www.gaf.com/en-us/blog/six-truths-about-cool-roofs-281474980105387

  - https://earthbound.report/2021/07/14/5-ways-to-reduce-the-urban-heat-island-effect/

Green Audit

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Sustainability study

AUDIT REPORT

Studied for

Pune District Education Association's

Mahatma Phule Institute of Management and Computer Studies

Annasaheb Magar College Campus,
Manjari Road, Pune, Pin code-412307 State-Maharashtra

Studied in the capacity of

Accredited and Certified

Green Building Professional

Studied by

Greenvia
solutions

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

Email: greenviosolutions@gmail.com

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Background reference image Sasin Tipchai on unsplash

Disclaimer

The Audit Team has prepared this report for the **Pune District Education Association's Mahatma Phule Institute of Management and Computer Studies** located at _Annasaheb Magar College Campus, Manjari Road, Pune, Pin code-412307 State-Maharashtra_ 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.

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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 **Pune District Education Association's Mahatma Phule Institute of Management and Computer Studies, Maharashtra** for assigning this important work of Green Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are extended are due to **Hon'ble Ajit Pawar,** (President); **Hon'ble Rajendra Ghadage,** (Vice President); **Hon'ble Sandeep Kadam** (Secretary) and everyone from the Management.

Our heartfelt thanks are extended to the Chairperson of the entire process **Dr. Sachin Bharadwaj,** (Principal) for the valuable inputs.

We are also thankful to Institute's Task force the faculty members who have played a major role in data collection – **Asst. Professor Madhuri Bhise**, Criteria 7 head *(Special mention for the excellent coordination)*; **Mrs. Shubhangi Yadav,** (Non-teaching staff) **and Mrs. Rehena Kotwal,** (Administrative staff).

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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Greenvio

1. Introduction

1.1   About the Institution

Mahatma Phule Institute of Management and computer studies was established keeping in view the industry's and society's need for management professionals.

MBA programme emphasizes to learn diversity, culture, sharing knowledge, with in-depth interaction with participants who have a diverse experience of various diversified fields.

MPIM gives lead start in career to students, helps to re-invent the future and equips to emerge as a leader with thorough understanding of business.

MPIM emphasizes on a constantly evolving curriculum which is at par with the full time educational programmes and meets the latest needs of a fast growing economy and progressive society.

The institute is gearing up to meet the aspirations of the industries in all the possible ways, when the need arises and to this end is not leaving any stones unturned.

1.2   Statements of the Institution

1.2.1 Vision

The Institute proposes *"To be quality Management institute of masses."*

1.2.2 Mission

The Institute adheres and focuses:

➲ *To create intellectual capital.*

➲ *To foster a culture of academic excellence and social sensitivity based management education through teaching, research, case studies, industry-institute interface and pedagogy of learning, empowering masses.*

1.3   Assessment of the Institute

1.3.1 Affiliation

The Institute is affiliated to **Savitribai Phule Pune University**, one of the premier universities in India, is positioned in the North-western part of Pune city.

1.3.2 Certification

The College has received the code under **All India Survey of Higher Education** (AISHE) wherein the code is C-41697.

1.3.3 Approval

The technical courses provided by the College are approved by **All India Council for Technical Education (AICTE), New Delhi**.

1.4   Facilities

The team emphasize on latest technological advancement through its educational initiatives. Some of the key facilities are listed below.

- Well-equipped classrooms
- Well stocked library
- Computer laboratory with latest softwares
- Outdoor sports facilities

2. Overview

2.1 Summarised Populace analysis for 2022-2023

2.1.1 Students data

The data (shared by the Institute) shows there were a total of **120 male and 79 female students in the premises.**

2.1.2 Staff data

S. No.	Type	Male	Female	Total
1	Admin staff	00	02	**02**
2	Teaching staff	06	07	**13**
3	Non-Teaching staff	03	01	**04**
Total Staff Members		**09**	**10**	**19**

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

The staff data shows the Institute premises had a total of **19 Staff Members.**

2.2   Summarised Populace analysis for 2021-2022

2.2.1 Students data

The data (shared by the Institute) shows there were a total of **110 male and 76 female students in the premises.**

2.2.2 Staff data

S. No.	Type	Male	Female	Total
1	Admin staff	00	02	**02**
2	Teaching staff	06	07	**13**
3	Non-Teaching staff	03	01	**04**
Total Staff Members		**09**	**10**	**19**

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

The staff data shows the Institute premises had a total of **19 Staff Members.**

3. Research

3.1   Site Area & Institute Building Spread Area

The **site area is 1.25 acre** with a built-up area of **2,923 sq. m or 31,451 sq. ft.** for an **approx. 218 footfalls.**

3.2   Institute Infrastructure

3.2.1 Establishment

The Institute was established in **1990 & the MBA programme was introduced in 1994**.

3.2.2 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.

4. Investigation

4.1 Scope for improvement aspects

➲ **Messages on the beam area**

Include quotes and messages from eminent personalities all over the premises on beam for inspiration and beautification.

➲ **General aspects (Outdoor areas)**

- o Increase in green cover on rooftop

- o Placards and manuals for awareness

- o Dedicated reserved parking for physically disabled

- o Development of breakout zones at relevant locations

- o Introduce information boards everywhere

- o Increase sensitization programmes

- o Upgrade the website w.r.t. green initiatives

5. Documentation

5.1 Green Practices Audit

The increasing global warming and climate change have made us realise that apart from the enormous strategies the individual small efforts need to be taken by individuals and Educational Institutes as the younger generations are the future of the world and once they are taught about these practices only then can we assume a better future.

5.1.1 Green practices

We observed the following points during the Site investigation and data verification of the premises; these are common for all the Buildings on the premises.

- **Social awareness** - *The Institute has taken up awareness drives on various social issues for rural upliftment and regeneration in the Institute and surrounding villages.*

- **Silent and peaceful atmosphere –** *The Institute is located amidst residential areas which are well designed thus these help to maintain the pollution under control and provide a healthy ambience.*

- **Team work** *– The best quality of the Institute which sets it apart from other institutes is its coordinating and cooperative staff members, as for a building the foundation plays the most important role for its future similarly for an educational institute its staff members do.*

5.1.2 Community development

The Institute conducts environmental initiatives documented as follows:

S. No.	Event	Particulars	Date
1	Plantation Program	During various occasions	22 July,12 December 2021
2	Plastic collection drive	22nd of every month is dedicated for plastic collection drive	
3	Swachhta abhiyan	2nd October Gandhi Jayanti	

Table 3: Details of the events undertaken by the Institute

5.2 Waste Audit

Waste is an inevitable part of our lives. Over the years the awareness about waste management techniques has given a rise to rethink how the waste can be avoided being sent to the landfills.

The audit provides an approximation of the types of waste generated, location of waste collections, disposal techniques used, waste segregation methodologies adopted, and waste management strategies that are implemented in addition to the newer ways that can be adopted aiming to make the premise clean and sustainable.

5.2.1   Waste produced

- **Solid waste** – The solid waste from the toilets is let into the storm water drains. *We suggest undertaking a biogas plant in the premises as there is availability of land and resources.*

- **Liquid waste** – The black and grey water from the wash basin and kitchens, toilets is let water treatment plant. *We suggest exploring the possibility of installing a water treatment plant.*

- **E-waste management** – *We suggest practicing a dedicated E-waste collection drive and utilising the same for a best out of waste installation.*

- **Plastic waste** – The current practices involve sensitization programs and a dedicated Plastic collection drive on 22nd of every month*, thus no changes required continue with the same practice.*

- **Bio-waste** – *No changes proposed for this section as they are appropriately manages through sanitary vending machines.*

- **There are 8 dustbins the premises in the Indoor areas and twin-litter dustbins in the outdoor areas.**

5.3   Water Audit

Water is one of the basic needs. Pure drinking water is a resource that needs to be preserved efficiently. A water audit helps to identify the sources of water consumption, and the water requirement by the premises is met by these sources. The effective usage of water without any wastage should be a mandatory practice. Understanding the techniques as per site context to increase water conservation in terms of awareness and practice can be identified and executed as part of this exercise.

5.3.1   Water availability and consumption

5.3.1.1   Source of Primary water supply

The Institute requires water from the Local Municipality for drinking water purposes. **There are dedicated water tanks as underground and overhead tank facilities available in the premises.**

5.3.1.2   Source of Secondary water supply

The Institute uses the following sources of water supply for secondary usages such as watering plants, kitchen, toilets, and wash basins and other spaces. **There is a bore well available at present.**

5.3.1.3   Source of Tertiary water supply

The tertiary source of water is **the source of water harvesting, currently the project is under process. the project is designed to connect the rooftop overflow pipes to bore well for ground water recharge.**

5.3.1.4   Source of Reusing waste water

This initiative is not practiced at present. Since the campus is located in shared premises, the system is not an urgent requirement.

5.3.2 Areas of water usage

Based on the inventory done and data shared by the staff it was found that the premise has the facilities such as water cooler, toilets, washbasins etc.

5.4   Health and Hygiene Audit

The hygiene is a part and parcel of our daily life. It is extremely essential to keep the surroundings clean in the same manner as we would want our houses to be.

Educational Institutes have a bigger role to play in order to affect the young minds in the positive manner through better hygienic practices.

5.4.1 Facilities available

The Institution has washroom facility, hand wash, drinking water and dustbin facilities.

5.4.2 Hygiene aspects

The team has taken necessary steps to upgrade the hygiene areas of the site as per the instructions and discussion.

6. Suggestions

Section-wise suggestions related to premises

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

6.1 Green practices Audit

➲ **Environmental awareness -** There can be various artworks on the compound wall giving the message of saving the environment through the joint efforts of the students and staff thereby making the student socially and environmentally responsible citizens.

➲ **Documentation** – Improve and increase the documentation and visibility/ reflectance of the environment related events on the website, social media handles

6.2 Waste Audit

➲ **Material of the dustbin -** The current plastic dustbins should be replaced with eco-friendly material.

➲ **Include better plastic/ E-waste management measures** - The Institute can celebrate one day of every month as a 'Plastic/ E-waste awareness day' The stakeholders (Students and staff members) can be asked to bring plastic/ E-waste which can be further given to an NGO for recycling or better purpose.

➲ Tie up with **Bisleri International regarding their 'Bottles for change program'** also with **'Thereco'** for their waste management.

➲ Invite companies such as **'Thaely'** and **'Recharkha'** for skill development workshops.

6.3 Water Audit

Waterless urinals - There can be the provision of waterless urinals as a Green Building initiative in the premise, either the existing ones can be replaced with such a facility or new toilets can be constructed in this manner.

6.4   Health and Hygiene Audit

⮕ **Courtyards and duct areas** – These are located in the internal and setback should have vertical gardens for beautification.

⮕ **Health related provisions** – There should be provisions for a dedicated health centre and 24x7 available ambulance services inside the premises.

⮕ **Avoid burning waste -** The waste produced on the premises should not be burned as it is dangerous to the health of students and staff

⮕ **Pest control program -** The Institute should practice pest control programs with appropriate sanitation facilities through an appropriate agency.

⮕ **Designated staff for maintenance -** There should be a designated Hygiene specialist and Maintenance staff who can keep a regular check on the operation and maintenance of the toilet areas and the equipment, lights, and all facilities.

⮕ **Signboards** – The Institute should have multiple signboards about 'No smoking' and 'Healthy premises' at every nook and corner of the Institute.

⮕ **Compound wall** – The compound wall should have awareness messages about 'No Smoking' and 'No Tobacco'

⮕ **Toilet hygiene** – There should be facilities such as potpourri, camphor tablets in the toilet to avoid smell and health related issues.

On-site investigation parameters about the premises

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7. Compilation

The study is based on the data collected, analysed, 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 analyse and study the data collected.

- ➲ 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

- ➲ 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

- ➲ Images on site by Coordinators of the both teams

- ➲ Icon images used by https://www.vecteezy.com/free-vector/security-camera-icon and https://www.vecteezy.com/free-vector/electric-car-icon