

# GREEN AUDIT REPORT

## YASHAWANTRAO CHAVAN MAHARASHTRA OPEN UNIVERSITY,

Dnyangangotri, Near Gangapur Dam, Nashik 422 222



Year: 2023-24

Prepared by:

### ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society  
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Phone: 09890444795 Email: [engress123@gmail.com](mailto:engress123@gmail.com)



## ENGRESS SERVICES

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**UDYAM** Regn. No: UDYAM-MH-26-0135636,  
**MEDA** Regn. No: ECN/2023-24/CR-43/1709  
**ISO: 9001-2015** Certified (Cert No: 23EQKC13),  
**ISO: 14001-2015** Certified (Cert No: 23EEKW20)



## GREEN AUDIT CERTIFICATE

Certificate No: ES/YCMOU/23-24/02

Date: 18/7/2024

This is to certify that we have conducted Green Audit at Yashwantrao Chavan Maharashtra Open University, Dnyangangotri, Near Gangapur Dam, Nashik in the year 2023-24.

The University has adopted following Green & Sustainable Practices:

- Usage of Energy Efficient LED Fittings
- Usage of BEE STAR Rated Equipment
- Installation of 218.184 kWp off Grid Solar PV Plant
- Installation of 27000 LPD Solar Thermal Water Heating System.
- Segregation of Waste at source
- Vermi Composting Arrangement for Conversion of Organic Waste
- Installation of Sanitary Waste Incinerator
- Provision of Septic Tank
- Construction of Internal Bandhara of Capacity 26.2 million Liters
- Construction of Farm Pond
- Rain Water Harvesting project for making use of rain water falling on terrace
- Good Internal Roads
- Tree Plantation in the campus
- Provision of Ramp for Divyangajan
- Creation of Awareness on Plastic Free Campus by Display of Boards
- Usage of Solar Powered E Vehicle in the Campus

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

For Engress Services,




**A Y Mehendale,**

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



**Registration Certificates: UDYAM, MEDA, ASSOCHAM GEM-CP, ISO: 9001 & 14001:**


 भारत सरकार  
 Government of India  
 सूक्ष्म, नपु एवं मध्यम उद्यम विभाग  
 Ministry of Micro, Small and Medium Enterprises

**UDYAM REGISTRATION CERTIFICATE**

UDYAM REGISTRATION NUMBER: UDYAM-MH-26-0135636

NAME OF ENTERPRISE: ENGRESS SERVICES

S.No.	Classification Year	Enterprise Type	Classification Date
1	2023-24	Micro	03/02/2024
2	2022-23	Micro	26/06/2022
3	2021-22	Micro	27/07/2021

TYPE OF ENTERPRISE: SERVICES

MAJOR ACTIVITY: SERVICES

SOCIAL CATEGORY OF ENTREPRENEUR: GENERAL

NAME OF UNIT(S):

S.No.	Name of Unit(s)
1	Engress Services

OFFICIAL ADDRESS OF ENTERPRISE:

Flat/Door/Block No.	Name of Premises/Building	Yashashree
26	Yashashree	
Village/Town	Block	1
Pune		
Road/Street/Lane	City	Pune
Lokmanya Nagar/Nirmal Baug Soc		
State	District	PUNE, Pin 411009
MAHARASHTRA		
Mobile	Email:	engress12@gmail.com
8767447244		

DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE: 13/04/2021


DATE OF COMMENCEMENT OF PRODUCTION/BUSINESS: 13/04/2021

S.No.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
1	79 - Activities of head offices; management consultancy activities	7920 - Management consultancy activities	79200 - Management consultancy activities	Services

NATIONAL INDUSTRY CLASSIFICATION CODE(S):

DATE OF UDYAM REGISTRATION: 27/07/2021




 MAHARASHTRA ENERGY DEVELOPMENT AGENCY  
 Maharashtra Energy Development Agency  
 (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@maharaja.com, Web: www.maharaja.com

ECN/2022-23/CR-43/1709 10<sup>th</sup> May, 2022

**CERTIFICATE OF REGISTRATION FOR CLASS 'A'**

We hereby certify that, the firm having following particulars is registered with MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA) under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

Name and Address of the firm: M/s Engress Services, Yashashree, 26, Nirmal Baug Society, Near Muktaganj English School, Parvati, Pune - 411 009.

Registration Category: Empanelled Consultant for Energy Conservation Programme for Class 'A'

Registration Number: MEDA/ECN/2022-23/Class A/EA-32.

- 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.
- 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.
- This empanelment is valid till 09<sup>th</sup> May, 2024 from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

General Manager (EC)



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## **ACKNOWLEDGEMENT**

We Engress Services, Pune, express our sincere gratitude to the management of Yashwantrao Chavan Maharashtra Open University, Dnyangangotri, Near Gangapur Dam, Nashik 422 222for awarding us the assignment of Green Audit of their Nashik Campus, for the Year: 2023-24.

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

## EXECUTIVE SUMMARY

1. **Yashwantrao Chavan Maharashtra Open University, Nashik** uses Energy in two forms, namely: **Electrical Energy and Diesel**; for various Equipment.

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

No	Particulars	Value	Unit
1	Annual Energy Purchased	<b>593435</b>	kWh
2	Annual Diesel Consumed	<b>9240</b>	Liters
3	Annual CO <sub>2</sub> Emissions	<b>576.47</b>	MT

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

No	Particulars	Value	Unit
1	Solar PV Plant Capacity	<b>218.184</b>	kWp
2	Energy generated in 23-24	<b>161820.8</b>	kWh
3	Reduction in Annual CO <sub>2</sub> Emissions	<b>243.49</b>	MT

### 4. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Organic waste	Provision of Vermi Composting Facility
3	Sanitary Waste	Provision of Sanitary Waste Incinerator
4	E Waste	Disposed of through Authorized Agency
5	Liquid Waste	Provision of Septic Tank

5. **Rain Water Harvesting:** The University has installed Rain Water Harvesting Project in three ways; namely:

1. Construction of Bandhara of Capacity **26.2 million Liters**
2. Construction of Farm Pond
3. Rain Water Harvesting of Water falling on Terrace.

### 6. Green & Sustainable Practices:

1. Good Internal Roads
2. Tree Plantation in the campus
3. Provision of Ramp for Divyangajan
4. Creation of Awareness on Plastic Free Campus by display of Boards
5. Paperless Campus Initiatives
6. Solar Powered E Vehicle Usage

## 7. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.93 Kg of CO<sub>2</sub>** into atmosphere
2. **1 Liter of Diesel** releases **2.66 Kg of CO<sub>2</sub>** into atmosphere
3. **1 kWp** Solar PV system generates **4 kWh** of Electrical Energy per Day
4. Annual Solar Energy Generation Days: **300 Nos**

## 8. References:

- For CO<sub>2</sub> Emissions: [www.ccd.gujarat.gov.in](http://www.ccd.gujarat.gov.in)
- For Solar PV Energy generation: [www.solarrooftop.gov.in](http://www.solarrooftop.gov.in)

## **ABBREVIATIONS**

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



## CHAPTER-I INTRODUCTION

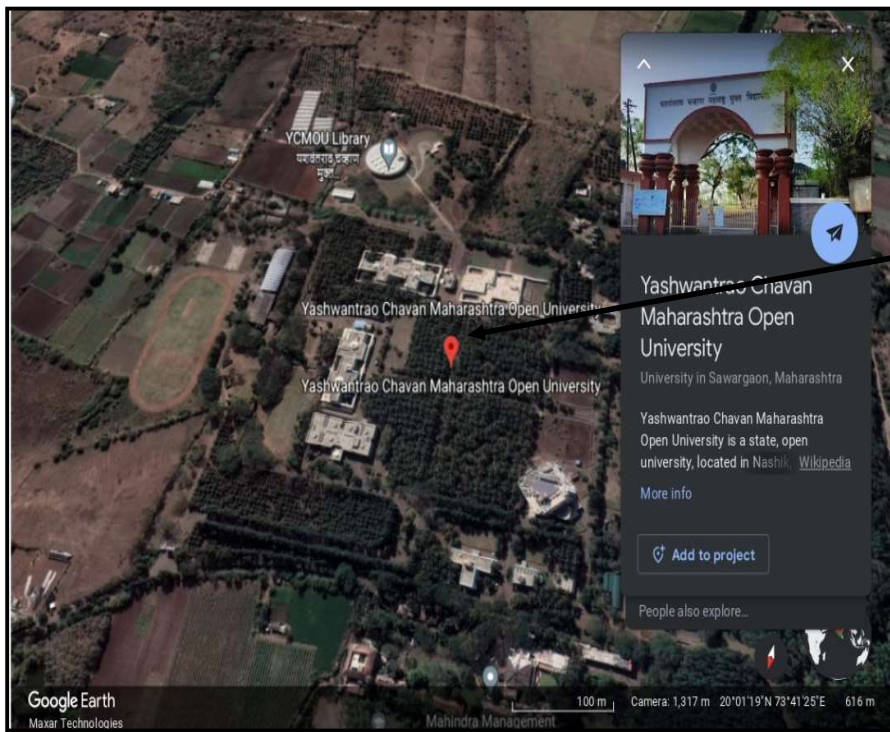
### 1.1 Introduction:

A Green Audit is conducted at Yashwantrao Chavan Maharashtra Open University Nashik.

### 1.2 Key Study Points:

No	Particulars
1	Study of Present Energy Consumption & CO <sub>2</sub> Emission
2	Study of Usage of Renewable Energy
3	Study of Waste Management Practices
4	Study of Rain Water Management
5	Study of Green & Sustainable Initiatives

### 1.3 University Location Image:



University  
Campus

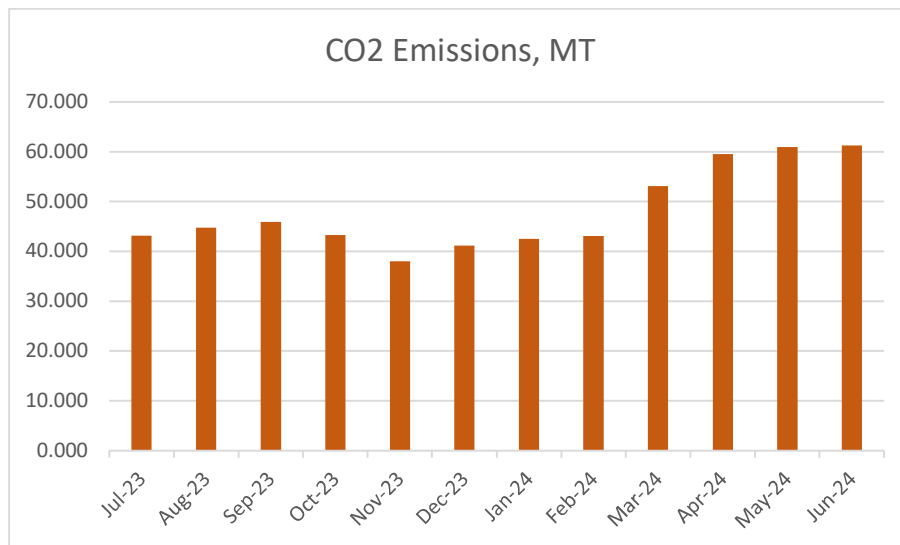
## CHAPTER-II STUDY OF ENERGY CONSUMPTION & CO<sub>2</sub> EMISSION

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 **0.93 Kg of CO<sub>2</sub>** & **1 Liter of Diesel** releases **2.66 Kg** of CO<sub>2</sub> into atmosphere.

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

No	Month	Energy Purchased, kWh	Diesel Consumed, Liters	CO <sub>2</sub> Emissions, MT
1	Jul-23	44371	700	43.127
2	Aug-23	43944	1460	44.752
3	Sep-23	43054	2200	45.892
4	Oct-23	45634	300	43.238
5	Nov-23	40118	250	37.975
6	Dec-23	43500	250	41.120
7	Jan-24	45400	100	42.488
8	Feb-24	45488	300	43.102
9	Mar-24	53655	1200	53.091
10	Apr-24	62560	500	59.511
11	May-24	62299	1130	60.944
12	Jun-24	63412	850	61.234
13	Total	593435	9240	576.47
14	Maximum	63412	2200	61.23
15	Minimum	40118	100	37.97
16	Average	49452.92	770.00	48.04

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



## CHAPTER III

### STUDY OF USAGE OF RENEWABLE ENERGY

3.1 The University has installed:

- Roof Top Solar PV Plant on various Buildings, Solar Street Lights, Solar Based Traffic Signals & Solar High Mast Lights.
- The Total Installed Solar PV Capacity is **218.184 kWp**
- Solar Thermal Water Heating System of Capacity **27000** Liters per Day
- The University is also installing Grid Connected Solar PV Plant of Capacity **300 kWp**

3.2 Table No 2: Reduction in CO<sub>2</sub> Emissions due to Usage of Solar Energy:

No	Particulars	Value	Unit
1	Total Installed Solar PV Capacity	218.184	kWp
2	Average Energy generated per Day	4	kWh/kWp
3	Annual Solar Generation Days	300	Nos
4	Annual Energy Generated =1*2*3	261820.8	kWh/kWp
5	1 kWh of Energy is equivalent to	0.9	Kg of CO <sub>2</sub>
6	Annual Reduction in CO <sub>2</sub> Emissions =4*5/1000	<b>235.64</b>	MT



Photograph of Roof Top Solar PV Plant & Solar Thermal Water Heating System:




## CHAPTER IV STUDY OF WASTE MANAGEMENT

In this Chapter, we present the Waste Management Practices, followed by the College.

### Details of Waste Management Practices:

No	Head	Observation	Photograph
1	<b>Solid Waste</b>	Segregation of Waste at Source: Provision of Waste Collection Bins	<p><b>Waste Collection Bin:</b></p>  <p>GPS Map Camera Sawargaon, Maharashtra, India 2MCR+9V2, YCMOU, Sawargaon, Maharashtra 422222, India Lat 20.020883° Long 73.692164° 25/09/23 01:44 PM GMT +05:30</p>
2	<b>Organic Waste</b>	Provision of Vermi-composting facility & about 100 MT of Vermi compost is produced annually and is used in the own campus.	<p><b>Vermi Composting Facility</b></p>  <p>GPS Map Camera Sawargaon, Maharashtra, India 2MHQ+57V, Sawargaon, Maharashtra 422222, India Lat 20.025828° Long 73.688972°</p>

<p>3</p>	<p><b>Sanitary waste</b></p>	<p>Provision of Sanitary Waste Incinerator</p>	<p style="text-align: center;"><b>Sanitary Waste Incinerator</b></p> 
<p>4</p>	<p><b>E Waste</b></p>	<p>E Waste is disposed of through Authorized Agency, M/s. Arihant E-Recycling Pvt. Ltd.</p>	
<p>5</p>	<p><b>Liquid Waste</b></p>	<p>Provision of Septic Tank in the Campus</p>	

## CHAPTER-V STUDY OF RAIN WATER MANAGEMENT

The University has implemented the Rain Water Harvesting Project by three ways, namely:

1. Yashwant Bandhara
2. Farm Pond and
3. Collecting the rain water from terrace & using the same for Bore well recharging.

**6.1 Yashwant Bandhara:** The Water Storage capacity is about **26.2 million Liters.**

**Photograph of Yashwant Bandhara:**



**6.2 Farm Pond:**

The University has a farm pond which can store approximately -- million liters of Water. This farm pond has helped the nearby farmers, as the underground water level has increased substantially due to this farm pond.

**Photograph of Farm Pond:**



### 6.3 Rain water harvesting from Terrace at Main Building:

The rain water falling on the terrace is used to recharge the bore well.


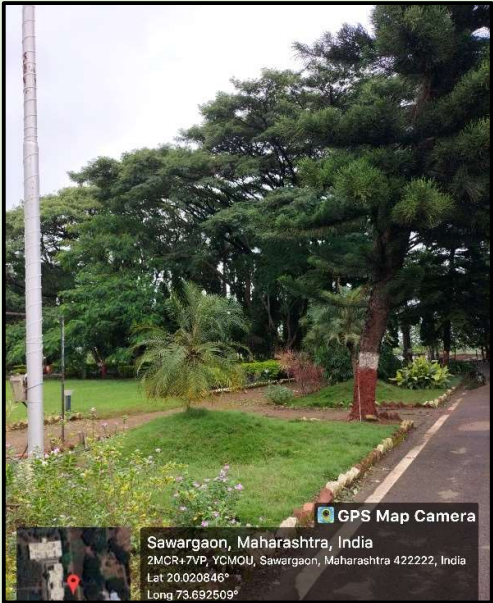
#### Photograph of Rain Water Collecting Pipe from Terrace:



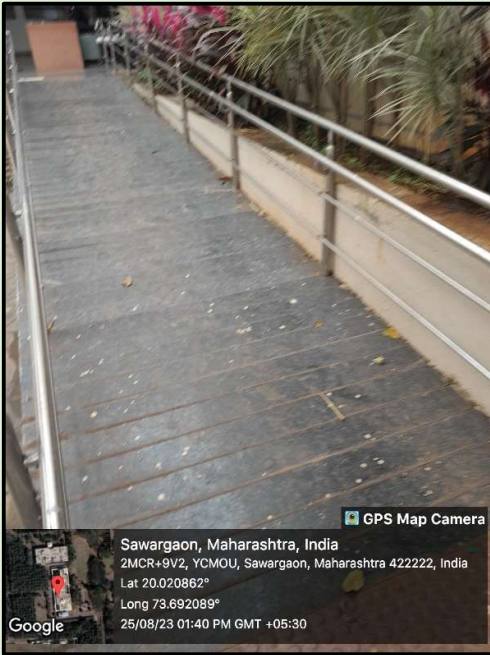

## CHAPTER-VI STUDY OF GREEN & SUSTAINABLE PRACTICES


In this Chapter, we present the Green & Sustainable Practices followed by the College.

### Green & Sustainable Practices:

No	Head	Observation	Photograph
1	Easy Movement of Stake Holders	Provision of Good Internal Road within the Campus	<p><b>Internal Road:</b></p>  <p>GPS Map Camera Sawargaon, Maharashtra, India 2MCR+9V2, YCMOU, Sawargaon, Maharashtra 422222, India Lat 20.020892° Long 73.692335° 25/08/23 01:41 PM GMT +05:30 Google</p>
2	Tree Plantation	Internal Tree Plantation in the Campus	<p><b>Internal Tree Plantation:</b></p>  <p>GPS Map Camera Sawargaon, Maharashtra, India 2MCR+7VP, YCMOU, Sawargaon, Maharashtra 422222, India Lat 20.020846° Long 73.692509°</p>



<p>3</p>	<p><b>Facilities for Divyangajan</b></p>	<p><b>Provision of Ramp for Divyangajan</b></p>	<p><b>Ramp for Divyangajan:</b></p> 
<p>4</p>	<p><b>Creation of Awareness among Stake Holders</b></p>	<p><b>Display of Poster on Plastic Free Campus</b></p>	<p><b>Poster on Plastic Free Campus:</b></p> 

<p>5</p>	<p><b>Promotion of E Vehicle</b></p>	<p><b>Usage of E Vehicle in the Campus</b></p>	<p style="text-align: center;"><b>E Vehicle</b></p> 
<p>6</p>	<p><b>Promotion of Paperless Initiatives</b></p>	<p>The University is taking various measures to make the Day-to-Day operations Paper less. There about Thirteen sections/operations wherein software-based solutions are adopted are:</p> <ul style="list-style-type: none"> <li>• E-Books Down load</li> <li>• YCMOU Regional Centers</li> <li>• Finance</li> <li>• Admission</li> <li>• Results</li> <li>• Migration</li> <li>• Grievances</li> <li>• Scanned copy of Mark list, to name a few</li> <li>• Revaluation of Answer Book</li> <li>• E-Tenders</li> </ul>	

**ANNEXURE-I**  
**LIST OF TREES IN THE CAMPUS**

No	Name of the Tree	Qty
1	Babhul	1188
2	Eucalyptus	3404
3	Casurina	522
4	Australian Acacia	1869
5	Subabul	60
6	Neem	244
7	Cashew	13
8	Mango	10
9	Jamun	16
10	Umbar	42
11	Kashid	117
12	Shiso	385
13	Vilayati Chinch	11
14	Glyrisidia	715
15	Shivan	76
16	Karani	133
17	Bamboo	20
18	Tembhurni	10
19	Sadada	19
20	Waras	06
21	Agasti	70
22	Moha	31
23	Bhendi	15
24	Kadamb	61
25	Pimpal	22
26	Jakaranda	38
27	Shiras	766
28	Raintree	279
29	Silver Oak	54