

# GREEN AUDIT REPORT

of

Jayawant Shikshan Prasarak Mandal's,  
**RAJARSHI SHAHU COLLEGE OF PHARMACY & RESEARCH,**  
Tathawade, Pune 411 033



Year: 2022-23

Prepared by:

## **ENGRESS SERVICES**

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MEDA Registration No: ECN/2022-23/CR-43/1709  
ISO: 9001-2015 Certified (Cert No: 23EQKC13),  
ISO: 14001-2015 Certified (Cert No: 23EEKW20)

## GREEN AUDIT CERTIFICATE

**Certificate No: ES/RSCOPR /22-23/02**

**Date: 11/6/2023**

This is to certify that we have conducted Green Audit at Jayawant Shikshan Prasarak Mandal's, Rajarshi Shahu College of Pharmacy & Research, Tathawade, Pune 411 033, in the Year 2022-23.

The College has adopted following Green & Sustainable Initiatives:

- Usage of Energy Efficient LED Light Fitting
- Usage of BEE STAR Rated Energy Efficient Equipment
- Installation of Roof Top Solar PV Plant of Capacity 10 kWp
- Segregation of Waste at source
- Installation of Vermi Composting Plant
- Implementation of Rain Water Harvesting Project
- Maintenance of good Internal Road
- Tree Plantation in the campus
- Provision of Ramp for Divyangajan
- Creation of Awareness on Water Conservation, by Display of Posters

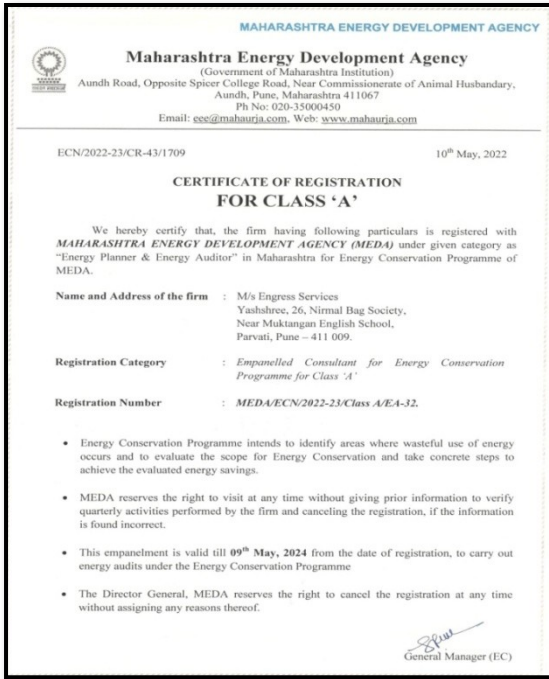
We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

**For Engress Services,**

**A Y Mehendale,**

B E- Mech, M Tech-Energy, Certified Energy Auditor, EA-8192  
ASSOCHAM GEM Certified Professional: GEM: 22/788

**REGISTRATION CERTIFICATES**



**MEDA REGISTRATION CERTIFICATE**

**ASSOCHAM GEM CP CERTIFICATE**



**ISO: 9001-2015 CERTIFICATE**

**ISO: 14001-2015 CERTIFICATE**

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## **ACKNOWLEDGEMENT**

We Engress Services, Pune, express our sincere gratitude to the management of Jayawant Shikshan Prasarak Mandal's Rajarshi Shahu College of Pharmacy & Research, Tathawade, Pune, for awarding us the assignment of Green Audit of their Campus for the Year: 2022-23.

We are thankful to all staff members for helping us during the field study.

## EXECUTIVE SUMMARY

**1. Jayawant Shikshan Prasarak Mandal's Rajarshi Shahu College of Pharmacy & Research, Tathawade, Pune** consumes Energy in the form of **Electrical Energy**; used for various Electrical Equipment, office & other facilities.

### 2. Present Energy Consumption & CO<sub>2</sub> Emission:

No	Particulars	Value	Unit
1	Annual Energy Purchased	<b>34604</b>	kWh
2	Annual LPG Consumed	<b>114</b>	Kg
3	Annual CO <sub>2</sub> Emissions	<b>31.45</b>	MT

### 3. Renewable Energy & Reduction in CO<sub>2</sub> Emissions:

- The College has installed Roof Top Solar PV Plant of Capacity **10 kWp**.
- The Energy generated by Solar PV Plant in 22-23 is **12000 kWh**.
- Reduction in CO<sub>2</sub> Emissions in 22-23 is **10.8 MT**

### 4. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Organic Waste	Provision of Vermi Composting Pit
3	Chemical Fumes	Provision of Fumigation Chamber
4	E Waste Management	Disposed through Society

### 5. Rain Water Harvesting:

The College has installed the Rainwater harvesting project; the rain water falling on the terrace is collected and is used for increasing the underground water table.

### 6. Green & Sustainable Practices:

- Maintenance of good Internal Road
- Tree Plantation in the campus.
- Provision of Ramp for Divyangajan
- Creation of awareness on Water Conservation Display of Posters

### 7. Assumptions:

1. Energy Consumed is computed based on Load Utilization Factor
2. **1 kWh** of Electrical Energy releases **0.9 Kg of CO<sub>2</sub>** into atmosphere
3. **1 Kg** of LPG releases **2.68 Kg of CO<sub>2</sub>** into atmosphere
4. Energy generated by Roof Top Solar PV Plant: **4 kWh/kWp per Day**
5. Annual Solar Energy generation Days: **300 Nos**

### 8. References:

- For CO<sub>2</sub> Emissions: [www.tatapower.com](http://www.tatapower.com)

- For Solar PV Energy generation: [www.solarrooftop.gov.in](http://www.solarrooftop.gov.in)

## **ABBREVIATIONS**

BEE	Bureau of Energy Efficiency
kWh	Kilo Watt Hour
LPD	Liters Per Day
Kg	Kilo Gram
MT	Metric Ton
CO <sub>2</sub>	Carbon Di Oxide
Qty	Quantity

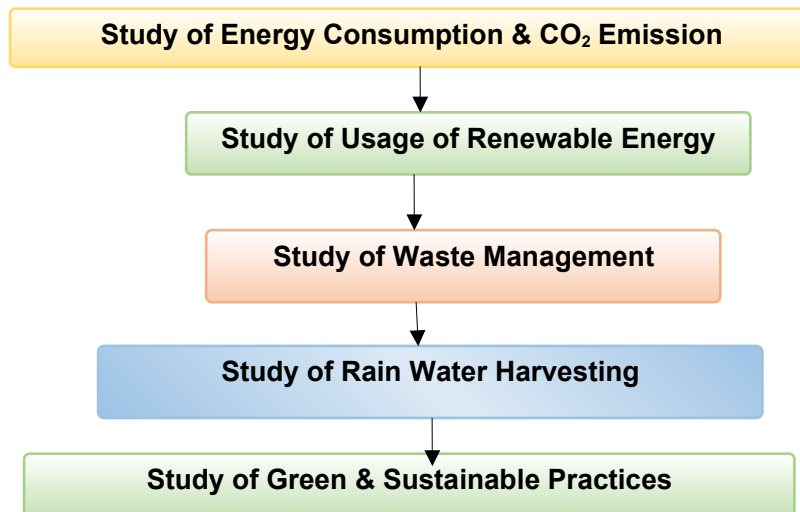


## CHAPTER-I INTRODUCTION

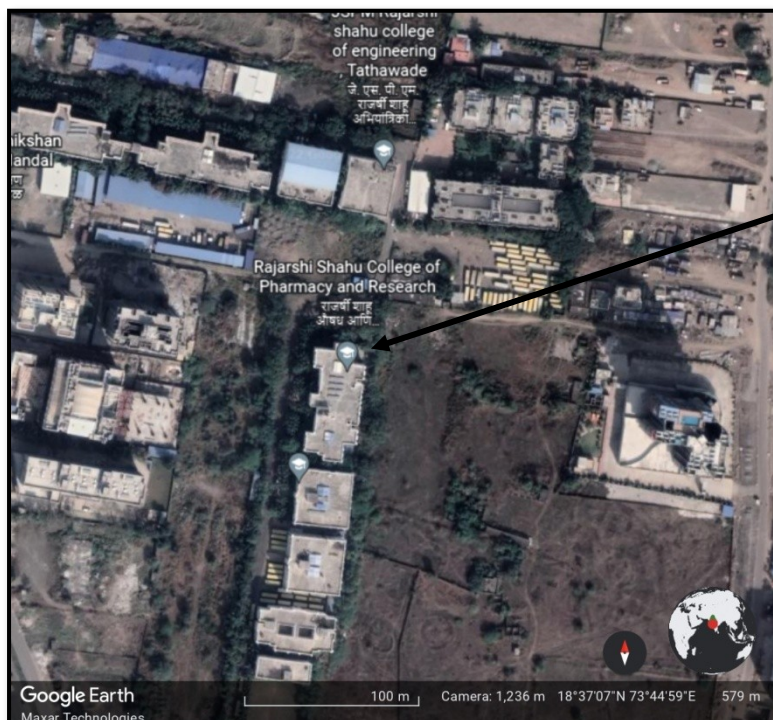
### 1.1 Introduction:

A Green Audit is conducted at Jayawant Shikshan Prasarak Mandal's, Rajarshi Shahu College of Pharmacy & Research, Tathawade, Pune 411 033.

### 1.2 Audit Procedural Steps:



### 1.3 College Location Image:





**CHAPTER-II****STUDY OF ENERGY CONSUMPTION & CO<sub>2</sub> EMISSION**

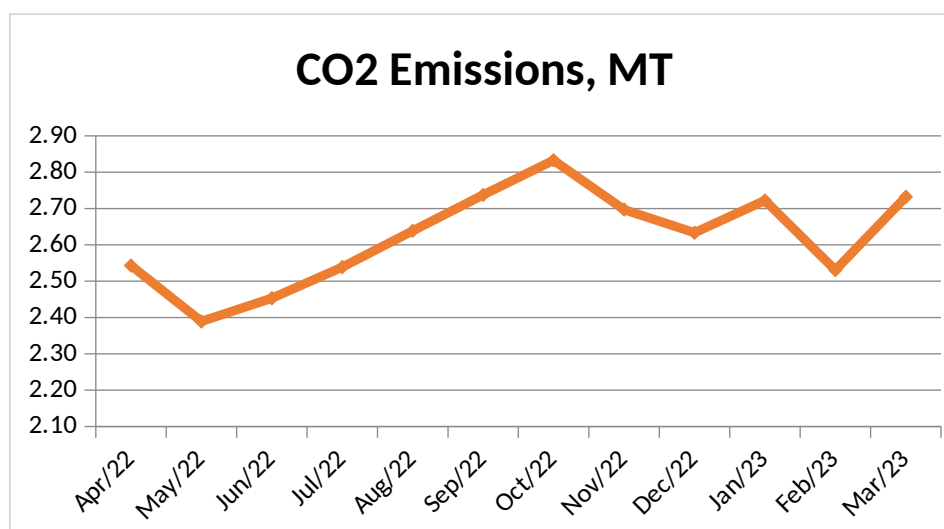
**A Carbon Foot print** is defined as the Total Greenhouse Gas emissions, emitted due to various activities.. The College uses Electrical Energy for various Electrical gadgets.

**Basis for computation of CO<sub>2</sub> Emissions:**

- **1 kWh** of Electrical Energy releases **0.9 Kg of CO<sub>2</sub>** into atmosphere
- **1 Kg** of **LPG** releases **2.68 Kg of CO<sub>2</sub>** into atmosphere.

**Table No 1: Month wise Energy Consumption & CO<sub>2</sub> Emissions:**

No	Month	Energy Purchased, kWh	LPG Consumed, Kg	CO <sub>2</sub> Emissions, MT
1	Apr-22	2796	10	2.54
2	May-22	2628	9	2.39
3	Jun-22	2696	10	2.45
4	Jul-22	2794	9	2.54
5	Aug-22	2905	9	2.64
6	Sep-22	3015	9	2.74
7	Oct-22	3118	10	2.83
8	Nov-22	2967	10	2.70
9	Dec-22	2896	10	2.63
10	Jan-23	2998	9	2.72
11	Feb-23	2785	9	2.53
12	Mar-23	3006	10	2.73
13	Total	34604	114	31.45
14	Maximum	3118	10	2.83
15	Minimum	2628	9	2.39
16	Average	2883.67	9.5	2.62

**Chart No 1: Month wise CO<sub>2</sub> Emissions:**

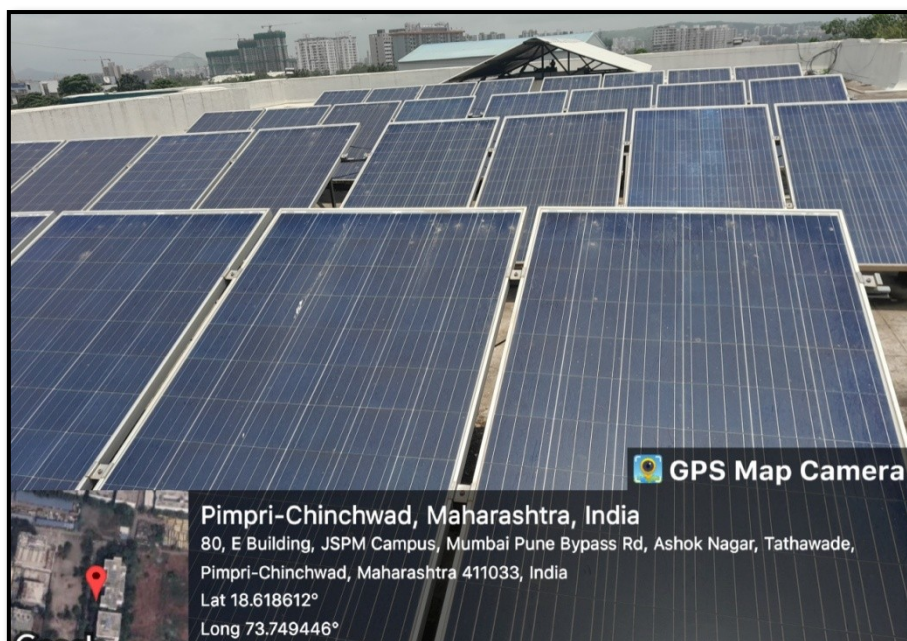
### CHAPTER III STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity **10 kWp**  
In the following Table, we present the reduction in CO<sub>2</sub> emissions due to Solar Energy:

**Table No 3: Computation of Reduction in CO<sub>2</sub> Emissions:**

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	10	kWp
2	Energy Generated in per kWp	4	4 kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 22-23	<b>12000</b>	kWh
5	1 kWh of Electrical Energy saves	<b>0.9</b>	Kg/kWh
6	<b>Qty of CO<sub>2</sub> Saved by Solar PV Plant = (4)*(5) /1000</b>	<b>10.8</b>	<b>MT of CO<sub>2</sub></b>

**Photograph of Roof Top Solar PV Plant:**

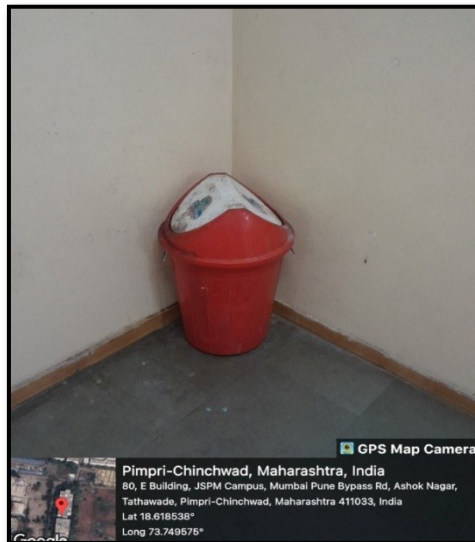


## CHAPTER IV STUDY OF WASTE MANAGEMENT

### 4.1 Segregation of Waste at Source:

The recyclable waste, like paper, plastic waste is segregated at source and is handed over to Authorized Agency for further action.

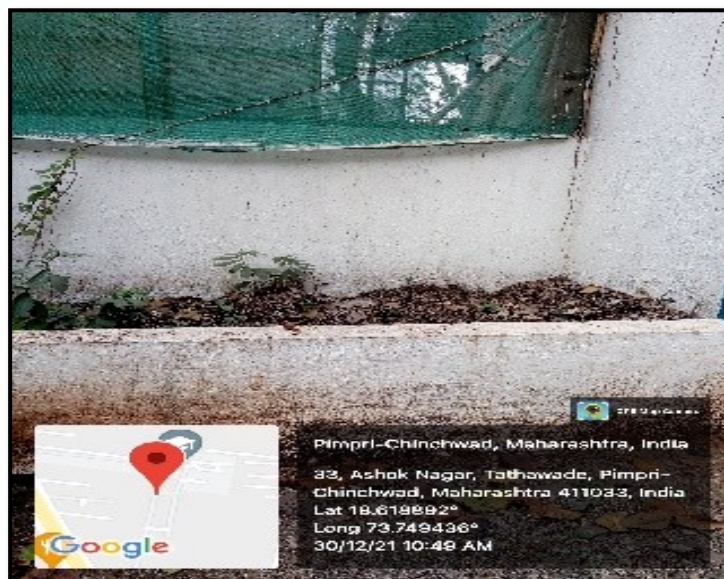
#### Photograph of Waste Collection Bin:



### 4.2 Organic Waste Management:

The Organic Waste like leafy waste is composted in a Vermi composting Pit.

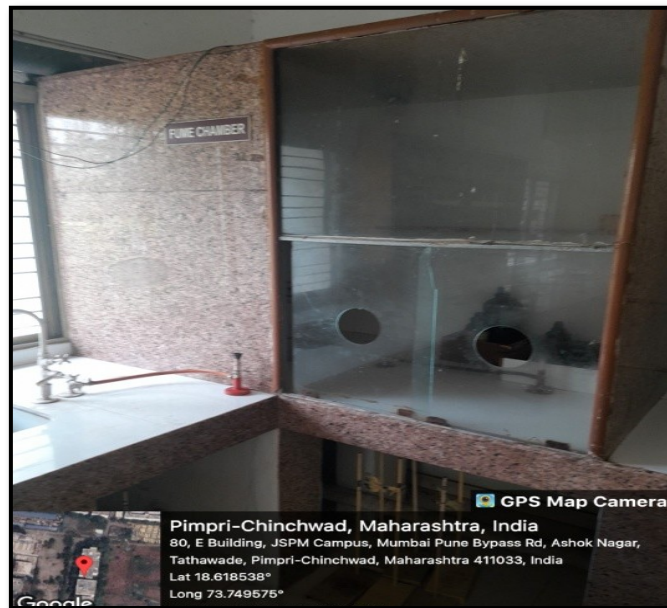
#### Photograph of Vermi Composting Pit:



#### 4.3 Chemical Storage & Fumes Management:

The Chemicals are stored out of reach of students in a Fuming Chamber.

Photograph of Fuming Chamber:



#### 4.4 E Waste Management:

The E Waste is collected in a common Bin & is disposed by the Society.





## CHAPTER V STUDY OF RAIN WATER HARVESTING

The College has installed Pipes from the terrace and the Rain water falling on the terrace is stored in an underground Tank and is further used for domestic purpose after treatment.

### Photograph of Rain Water Carrying Pipe:



Rain Water  
Carrying Pipe

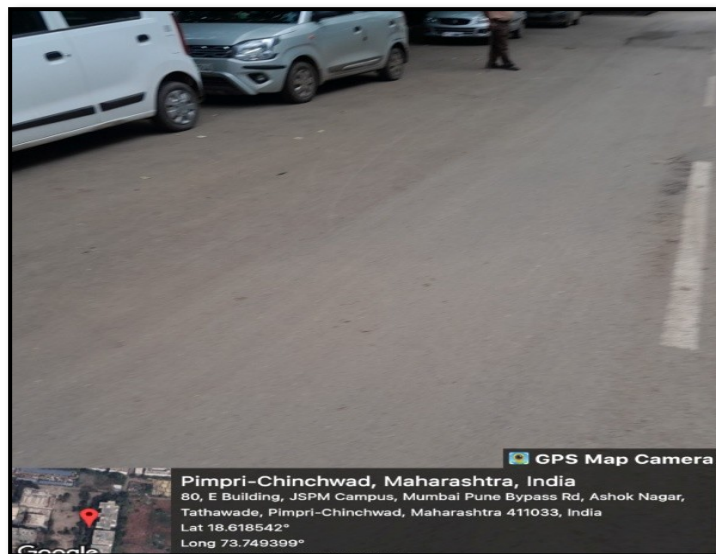
## CHAPTER VI

### STUDY OF GREEN & SUSTAINABLE PRACTICES

#### 6.1 Pedestrian Friendly Road & Internal Tree Plantation:

The College has well maintained internal road to facilitate the easy movement of the students within the campus. The College has well maintained landscaped garden in the campus.

#### Photograph of Internal Road & Tree plantation:



#### 6.2 Provision of Ramp for Divyangajan:

For easy movement of Divyangjan, the College has made provision of Ramp.

**Photograph of Ramp:**



**6.3 Creation of Awareness about Water Conservation:**

The College has displayed posters emphasizing on importance of Water Conservation.

**Photograph of Poster on Water Conservation:**



**ANNEXURE-1:**



**DETAILS OF MEDICINAL PLANTS IN THE CAMPUS:**

<b>No</b>	<b>Common Name</b>	<b>No</b>	<b>Common Name</b>
1	Tulsi	26	Mogara
2	Brahma Kamal	27	Moha
3	Adulasa	28	Limbu
4	Ghaytal Qaayapat	29	Nilgiri
5	Black Nirgundi	30	Morpankhi
6	Kadamb	31	Ajwain
7	Khus	32	Galfemia
8	Inulin	33	Ashwagandha
9	White Jaswand	34	Adulasa
10	Red Jaswand	35	Ilayachi
11	Dressinia	36	Gavati Chaha
12	Kanher	37	Nirgundi
13	Galfemia	38	Aritha
14	Khair	39	Mango
15	Phycus	40	Pimpal
16	White Champa	41	Gulvel
17	Rose.	42	Mix Spice
18	Sadaphuli	43	Mehendi
19	Curry Leaf	44	Champa
20	Tuti	45	Kamini
21	Furfuria	46	Vekhand
22	Jambhul	47	Panfuti
23	Clove	48	Prajakta
24	Cinnanom	49	Neem
25	Kachnar	50	Babhul