



JAYAWANT SHIKSHAN PRASARAK MANDAL'S

## JAYAWANTRAO SAWANT COMMERCE AND SCIENCE COLLEGE

Sr. No. 58, Handewadi Road, Satavnagar, Hadapsar, Pune-411028

Phone: 7722045403 / 9175954032

Email Id: [principal@jspmjscocs.edu.in](mailto:principal@jspmjscocs.edu.in) Website: [www.jspmjscocs.edu.in](http://www.jspmjscocs.edu.in)

Approved by Govt. of Maharashtra & Affiliated to SPPU, Pune-07

College Code: PU/PN/CS/485/2018



**PROF. DR. T. J. SAWANT**  
B.E. (Elec.), PGDM, PhD  
Founder Secretary

Dr. Vinod R.Kulkarni  
M.Com.M.A.MBA,M.Phil, PhD  
Principal

### Key indicator: 7.1 Institutional Values and Social Responsibilities

#### Metric point: 7.1.3

Quality audits on environment and energy regularly undertaken by the Institution. The institutional environment and energy initiatives are confirmed through the following

1. Green audit / Environment audit
2. Energy audit
3. Clean and green campus initiatives
4. Beyond the campus environmental promotion activities

#### HEI Input

- A. All of the above

#### DVV Clarification:

Kindly share document includes the institution's environmental and energy usage policy, action taken reports and achievements related to green campus initiatives, audit reports, a certificate from an external accredited auditing agency (preferably a government department of the affiliating university), geo-tagged photos with captions and dates, and any other

**As per DVV suggestion, the supporting documents are attached below**



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**PRINCIPAL**  
JSPM's  
Jayawantrao Sawant  
Commerce & Science College  
Hadapsar, Pune - 411 028.



**PROF. DR. T. J. SAWANT**  
B.E. (Elec.), PGDM, PhD  
FOUNDER SECRETARY

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**PROF. DR. V. R. KULKARNI**  
M.Com. MBA, PhD  
PRINCIPAL

## Policy Document on Environment and Energy Usage

JSPM's Jayawantrao Sawant Commerce and science college, Handewadi Road, Hadapsar, Pune focuses and committed to manage the energy resources and monitor the energy usage to minimize its use and impact on the environment. Energy auditing committees conducted an audit to measure the impact of usage. The institute suggests and spread the awareness about renewable energy sources.

### Policies:

- To raise awareness in the students as well as teaching non-teaching staff to empower in the skills and knowledge about promoting and improving environmental necessities and its efficient use.
- Use of LED bulb as much as possible.
- Use of fans only if it is needed.
- To raise awareness about tree plantation drive periodically.
- Use of solar energy for saving traditional energy resources.
- Promoting use of e-vehicle to reduce air pollution as well as conservation of traditional energy resources.
- Promoting no vehicle day for saving non-renewable resources and reduction of carbon emission.
- Promoting use of bicycle for better environmental growth and fuel management.
- Switch off the light if it is not necessary.
- Switch off the computers if it is not in use.
- To arrange the guest lecture, workshops and awareness program in the students about energy saving and its efficient usage.
- To raise the awareness about solar energy among everyone.
- Switch off every button of electrical equipment when it is not in use.
- Implement as much as solar energy system.
- To monitor energy use periodically to save the resources.
- Replacement of every traditional lighting system with the LED.
- Must conduct the energy audit periodically to identify the use of energy.
- Keeping the record of energy use monthly helps to improve the better energy usage.
- Use of pedestrian friendly pathways.



  
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**7.1.3: Quality audits on environment and energy regularly undertaken by the Institution. The institutional environment and energy initiatives are confirmed through the following**

- **Beyond the campus environmental promotion activities**







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**PROF. DR. T. J. SAWANT**  
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**FOUNDER SECRETARY**

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M.Sc., PhD, PGDBM, PGDM,  
MBS, FAZI  
Principal

PROF. DR. L. J. SAWANT  
B.E. (Elec.), PGDM, PhD  
Founder Secretary

Date: 11/03/2023

## Notice

All students are hereby informed that the "Tree Plantation" is organized on 15<sup>th</sup> March, 2023 at 11:00 a.m. in Handewadi. This initiative aims to enhance the greenery of our locality and contribute to a sustainable future. All be present for making green environment.

Principal

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PROF. DR. H. R. KULKARNI  
M.Sc., PhD, PGDBM, PGDM,  
MBS, FAZI  
Principal

## Report

To,

The Principal,

Subject: Report about the program conducted on "Tree Plantation"

Respected Sir,

I am hereby submitting the report on the program conducted on "Tree Plantation".

### Details of the program:

Time: 11:00 a.m.


- Date : 15/03/2023
- Day : Wednesday
- Place : Handewadi

### Particulars of the program:

The program "Tree Plantation" was conducted on 15<sup>th</sup> March, 2023 from 11:00 a.m. in Handewadi. The purpose of the staff and students leading "Tree Plantation" in Handewadi was to help improve the area's greenery and natural balancing. By planting trees, participants increased the biodiversity of the area and highlighted the value of group action for a greener future.

Thank you.

Prepared by,

  
Prof. Ravin Bobare





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PROF. DR. T. J. SAWANT  
B.E. (Elec.), PGDM, PhD  
Founder Secretary



GPS Map Camera



Pune, Maharashtra, India  
Handewadi Road, Satavnagar, Hadpsar,  
Long 73.937458°  
Lat 18.456832°  
15/3/2023 11:48 AM

Google





### Attendance

Program Name : tree plantation programme

Date: 15-03-23

Sr. No.	Student Name	Sign
1)	Bhosale Bharti	Bhosale
2)	Holkar Gnyasi	H. Gnyasi
3)	Dobe Vikas	Beldar
4)	Beldar harshali	Jankshi
5)	Mane humbald	N. Mane
6)	Chaudhary Surenbra.	C. Surenbra.
7)	Joshi Shreyash	Shreyash
8)	Waghapure Vaishnavi	Vaishnavi
9)	Patil Leni	L. Patil
10)	Tiwari Mansi	Mansi
11)	Badke Poonam.	Poonam
12)	Rothod Chaitanya	Ch.
13)	Tadavi Sumrudhi	Sumrudhi
14)	Kame Smita	Smita
15)	Shaik Asif	shaik.A.
16)	Panchal Ankur	P. Panchal
17)	Jachau Sanket.	Sanket.
18)	Kale Vaishnavi	Vaishnavi
19)	Gaikwad Avishkar	Avishkar
20)	Devkar Yash	Yash
21)	Raskar Abishale.	Raskar
22)	Bhandare Nikita	Nikita
23)	Salgar. Pooja.	S. Pooja
24)	Khoke. payal	payal
25)	Kad Priya	Priya
26)	choudhary anati	Anati
27)	bhorake Archana	Archana
28)	Katkar Shradha.	K. Shradha
29)	Dikale Suraj	Suraj
30)	Kulkarni priya	priya
31)	gore suchit	suchit
32)	Sasane Suchit	Suchit
33)	Shirke Saloni	Saloni
	Dhere monika	Dhere M.





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MBS, FAZI  
Principal

PROF. DR. E. J. SAWANT  
B.E. (Elec.), PGDM, PhD  
Founder Secretary

Date: 15/12/2022

## Notice

All students are hereby informed that the "Gram Swachh Abhiyan" is organized on 18<sup>th</sup> December, 2022 from 10:00 a.m. in Veer gaon. This activity is organized by NSS department for each one of us to come together and contribute towards a cleaner and healthier environment. All be present for this abhiyan.

Principal

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PROF. DR. H. R. KULKARNI  
M.Sc., PhD, PGDBM, PGDM,  
MBS, FAZI  
Principal

## Report

To,

The Principal,

Subject: Report about the program conducted on "Gram Swachh Abhiyan"

Respected Sir,

I am hereby submitting the report on the program conducted on "Gram Swachh Abhiyan".

**Details of the program:**

**Time: 10:00 a.m.**

- Date : 18/12/2022
- Day : Sunday
- Place : Veer Gaon

**Particulars of the program:**

The program "Gram Swachh Abhiyan" was conducted on 18<sup>th</sup> December, 2022 from 10:00 a.m. in Veer gaon. The Gram Swachh Abhiyan in Veer Gaon involved students who actively cleaned the village, exemplifying community service and environmental stewardship. Their collective efforts not only beautified Veer Gaon but also promoted a culture of cleanliness and pride within the community.

Thank you.

Prepared by,

Prof. Pravin Babbar





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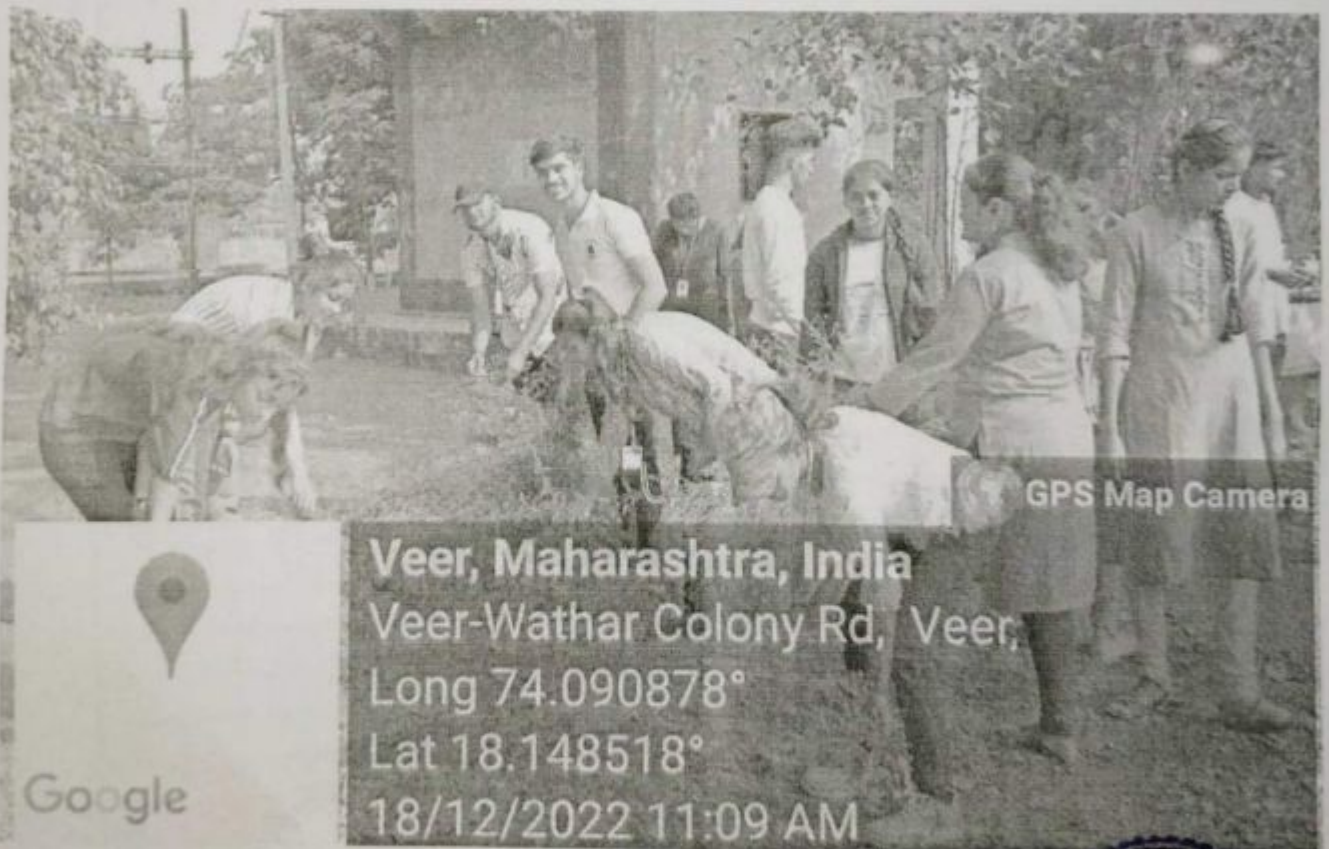
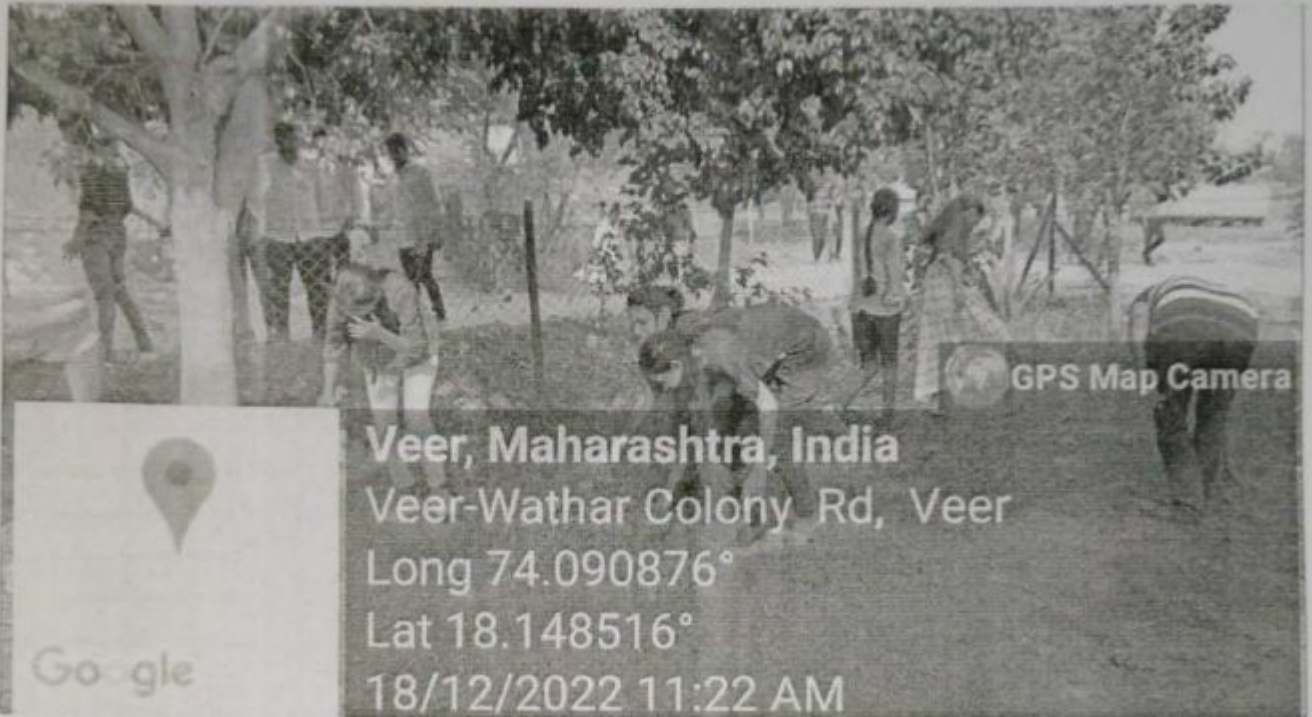
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B.E. (Elec.), PGDM, PhD  
Founder Secretary

Date: 13/12/2022

## Notice

All students are hereby informed that the "Disaster and Water Management" activity is organized on 17<sup>th</sup> December, 2022 from 10:00 a.m. in Veer gaon. This activity is organized by NSS department. All be present for enhance our understanding of disaster preparedness and efficient water management techniques.

Principal

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Hadapsar, Pune - 411 028.



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M.Sc., PhD, PGDBM, PGDM,  
MBS, FAZI  
Principal

## Report

To,

The Principal,

Subject: Report about the program conducted on “Disaster and Water Management”

Respected Sir,

I am hereby submitting the report on the program conducted on “Disaster and Water Management”.

### Details of the program:

Time: 10:00 a.m.

- Date : 17/12/2022
- Day : Saturday
- Place : Veer Gaon

### Particulars of the program:

The “Disaster and Water Management” activity in Veer Gaon utilized student-led initiatives to conserve rainwater and enhance its utility. Students constructed rainwater harvesting systems, preventing soil erosion and replenishing groundwater. Their efforts not only improved water management but also fostered a deeper connection with nature, emphasizing sustainable practices.

Thank you.

Prepared by,

Prof. Prann Babar





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M.Sc., PhD, PGDBM, PGDM,  
MBS, FAZI  
Principal

Date: 13/12/2022

## Notice

All students are hereby informed that the "Environmental Awareness about Plastic & Pesticides" activity is organized on 17<sup>th</sup> December, 2022 from 2:30 p.m. at Veer gaon. This activity is organized by NSS department. We aim to deepen our understanding of these environmental challenges and explore sustainable solutions. All be present for the nature save.

  
Principal

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MBS, FAZI  
Principal

## Report

To,  
The Principal,  
Subject: Report about the program conducted on “**Environmental Awareness about Plastic & Pesticides**”

Respected Sir,

I am hereby submitting the report on the program conducted on “**Environmental Awareness about Plastic & Pesticides**”.

### Details of the program:

**Time: 2:30 p.m.**

- Date : 17/12/2022
- Day : Saturday
- Place : Veer Gaon

### Particulars of the program:

The “Environmental Awareness about Plastic & Pesticides” program in Veer Gaon saw students actively participating in plastic collection drives throughout the village. Their enthusiastic involvement not only helped clean up the environment but also raised awareness about the importance of proper waste management and the harmful impact of plastic pollution on local ecosystems.

Thank you.

Prepared by,

Prof. Pravin Babar





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 MBS, FAZI  
 Principal

PROF. DR. J. J. SAWANT  
 B.E. (Elec.), PGDML, PhD  
 Founder Secretary



17-12-22

- |     |                       |          |
|-----|-----------------------|----------|
| 1)  | Sanjayot Bankar       | Bankar   |
| 2)  | Mahesh Bhasale        | Mahesh B |
| 3)  | Kirti Admane          | Admane   |
| 4)  | Smrity Padhak         | Smrity   |
| 5)  | Humera Sayyad         | Humera   |
| 6)  | Trupti Chaitkumar     | Trupti   |
| 7)  | Vaishnavi Kale        | Vkale    |
| 8)  | AMOL KAYANDE          | Amol     |
| 9)  | Aniket Ranjan         | Aniket   |
| 10) | Sachin Nale           | Sachin   |
| 11) | Swati Gavate          | Swati    |
| 12) | Harshali Beldar       | Harshali |
| 13) | Rutuja Guri           | Rutuja   |
| 14) | Alsha Maniyar         | Alsha    |
| 15) | Mirakshisani Maybhate | Maybhate |
| 16) | Swapnala Komble       | Swapnala |
| 17) | Siddhi Nevare         | Siddhi   |
| 18) | Poorvaja More         | Poorvaja |
| 19) | Sakshi Namde          | Sakshi   |
| 20) | Priti Panchal         | Priti    |
| 21) | Bhasale Bharti        | Bhasale  |



Teacher's Signature





PROF. DR. T. J. SAWANT  
B.E. (Elec.), PGDM, PhD  
Founder Secretary

JAYAWANT SHIKSHAN PRASARAK MANDAL'S  
**JAYAWANTRAO SAWANT COMMERCE AND SCIENCE COLLEGE**

Sr. No. 58, Handewadi Road, Satavnagar, Hadapsar, Pune-411028  
Phone: 7722045403 / 9175954032

Email Id: [principal@jspmjscocs.edu.in](mailto:principal@jspmjscocs.edu.in) Website: [www.jspmjscocs.edu.in](http://www.jspmjscocs.edu.in)  
Approved by Govt. of Maharashtra & Affiliated to SPPU, Pune-07  
College Code: PU/PN/CS/485/2018



PROF. DR. H. R. KUTKARNI  
M.Sc., PhD, PGDBM, PGDM,  
MBS, FAZI  
Principal

Date: 14/10/2022

## Notice

All students are hereby informed that the "Bharat Swachh Abhiyan" is organized on 19<sup>th</sup> October, 2022 from 10:00 a.m. in Veer gaon. This nationwide cleaning initiative desires upon each of us to contribute towards a cleaner and healthier India. All be present for this abhiyan.

  
Principal

**PRINCIPAL**  
JSPM's  
Jayawantrao Sawant  
Commerce & Science College  
Hadapsar, Pune - 411 028.



PROF. DR. L. J. SAWANT  
B.E. (Elec.), PGDM, PhD  
Founder Secretary

JAYAWANT SHIKSHAN PRASARAK MANDAL'S  
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PROF. DR. H. R. KUTKARNI  
M.Sc., Ph.D., PGDBM, PGDM,  
MBS, FAZI  
Principal

## Report

To,

The Principal,

Subject: Report about the program conducted on "Bharat Swachh Abhiyan"

Respected Sir,

I am hereby submitting the report on the program conducted on "Bharat Swachh Abhiyan".

### Details of the program:

Time: 10:00 a.m.

- Date : 19/10/2022
- Day : Wednesday
- Place : Veer Gaon

### Particulars of the program:

The program "Bharat Swachh Abhiyan" was conducted on 19<sup>th</sup> October, 2022 from 10:00 a.m. in Veer gaon. Students at Veer Gaon participate from the National Service Scheme's Bharat Gram Swachh Abhiyan program, which encourages community-led sanitation and cleanliness initiatives and promotes awareness while nurturing a healthier environment.

Thank you.

Prepared by,

Prof. Peavim Babar



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PROF. DR. H. R. KULKARNI  
 M.Sc., Ph.D, PGDBM, PGDM,  
 MBS, FAZI  
 Principal

PROF. DR. T. J. SAWANT  
 B.E. (Elec.), PGDM, PhD  
 Founder Secretary



GPS Map Camera



Google

**Veer, Maharashtra, India**  
 Veer-Wathar Colony Rd, Veer,  
 Long 74.090878°  
 Lat 18.148507°  
 20/10/2022 10:42 AM





Bharat Swachh Abhiyan

Date - 19-10-2022

Sr. No.

Roll No.	Name	Signature	Sr. No.
1111	Tripti Gaikwad	Tripti	①
1110	Pratiksha Chongde	Pratiksha	②
1007	Kirti Admane	Kirti	③
1004	Smrity Pathak	Smrity	④
1104	Sanjay Bankar	Bankar	⑤
1112	Swati Gavate	Gavate	⑥
1005	Krishna E. Yojan	Krishna	⑦
1002	Sachin G. Nale	Sachin	⑧
1103	Aniket Ranjan	Ranjan	⑨
1107	Omkar Dal	Omkar	⑩
1106	Chaukate Jayram	Chaukate	⑪
1101	Aaditya Jadhav	Aaditya	⑫
1126	Kumbhar Saurabh	Kumbhar	⑬
1122	Shweta Kaspate	Shweta	⑭
1123	Shradha Katkar	Shradha	⑮
1136	Ankita Pande	Ankita	⑯
1135	Riya Panikar	Riya	⑰
1134	Monika Narayanekar	Monika	⑱
1120	Vaishnavi Kale	Vaishnavi	⑲
1116	Humera Sayyad	Humera	⑳
1112	Swati Gavate	Swati	㉑
1102	Amol Kayande	Amol	㉒
1114	Rutuja Giri	Rutuja	
1115	Harshali Beldar	Harshali	



Teacher's Signature



PROF. DR. E. J. SAWANT  
B.E. (Elec.), PGDM, PhD  
Founder Secretary

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PROF. DR. H. R. KULKARNI  
M.Sc., PhD, PGDBM, PGDM,  
MBS, FAZI  
Principal

Date: 15/03/2022

## Notice

All students are hereby informed that the "Gram Swachh Abhiyan" is organized on 22<sup>nd</sup> March, 2022 from 10:00 a.m. in Wadki gaon. This program is organized by NSS department. All be present for this abhiyan.

Principal

**PRINCIPAL**

JSPM's

Jayawantrao Sawant  
Commerce & Science Collage  
Hadapsar, Pune - 411 028.





PROF. DR. J. E. SAWANT  
B.E. (Elec.), PGDM, PhD  
Founder Secretary

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PROF. DR. H. R. KULKARNI  
M.Sc., PhD, PGDBM, PGDM,  
MBS, FAZI  
Principal

## Report

To,

The Principal,

Subject: Report about the program conducted on "Gram Swachh Abhiyan"

Respected Sir,

I am hereby submitting the report on the program conducted on "Gram Swachh Abhiyan".

### Details of the program:

Time: 10:00 a.m.

- Date : 22/03/2022
- Day : Tuesday
- Place : Wadki Gaon

### Particulars of the program:

The program "Gram Swachh Abhiyan" was conducted on 22<sup>nd</sup> March, 2022 from 10:00 a.m. in Wadki gaon. The National Service Scheme (NSS) department's student-centered Gram Swachh Abhiyan is beneficial to Wadki Gaon. Students participate in several sanitation and hygiene campaigns around the community as part of NSS-led projects. Students increase awareness and actively participate in bettering sanitation standards. Their initiatives support a healthier and cleaner environment, which is in keeping with the national cleaning campaign's objectives.

Thank you.

Prepared by,

Prof. Ravin Bobay



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**JAYAWANTRAD SAWANT COMMERCE AND SCIENCE COLLEGE**

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 College Code: PUI/PN/CS/485/2018



PROF. DR. H. R. KULKARNI  
 M.Sc., PhD, PGDBM, PGDM,  
 MBS, FAZI  
 Principal

PROF. DR. L. J. SAWANT  
 B.E. (Elec.), PGDM, PhD  
 Founder Secretary



GPS Map Camera



**Pune, Maharashtra, India**  
 Wadki, Hadapsar- Jejuri road, Maharashtra  
 Long 78.719210°  
 Lat 20.280557°  
 22/3/2022 12:14 PM





JAYAWANT SHIKSHAN PRASARAK MANDAL'S  
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College Code: PU/PN/CS/485/2018



PROF. DR. H. R. KULKARNI  
M.Sc., Ph.D., PGDBM, PGDM,  
MBS, FAZI  
Principal

PROF. DR. E. J. SAWANT  
B.E. (Elec.), PGDM, PhD  
Founder Secretary

Date: 14/03/2022

## Notice

All students are hereby informed that the "Jal Savardhan Abhiyan" is organized on 18<sup>th</sup> March, 2022 from 10:00 a.m. in Wadki gaon, a campaign dedicated to water conservation and management. This program is organized by NSS department. All be present for conserve water resources, promote sustainable usage, and raise awareness about the importance of water preservation.

Principal

**PRINCIPAL**  
JSPM's  
Jayawantrao Sawant  
Commerce & Science College  
Hadapsar, Pune - 411 028.





PROF. DR. T. J. SAWANT  
B.E. (Elec.), PGDM, PhD  
Founder Secretary

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College Code: PU/PN/CS/485/2018



PROF. DR. H. R. KULKARNI  
M.Sc., PhD, PGDBM, PGDM,  
MBS, FAZI  
Principal

## Report

To,

The Principal,

Subject: Report about the program conducted on "Jal Savardhan Abhiyan"

Respected Sir,

I am hereby submitting the report on the program conducted on "Jal Savardhan Abhiyan".

### Details of the program:

Time: 10:00 a.m.

- Date : 18/03/2022
- Day : Friday
- Place : Wadki Gaon

### Particulars of the program:

The program "Jal Savardhan Abhiyan" was conducted on 18<sup>th</sup> March, 2022 from 10:00 a.m. in Wadki gaon. The National Service Scheme (NSS) department's student-centered Gram Swachh Abhiyan is beneficial to Wadki Gaon. Students participate in several sanitation and hygiene campaigns around the community as part of NSS-led projects. Students increase awareness and actively participate in bettering sanitation standards. Their initiatives support a healthier and cleaner environment, which is in keeping with the national cleaning campaign's objectives.

Thank you.

Prepared by.

Prof. Pravin Babar



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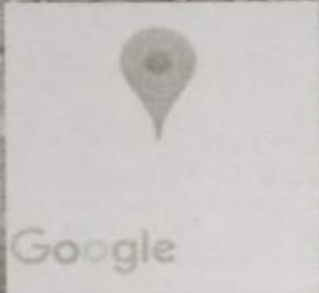


PROF. DR. H. R. KULKARNI  
 M.Sc., Ph.D., PGDBM, PGDM,  
 MBS, FAZI  
 Principal

PROF. DR. L. J. SAWANT  
 B.E. (Elec.), PGDM, Ph.D  
 Founder Secretary



GPS Map Camera



**Pune, Maharashtra, India**  
 Wadki, Hadapsar- Jejuri road, Maharashtra  
 Long 78.719137°  
 Lat 20.280537°  
 18/3/2022 11:48 AM



GPS Map Camera



**Pune, Maharashtra, India**  
 Wadki, Hadapsar- Jejuri road, Maharashtra,  
 Long 78.719131°  
 Lat 20.280547°  
 18/3/2022 11:13 AM





wadki 9900

22/03/22

- 1) Bhondave Samiksha
- 2) Gaikwad Trupti
- 3) Supriya Chandan
- 4] Smriti Pathak
- 5] Pratiksha Dhongde
- 6] Alisha Maniyar
- 7] Minakshisani Maybhat
- 8] Smita Karne
- 9] Sahil Ghule
- 10) Aniket Khutale
- 11) Karan Zote
- 12) Kumbhar Saurabhi
- 13] Ankita Pasole
14. Sanjayot Bantar
- 15] Humera Sayyad
- 16] Swati Gavate
- 17] Bharti Bhosule
- 18) Pratiksha Shinde
- 19 Rutuja Gisi
- 20) Harhali Bedar
- 21 Menika Narayanekar
22. Vaishnavi Kale
23. Supriya Nharale
- 24 Mahesh Bhosale
- 25 Dattatray Chelalle
- 26 Omkar Dal
27. Sumit Nalavade
- 28 Shingare Dabtey
- 29 Sagad Kale
- 30] Aditya Jadhav.
- 31] Sachin Nale
- 32] Prakash Shiraskar

~~Pratiksha~~  
Trupti  
Prachandan

~~Smriti~~  
Pratiksha

~~Alisha~~  
Maybhat

~~Karne~~  
Ghule

AK

~~Karan~~  
Kumbhar

Khole

Kumar

~~Humera~~  
Gavate

Bhosule  
Shinde

Rutuja

~~Harhali~~

Menika

Kale

Sharale

Mahesh

Datte

Omkar

Sumit

Shingare  
Dabtey

Sagad

Aditya

Sachin

Prakash



- 38 Ganesh Babu Salunke
- 34) Yashraj Deepak Abnork
- 35) Shweta Kaspate
- 36) Riya Parvkar
- 37 Ghospade Madhura A

Alu.

Abnork D

Suk

Hyg

Madhura







PROF. DR. L. J. SAWANT  
B.E. (Elec.), PGDML, PhD  
Founder Secretary

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PROF. DR. H. R. KULKARNI  
M.Sc., PhD, PGDBM, PGDML,  
MBS, FAZI  
Principal

Date: 03/01/2020

## Notice

All students are hereby informed that the "Gram Swachh Abhiyan" is organized on 6<sup>th</sup> January, 2020 from 10:00 a.m. in Pangare gaon. This program is organized by NSS department. All be present for this abhiyan.

  
Principal

**PRINCIPAL**  
JSPM's  
Jayawantrao Sawant  
Commerce & Science College  
Hadapsar, Pune - 411 028.



PROF. DR. L. J. SAWANT  
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PROF. DR. H. R. KULKARNI  
M.Sc., PhD, PGDBM, PGDM,  
MBS, FAZI  
Principal

## Report

To,

The Principal,

Subject: Report about the program conducted on "Gram Swachh Abhiyan"

Respected Sir,

I am hereby submitting the report on the program conducted on "Gram Swachh Abhiyan".

### Details of the program:

Time: 10:00 a.m.

- Date : 06/01/2020
- Day : Monday
- Place : Pangare Gaon

### Particulars of the program:

The program "Gram Swachh Abhiyan" was conducted on 6<sup>th</sup> January, 2020 from 10:00 a.m. in Pangare gaon. Major improvement in the cleanliness and general health of the surrounding area were made possible by the students' active participation in garbage removal activities and sanitation awareness initiatives. The occasion showed the dedication the NSS department is to encouraging student participation in society and responsibility.

Thank you.

Prepared by,

Prof. Peavin Babar



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PROF. DR. H. R. KULKARNI

M.Sc., Ph.D, PGDBM, PGDM,

MBS, FAZI

Principal

PROF. DR. T. J. SAWANT  
B.E. (Elec.), PGDM, Ph.D  
Founder Secretary





## Attendance

Program Name : Geam swachh Abhiran

Date: 06-01-20

Sr. No.	Student Name	Sign
1	Ajit More	<del>More</del>
2	Gaura Javalkar	Javalkar
3	Pranjana Khedkar	Pranjana
4	ANKITA More	<del>More</del>
5	JARSHA SALE	Sale
6	Vaibhav Sable	Sable
7	amit patil	Apatil
8	Fatima Sayyad	Fatima
9	Sarvesh Khopde	<del>Khopde</del>
10	Ahjali Kumbhar	<del>Kumbhar</del>
11	Akash Raut	Raut
12	Bakshi Galunte	Bakshi
13	Pooja Bhalke	Bhalke
14	Hemangi Zagade	Zagade
15	Juli Gupta	Gupta
16	zagade hemangi	Hemangi
17	Alakshya Chalki	Chalki
18	Malashri Hadule	Hadule
19	Akash Jadhav	Jadhav
20	Pratiksha Kathpure	Kathpure
21	Akilesh More	More
22	Pupali Gadale	Gadale
23	Dhiraj Ghodhani	Dhiraj
24	Bhargav Nale	Nale
25	Nidhi Reddy	Reddy
26	Atul Kharad	Kharad
27	Aditya Sarale	Sarale
28	Apurva Patil	Patil
29	utkarsha Dhol	<del>Dhol</del>
30	Vijay Salgar	Salgar
31	Raju Gogi	Raju
32	Rajadani Rajput	Rajput
33	Preeti Karad	Karad
34	Saundarya Suryabhan	<del>Suryabhan</del>
35	Spandana P	Spandana
36	Yash Niknaware	Niknaware
37	Amruta Vargabe	Vargabe
38	Rohite Tate	Rohite
39	Abhishhek Veer	Veer
40	Nidhi Reddy	Nidhi
41	Shrushti Gajkal	Shrushti
42	Anuj Soni	Anuj





PROF. DR. T. J. SAWANT  
B.E. (Elec.), PGDM, PhD  
Founder Secretary

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PROF. DR. H. R. KULKARNI  
M.Sc., PhD, PGDBM, PGDM,  
MBS, FAZI  
Principal

Date: 20/07/2018

## Notice

All staff and students are informed that we are organizing a Tree Plantation program scheduled on 24<sup>th</sup> July, 2018 11:00 a.m., at Aadarshanagar. We all work together to create a more sustainable and greener future.

Principal  
**PRINCIPAL**  
JSPM's  
Jayawantrao Sawant  
Commerce & Science College  
Hadapsar, Pune - 411 028.





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B.E. (Elec.), PGDM, PhD  
Founder Secretary

PROF. DR. H. H. KULKARNI  
M.Sc., PhD, PGDBM, PGDM,  
MBS, FAZI  
Principal

## Report

To,

The Principal,

Subject: Report about the program conducted on **"Tree Plantation"**

Respected Sir,

I am hereby submitting the report on the program conducted on **"Tree Plantation"**.

### Details of the program:

Time: 11: 00 a.m.

- Date : 24/07/2018
- Day : Tuesday
- Place : Aadarshanagar

### Particulars of the program:

The program "Tree Plantation" was conducted on 24<sup>th</sup> July, 2018 from 11:00 a.m. at Aadarshanagar. All witnessed active involvement, leading to the planting of 50 trees. Speakers highlighted the program's significance in promoting environmental sustainability. The event marked a commendable effort towards creating a greener, more resilient community, resonating with the collective commitment to preserving our planet for future generations.

Thank you.

Prepared by,

Prof. Pearvin Babar.





JAYAWANT SHIKSHAN PRASARAK MANDAL'S  
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College Code: PU/PN/CS/485/2018



PROF. DR. H. R. KULKARNI

M.Sc., Ph.D., PGDBM, PGDM,

MBS, FAZI

Principal

PROF. DR. L. J. SAWANT  
 B.E. (Elec.), PGDM, Ph.D  
 Founder Secretary





## Attendance

Program Name : Tree plantation program

Date: 24-07-18

Sr. No.	Student Name	Sign
1.	Kajal Gorad	Gorad.
2.	Sahvesh Khopde	Sahvesh
3.	Rohan Patkar	Rohan
4.	Rutuja Mule.	R. Mule
5.	Neha Patil	Neha
6.	Amit Patil	<del>Amit</del>
7.	Pratibha Patil.	<del>P.P.</del>
8.	Vaishali Tale	Vaishali
9.	Rakhi Tale	R. Tale.
10.	Aishwarya Lawande	<del>Aishwarya</del>
11.	Manasi Hingane.	<del>Manasi</del>
12.	Shivani Pappat	<del>Shivani</del>
13.	Zagade hemangi	hemangi.
14.	Ajit More	Ajit
15.	Uttara otkar	<del>Uttara</del>
16.	Swaminaj Deshmukh.	<del>Swaminaj</del>
17.	Neha Shrivastav	Neha
18.	Rutuja Shetile	<del>Rutuja</del>
19.	Akash Raut.	<del>Akash</del>
20.	Vijay Salgar	<del>Vijay</del>
21.	Pratik Kojic	<del>Pratik</del>
22.	Anuj Soni	Anuj
23.	Aditya Sanyal	Adi.
24.	Ritesh Jadhav	R. Jadhav.
25.	Asmita Gaud.	<del>Asmita</del>
26.	Dhruv Gaurav	Dhruv
27.	Ankita munde	<del>Ankita</del>
28.	Ajit Mali	Ajita.
29.	Mrunali Kurwad.	M. Kurwad.
30.	Gayatri Lonche	G. Lonche.
31.	Shruti Sapkal	Shruti
32.	Shard Kale.	Kale
33.	Renuka Kamble	<del>Renuka</del>
34.	Suyant Nandibare	Suyant
35.	Akash Swirse	Akash
36.	Kuvraj Gote	<del>Kuvraj</del>
37.	Sule Varsha Ambaji	<del>Sule</del>
38.	Harshada Range	H. Range
39.	Prayalata Khedkar.	<del>Prayalata</del>
40.	Vaibhav Shinde	<del>Vaibhav</del>
41.	Prachi Bhagwat.	P. Bhagwat
42.	Neha Shrivastav.	<del>Neha</del>



# ENVIRONMENTAL AUDIT REPORT

of  
JAYAWANT SHIKSHAN PRASARAK MANDAL'S,  
**JAYAWANTRAO SAWANT COMMERCE & SCIENCE COLLEGE,**  
Handewadi Road, Hadapsar, Pune



Year: 2022-23

Prepared by:

## ENGRESS SERVICES

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Phone: 09890444795 Email: [engress123@gmail.com](mailto:engress123@gmail.com)





## REGISTRATION CERTIFICATES



**MEDA REGISTRATION CERTIFICATE**



**ASSOCHAM GEM CP CERTIFICATE**



**ISO: 9001-2015 CERTIFICATE**



**ISO: 14001-2015 CERTIFICATE**

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



## EXECUTIVE SUMMARY

1. Jayawant Shikshan Prasarak Mandal's, Jayawantrao Sawant Commerce & Science College, Hadapsar, Pune consumes Energy in the form of **Electrical Energy**; used for various Electrical Equipment, office & other facilities

### 2. Pollution due to College Activities:

- **Air pollution:** Mainly CO<sub>2</sub> on account of Electricity Consumption
- **Solid Waste:** Bio degradable Garden Waste
- **Liquid Waste:** Human liquid waste

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

No	Particulars	Value	Unit
1	Annual Energy Purchased	<b>37463</b>	kWh
2	Annual CO <sub>2</sub> Emissions	<b>33.72</b>	MT

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

- The College has installed Solar PV Plant of capacity **3 KW**.
- The Energy generated by Solar PV Plant in 2022-23 is **3600 kWh**.
- Reduction in CO<sub>2</sub> Emissions in 2022-23 is **3.24 MT**

### 5. Indoor Air Quality Parameters:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	<b>53</b>	<b>31</b>	<b>34</b>
2	Minimum	<b>50</b>	<b>29</b>	<b>32</b>

### 6. Indoor Comfort Conditions:

No	Parameter/Value	Temperature, °C	Humidity, %	Lux Level	Noise Level, dB
1	Maximum	<b>27.2</b>	<b>71</b>	<b>132</b>	<b>45</b>
2	Minimum	<b>27.1</b>	<b>69</b>	<b>105</b>	<b>40</b>

### 7. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Microbial Waste	Provision of Autoclave
3	Sanitary Waste	Provision of Sanitary Waste Incinerator

### 8. Rain Water Management:

The rain water falling on terrace is used for increasing the underground water table.

### 9. Environment Friendly Initiatives:

- Tree Plantation in the campus.
- Creation of awareness on ban Single Use Plastic by Display of Posters

### 10. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO<sub>2</sub>** into atmosphere
2. Energy generated by Roof Top Solar PV Plant: **4 kWh/kWp per Day**
3. Annual Solar Energy generation Days: **300 Nos**

### 11. References:

- For CO<sub>2</sub> Emissions: [www.tatapower.com](http://www.tatapower.com)
- For Various Indoor Air Parameters: [www.ishrae.com](http://www.ishrae.com)
- For AQI Quality Standards: [www.cpcb.com](http://www.cpcb.com)
- For Solar PV Energy generation: [www.solarrooftop.gov.in](http://www.solarrooftop.gov.in)

## **ABBREVIATIONS**

Kg	: Kilo Gram
MSEDCL	: Maharashtra State Distribution Company Limited
MT	: Metric Ton
kWh	: kilo-Watt Hour
LPD	: Liters per Day
LED	: Light Emitting Diode
AQI	: Air Quality Index
PM-2.5	: Particulate Matter of Size 2.5 Micron
PM-10	: Particulate Matter of Size 10 Micron
CPCB	: Central Pollution Control Board
ISHRAE	: The Indian Society of Heating & Refrigerating & Air Conditioning Engineers



## CHAPTER-I INTRODUCTION

### 1. Important Definitions:

#### 1.1. Environment: Definition as per environment Protection Act: 1986

Environment includes water, air and land and the inter-relationship which exists among and between Water, Air, Land and Human beings, other living creatures, plants microorganism and property

#### 1.2. Environmental Audit: Definition:

An audit which aims at verification and validation to ensure that various environmental laws are compiled with and adequate care has been taken towards environmental protection and preservation

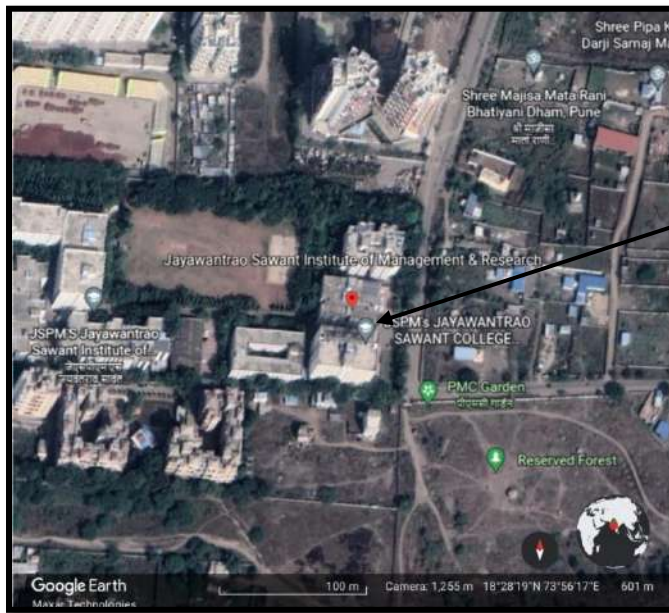
*According to UNEP, 1990, "Environmental audit can be defined as a management tool comprising systematic, documented and periodic evaluation of how well environmental organization management and equipment are performing with an aim of helping to regularize the environment"*

**1.3. Environmental Pollutant:** means any solid, liquid and gaseous substance present in the concentration as may be, or tend to be, injurious to Environment.

#### 1.4 Audit Procedural Steps:



### 1.3 College Location Image:



College  
Campus

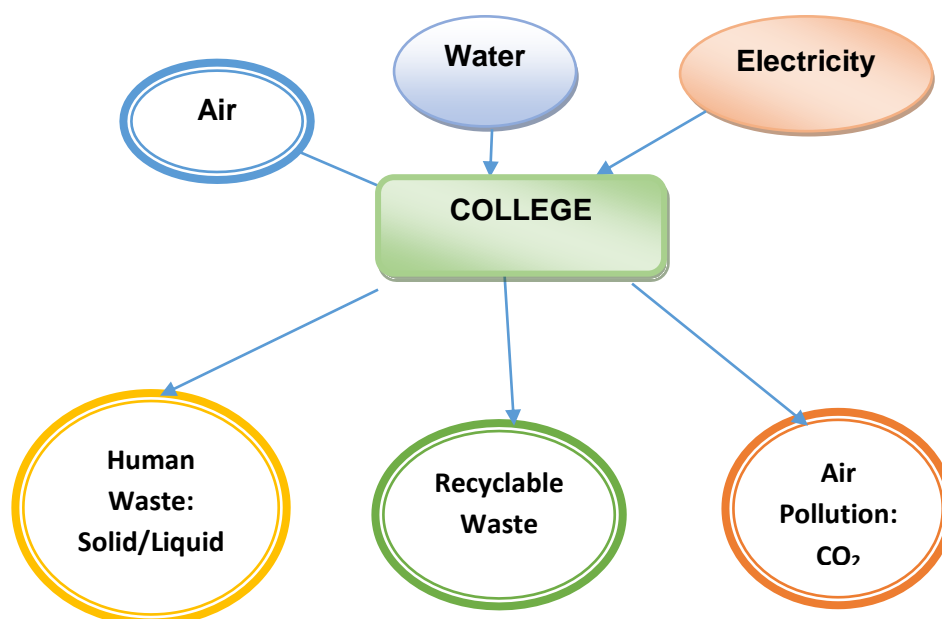
## CHAPTER-II STUDY OF RESOURCE CONSUMPTION & CO<sub>2</sub> EMISSION

The College consumes following basic/derived Resources:

1. Air
2. Water
3. Electrical Energy

We try to draw a schematic diagram for the College System & Environment as under.

**Chart No 1: Representation of College as System & Study of Resources & Waste**



Now we compute the Generation of CO<sub>2</sub> on account of consumption of Electrical Energy. The basis of Calculation for CO<sub>2</sub> emissions due to Electrical Energy is as under.

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

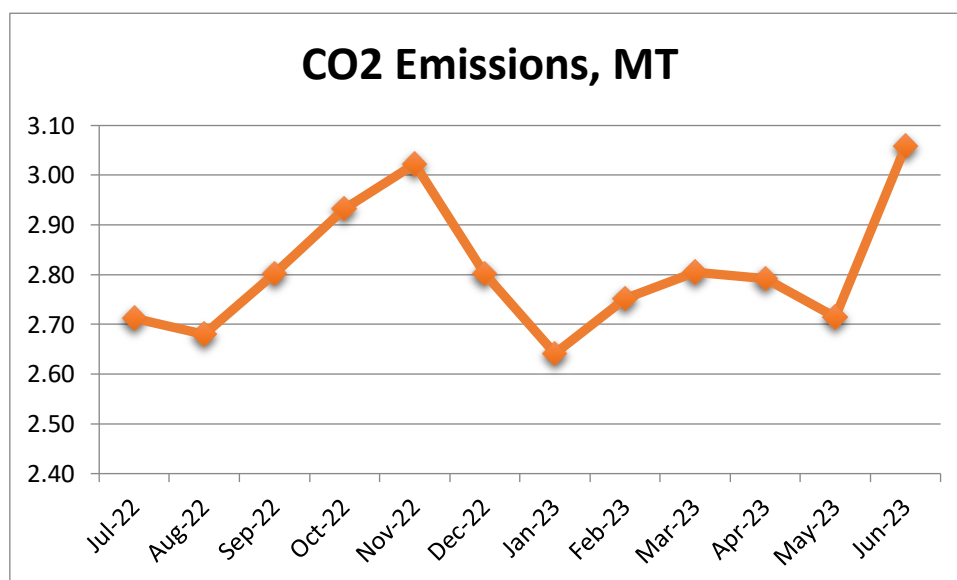
**Table No 1: Study of Purchase of Energy & CO<sub>2</sub> Emissions: 2022-23:**

No	Month	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Jul-22	3014	2.71
2	Aug-22	2978	2.68
3	Sep-22	3114	2.80
4	Oct-22	3258	2.93
5	Nov-22	3358	3.02
6	Dec-22	3114	2.80
7	Jan-23	2935	2.64



8	Feb-23	3058	2.75
9	Mar-23	3117	2.81
10	Apr-23	3102	2.79
11	May-23	3017	2.72
12	Jun-23	3398	3.06
13	Total	37463	33.72
14	Maximum	3398	3.06
15	Minimum	2935	2.64
16	Average	3121.92	2.81

**Chart No 2: 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 **3 kWp**  
 In the following Table, we present the reduction in CO<sub>2</sub> emissions due to Solar Energy:

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

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	3	kWp
2	Energy Generated in per kWp	4	kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 2022-23 = 1*2*3	<b>3600</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>3.24</b>	<b>MT of CO<sub>2</sub></b>

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



## CHAPTER IV STUDY OF INDOOR AIR QUALITY

### 4.1 Importance of Air Quality:

**Air:** The common name given to the atmospheric gases used in breathing and photosynthesis.

By volume, Dry Air contains 78.09% Nitrogen, 20.95% Oxygen, 0.93% Argon, 0.039% carbon dioxide, and small amounts of other gases.

On average, a person inhales about **14,000 liters** of air every day. Therefore, poor air quality may affect the quality of life now and for future generations by affecting the health, the environment, the economy and the city's livability.

**Air quality is a measure of the suitability of air for breathing by people, plants and animals.**

### 4.2 Air Quality Index:

An **Air Quality Index (AQI)** is a number used by government agencies to measure the **air pollution** levels and communicate it to the population. As the AQI increases, it means that a large percentage of the population will experience severe adverse health effects.

We present herewith following important Parameters.

1. AQI- Air Quality Index
2. PM-2.5- Particulate Matter of Size 2.5 micron
3. PM-10- Particulate Matter of Size 10 micron

**Table No 3: Indoor Air Quality Parameters:**

No	Location	AQI	PM-2.5	PM-10
1	Classroom	50	30	33
2	Electronics Dept	51	31	34
3	Exam Section	53	32	34
4	NSS Room	52	31	33
5	Office	50	29	32
	Maximum	<b>53</b>	<b>31</b>	<b>34</b>
	Minimum	<b>50</b>	<b>29</b>	<b>32</b>



## **CHAPTER V**

### **STUDY OF INDOOR COMFORT CONDITION PARAMETERS**

In this Chapter, we present the various Indoor Comfort Parameters measured during the Audit. The Parameters include:

1. Temperature
2. Humidity
3. Lux Level
4. Noise Level.

**Table No 4: Study of Indoor Comfort Condition Parameters:**

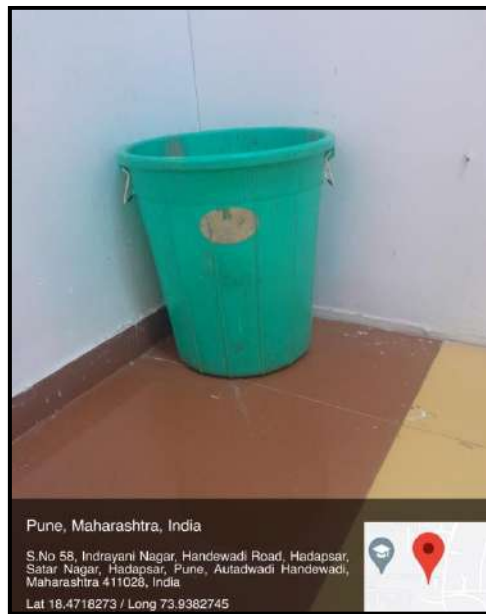
<b>No</b>	<b>Location</b>	<b>Temperature, °C</b>	<b>Humidity, %</b>	<b>Lux Level</b>	<b>Noise Level, dB</b>
1	Classroom	27.1	70	124	44.3
2	Electronics Dept	27.2	69	105	42
3	Exam Section	27.1	69	132	41.9
4	NSS Room	27.1	71	126	45
5	Office	27.2	69	132	40
	Maximum	<b>27.2</b>	<b>71</b>	<b>132</b>	<b>45</b>
	Minimum	<b>27.1</b>	<b>69</b>	<b>105</b>	<b>40</b>

## CHAPTER VI STUDY OF WASTE MANAGEMENT

### 6.1 Segregation of Waste at Source:

The Waste is segregated at source. Waste bins are located at various locations.

#### Photograph of Separate Waste Collection Bin:



### 6.2 Microbial Waste Management:

The Microbial Waste is completely degenerated in an Autoclave, before disposal.

### 6.3 Sanitary Waste Management:

The College has installed Sanitary Waste Incinerator, for Disposal of Sanitary Waste.

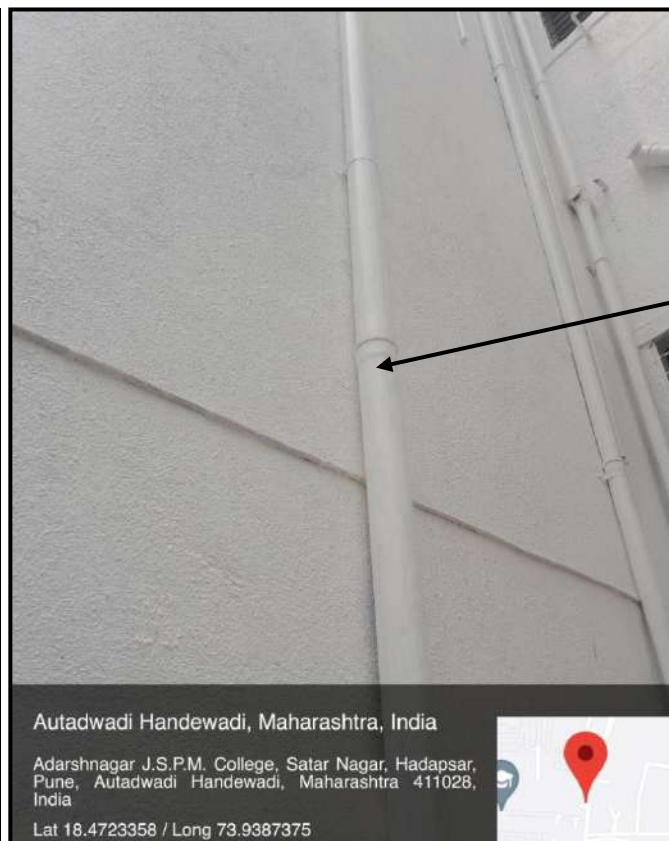
#### Photograph of Sanitary Waste Incinerator:



## CHAPTER-VII STUDY OF RAIN WATER MANAGEMENT

The College has installed Pipes from the terrace. The Rain Water is used to increase the underground water table.

### Photograph of Rain water Collecting Pipe:



Rain Water  
Collecting Pipe



## CHAPTER-VIII STUDY OF ECO FRIENDLY INITIATIVES

### 8.1 Internal Tree Plantation:

The College has Tree Plantation in the campus.

**Photograph of Tree plantation:**



### 8.2 Creation of Awareness about Resource Conservation:

The College has displayed posters emphasizing on importance of Ban Single Use Plastic.

**Photograph of Poster on Ban Single Use Plastic:**



## **ANNEXURE-I: VARIOUS AIR QUALITY, NOISE & COMFORT STANDARDS:**

### **1. Category Wise Air Quality Index Values & Concentration of PM 2.5 & PM10:**

<b>No</b>	<b>Category</b>	<b>AQI Value</b>	<b>Concentration Range, PM 2.5</b>	<b>Concentration Range, PM 10</b>
1	Good	0 to 50	0 to 30	0 to 50
2	Satisfactory	51 to 100	31 to 60	51 to 100
3	Moderately Polluted	101 to 200	61 to 90	101 to 250
4	Poor	201 to 300	91 to 120	251 to 350
5	Very Poor	301 to 400	121 to 250	351 to 430
6	Severe	401 to 500	250 +	430 +

### **2. Recommended Noise Level Standards:**

<b>No</b>	<b>Location</b>	<b>Noise Level dB</b>
1	Auditoriums	20-25
2	Outdoor Playground	55
3	Occupied Class Room	40-45
4	Un occupied Class Room	35
5	Apartment, Homes	35-40
6	Offices	45-50
7	Libraries	35-40
8	Restaurants	50-55

### **3. Thermal Comfort Conditions: For Non-conditioned Buildings:**

<b>No</b>	<b>Parameter</b>	<b>Value</b>
1	Temperature	Less Than 33°C
2	Humidity	Less Than 70%

# GREEN AUDIT REPORT

of

JAYAWANT SHIKSHAN PRASARAK MANDAL'S,  
**JAYAWANTRAO SAWANT COMMERCE & SCIENCE COLLEGE,**

Handewadi Road, Hadapsar, Pune



Year: 2022-23

Prepared by:

## ENGRESS SERVICES

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Near Mukhtangan English School, Parvati, Pune 411009  
Phone: 09890444795 Email: [engress123@gmail.com](mailto:engress123@gmail.com)





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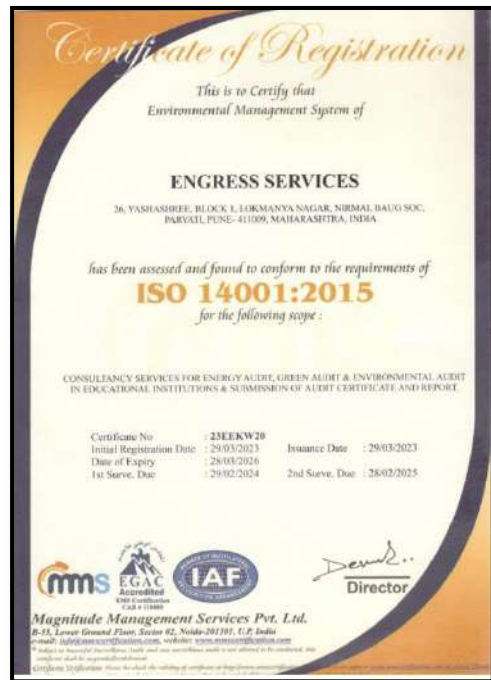


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5	Study of Rain Water Management	11
6	Study of Green & Sustainable Practices	12

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



## EXECUTIVE SUMMARY

**1. Jayawant Shikshan Prasarak Mandal's, Jayawantrao Sawant Commerce & Science College, Hadapsar, 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>37463</b>	kWh
2	Annual CO <sub>2</sub> Emissions	<b>33.72</b>	MT

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

- The Energy generated by **3 kWp** Solar PV Plant in 2022-23 is **3600 kWh**.
- Reduction in CO<sub>2</sub> Emissions in 2022-23 is **3.24 MT**

### 4. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Microbial Waste	Provision of Autoclave
3	Sanitary Waste	Provision of Sanitary Waste Incinerator

### 5. Rain Water Management:

The rain water falling on terrace 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 ban Single Use Plastic by Display of Posters

### 7. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO<sub>2</sub>** into atmosphere
2. Energy generated by Roof Top Solar PV Plant: **4 kWh/kWp per Day**
3. 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**

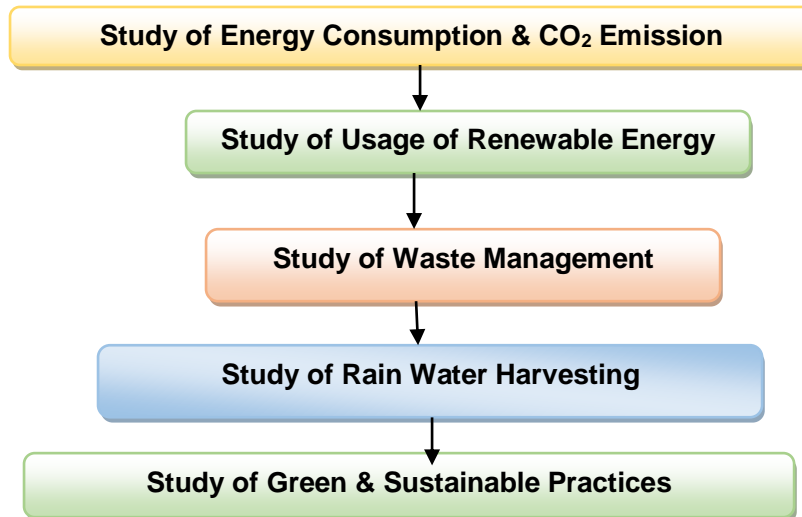
BEE	Bureau of Energy Efficiency
JSPM	Jayawant Shikshan Prasarak Mandal
kWh	Kilo Watt Hour
LPD	Liters Per Day
Kg	Kilo Gram
MT	Metric Ton
CO <sub>2</sub>	Carbon Di Oxide
Qty	Quantity

## CHAPTER-I INTRODUCTION

### 1.1 Introduction:

A Green Audit is conducted at Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College, Hadapsar, Pune

### 1.2 Audit Procedural Steps:



### 1.3 College Location Image:





## CHAPTER-II

### STUDY OF ENERGY CONSUMPTION & CO<sub>2</sub> EMISSION

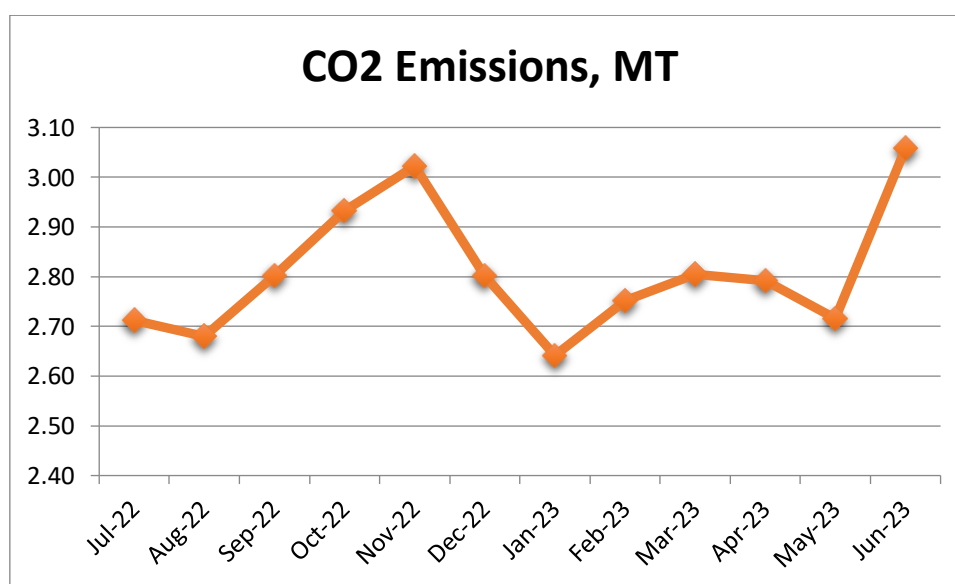
A **Carbon Foot print** is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO<sub>2</sub> Emissions:**

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

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

No	Month	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Jul-22	3014	2.71
2	Aug-22	2978	2.68
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**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 **3 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:**

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

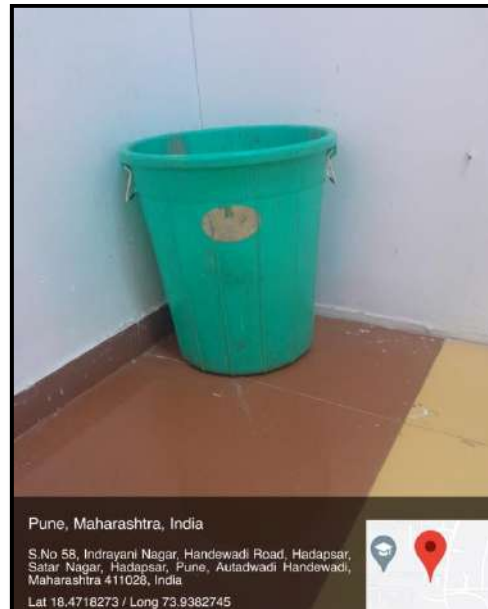


## CHAPTER IV STUDY OF WASTE MANAGEMENT

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The Waste is segregated at source. Waste bins are located at various locations.

#### Photograph of Separate Waste Collection Bin:



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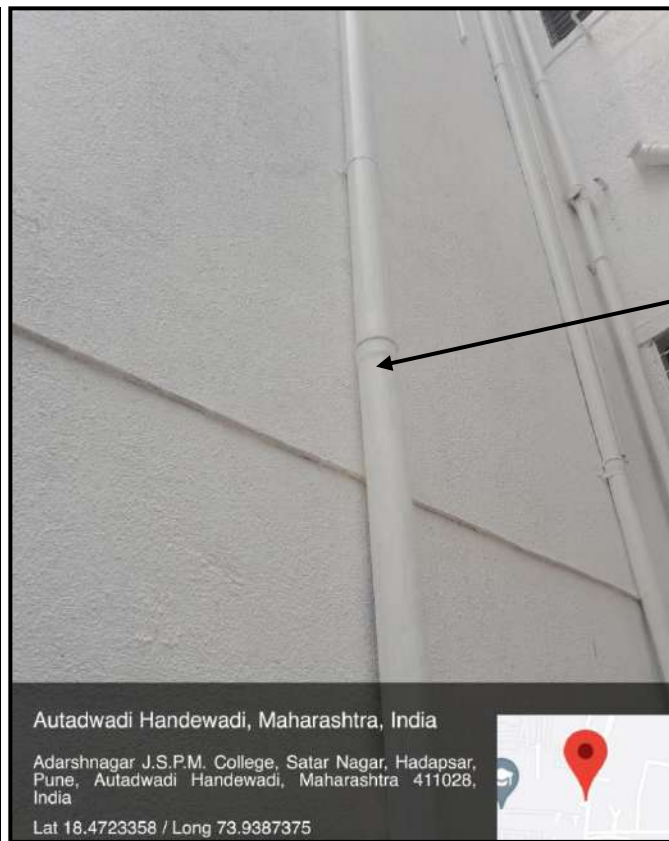


## **CHAPTER V**

### **STUDY OF RAIN WATER MANAGEMENT**

The College has installed Pipes from the terrace. The Rain Water is used to increase the underground water table.

**Photograph of Rain water Collecting Pipe:**



**Rain Water  
Collecting Pipe**

Autadwadi Handewadi, Maharashtra, India  
Adarshnagar J.S.P.M. College, Satar Nagar, Hadapsar,  
Pune, Autadwadi Handewadi, Maharashtra 411028,  
India  
Lat 18.4723358 / Long 73.9387375

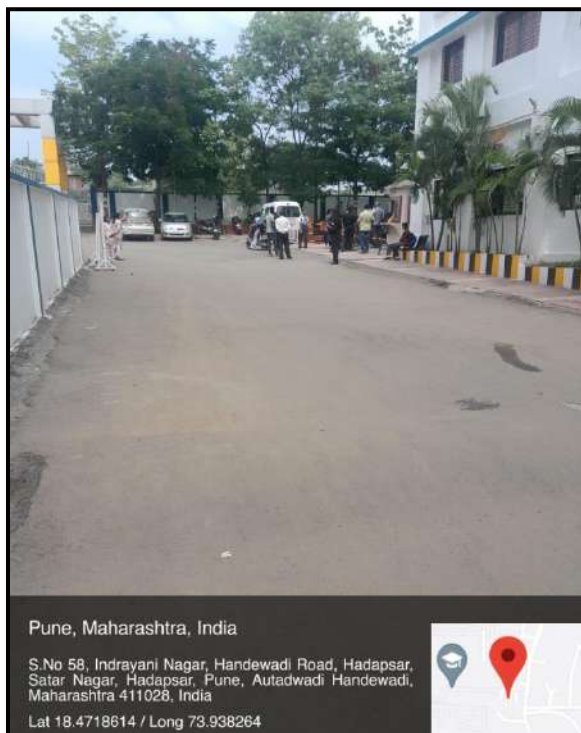


## CHAPTER VI STUDY OF GREEN & SUSTAINABLE PRACTICES

### 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 Divyangajan, the College has made provision of Ramp.

#### Photograph of Ramp:



### 6.3 Creation of Awareness about Resource Conservation:

The College has displayed posters emphasizing on importance of Ban Single Use Plastic.

#### Photograph of Poster on Ban Single Use Plastic:



# ENVIRONMENTAL AUDIT REPORT

of  
JAYAWANT SHIKSHAN PRASARAK MANDAL'S,  
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Handewadi Road, Hadapsar, Pune



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

## EXECUTIVE SUMMARY

**1. Jayawant Shikshan Prasarak Mandal's, Jayawantrao Sawant Commerce & Science College, Hadapsar, Pune** consumes Energy in the form of **Electrical Energy**; used for various Electrical Equipment, office & other facilities

### 2. Pollution due to College Activities:

- **Air pollution:** Mainly CO<sub>2</sub> on account of Electricity Consumption
- **Solid Waste:** Bio degradable Garden Waste
- **Liquid Waste:** Human liquid waste

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

No	Parameter/ Value	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Total	35308	31.78
2	Maximum	3117	2.81
3	Minimum	2690	2.42
4	Average	2942.33	2.65

### 4. Usage of Renewable Energy & Reduction in CO<sub>2</sub> Emissions:

- The College has installed Roof Top Solar PV Plant of Capacity **3kWp**.
- The Electrical Energy generated in 21-22 is **3600 kWh**.
- Reduction in CO<sub>2</sub> Emissions in 21-22 works out to be **3.24 MT**.

### 5. Indoor Air Quality Parameters:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	63	38	42
2	Minimum	56	30	35

### 6. Indoor Comfort Conditions:

No	Parameter/Value	Temperature, °C	Humidity, %	Lux Level	Noise Level, dB
1	Maximum	25.8	86	190	54
2	Minimum	25.4	84	115	45.6

### 7. Waste Management:

#### 7.1 Solid Waste Management:

Waste is segregated at Source. Waste bins are provided at various locations.

### **7.2 Microbial Waste Management:**

The Microbial Waste is degenerated in an Autoclave before disposal.

### **7.3 Sanitary Waste Management:**

A Sanitary Waste Incinerator is provided in the Campus for Disposal of Sanitary Waste.

### **8. Rain Water Management:**

The rain water falling on the terrace is used for increasing the Underground Water Table.

### **9. Environment Friendly Initiatives:**

- Internal Tree Plantation:
- Creation of Awareness on Energy Conservation by Display of Posters

### **10. Assumptions:**

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO<sub>2</sub>** into atmosphere
2. **1 kWp** Roof Top Solar PV Plant generates **4 kWh of Electrical Energy** per Day
3. Annual Solar Energy Generation Days: **300 Nos.**

### **11. References:**

- For CO<sub>2</sub> Emissions: [www.tatapower.com](http://www.tatapower.com)
- For Solar PV Energy generation: [www.solarroftop.gov.in](http://www.solarroftop.gov.in)
- For Various Indoor Air Parameters: [www.ishrae.com](http://www.ishrae.com)
- For AQI & Water Quality Standards: [www.cpcb.com](http://www.cpcb.com)



## **ABBREVIATIONS**

Kg	: Kilo Gram
JSPM	: Jayawant Shikshan Prasarak Mandal
MT	: Metric Ton
kWh	: kilo-Watt Hour
LPD	: Liters per Day
LED	: Light Emitting Diode
AQI	: Air Quality Index
PM-2.5	: Particulate Matter of Size 2.5 Micron
PM-10	: Particulate Matter of Size 10 Micron
CPCB	: Central Pollution Control Board
ISHRAE	: The Indian Society of Heating & Refrigerating & Air Conditioning Engineers

## CHAPTER-I INTRODUCTION

### 1.1 Important Definitions:

#### 1.1.1 Environment: Definition as per environment Protection Act: 1986

Environment includes water, air and land and the inter-relationship which exists among and between Water, Air, Land and Human beings, other living creatures, plants microorganism and property

#### 1.1.2. Environmental Audit: Definition:

An audit which aims at verification and validation to ensure that various environmental laws are compiled with and adequate care has been taken towards environmental protection and preservation

*According to UNEP, 1990, "Environmental audit can be defined as a management tool comprising systematic, documented and periodic evaluation of how well environmental organization management and equipment are performing with an aim of helping to regularize the environment"*

**1.1.3. Environmental Pollutant:** means any solid, liquid and gaseous substance present in the concentration as may be, or tend to be, injurious to Environment.

#### 1.1.4. Table No 1: Relevant Environmental Laws in India:

1927	The Indian Forest Act
1972	The Wildlife Protection Act
1974	The Water (Prevention and Control of Pollution) Act
1977	The Water (Prevention & Control of Pollution) Cess Act
1980	The Forest (Conservation) Act
1981	The Air (Prevention and Control of Pollution) Act
1986	The Environment Protection Act
1991	The Public Liability Insurance Act
2002	The Biological Diversity Act
2010	The National Green Tribunal Act

#### 1.1.5. Table No 2: Some Important Environmental Rules in India:

1989	Hazardous Waste (Management and Handling) Rules
1989	Manufacture, Storage and Import of Hazardous Chemical Rules
2000	Municipal Solid Waste (Management and Handling) Rules
1998	The Biomedical Waste (Management and Handling) Rules
1999	The Environment (Sitting for Industrial Projects) Rules
2000	Noise Pollution (Regulation and Control) Rules
2000	Ozone Depleting Substances (Regulation and Control) Rules
2011	E-waste (Management and Handling) Rules

2011	National Green Tribunal (Practices and Procedure) Rules
2011	Plastic Waste (Management and Handling) Rules

**1.1.6 Table No 3: National Environmental Plans & Policy Documents:**

1.	National Forest Policy, 1988
2.	National Water Policy, 2002
3.	National Environment Policy or NEP (2006)
4.	National Conservation Strategy and Policy Statement on Environment and Development, 1992
5.	Policy Statement for Abatement of Pollution (1992)
6.	National Action Plan on Climate Change
7.	Vision Statement on Environment and Human Health
8.	Technology Vision 2030 (The Energy Research Institute)
9.	Addressing Energy Security and Climate Change (MoEF and Bureau of Energy Efficiency)
10	The Road to Copenhagen; India's Position on Climate Change Issues (MoEF)

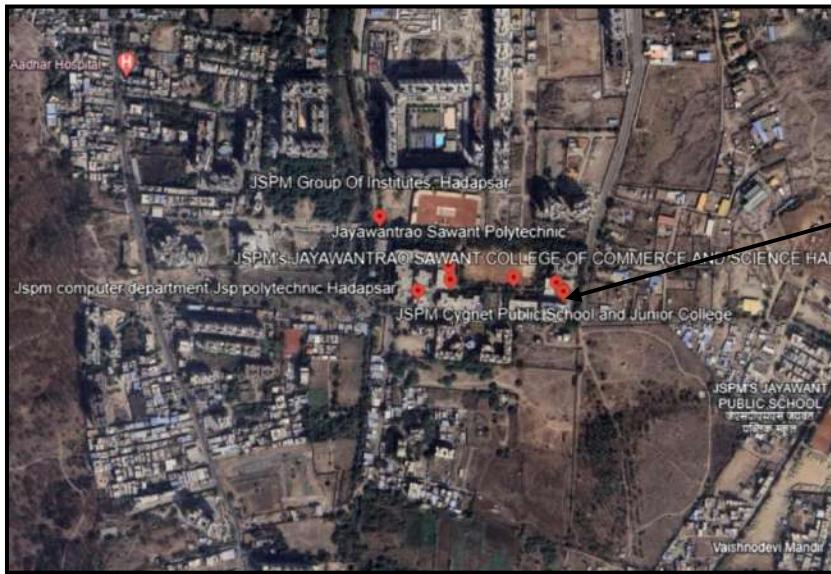
**1.2 Objectives:**

1. To study Resource Consumption & CO<sub>2</sub> Emissions
2. To Study Usage of renewable Energy
3. To study Indoor Air Quality Parameters
4. To study Indoor Comfort Condition Parameters
5. To Study of Waste Management
6. To Study of Rain Water Management
7. To Study of Environment Friendly Initiatives

**1.3 Table No 4: General Details of College:**

No	Head	Particulars
1	Name of Institution	Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College
2	Address	Handewadi Road, Hadapsar, Pune 411 028
3	Affiliation	Savitribai Phule Pune University

### 1.4 Google Earth Image:



**College  
Campus**



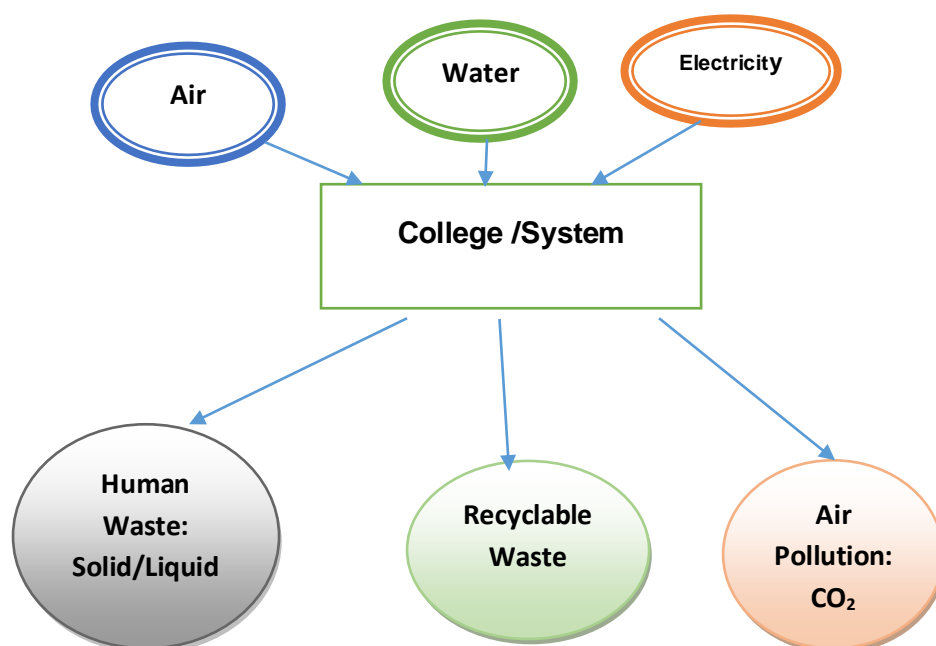
## CHAPTER-II STUDY OF CONSUMPTION OF RECOURCES & CO<sub>2</sub> EMISSION

The Institute consumes following basic/derived Resources:

1. Air
2. Water
3. Electrical Energy

We try to draw a schematic diagram for the College System & Environment as under.

**Chart No 1: Representation of College as System & Study of Resources & Waste**



Now we compute the Generation of CO<sub>2</sub> on account of consumption of Electrical Energy.

The basis of Calculation for CO<sub>2</sub> emissions due to Electrical Energy is as under

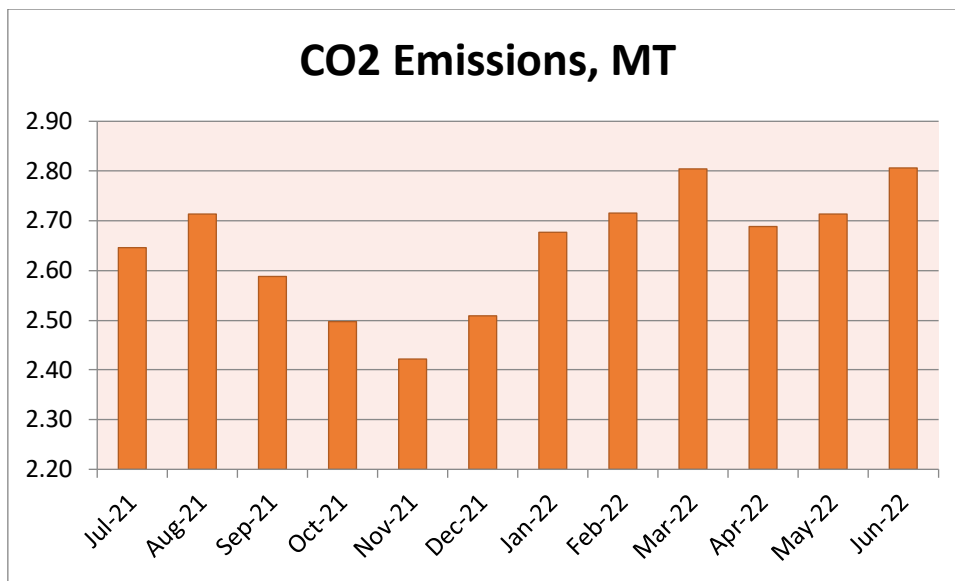
- 1 kWh of Electrical Energy releases 0.9 Kg of CO<sub>2</sub> into atmosphere

**Table No 5: Study of Consumption of Electrical Energy & CO<sub>2</sub> Emissions: 21-22:**

No	Month	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Jul-21	2940	2.65
2	Aug-21	3015	2.71
3	Sep-21	2875	2.59
4	Oct-21	2775	2.50
5	Nov-21	2690	2.42
6	Dec-21	2787	2.51
7	Jan-22	2974	2.68
8	Feb-22	3018	2.72

9	Mar-22	3115	2.80
10	Apr-22	2987	2.69
11	May-22	3015	2.71
12	Jun-22	3117	2.81
13	Total	35308	31.78
14	Maximum	3117	2.81
15	Minimum	2690	2.42
16	Average	2942.33	2.65

**Chart No 2: 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 **3 kWp**.

In the following Table, we compute the Annual Reduction in CO<sub>2</sub> Emissions due to installation of Roof TOP Solar PV Plant.

**Table No 6: Computation of Annual Reduction in CO<sub>2</sub> Emissions:**

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	3	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: 21-22	3600	kWh
5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	<b>Qty of CO<sub>2</sub> Saved by Solar PV Plant = (4)*(5) /1000</b>	<b>3.24</b>	<b>MT of CO<sub>2</sub></b>

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



## CHAPTER IV STUDY OF INDOOR AIR QUALITY

### 4.1 Importance of Air Quality:

**Air:** The common name given to the atmospheric gases used in breathing and photosynthesis.

By volume, Dry Air contains 78.09% Nitrogen, 20.95% Oxygen, 0.93% Argon, 0.039% carbon dioxide, and small amounts of other gases.

Rapid urbanization and industrialization has added other elements/compounds to the pure air and thus caused the increase in pollution. In order to prevent, control and abate air pollution, the Air (Prevention and Control of Pollution) Act was enacted in 1981.

**Air quality is a measure of the suitability of air for breathing by people, plants and animals.**

According to Section 2(b) of Air (Prevention and control of pollution) Act, 1981 'air pollution' has been defined as 'the presence in the atmosphere of any air pollutant.'

As per Section 2(a) of Air (Prevention and control of pollution) Act, 1981 'air pollutant' has been defined as 'any solid, liquid or gaseous substance [(including noise)] present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment

### 4.2 Air Quality Index:

An **Air Quality Index (AQI)** is a number used by government agencies to measure the **air pollution** levels and communicate it to the population.

We present herewith following important Parameters.

1. AQI- Air Quality Index
2. PM-2.5- Particulate Matter of Size 2.5 micron
3. PM-10- Particulate Matter of Size 10 micron

**Table No 7: Indoor Air Quality Parameters:**

No	Location	AQI	PM-2.5	PM-10
1	Office	60	36	48
2	Physics Lab	56	33	37
3	Chemistry Lab	63	38	39
4	Class room	61	37	42
5	Faculty Cabin	56	30	35
	Maximum	<b>63</b>	<b>38</b>	<b>42</b>
	Minimum	<b>56</b>	<b>30</b>	<b>35</b>



## **CHAPTER V STUDY OF INDOOR COMFORT CONDITION PARAMETERS**

In this Chapter, we present the various Indoor Comfort Parameters measured during the Audit.

The Parameters include:

1. Temperature
2. Humidity
3. Lux Level
4. Noise Level.

**Table No 8: Study of Indoor Comfort Condition Parameters:**

<b>No</b>	<b>Location</b>	<b>Temperature, °C</b>	<b>Humidity, %</b>	<b>Lux Level</b>	<b>Noise Level, dB</b>
1	Office	25.8	85	131	45.6
2	Physics Lab	25.4	86	119	46
3	Chemistry Lab	25.5	86	115	52
4	Class room	25.7	84	182	54
5	Faculty Cabin	25.7	84	190	53.6
	Maximum	<b>25.8</b>	<b>86</b>	<b>190</b>	<b>54</b>
	Minimum	<b>25.4</b>	<b>84</b>	<b>115</b>	<b>45.6</b>

## CHAPTER VI STUDY OF WASTE MANAGEMENT

### 6.1 Solid Waste Management:

The Waste is segregated at Source. Waste Bins are kept at various locations in the Campus.

#### Photograph of Waste Collection Bin:



### 6.2 Microbial Waste Management:

The Microbial Waste is completely degenerated in an Autoclave, before disposal.

### 6.3 Sanitary Waste Management:

For disposal of Sanitary Waste, a Sanitary Waste Incinerator is installed in the campus.

#### Photograph of Sanitary Waste Incinerator:



## CHAPTER-VII STUDY OF RAIN WATER MANAGEMENT

The College has installed Pipes from the terrace. The Rain Water is used to increase the underground water table.

**Photograph of Rain water Collecting Pipe:**



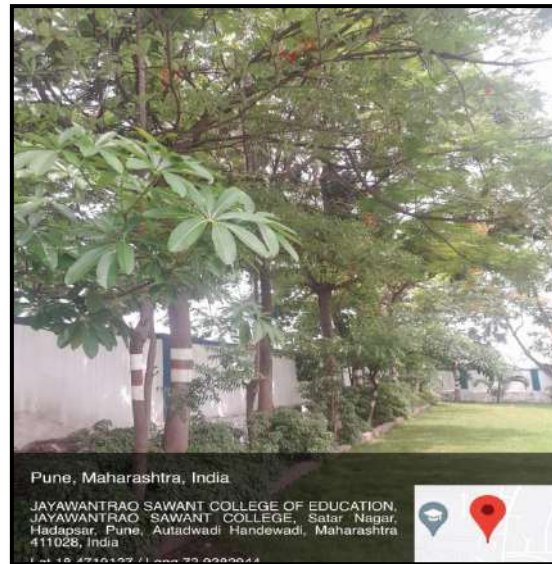
Rain Water  
Collecting Pipe

## CHAPTER-VIII STUDY OF ENVIRONMENT FRIENDLY INITIATIVES

### 8.1 Internal Tree Plantation:

The College has well maintained landscaped garden in the campus.

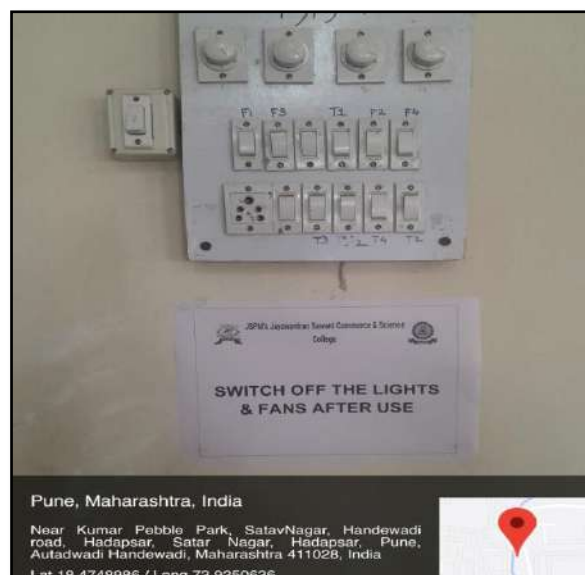
#### Photograph of Tree plantation:



### 8.2 Creation of Awareness on Energy Conservation:

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

#### Photograph of Poster on Energy Conservation:





## **ANNEXURE-I: AIR QUALITY, NOISE & INDOOR COMFORT STANDARDS:**

### **1. Category Wise Air Quality Index Values & Concentration of PM 2.5 & PM10:**

<b>No</b>	<b>Category</b>	<b>AQI Value</b>	<b>Concentration Range, PM 2.5</b>	<b>Concentration Range, PM 10</b>
1	Good	0 to 50	0 to 30	0 to 50
2	Satisfactory	51 to 100	31 to 60	51 to 100
3	Moderately Polluted	101 to 200	61 to 90	101 to 250
4	Poor	201 to 300	91 to 120	251 to 350
5	Very Poor	301 to 400	121 to 250	351 to 430
6	Severe	401 to 500	250 +	430 +

### **2. Recommended Noise Level Standards:**

<b>No</b>	<b>Location</b>	<b>Noise Level dB</b>
1	Auditoriums	20-25
2	Outdoor Playground	55
3	Occupied Class Room	40-45
4	Un occupied Class Room	35
5	Apartment, Homes	35-40
6	Offices	45-50
7	Libraries	35-40
8	Restaurants	50-55

### **3. Thermal Comfort Conditions: For Non-conditioned Buildings:**

<b>No</b>	<b>Parameter</b>	<b>Value</b>
1	Temperature	Less Than 33°C
2	Humidity	Less Than 70%

# GREEN AUDIT REPORT

of

JAYAWANT SHIKSHAN PRASARAK MANDAL'S,  
**JAYAWANTRAO SAWANT COMMERCE & SCIENCE COLLEGE,**

Handewadi Road, Hadapsar, Pune



Year: 2021-22

Prepared by:

## **ENGRESS SERVICES**

Yashashree, 26, Nirmal Bag Society,  
Near Mukhtangan English School, Parvati, Pune 411009  
Phone: 09890444795, Email: [engress123@gmail.com](mailto:engress123@gmail.com)



## REGISTRATION CERTIFICATES



**BEE AUDITOR CERTIFICATE**



**MEDA EMPANELMENT CERTIFICATE**



**ASSOCHAM GEM CP CERTIFICATE**

## **INDEX**

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6	Study of Rain water Management	13
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## **ACKNOWLEDGEMENT**

We Engress Services, Pune, express our sincere gratitude to the management of Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College, Handewadi Road, Hadapsar, Pune for awarding us the assignment of Green Audit of their Campus for the Year: 2021-22.

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

## EXECUTIVE SUMMARY

1. Jayawant Shikshan Prasarak Mandal's, Jayawantrao Sawant Commerce & Science College, Hadapsar, 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> Emissions:

No	Parameter/ Value	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Total	35308	31.78
2	Maximum	3117	2.81
3	Minimum	2690	2.42
4	Average	2942.33	2.65

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

- The College has installed Roof Top Solar PV Plant of Capacity **3 kWp**.
- The Electrical Energy generated in 2021-22 is **3600 kWh**.
- Reduction in CO<sub>2</sub> Emissions in 2021-22 works out to be **3.24 MT**.

### 4. Waste Management:

#### 4.1 Solid Waste Management:

Waste is segregated at Source. Waste bins are provided at various locations.

#### 4.2 Microbial Waste Management:

The Microbial Waste is degenerated in an Autoclave before disposal.

#### 4.3 Sanitary Waste Management:

A Sanitary Waste Incinerator is provided in the Campus for Disposal of Sanitary Waste.

### 5. Rain Water Management:

The rain water falling on terrace is used for increasing the underground water table.

### 6. Green & Sustainable Initiatives

- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp for Divyangajan
- Creation of Awareness on Energy Conservation Display of Posters

### 7. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO<sub>2</sub>** into atmosphere
2. **1 kWp** Roof Top Solar PV Plant generates **4 kWh of Electrical Energy** per Day
3. 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.solarroftop.gov.in](http://www.solarroftop.gov.in)

## **ABBREVIATIONS**

BEE	Bureau of Energy Efficiency
JSPM	Jayawant Shikshan Prasarak Mandal
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

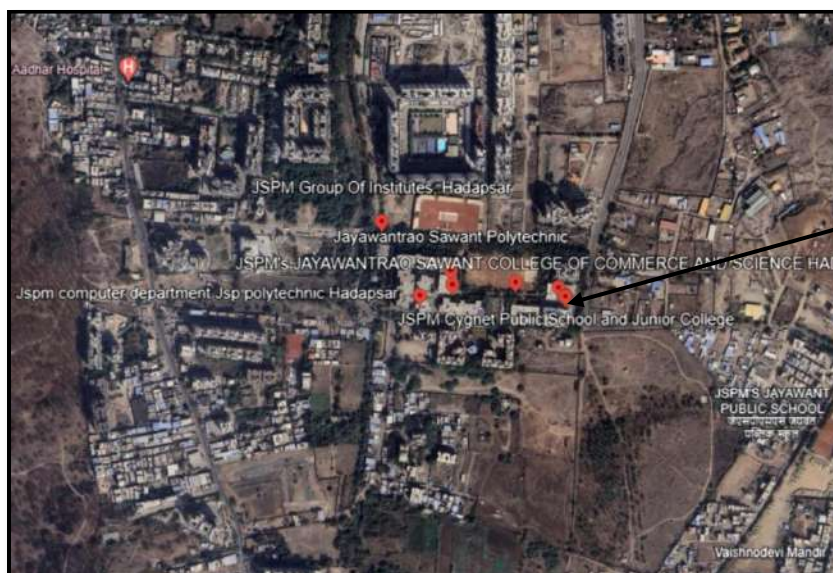
### 1.1 Objectives:

1. To study present Energy Consumption
2. To compute the CO<sub>2</sub> emissions
3. To study usage of Renewable Energy
4. Study of Waste Management
5. Study of Rain Water Harvesting
6. Study of Green & Sustainable Practices

### 1.2 Table No 1: General Details of College:

No	Head	Particulars
1	Name of Institution	Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College
2	Address	Handewadi Road, Hadapsar, Pune 411 028
3	Affiliation	Savitribai Phule Pune University

### 1.3 Google Earth Image:



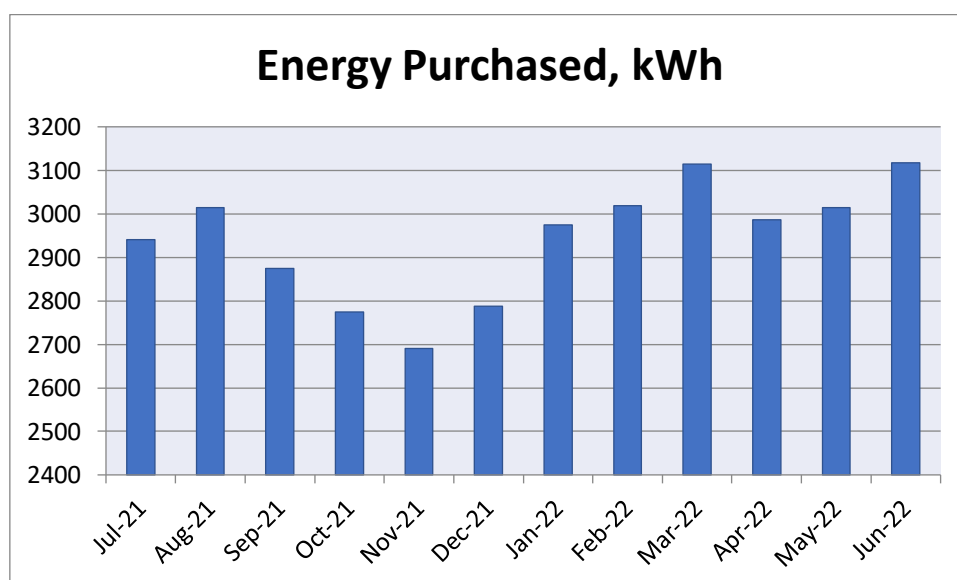
## CHAPTER-II STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of Electrical Energy.

**Table No 2: Electrical Bill Analysis- 2021-22:**

No	Month	Energy Purchased, kWh
1	Jul-21	2940
2	Aug-21	3015
3	Sep-21	2875
4	Oct-21	2775
5	Nov-21	2690
6	Dec-21	2787
7	Jan-22	2974
8	Feb-22	3018
9	Mar-22	3115
10	Apr-22	2987
11	May-22	3015
12	Jun-22	3117
13	Total	35308
14	Maximum	3117
15	Minimum	2690
16	Average	2942.33

**Chart No 1: Variation in Monthly Energy Consumption:**



## CHAPTER III

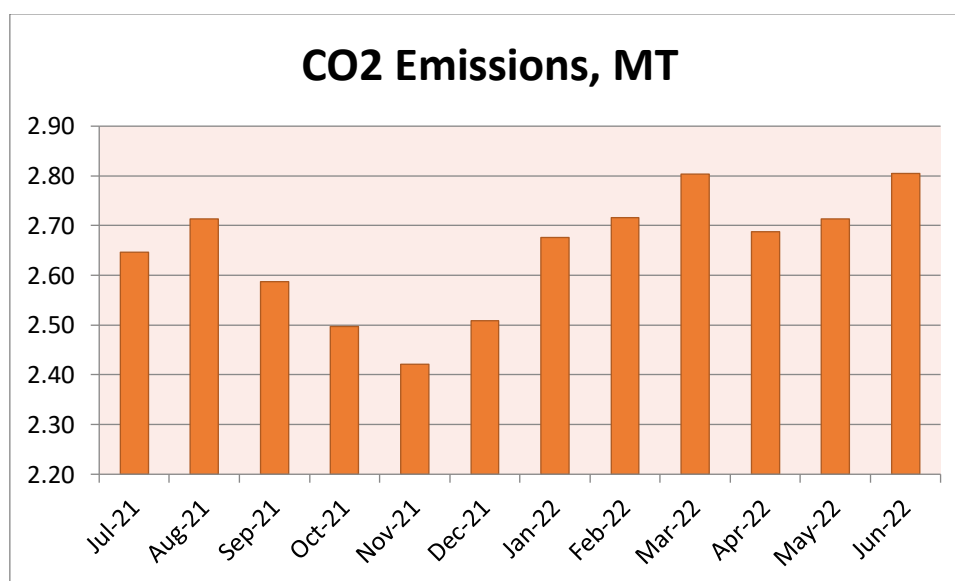
### STUDY OF CARBON FOOTPRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **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**

**Table No 4: Month wise CO<sub>2</sub> Emissions:**

No	Month	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Jul-21	2940	2.65
2	Aug-21	3015	2.71
3	Sep-21	2875	2.59
4	Oct-21	2775	2.50
5	Nov-21	2690	2.42
6	Dec-21	2787	2.51
7	Jan-22	2974	2.68
8	Feb-22	3018	2.72
9	Mar-22	3115	2.80
10	Apr-22	2987	2.69
11	May-22	3015	2.71
12	Jun-22	3117	2.81
13	Total	35308	31.78
14	Maximum	3117	2.81
15	Minimum	2690	2.42
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**Chart No 2: Month wise CO<sub>2</sub> Emissions:**



## CHAPTER IV STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity **3 kWp**.

In the following Table, we compute the Annual Reduction in CO<sub>2</sub> Emissions due to installation of Roof TOP Solar PV Plant.

**Table No 6: Computation of Annual Reduction in CO<sub>2</sub> Emissions:**

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	3	kWp
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3	Annual Solar Energy generation Days	300	Nos
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5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	<b>Qty of CO<sub>2</sub> Saved by Solar PV Plant =(4)*(5) /1000</b>	<b>3.24</b>	<b>MT of CO<sub>2</sub></b>

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





## **CHAPTER V STUDY OF WASTE MANAGEMENT**

### **5.1 Solid Waste Management:**

The Waste is segregated at Source. Waste Bins are kept at various locations in the Campus.

#### **Photograph of Waste Collection Bin:**



### **5.2 Microbial Waste Management:**

The Microbial Waste is completely degenerated in an Autoclave, before disposal.

### **5.3 Sanitary Waste Management:**

For disposal of Sanitary Waste, a Sanitary Waste Incinerator is installed in the campus.

#### **Photograph of Sanitary Waste Incinerator:**



## CHAPTER-VI STUDY OF RAIN WATER MANAGEMENT

The College has installed Pipes from the terrace. The Rain Water is used to increase the underground water table.

**Photograph of Rain water Collecting Pipe:**



Rain Water  
Collecting Pipe

## CHAPTER-VII

### STUDY OF GREEN & SUSTAINABLE PRACTICES

#### 7.1 Pedestrian Friendly Roads:

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

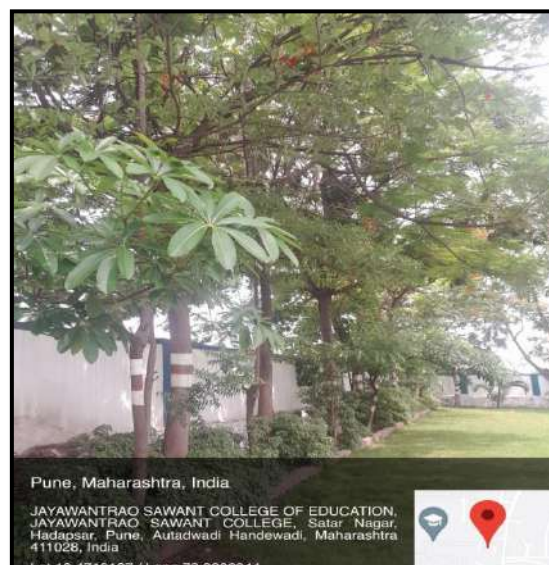
#### Photograph of Internal Road:



#### 7.2 Internal Tree Plantation:

The College has well maintained landscaped garden in the campus.

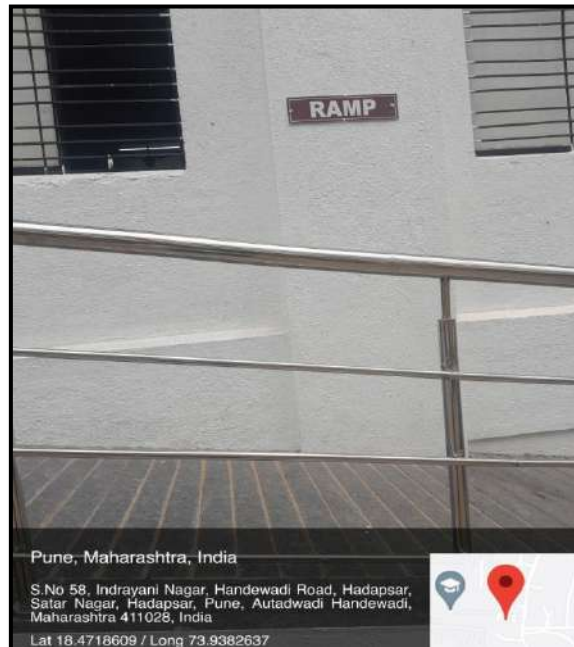
#### Photograph of Tree plantation:



### 7.3 Provision of Ramp for Divyangajan:

For easy movement of Divyangajan, the College has made provision of Ramp as well as dedicated wash room.

#### Photograph of Ramp:



### 7.4 Creation of Awareness about Energy Conservation:

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

#### Photograph of Poster on Energy Conservation:



# ENVIRONMENTAL AUDIT REPORT

of  
JAYAWANT SHIKSHAN PRASARAK MANDAL'S,  
**JAYAWANTRAO SAWANT COMMERCE & SCIENCE COLLEGE,**  
Handewadi Road, Hadapsar, Pune



Year: 2020-21

Prepared by:

## ENRICH CONSULTANTS

Yashashree, 26, Nirmal Bag Society,  
Near Mukhtangan English School, Parvati, Pune 411009  
Phone: 09890444795 Email: [enrichcons@gmail.com](mailto:enrichcons@gmail.com)





## REGISTRATION CERTIFICATES

Regn. No. EA-8192		No. 2942
<b>National Productivity Council</b> (National Certifying Agency)		
<b>PROVISIONAL CERTIFICATE</b>		
This is to certify that Mr. / Ms. <u>Achyut Yashavant Mehendale</u> son / daughter of Mr. <u>Yashavant</u> has passed the National Certification Examination for Energy Auditors in April - 2007, conducted on behalf of the Bureau of Energy Efficiency, Ministry of Power, Government of India. He / She is qualified as Certified Energy Manager as well as Certified Energy Auditor. He / She shall be entitled to practice as Energy Auditor under the Energy Conservation Act 2001, subject to the fulfillment of qualifications for the Accredited Energy Auditor and issue of certificate of Accreditation by the Bureau of Energy Efficiency under the said Act. This certificate is valid till the issuance of an official certificate by the Bureau of Energy Efficiency.		
Place : Chennai, India		 Controller of Examination
Date : 10 <sup>th</sup> August 2007		

## BEE ENERGY AUDITOR CERTIFICATE

<b>MAHARASHTRA ENERGY DEVELOPMENT AGENCY</b> <small>An ISO 9001 : 2000 Reg. no. : RO 91 / 2482</small>	
 <b>Maharashtra Energy Development Agency</b> (Government of Maharashtra Institution) Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary, Aundh, Pune, Maharashtra 411067 Ph No: 020-35000450 Email: eee@mahaurja.com, Web: www.mahaurja.com	
ECN/2021-22/CR-14/1577	22 <sup>nd</sup> April, 2021
<b>CERTIFICATE OF REGISTRATION FOR CLASS 'A'</b>	
We hereby certify that, the firm having following particulars is registered with <b>MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)</b> under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.	
<b>Name and Address of the firm</b>	: M/s Enrich Consultants Yashashree, Plot No. 26, Nirmal Bag Society, Near Mukhtangan English School, Parvati, Pune - 411009.
<b>Registration Category</b>	: Empanelled Consultant for Energy Conservation Programme for Class 'A'
<b>Registration Number</b>	: MEDA/ECN/2021-22/Class A/EA-03
<ul style="list-style-type: none"><li>• Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.</li><li>• MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.</li><li>• This empanelment is valid till 21<sup>st</sup> April, 2023 from the date of registration, to carry out energy audits under the Energy Conservation Programme</li><li>• The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.</li></ul>	
 General Manager (EC)	

## MEDA EMPANELMENT CERTIFICATE

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## **ACKNOWLEDGEMENT**

We Enrich Consultants, Pune, express our sincere gratitude to the management of Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College, Handewadi Road, Hadapsar, Pune for awarding us the assignment of Environmental Audit of their Campus for the Year: 2020-21.

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

## EXECUTIVE SUMMARY

**1. Jayawant Shikshan Prasarak Mandal's, Jayawantrao Sawant Commerce & Science College, Hadapsar, Pune** consumes Energy in the form of **Electrical Energy**; used for various Electrical Equipment, office & other facilities

### 2. Pollution due to College Activities:

- **Air pollution:** Mainly CO<sub>2</sub> on account of Electricity Consumption
- **Solid Waste:** Bio degradable Garden Waste
- **Liquid Waste:** Human liquid waste

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

No	Parameter/ Value	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Total	14253	12.83
2	Maximum	2902	2.61
3	Minimum	785	0.71
4	Average	14253	12.83

### 4. Usage of Renewable Energy & Reduction in CO<sub>2</sub> Emissions:

- The College has installed Roof Top Solar PV Plant of Capacity **3kWp**.
- The Electrical Energy generated in 2020-21 is **3600 kWh**.
- Reduction in CO<sub>2</sub> Emissions in 2020-21 works out to be **3.24 MT**.

### 5. Indoor Air Quality Parameters:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	95	56	69
2	Minimum	86	52	59

### 6. Waste Management:

#### 6.1 Solid Waste Management:

Waste is segregated at Source. Waste bins are provided at various locations.

#### 6.2 Microbial Waste Management:

The Microbial Waste is degenerated in an Autoclave before disposal.

#### 6.3 Sanitary Waste Management:

A Sanitary Waste Incinerator is provided in the Campus for Disposal of Sanitary Waste.

### 7. Rain Water Management:

The rain water falling on the terrace is used for increasing the Underground Water Table.

### 8. Environment Friendly Initiatives:

- Internal Tree Plantation:
- Creation of Awareness on 3R's Reduce, Reuse & Recycle by Display of Posters

### 9. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO<sub>2</sub>** into atmosphere
2. **1 kWp** Roof Top Solar PV Plant generates **4 kWh of Electrical Energy** per Day
3. Annual Solar Energy Generation Days: **300 Nos.**

### 10. References:

- For CO<sub>2</sub> Emissions: [www.tatapower.com](http://www.tatapower.com)
- For Solar PV Energy generation: [www.solarroftop.gov.in](http://www.solarroftop.gov.in)
- For AQI Standards: [www.cpcb.com](http://www.cpcb.com)



## **ABBREVIATIONS**

Kg	: Kilo Gram
JSPM	: Jayawant Shikshan Prasarak Mandal
MT	: Metric Ton
kWh	: kilo-Watt Hour
LPD	: Liters per Day
LED	: Light Emitting Diode
AQI	: Air Quality Index
PM-2.5	: Particulate Matter of Size 2.5 Micron
PM-10	: Particulate Matter of Size 10 Micron
CPCB	: Central Pollution Control Board

## CHAPTER-I INTRODUCTION

### 1.1 Important Definitions:

#### 1.1.1 Environment: Definition as per environment Protection Act: 1986

Environment includes water, air and land and the inter-relationship which exists among and between Water, Air, Land and Human beings, other living creatures, plants microorganism and property

#### 1.1.2. Environmental Audit: Definition:

An audit which aims at verification and validation to ensure that various environmental laws are compiled with and adequate care has been taken towards environmental protection and preservation

*According to UNEP, 1990, "Environmental audit can be defined as a management tool comprising systematic, documented and periodic evaluation of how well environmental organization management and equipment are performing with an aim of helping to regularize the environment*

**1.1.3. Environmental Pollutant:** means any solid, liquid and gaseous substance present in the concentration as may be, or tend to be, injurious to Environment.

#### 1.1.4. Table No 1: Relevant Environmental Laws in India:

1927	The Indian Forest Act
1972	The Wildlife Protection Act
1974	The Water (Prevention and Control of Pollution) Act
1977	The Water (Prevention & Control of Pollution) Cess Act
1980	The Forest (Conservation) Act
1981	The Air (Prevention and Control of Pollution) Act
1986	The Environment Protection Act
1991	The Public Liability Insurance Act
2002	The Biological Diversity Act
2010	The National Green Tribunal Act

#### 1.1.5. Table No 2: Some Important Environmental Rules in India:

1989	Hazardous Waste (Management and Handling) Rules
1989	Manufacture, Storage and Import of Hazardous Chemical Rules
2000	Municipal Solid Waste (Management and Handling) Rules
1998	The Biomedical Waste (Management and Handling) Rules
1999	The Environment (Sitting for Industrial Projects) Rules
2000	Noise Pollution (Regulation and Control) Rules
2000	Ozone Depleting Substances (Regulation and Control) Rules
2011	E-waste (Management and Handling) Rules

2011	National Green Tribunal (Practices and Procedure) Rules
2011	Plastic Waste (Management and Handling) Rules

**1.1.6 Table No 3: National Environmental Plans & Policy Documents:**

1.	National Forest Policy, 1988
2.	National Water Policy, 2002
3.	National Environment Policy or NEP (2006)
4.	National Conservation Strategy and Policy Statement on Environment and Development, 1992
5.	Policy Statement for Abatement of Pollution (1992)
6.	National Action Plan on Climate Change
7.	Vision Statement on Environment and Human Health
8.	Technology Vision 2030 (The Energy Research Institute)
9.	Addressing Energy Security and Climate Change (MoEF and Bureau of Energy Efficiency)
10	The Road to Copenhagen; India's Position on Climate Change Issues (MoEF)

**1.2 Objectives:**

1. To study Resource Consumption & CO<sub>2</sub> Emissions
2. To Study Usage of renewable Energy
3. To study Indoor Air Quality Parameters
4. To study Indoor Comfort Condition Parameters
5. To Study of Waste Management
6. To Study of Rain Water Management
7. To Study of Environment Friendly Initiatives

**1.3 Table No 4: General Details of College:**

No	Head	Particulars
1	Name of Institution	Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College
2	Address	Handewadi Road, Hadapsar, Pune 411 028
3	Affiliation	Savitribai Phule Pune University

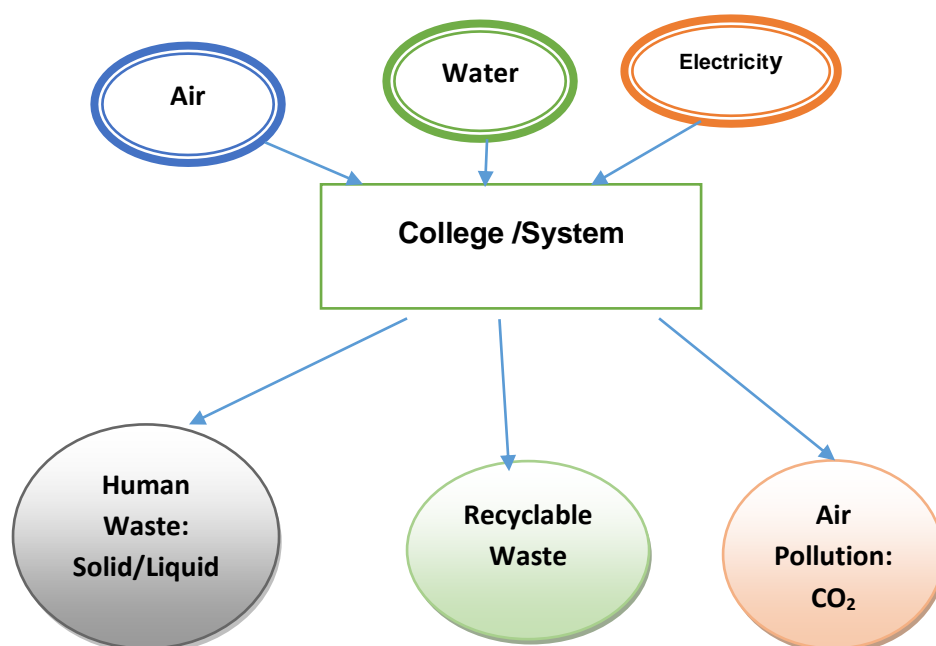
## CHAPTER-II STUDY OF CONSUMPTION OF RECOURCES & CO<sub>2</sub> EMISSION

The Institute consumes following basic/derived Resources:

1. Air
2. Water
3. Electrical Energy

We try to draw a schematic diagram for the College System & Environment as under.

**Chart No 1: Representation of College as System & Study of Resources & Waste**



Now we compute the Generation of CO<sub>2</sub> on account of consumption of Electrical Energy.

The basis of Calculation for CO<sub>2</sub> emissions due to Electrical Energy is as under

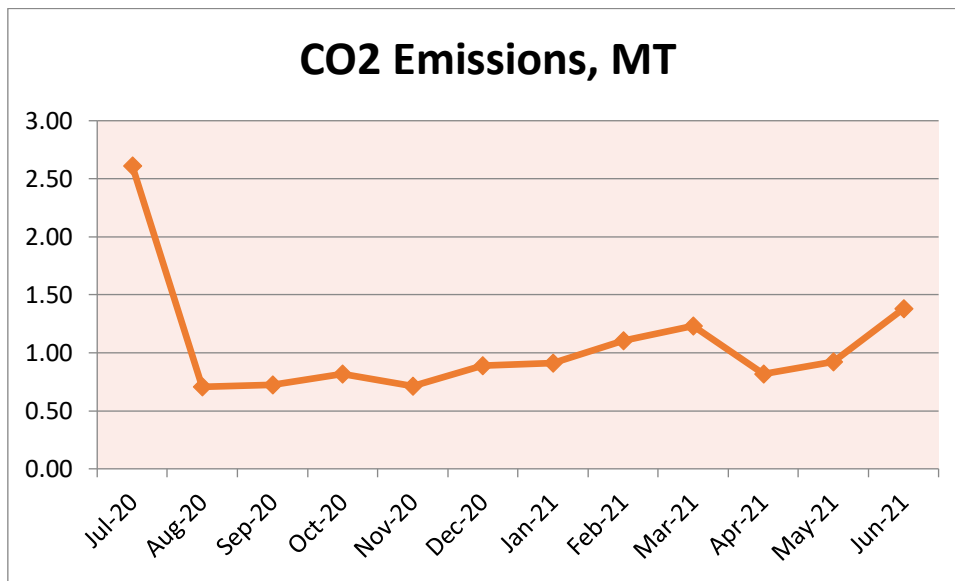
- 1 kWh of Electrical Energy releases 0.9 Kg of CO<sub>2</sub> into atmosphere

**Table No 5: Study of Consumption of Electrical Energy & CO<sub>2</sub> Emissions: 20-21:**

No	Month	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Jul-20	2902	2.61
2	Aug-20	785	0.71
3	Sep-20	805	0.72
4	Oct-20	907	0.82
5	Nov-20	789	0.71
6	Dec-20	990	0.89
7	Jan-21	1012	0.91
8	Feb-21	1228	1.11

9	Mar-21	1368	1.23
10	Apr-21	907	0.82
11	May-21	1025	0.92
12	Jun-21	1535	1.38
13	Total	14253	12.83
14	Maximum	2902	2.61
15	Minimum	785	0.71
16	Average	1187.75	1.07

**Chart No 2: 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 **3 kWp**.

In the following Table, we compute the Annual Reduction in CO<sub>2</sub> Emissions due to installation of Roof TOP Solar PV Plant.

**Table No 6: Computation of Annual Reduction in CO<sub>2</sub> Emissions:**

<b>No</b>	<b>Particulars</b>	<b>Value</b>	<b>Unit</b>
<b>1</b>	Installed Capacity of Roof Top Solar PV Plant Capacity	3	kWp
<b>2</b>	Energy Generated in per kWp	4	4 kWh/kWp
<b>3</b>	Annual Solar Energy generation Days	300	Nos
<b>4</b>	Energy Generated in the Year: 20-21	3600	kWh
<b>5</b>	1 kWh of Electrical Energy saves	0.9	Kg/kWh
<b>6</b>	<b>Qty of CO<sub>2</sub> Saved by Solar PV Plant = (4)*(5) /1000</b>	<b>3.24</b>	<b>MT of CO<sub>2</sub></b>

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



## CHAPTER IV STUDY OF INDOOR AIR QUALITY

### 4.1 Importance of Air Quality:

**Air:** The common name given to the atmospheric gases used in breathing and photosynthesis.

By volume, Dry Air contains 78.09% Nitrogen, 20.95% Oxygen, 0.93% Argon, 0.039% carbon dioxide, and small amounts of other gases.

Rapid urbanization and industrialization has added other elements/compounds to the pure air and thus caused the increase in pollution. In order to prevent, control and abate air pollution, the Air (Prevention and Control of Pollution) Act was enacted in 1981.

**Air quality is a measure of the suitability of air for breathing by people, plants and animals.**

According to Section 2(b) of Air (Prevention and control of pollution) Act, 1981 'air pollution' has been defined as 'the presence in the atmosphere of any air pollutant.'

As per Section 2(a) of Air (Prevention and control of pollution) Act, 1981 'air pollutant' has been defined as 'any solid, liquid or gaseous substance [(including noise)] present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment

### 4.2 Air Quality Index:

An **Air Quality Index (AQI)** is a number used by government agencies to measure the **air pollution** levels and communicate it to the population.

We present herewith following important Parameters.

1. AQI- Air Quality Index
2. PM-2.5- Particulate Matter of Size 2.5 micron
3. PM-10- Particulate Matter of Size 10 micron

**Table No 7: Indoor Air Quality Parameters:**

No	Location	AQI	PM-2.5	PM-10
1	Faculty Room	93	55	67
2	Microbiology Dept	90	54	64
3	Library	94	55	68
4	Classroom	86	52	59
5	Physics Dept	95	56	69
	Maximum	<b>95</b>	<b>56</b>	<b>69</b>
	Minimum	<b>86</b>	<b>52</b>	<b>59</b>

## **CHAPTER V STUDY OF WASTE MANAGEMENT**

### **5.1 Solid Waste Management:**

The Waste is segregated at Source. Waste Bins are kept at various locations in the Campus.

#### **Photograph of Waste Collection Bin:**



### **5.2 Microbial Waste Management:**

The Microbial Waste is completely degenerated in an Autoclave, before disposal.

### **5.3 Sanitary Waste Management:**

For disposal of Sanitary Waste, a Sanitary Waste Incinerator is installed in the campus.

#### **Photograph of Sanitary Waste Incinerator:**



## **CHAPTER-VI**

### **STUDY OF RAIN WATER MANAGEMENT**

The College has installed Pipes from the terrace. The Rain Water is used to increase the underground water table.

**Photograph of Rain water Collecting Pipe:**



## **CHAPTER-VII**

### **STUDY OF ENVIRONMENT FRIENDLY INITIATIVES**

#### **7.1 Internal Tree Plantation:**

The College has well maintained landscaped garden in the campus.

**Photograph of Tree plantation:**



#### **7.2 Creation of Awareness about 3 R's:**

The College has displayed posters emphasizing on importance of 3 R's i.e Reduce, Reuse & Recycle.

**Photograph of Poster on importance of 3R's i.e Reduce, Reuse & Recycle:**





**ANNEXURE-I:  
INDOOR AIR QUALITY STANDARDS:**

**1. Category Wise Air Quality Index Values & Concentration of PM 2.5 & PM10:**

No	Category	AQI Value	Concentration Range, PM 2.5	Concentration Range, PM 10
1	Good	0 to 50	0 to 30	0 to 50
2	Satisfactory	51 to 100	31 to 60	51 to 100
3	Moderately Polluted	101 to 200	61 to 90	101 to 250
4	Poor	201 to 300	91 to 120	251 to 350
5	Very Poor	301 to 400	121 to 250	351 to 430
6	Severe	401 to 500	250 +	430 +

# GREEN AUDIT REPORT

of

JAYAWANT SHIKSHAN PRASARAK MANDAL'S,  
**JAYAWANTRAO SAWANT COMMERCE & SCIENCE COLLEGE,**

Handewadi Road, Hadapsar, Pune



Year: 2020-21

Prepared by:

## ENRICH CONSULTANTS

Yashashree, 26, Nirmal Bag Society,  
Near Mukhtangan English School, Parvati, Pune 411009  
Phone: 09890444795 Email: [enrichcons@gmail.com](mailto:enrichcons@gmail.com)



## REGISTRATION CERTIFICATES

Regn. No. EA-8192		No. 2942
<b>National Productivity Council</b> (National Certifying Agency)		
<b>PROVISIONAL CERTIFICATE</b>		
This is to certify that Mr. / Ms. <u>Achyut Yashavant Mehendale</u> son / daughter of Mr. <u>Yashavant</u> has passed the National Certification Examination for Energy Auditors in April - 2007, conducted on behalf of the Bureau of Energy Efficiency, Ministry of Power, Government of India. He / She is qualified as Certified Energy Manager as well as Certified Energy Auditor. He / She shall be entitled to practice as Energy Auditor under the Energy Conservation Act 2001, subject to the fulfillment of qualifications for the Accredited Energy Auditor and issue of certificate of Accreditation by the Bureau of Energy Efficiency under the said Act. This certificate is valid till the issuance of an official certificate by the Bureau of Energy Efficiency.		
Place : Chennai, India		 Controller of Examination
Date : 10 <sup>th</sup> August 2007		

## BEE ENERGY AUDITOR CERTIFICATE

<b>MAHARASHTRA ENERGY DEVELOPMENT AGENCY</b> <small>An ISO 9001 : 2000 Reg. no. : RO 91 / 2482</small>	
 <b>Maharashtra Energy Development Agency</b> (Government of Maharashtra Institution) Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary, Aundh, Pune, Maharashtra 411067 Ph No: 020-35000450 Email: eee@mahaurja.com, Web: www.mahaurja.com	
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<ul style="list-style-type: none"><li>• Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.</li><li>• MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.</li><li>• This empanelment is valid till <b>21<sup>st</sup> April, 2023</b> from the date of registration, to carry out energy audits under the Energy Conservation Programme</li><li>• The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.</li></ul>	
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## MEDA EMPANELMENT CERTIFICATE

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6	Study of Rain water Management	13
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## **ACKNOWLEDGEMENT**

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



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1. Jayawant Shikshan Prasarak Mandal's, Jayawantrao Sawant Commerce & Science College, Hadapsar, 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> Emissions:

No	Parameter/ Value	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Total	14253	12.83
2	Maximum	2902	2.61
3	Minimum	785	0.71
4	Average	1187.75	1.07

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

- The College has installed Roof Top Solar PV Plant of Capacity **3 kWp**.
- The Electrical Energy generated in 2020-21 is **3600 kWh**.
- Reduction in CO<sub>2</sub> Emissions in 2020-21 works out to be **3.24 MT**.

### 4. Waste Management:

#### 4.1 Solid Waste Management:

Waste is segregated at Source. Waste bins are provided at various locations.

#### 4.2 Microbial Waste Management:

The Microbial Waste is degenerated in an Autoclave before disposal.

#### 4.3 Sanitary Waste Management:

A Sanitary Waste Incinerator is provided in the Campus for Disposal of Sanitary Waste.

### 5. Rain Water Management:

The rain water falling on terrace is used for increasing the underground water table.

### 6. Green & Sustainable Initiatives

- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp for Divyangajan
- Creation of Awareness on 3R's Reduce, Reuse & Recycle by Display of Posters

### 7. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO<sub>2</sub>** into atmosphere
2. **1 kWp** Roof Top Solar PV Plant generates **4 kWh of Electrical Energy** per Day
3. 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.solarroftop.gov.in](http://www.solarroftop.gov.in)

## **ABBREVIATIONS**

BEE	Bureau of Energy Efficiency
JSPM	Jayawant Shikshan Prasarak Mandal
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 Objectives:**

1. To study present Energy Consumption
2. To compute the CO<sub>2</sub> emissions
3. To study usage of Renewable Energy
4. Study of Waste Management
5. Study of Rain Water Harvesting
6. Study of Green & Sustainable Practices

### **1.2 Table No 1: General Details of College:**

<b>No</b>	<b>Head</b>	<b>Particulars</b>
1	Name of Institution	Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College
2	Address	Handewadi Road, Hadapsar, Pune 411 028
3	Affiliation	Savitribai Phule Pune University

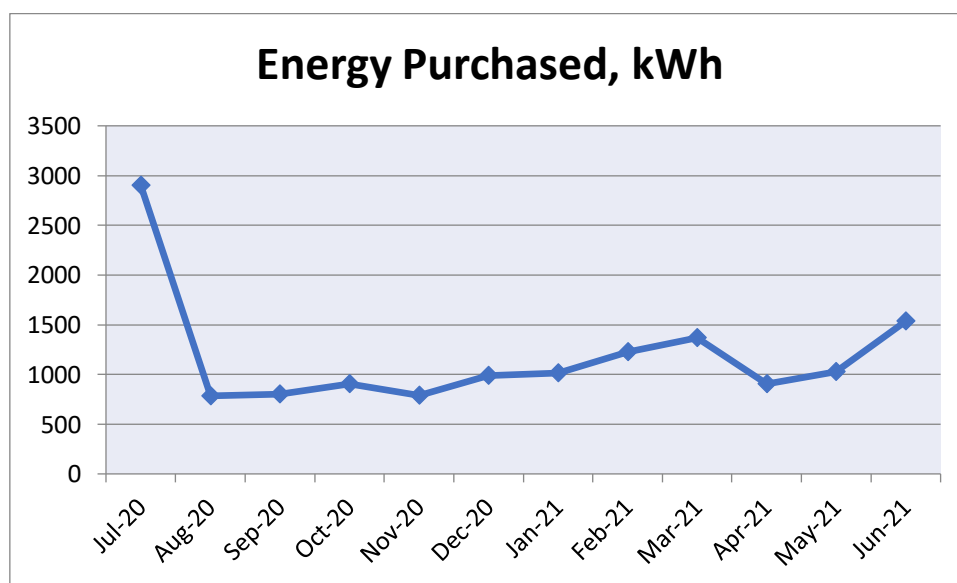
## CHAPTER-II STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of Electrical Energy.

**Table No 2: Electrical Bill Analysis- 2020-21:**

No	Month	Energy Purchased, kWh
1	Jul-20	2902
2	Aug-20	785
3	Sep-20	805
4	Oct-20	907
5	Nov-20	789
6	Dec-20	990
7	Jan-21	1012
8	Feb-21	1228
9	Mar-21	1368
10	Apr-21	907
11	May-21	1025
12	Jun-21	1535
13	Total	14253
14	Maximum	2902
15	Minimum	785
16	Average	1187.75

**Chart No 1: Variation in Monthly Energy Consumption:**





## CHAPTER III

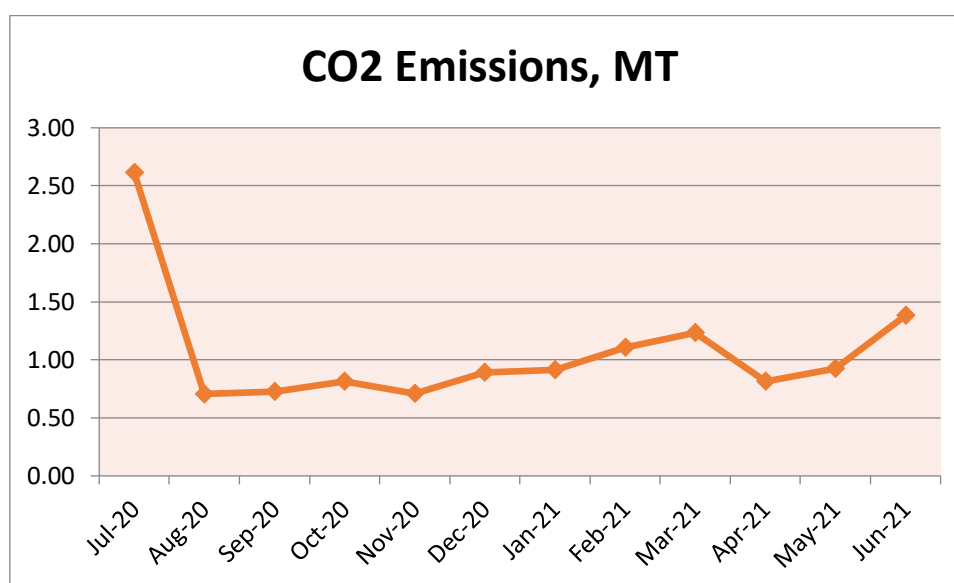
### STUDY OF CARBON FOOTPRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **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**

**Table No 4: Month wise CO<sub>2</sub> Emissions:**

No	Month	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Jul-20	2902	2.61
2	Aug-20	785	0.71
3	Sep-20	805	0.72
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12	Jun-21	1535	1.38
13	Total	14253	12.83
14	Maximum	2902	2.61
15	Minimum	785	0.71
16	Average	1187.75	1.07

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



## CHAPTER IV STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity **3 kWp**.

In the following Table, we compute the Annual Reduction in CO<sub>2</sub> Emissions due to installation of Roof TOP Solar PV Plant.

**Table No 6: Computation of Annual Reduction in CO<sub>2</sub> Emissions:**

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5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	<b>Qty of CO<sub>2</sub> Saved by Solar PV Plant = (4)*(5) /1000</b>	<b>3.24</b>	<b>MT of CO<sub>2</sub></b>

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



## **CHAPTER V STUDY OF WASTE MANAGEMENT**

### **5.1 Solid Waste Management:**

The Waste is segregated at Source. Waste Bins are kept at various locations in the Campus.

#### **Photograph of Waste Collection Bin:**



### **5.2 Microbial Waste Management:**

The Microbial Waste is completely degenerated in an Autoclave, before disposal.

### **5.3 Sanitary Waste Management:**

For disposal of Sanitary Waste, a Sanitary Waste Incinerator is installed in the campus.

#### **Photograph of Sanitary Waste Incinerator:**



## **CHAPTER-VI**

### **STUDY OF RAIN WATER MANAGEMENT**

The College has installed Pipes from the terrace. The Rain Water is used to increase the underground water table.

**Photograph of Rain water Collecting Pipe:**



## **CHAPTER-VII**

### **STUDY OF GREEN & SUSTAINABLE PRACTICES**

#### **7.1 Pedestrian Friendly Roads:**

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

#### **Photograph of Internal Road:**



#### **7.2 Internal Tree Plantation:**

The College has well maintained landscaped garden in the campus.

#### **Photograph of Tree plantation:**





### **7.3 Provision of Ramp for Divyangajan:**

For easy movement of Divyangajan, the College has made provision of Ramp as well as dedicated wash room.

#### **Photograph of Ramp:**



### **7.4 Creation of Awareness about 3 R's:**

The College has displayed posters emphasizing on importance of 3 R's i.e Reduce, Reuse & Recycle.

#### **Photograph of Poster on importance of 3R's i.e Reduce, Reuse & Recycle:**



# ENVIRONMENTAL AUDIT REPORT

of  
JAYAWANT SHIKSHAN PRASARAK MANDAL'S,  
**JAYAWANTRAO SAWANT COMMERCE & SCIENCE COLLEGE,**  
Handewadi Road, Hadapsar, Pune



Year: 2019-20

Prepared by:

## ENRICH CONSULTANTS

Yashashree, 26, Nirmal Bag Society,  
Near Mukhtangan English School, Parvati, Pune 411009  
Phone: 09890444795 Email: [enrichcons@gmail.com](mailto:enrichcons@gmail.com)



## REGISTRATION CERTIFICATES

Regn. No. EA-8192		No. 2942
<b>National Productivity Council</b> (National Certifying Agency)		
<b>PROVISIONAL CERTIFICATE</b>		
This is to certify that Mr. / Ms. <u>Achyut Yashavant Mehendale</u> son / daughter of Mr. <u>Yashavant</u> has passed the National Certification Examination for Energy Auditors in April - 2007, conducted on behalf of the Bureau of Energy Efficiency, Ministry of Power, Government of India. He / She is qualified as Certified Energy Manager as well as Certified Energy Auditor. He / She shall be entitled to practice as Energy Auditor under the Energy Conservation Act 2001, subject to the fulfillment of qualifications for the Accredited Energy Auditor and issue of certificate of Accreditation by the Bureau of Energy Efficiency under the said Act. This certificate is valid till the issuance of an official certificate by the Bureau of Energy Efficiency.		
Place : Chennai, India		 Controller of Examination
Date : 10 <sup>th</sup> August 2007		

## BEE ENERGY AUDITOR CERTIFICATE

<b>MAHARASHTRA ENERGY DEVELOPMENT AGENCY</b>	
 <b>Maharashtra Energy Development Agency</b> (A Government of Maharashtra undertaking) 2 <sup>nd</sup> Floor, MHADA Commercial Complex, Opp. Tridal Nagar, Yerwada, Pune 411 006, Ph No: 020-26614393/266144403 Email: eee@mahaurja.com, Web: www.mahaurja.com	
ECN/2018-19/CR-05/4174	19 <sup>th</sup> September, 2018
<b>CERTIFICATE OF REGISTRATION FOR CLASS 'A'</b>	
We hereby certify that, the firm having following particulars is registered with <b>MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)</b> under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.	
<b>Name and Address of the firm</b>	: <b>Enrich Consultants</b> Yashashree, Plot No. 26, Nirmal Bag Society, Near Mukangan English School, Parvati, Pune - 411009.
<b>Registration Category</b>	: Empanelled Consultant for Energy Conservation Programme
<b>Registration Number</b>	: <b>MEDA/ECN/CR-05/2018-19/EA-03</b>
<ul style="list-style-type: none"><li>• Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.</li><li>• MEDA reserves the right to visit the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.</li><li>• This empanelment is valid till <b>31<sup>st</sup> March 2021</b> from the date of registration, to carry out energy audits under the Energy Conservation Programme</li><li>• The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.</li></ul>	
 (Smita Kudarikar) General Manager (EC)	

## MEDA EMPANELMENT CERTIFICATE

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## **ACKNOWLEDGEMENT**

We Enrich Consultants, Pune, express our sincere gratitude to the management of Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College, Handewadi Road, Hadapsar, Pune for awarding us the assignment of Environmental Audit of their Campus for the Year: 2019-20.

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



## EXECUTIVE SUMMARY

1. Jayawant Shikshan Prasarak Mandal's, Jayawantrao Sawant Commerce & Science College, Hadapsar, Pune consumes Energy in the form of **Electrical Energy**; used for various Electrical Equipment, office & other facilities

### 2. Pollution due to College Activities:

- **Air pollution:** Mainly CO<sub>2</sub> on account of Electricity Consumption
- **Solid Waste:** Bio degradable Garden Waste
- **Liquid Waste:** Human liquid waste

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

No	Parameter/ Value	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Total	23526	21.17
2	Maximum	2557	2.30
3	Minimum	1012	0.91
4	Average	1960.50	1.76

### 4. Usage of Renewable Energy & Reduction in CO<sub>2</sub> Emissions:

- The College has installed Roof Top Solar PV Plant of Capacity **3kWp**.
- The Electrical Energy generated in 2019-20 is **3600 kWh**.
- Reduction in CO<sub>2</sub> Emissions in 2019-20 works out to be **3.24 MT**.

### 5. Waste Management:

#### 5.1 Solid Waste Management:

Waste is segregated at Source. Waste bins are provided at various locations.

#### 5.2 Microbial Waste Management:

The Microbial Waste is degenerated in an Autoclave before disposal.

### 6. Rain Water Management:

The rain water falling on the terrace is used for increasing the Underground Water Table.

### 7. Environment Friendly Initiatives:

- Internal Tree Plantation:

### 8. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO<sub>2</sub>** into atmosphere
2. **1 kWp** Roof Top Solar PV Plant generates **4 kWh of Electrical Energy** per Day

3. Annual Solar Energy Generation Days: **300 Nos.**

**10. References:**

- For CO<sub>2</sub> Emissions: [www.tatapower.com](http://www.tatapower.com)
- For Solar PV Energy generation: [www.solarroftop.gov.in](http://www.solarroftop.gov.in)

## **ABBREVIATIONS**

Kg	:	Kilo Gram
JSPM	:	Jayawant Shikshan Prasarak Mandal
MT	:	Metric Ton
kWh	:	kilo-Watt Hour
LPD	:	Liters per Day
LED	:	Light Emitting Diode

## CHAPTER-I INTRODUCTION

### 1.1 Important Definitions:

#### 1.1.1 Environment: Definition as per environment Protection Act: 1986

Environment includes water, air and land and the inter-relationship which exists among and between Water, Air, Land and Human beings, other living creatures, plants microorganism and property

#### 1.1.2. Environmental Audit: Definition:

An audit which aims at verification and validation to ensure that various environmental laws are compiled with and adequate care has been taken towards environmental protection and preservation

*According to UNEP, 1990, "Environmental audit can be defined as a management tool comprising systematic, documented and periodic evaluation of how well environmental organization management and equipment are performing with an aim of helping to regularize the environment"*

**1.1.3. Environmental Pollutant:** means any solid, liquid and gaseous substance present in the concentration as may be, or tend to be, injurious to Environment.

#### 1.1.4. Table No 1: Relevant Environmental Laws in India:

1927	The Indian Forest Act
1972	The Wildlife Protection Act
1974	The Water (Prevention and Control of Pollution) Act
1977	The Water (Prevention & Control of Pollution) Cess Act
1980	The Forest (Conservation) Act
1981	The Air (Prevention and Control of Pollution) Act
1986	The Environment Protection Act
1991	The Public Liability Insurance Act
2002	The Biological Diversity Act
2010	The National Green Tribunal Act

#### 1.1.5. Table No 2: Some Important Environmental Rules in India:

1989	Hazardous Waste (Management and Handling) Rules
1989	Manufacture, Storage and Import of Hazardous Chemical Rules
2000	Municipal Solid Waste (Management and Handling) Rules
1998	The Biomedical Waste (Management and Handling) Rules
1999	The Environment (Sitting for Industrial Projects) Rules
2000	Noise Pollution (Regulation and Control) Rules
2000	Ozone Depleting Substances (Regulation and Control) Rules
2011	E-waste (Management and Handling) Rules

2011	National Green Tribunal (Practices and Procedure) Rules
2011	Plastic Waste (Management and Handling) Rules

**1.1.6 Table No 3: National Environmental Plans & Policy Documents:**

1.	National Forest Policy, 1988
2.	National Water Policy, 2002
3.	National Environment Policy or NEP (2006)
4.	National Conservation Strategy and Policy Statement on Environment and Development, 1992
5.	Policy Statement for Abatement of Pollution (1992)
6.	National Action Plan on Climate Change
7.	Vision Statement on Environment and Human Health
8.	Technology Vision 2030 (The Energy Research Institute)
9.	Addressing Energy Security and Climate Change (MoEF and Bureau of Energy Efficiency)
10	The Road to Copenhagen; India's Position on Climate Change Issues (MoEF)

**1.2 Objectives:**

1. To study Resource Consumption & CO<sub>2</sub> Emissions
2. To Study Usage of renewable Energy
3. To study Indoor Air Quality Parameters
4. To study Indoor Comfort Condition Parameters
5. To Study of Waste Management
6. To Study of Rain Water Management
7. To Study of Environment Friendly Initiatives

**1.3 Table No 4: General Details of College:**

No	Head	Particulars
1	Name of Institution	Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College
2	Address	Handewadi Road, Hadapsar, Pune 411 028
3	Affiliation	Savitribai Phule Pune University



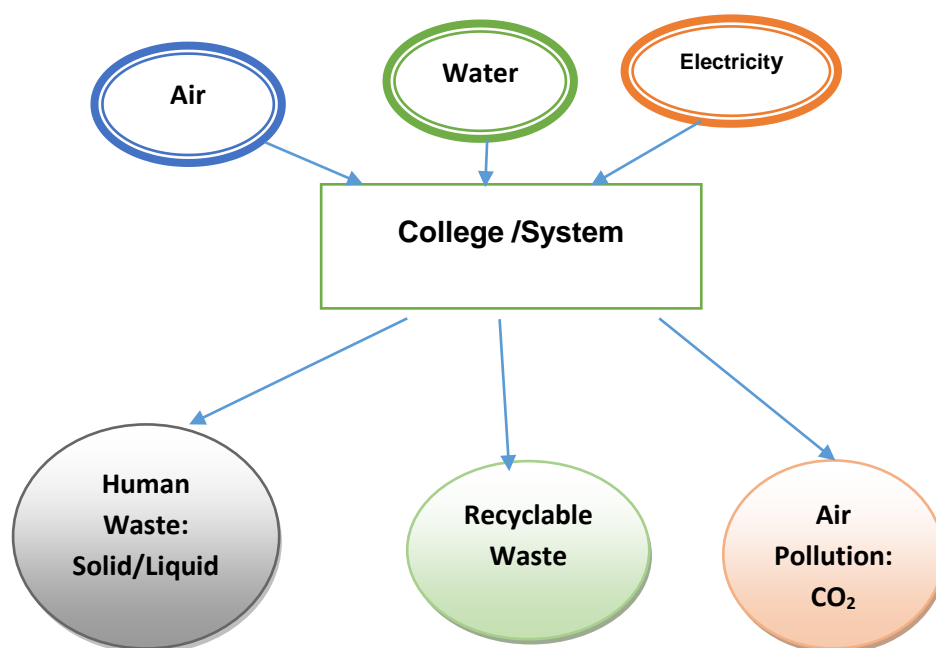
## CHAPTER-II STUDY OF CONSUMPTION OF RECOURCES & CO<sub>2</sub> EMISSION

The Institute consumes following basic/derived Resources:

1. Air
2. Water
3. Electrical Energy

We try to draw a schematic diagram for the College System & Environment as under.

**Chart No 1: Representation of College as System & Study of Resources & Waste**



Now we compute the Generation of CO<sub>2</sub> on account of consumption of Electrical Energy.

The basis of Calculation for CO<sub>2</sub> emissions due to Electrical Energy is as under

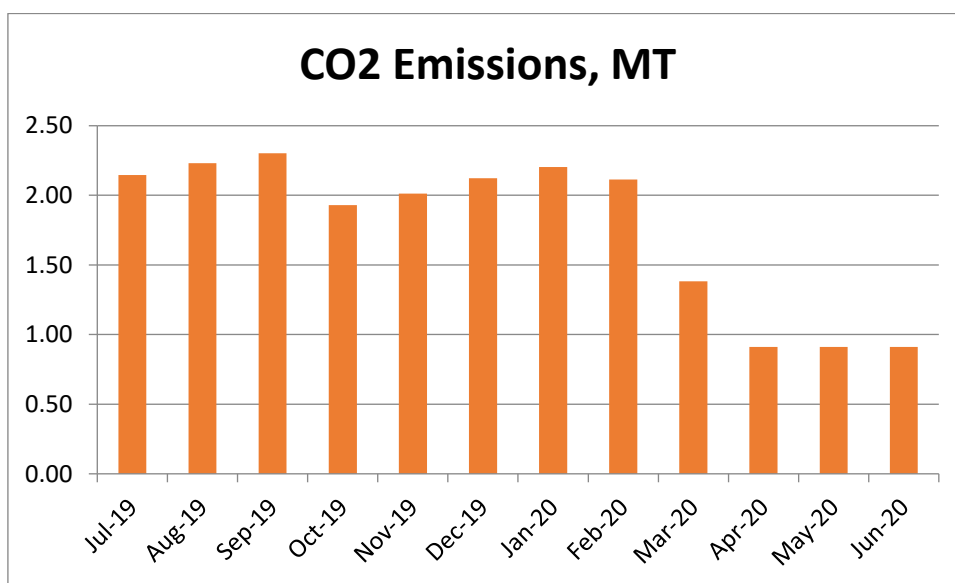
- 1 kWh of Electrical Energy releases 0.9 Kg of CO<sub>2</sub> into atmosphere

**Table No 5: Study of Consumption of Electrical Energy & CO<sub>2</sub> Emissions: 2019-20:**

No	Month	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Jul-19	2385	2.15
2	Aug-19	2478	2.23
3	Sep-19	2557	2.30
4	Oct-19	2145	1.93
5	Nov-19	2236	2.01
6	Dec-19	2358	2.12
7	Jan-20	2447	2.20
8	Feb-20	2348	2.11

9	Mar-20	1536	1.38
10	Apr-20	1012	0.91
11	May-20	1012	0.91
12	Jun-20	1012	0.91
13	Total	23526	21.17
14	Maximum	2557	2.30
15	Minimum	1012	0.91
16	Average	1960.50	1.76

**Chart No 2: 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 **3 kWp**.

In the following Table, we compute the Annual Reduction in CO<sub>2</sub> Emissions due to installation of Roof TOP Solar PV Plant.

**Table No 6: Computation of Annual Reduction in CO<sub>2</sub> Emissions:**

<b>No</b>	<b>Particulars</b>	<b>Value</b>	<b>Unit</b>
<b>1</b>	Installed Capacity of Roof Top Solar PV Plant Capacity	3	kWp
<b>2</b>	Energy Generated in per kWp	4	4 kWh/kWp
<b>3</b>	Annual Solar Energy generation Days	300	Nos
<b>4</b>	Energy Generated in the Year: 19-20	3600	kWh
<b>5</b>	1 kWh of Electrical Energy saves	0.9	Kg/kWh
<b>6</b>	<b>Qty of CO<sub>2</sub> Saved by Solar PV Plant = (4)*(5) /1000</b>	<b>3.24</b>	<b>MT of CO<sub>2</sub></b>

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



## **CHAPTER IV STUDY OF WASTE MANAGEMENT**

### **4.1 Solid Waste Management:**

The Waste is segregated at Source. Waste Bins are kept at various locations in the Campus.

#### **Photograph of Waste Collection Bin:**



### **4.2 Microbial Waste Management:**

The Microbial Waste is completely degenerated in an Autoclave, before disposal.

## **CHAPTER-VI**

### **STUDY OF RAIN WATER MANAGEMENT**

The College has installed Pipes from the terrace. The Rain Water is used to increase the underground water table.

**Photograph of Rain water Collecting Pipe:**





## **CHAPTER-VII**

### **STUDY OF ENVIRONMENT FRIENDLY INITIATIVES**

#### **7.1 Internal Tree Plantation:**

The College has well maintained landscaped garden in the campus.

#### **Photograph of Tree plantation:**



# GREEN AUDIT REPORT

of

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

No	Parameter/ Value	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Total	23526	21.17
2	Maximum	2557	2.30
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### 3. Usage of Renewable Energy & Reduction in CO<sub>2</sub> Emissions:

- The College has installed Roof Top Solar PV Plant of Capacity **3 kWp**.
- The Electrical Energy generated in 2019-20 is **3600 kWh**.
- Reduction in CO<sub>2</sub> Emissions in 2019-20 works out to be **3.24 MT**.

### 4. Waste Management:

#### 4.1 Solid Waste Management:

Waste is segregated at Source. Waste bins are provided at various locations.

#### 4.2 Microbial Waste Management:

The Microbial Waste is degenerated in an Autoclave before disposal.

### 5. Rain Water Management:

The rain water falling on terrace is used for increasing the underground water table.

### 6. Green & Sustainable Initiatives

- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp for Divyangajan

### 7. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO<sub>2</sub>** into atmosphere
2. **1 kWp** Roof Top Solar PV Plant generates **4 kWh of Electrical Energy** per Day
3. 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.solarroftop.gov.in](http://www.solarroftop.gov.in)



## **ABBREVIATIONS**

BEE	Bureau of Energy Efficiency
JSPM	Jayawant Shikshan Prasarak Mandal
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 Objectives:**

1. To study present Energy Consumption
2. To compute the CO<sub>2</sub> emissions
3. To study usage of Renewable Energy
4. Study of Waste Management
5. Study of Rain Water Harvesting
6. Study of Green & Sustainable Practices

### **1.2 Table No 1: General Details of College:**

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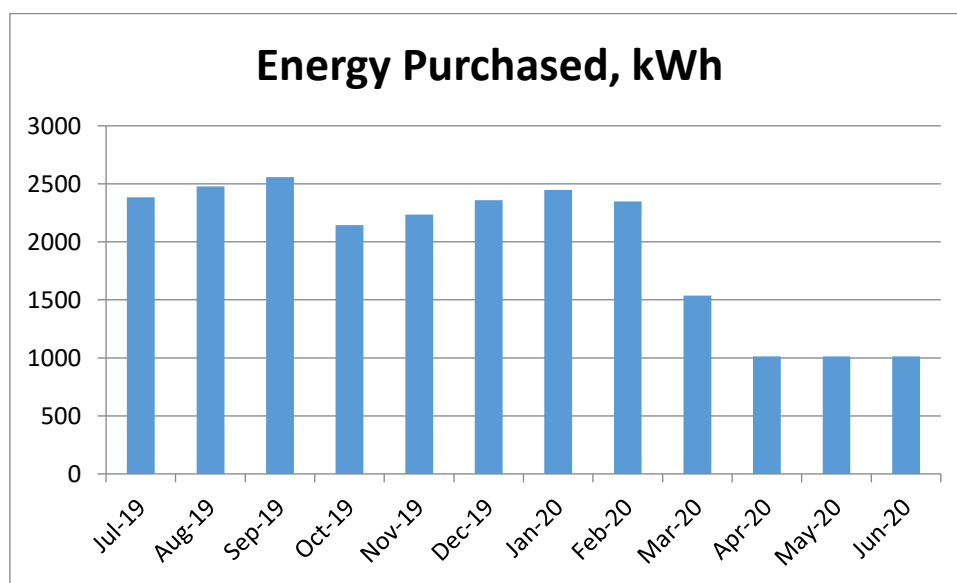
## CHAPTER-II STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of Electrical Energy.

**Table No 2: Electrical Bill Analysis- 2019-20:**

No	Month	Energy Purchased, kWh
1	Jul-19	2385
2	Aug-19	2478
3	Sep-19	2557
4	Oct-19	2145
5	Nov-19	2236
6	Dec-19	2358
7	Jan-20	2447
8	Feb-20	2348
9	Mar-20	1536
10	Apr-20	1012
11	May-20	1012
12	Jun-20	1012
13	Total	23526
14	Maximum	2557
15	Minimum	1012
16	Average	1960.50

**Chart No 1: Variation in Monthly Energy Consumption:**



## CHAPTER III

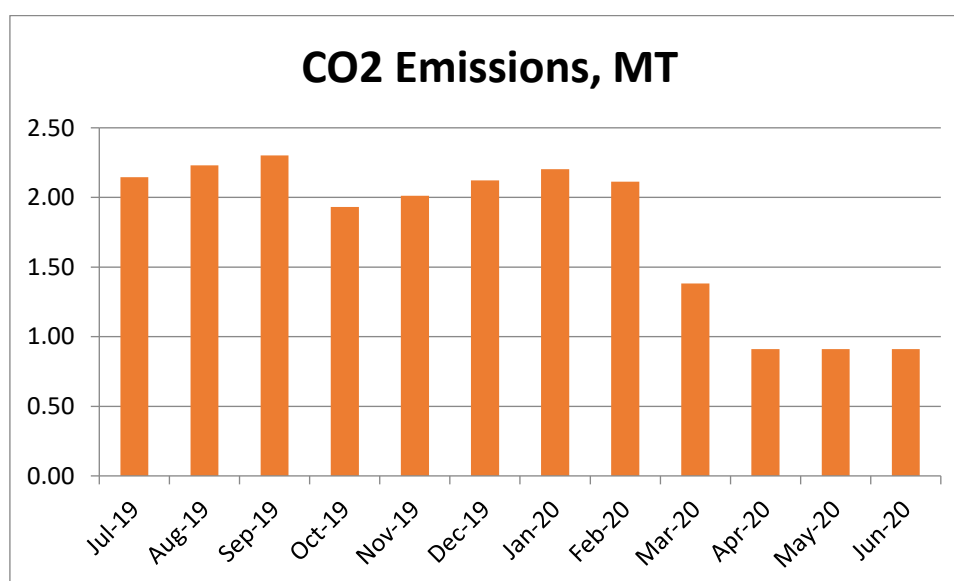
### STUDY OF CARBON FOOTPRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **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**

**Table No 4: Month wise CO<sub>2</sub> Emissions:**

No	Month	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Jul-19	2385	2.15
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**Chart No 2: Month wise CO<sub>2</sub> Emissions:**



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The College has installed Roof Top Solar PV Plant of Capacity **3 kWp**.

In the following Table, we compute the Annual Reduction in CO<sub>2</sub> Emissions due to installation of Roof TOP Solar PV Plant.

**Table No 6: Computation of Annual Reduction in CO<sub>2</sub> Emissions:**

No	Particulars	Value	Unit
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5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	<b>Qty of CO<sub>2</sub> Saved by Solar PV Plant <math>= (4) * (5) / 1000</math></b>	<b>3.24</b>	<b>MT of CO<sub>2</sub></b>

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



## **CHAPTER V STUDY OF WASTE MANAGEMENT**

### **5.1 Solid Waste Management:**

The Waste is segregated at Source. Waste Bins are kept at various locations in the Campus.

#### **Photograph of Waste Collection Bin:**



### **5.2 Microbial Waste Management:**

The Microbial Waste is completely degenerated in an Autoclave, before disposal.



## **CHAPTER-VI**

### **STUDY OF RAIN WATER MANAGEMENT**

The College has installed Pipes from the terrace. The Rain Water is used to increase the underground water table.

**Photograph of Rain water Collecting Pipe:**



## **CHAPTER-VII**

### **STUDY OF GREEN & SUSTAINABLE PRACTICES**

#### **7.1 Pedestrian Friendly Roads:**

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

#### **Photograph of Internal Road:**



#### **7.2 Internal Tree Plantation:**

The College has well maintained landscaped garden in the campus.

#### **Photograph of Tree plantation:**



### **7.3 Provision of Ramp for Divyangajan:**

For easy movement of Divyangajan, the College has made provision of Ramp as well as dedicated wash room.

#### **Photograph of Ramp:**



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<b>Registration Category</b>	: Empanelled Consultant for Energy Conservation Programme
<b>Registration Number</b>	: <b>MEDA/ECN/CR-05/2018-19/EA-03</b>
<ul style="list-style-type: none"> <li>Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.</li> <li>MEDA reserves the right to visit the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.</li> <li>This empanelment is valid till <b>31<sup>st</sup> March 2021</b> from the date of registration, to carry out energy audits under the Energy Conservation Programme</li> <li>The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.</li> </ul>	
 (Smita Kudarikar) General Manager (EC)	

## MEDA EMPANELMENT CERTIFICATE

## **INDEX**

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## **ACKNOWLEDGEMENT**

We Enrich Consultants, Pune, express our sincere gratitude to the management of Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College, Handewadi Road, Hadapsar, Pune for awarding us the assignment of Green Audit of their Campus for the Year: 2018-19.

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

## EXECUTIVE SUMMARY

**1. Jayawant Shikshan Prasarak Mandal's, Jayawantrao Sawant Commerce & Science College, Hadapsar, 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> Emissions:

No	Parameter/ Value	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Total	24970	22.47
2	Maximum	2234	2.01
3	Minimum	1887	1.70
4	Average	2080.83	1.87

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

- The College has installed Roof Top Solar PV Plant of Capacity **3 kWp**.
- The Electrical Energy generated in 2018-19 is **3600 kWh**.
- Reduction in CO<sub>2</sub> Emissions in 2018-19 works out to be **3.24 MT**.

### 4. Waste Management:

#### 4.1 Solid Waste Management:

Waste is segregated at Source. Waste bins are provided at various locations.

#### 4.2 Microbial Waste Management:

The Microbial Waste is degenerated in an Autoclave before disposal.

### 5. Rain Water Management:

The rain water falling on terrace is used for increasing the underground water table.

### 6. Green & Sustainable Initiatives

- Good Internal Road
- Internal Tree Plantation

### 7. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.8 Kg of CO<sub>2</sub>** into atmosphere
2. **1 kWp** Roof Top Solar PV Plant generates **4 kWh of Electrical Energy** per Day
3. Annual Solar Energy Generation Days: **300 Nos.**

### 8. References:

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

## **ABBREVIATIONS**

BEE	Bureau of Energy Efficiency
JSPM	Jayawant Shikshan Prasarak Mandal
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 Objectives:**

1. To study present Energy Consumption
2. To compute the CO<sub>2</sub> emissions
3. To study usage of Renewable Energy
4. Study of Waste Management
5. Study of Rain Water Harvesting
6. Study of Green & Sustainable Practices

### **1.2 Table No 1: General Details of College:**

<b>No</b>	<b>Head</b>	<b>Particulars</b>
1	Name of Institution	Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College
2	Address	Handewadi Road, Hadapsar, Pune 411 028
3	Affiliation	Savitribai Phule Pune University

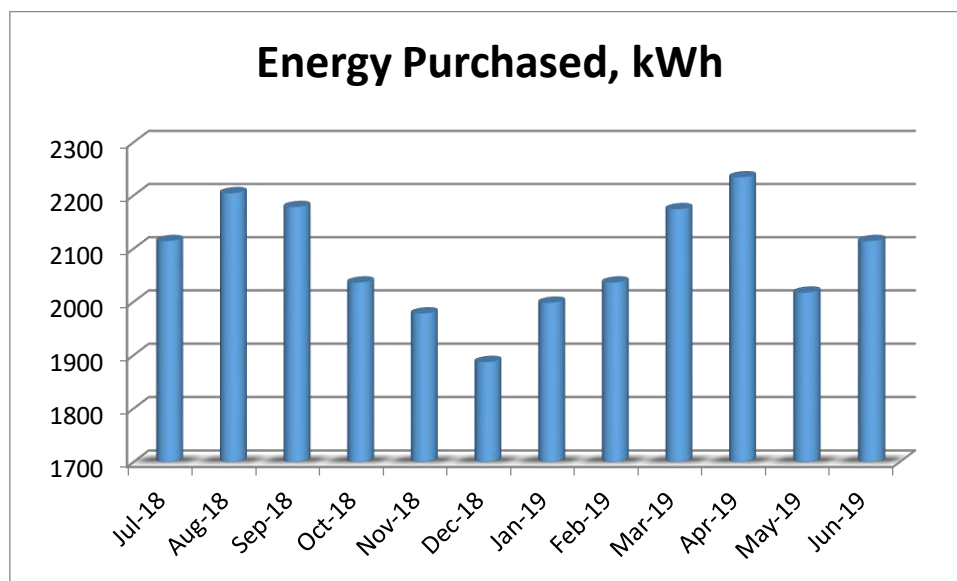
## CHAPTER-II STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of Electrical Energy.

**Table No 2: Electrical Bill Analysis- 2018-19:**

No	Month	Energy Purchased, kWh
1	Jul-18	2114
2	Aug-18	2204
3	Sep-18	2178
4	Oct-18	2036
5	Nov-18	1978
6	Dec-18	1887
7	Jan-19	1998
8	Feb-19	2036
9	Mar-19	2174
10	Apr-19	2234
11	May-19	2017
12	Jun-19	2114
13	Total	24970
14	Maximum	2234
15	Minimum	1887
16	Average	2080.83

**Chart No 1: Variation in Monthly Energy Consumption:**



## CHAPTER III

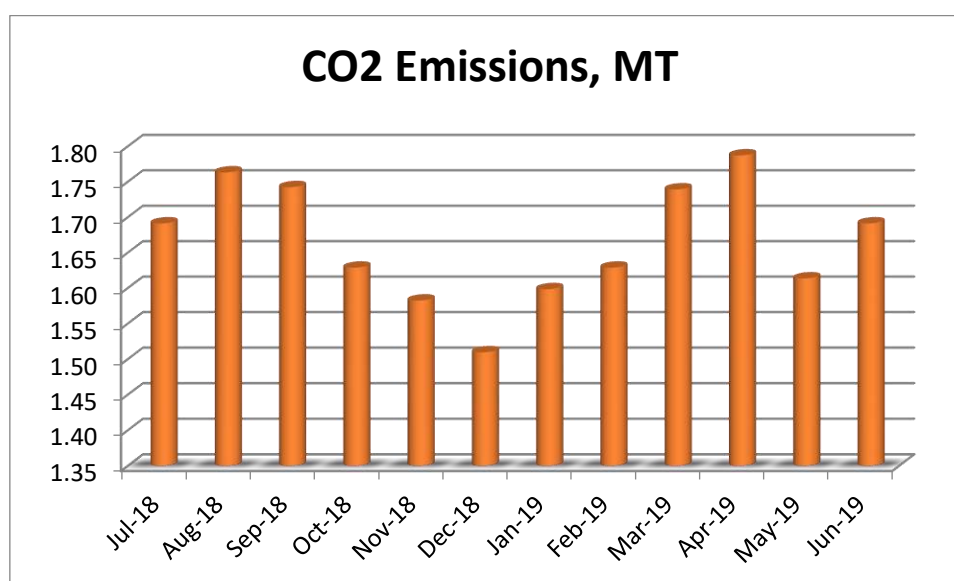
### STUDY OF CARBON FOOTPRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO<sub>2</sub> Emissions: 1 kWh of Electrical Energy releases 0.8 Kg of CO<sub>2</sub> into atmosphere**

**Table No 4: Month wise CO<sub>2</sub> Emissions:**

No	Month	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Jul-18	2114	1.69
2	Aug-18	2204	1.76
3	Sep-18	2178	1.74
4	Oct-18	2036	1.63
5	Nov-18	1978	1.58
6	Dec-18	1887	1.51
7	Jan-19	1998	1.60
8	Feb-19	2036	1.63
9	Mar-19	2174	1.74
10	Apr-19	2234	1.79
11	May-19	2017	1.61
12	Jun-19	2114	1.69
13	Total	24970	19.98
14	Maximum	2234	1.79
15	Minimum	1887	1.51
16	Average	2080.83	1.66

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





## CHAPTER IV STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity **3 kWp**.

In the following Table, we compute the Annual Reduction in CO<sub>2</sub> Emissions due to installation of Roof TOP Solar PV Plant.

**Table No 6: Computation of Annual Reduction in CO<sub>2</sub> Emissions:**

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	3	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: 18-19	3600	kWh
5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	<b>Qty of CO<sub>2</sub> Saved by Solar PV Plant =(4)*(5) /1000</b>	<b>3.24</b>	<b>MT of CO<sub>2</sub></b>

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



## **CHAPTER V STUDY OF WASTE MANAGEMENT**

### **5.1 Solid Waste Management:**

The Waste is segregated at Source. Waste Bins are kept at various locations in the Campus.

#### **Photograph of Waste Collection Bin:**



### **5.2 Microbial Waste Management:**

The Microbial Waste is completely degenerated in an Autoclave, before disposal.

## **CHAPTER-VI**

### **STUDY OF RAIN WATER MANAGEMENT**

The College has installed Pipes from the terrace. The Rain Water is used to increase the underground water table.

**Photograph of Rain water Collecting Pipe:**



## **CHAPTER-VII**

### **STUDY OF GREEN & SUSTAINABLE PRACTICES**

#### **7.1 Pedestrian Friendly Roads:**

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

#### **Photograph of Internal Road:**



#### **7.2 Internal Tree Plantation:**

The College has well maintained landscaped garden in the campus.

#### **Photograph of Tree plantation:**





RATING FOR EFFICIENT USE OF ENERGY

This is to certify that

*Jayawant Shikshan Prasarak Mandal's  
Jayawantrao Sawant Commerce & Science College  
Hadapsar, Pune*

has been awarded a **4 STAR RATING** for their Efficient use of Energy in Educational Campus for academic year 2023-24



Date of Issue: 14/06/2024



*S. S. Chaudhary*

For Campus Mark,  
Authorized Signatory



# ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune 411 009  
Tel: 09890444795 Email: [engress123@gmail.com](mailto:engress123@gmail.com)  
MEDA Registration No: ECN/2022-23/CR-43/1709  
ISO: 9001-2015 Certified (Cert No: 23EQKC13),  
ISO: 14001-2015 Certified (Cert No: 23EEKW20)

## ENERGY AUDIT CERTIFICATE

Certificate No: ES/JSCSC/22-23/01

Date: 10/7/2023

This is to certify that we have conducted Energy Audit at Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College, Handewadi Road, Hadapsar, Pune, in the Academic year 2022-23.

The College has adopted Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Maximum usage of Day Lighting
- Installation of 3 kWp Roof Top Solar PV Plant

We appreciate the support of Management, involvement of faculty members and students in the process of making the Campus Energy Efficient.

For Engress Services,



A Y Mehendale,  
B E-Mechanical, M Tech- Energy  
BEE Certified Energy Auditor, EA-8192





# ENGRESS SERVICES

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Near Mukhtangan English School, Parvati, Pune 411 009  
Tel: 09890444795 Email: [engress123@gmail.com](mailto:engress123@gmail.com)

Ref: ES/JSCSC/21-22/01

Date: 15/7/2022

## CERTIFICATE

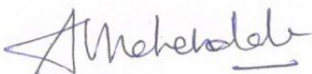
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B E- Mech, M Tech- Energy,  
Certified Energy Auditor, EA-8192



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Near Mukangan English School, Parvati, Pune 411 009  
Tel: 09890444795 Email: [enrichcons@gmail.com](mailto:enrichcons@gmail.com)

Ref: EC/JSCSC/20-21/01

Date: 14/7/2021

## CERTIFICATE


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Ref: EC/JSCSC/19-20/01

Date: 19/7/2020

## CERTIFICATE

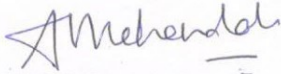
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Ref: EC/JSCSC/18-19/01

Date: 11/7/2019

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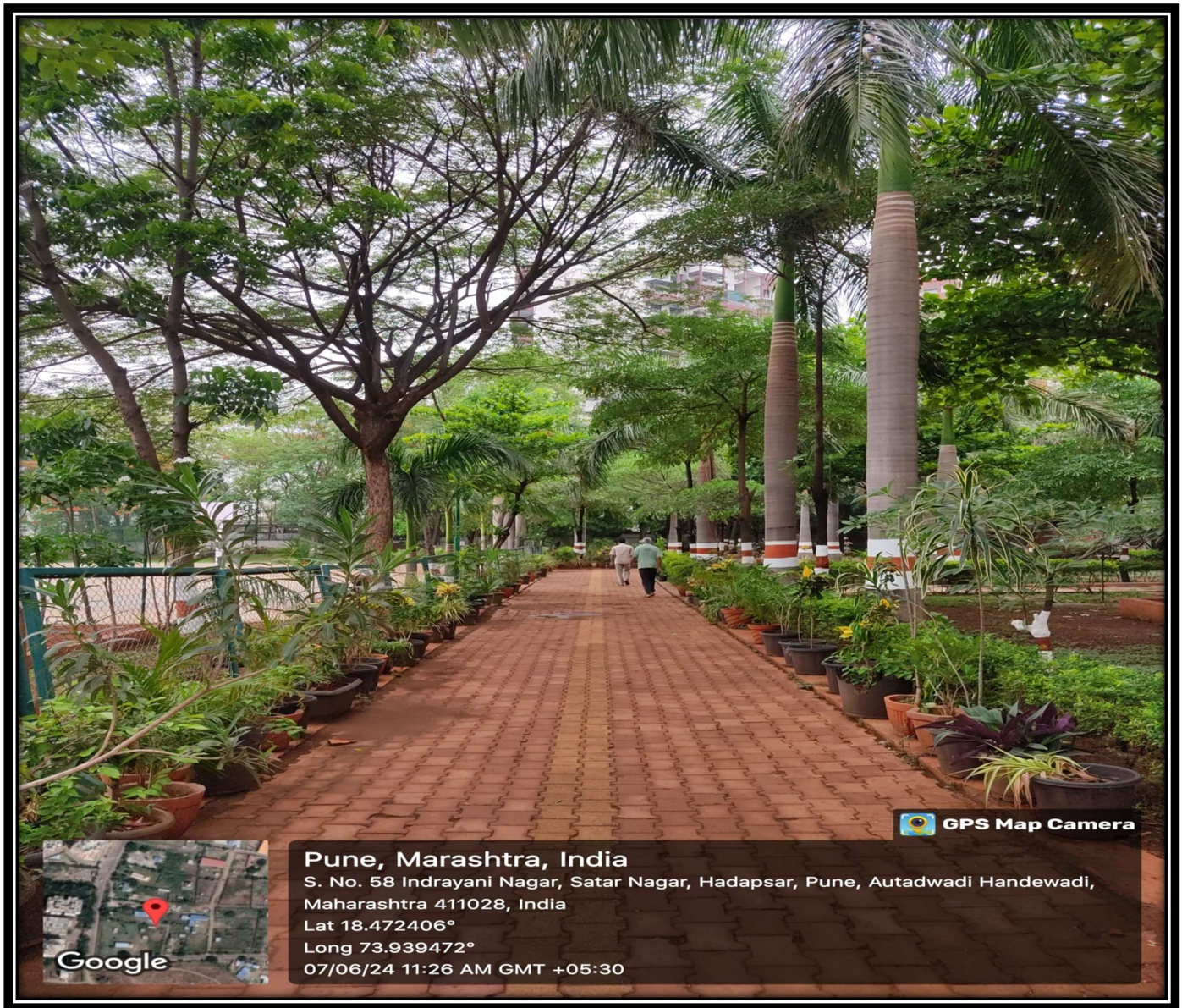


A Y Mehendale,  
Certified Energy Auditor,  
EA-8192





# Green Campus



## cPedestrian Friendly Pathway





**Plastic Ban Awareness**





## Landscaping with trees and Plants







## Nakshtra Garden

