

# ENVIRONMENTAL AUDIT REPORT

Of

Shri Wagheshwar Gramvikas Pratishthan's,  
Shri Vasantao Pharate Patil Arts, Commerce & Science College,  
Mandavgan Pharata, Taluka: Shirur, District: Pune



Year: 2019-20

Prepared by

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**MAHARASHTRA ENERGY DEVELOPMENT AGENCY**



**Maharashtra Energy Development Agency**

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ECN/2018-19/CR-05/4174

19<sup>th</sup> September, 2018

**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** : **Enrich Consultants**  
Yashashree, Plot No. 26, Nirmal Bag Society,  
Near Muktangan English School,  
Parvati, Pune - 411009.

**Registration Category** : Empanelled *Consultant for Energy Conservation Programme*

**Registration Number** : **MEDA/ECN/CR-05/2018-19/EA-03**

- 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 the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **31<sup>st</sup> March 2021** 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.

  
(Smita Kudarikar)  
General Manager (EC)

# Enrich Consultants

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Ref: EC/ SVPPACSC/19-20/03

Date: 22/8/2020

## CERTIFICATE

This is to certify that we have conducted Environmental Audit at Shri Wagheshwar Gramvikas Pratishthan's Shri Vasantao Pharate Patil Arts, Commerce & Science College, Mandavgan Pharate, Taluka: Shirur, District: Pune in the year 2019-20.

The College has adopted Environment Friendly Practices:

- Usage of Energy Efficient LED Fittings
- Solar Thermal Water Heating System at Hostel.
- Segregation of Waste at source
- Installation of Rain Water Management Project
- Tree Plantation 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 Enrich Consultants,**

**A Y Mehendale,**  
Certified Energy Auditor, EA-8192

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## **ACKNOWLEDGEMENT**

We Enrich Consultants, Pune, express our sincere gratitude to the management of Shri Wagheshwar Gramvikas Pratishthan's Shri Vasantao Pharate Patil Arts, Commerce & Science College, Mandavgan Pharate, Taluka: Shirur, District: Pune, for awarding us the assignment of Environmental Audit of their Mandavgan campus for the Year: 19-20.

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

## EXECUTIVE SUMMARY

1. Shri Wagheshwar Gramvikas Pratishthan's Shri Vasant Pharate Patil Arts, Commerce & Science College, Mandavgan Pharate, Taluka: Shirur, District: Pune consumes Energy in the form of **Electrical Energy**; used for various gadgets, Office & other facilities.

### 2. Pollution due to Day to Day Activities:

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

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

No	Parameter	Energy Consumed, kWh	CO <sub>2</sub> emissions, MT
1	Total	12599	10.08
2	Maximum	1231	0.98
3	Minimum	785	0.63
4	Average	1049.92	0.84

### 4. Various Measures Adopted for Environmental Conservation:

- Usage of Energy Efficient LED fittings
- Maximum Usage of Day Lighting
- Installation of Solar Thermal Water Heating System at Hostel.

### 5. Usage of Renewable Energy:

- The College has installed Solar Thermal Water Heating System at Hostel.

### 6. Waste Management:

#### 6.1 Segregation of Waste at Source:

The Waste is segregated at source and the recyclable waste like Paper waste, Plastic Waste is handed over to authorized agency.

#### 6.2 Sanitary Waste Management:

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

#### 6.3 E-Waste Management:

It is recommended to dispose of the E-Waste through Authorized Agency.

### **7. Rain Water Management:**

The College has installed Rainwater Management Project. The rain water falling on the terrace is collected through pipes and is used to increase the underground water table.

### **8. Eco Friendly Practices:**

- Internal Tree Plantation

### **9. Assumption:**

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

### **10. Reference:**

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

## **ABBREVIATIONS**

SWGP : Shri Wagheshwar Gramvikas Pratishthan

AQI : Air Quality Index

LED : Light Emitting Diode

kWh : kilo-Watt Hour

MT : Metric Ton

CO<sub>2</sub> : Carbon Di Oxide



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

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. Some Important Environmental Rules in India: Table No-2:

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 (Siting 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 National Environmental Plans & Policy Documents: Table No-3:

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 College)
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 Recourse Consumption and CO<sub>2</sub> Emission
2. To Study CO<sub>2</sub> Emission Reduction
3. To Study Waste Management Practices
4. To Study Rain Water Management
5. To study Environment Friendly Practices

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

No	Head	Particulars
1	Name	Shri Wagheshwar Gramvikas Pratishtan's Shri Vasantao Pharate Patil Arts, Commerce & Science College,
2	Address	Mandavgan Pharate, Taluka: Shirur, District: Pune 412 211
3	Affiliation	Savitribai Phule Pune University

## CHAPTER-II

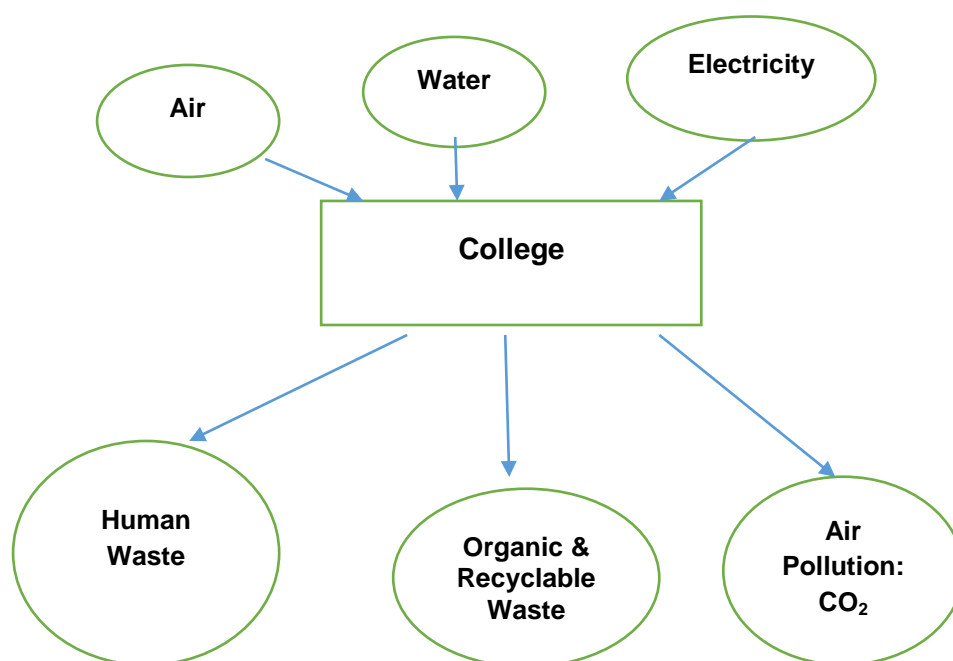
### STUDY OF RESOURCE CONSUMPTION & CO<sub>2</sub> EMISSION

The College consumes following Natural/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:**



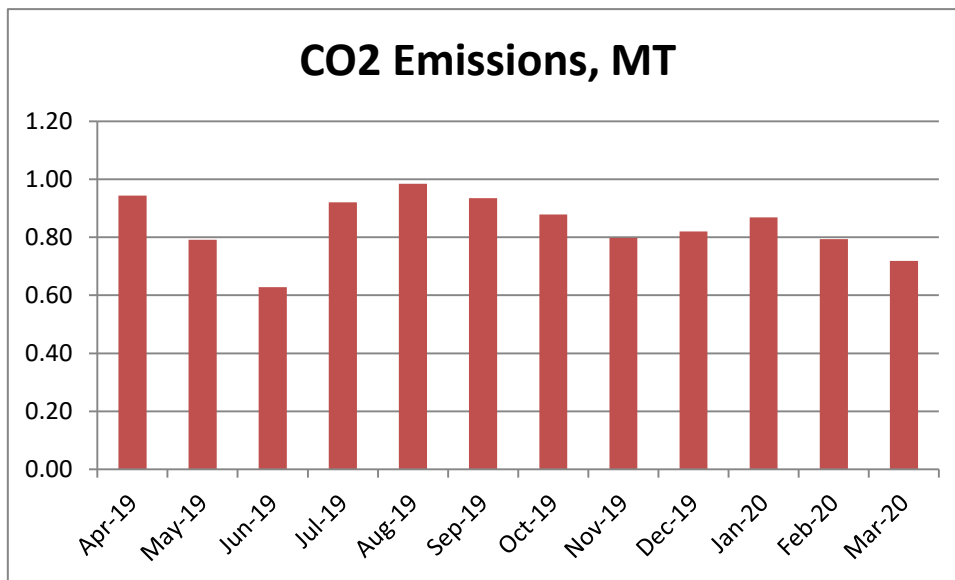
We compute the Generation of CO<sub>2</sub> on account of consumption of Electrical Energy as under. The basis of Calculation for CO<sub>2</sub> emissions due to Electrical Energy are: 1 Unit (kWh) of Electrical Energy releases **0.9 Kg of CO<sub>2</sub>** into atmosphere.

**Table No 5: Electrical Energy Usage & CO<sub>2</sub> Emission: 19-20:**

No	Month	Energy Consumed, kWh	CO <sub>2</sub> Emissions, MT
1	Apr-19	1179	0.94
2	May-19	989	0.79
3	Jun-19	785	0.63
4	Jul-19	1150	0.92
5	Aug-19	1231	0.98

6	Sep-19	1169	0.94
7	Oct-19	1098	0.88
8	Nov-19	997	0.80
9	Dec-19	1025	0.82
10	Jan-20	1086	0.87
11	Feb-20	992	0.79
12	Mar-20	898	0.72
13	Total	12599	10.08
14	Maximum	1231	0.98
15	Minimum	785	0.63
16	Average	1049.92	0.84

**Chart No 2: To study CO<sub>2</sub> Emission:**



**Table No 6: Important parameters:**

No	Parameter	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Total	12599	10.08
2	Maximum	1231	0.98
3	Minimum	785	0.63
4	Average	1049.92	0.84

### **CHAPTER-III**

## **STUDY OF USAGE OF RENEWABLE ENERGY**

The College has installed Solar Thermal Water Heating System at the Hostel Block

The College has yet to install Roof top Solar PV Plant.

**Photograph of Roof Top Solar Thermal Water Heating System:**



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

### **4.1 Segregation of Waste at Source:**

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

**Photograph of Separate Waste Collection Bin:**



### **4.2 Sanitary Waste Management:**

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

**Photograph of Sanitary Waste Incinerator:**



### **4.3 E-Waste Management:**

It is recommended to dispose of the E-Waste through Authorized Agency.

## **CHAPTER-V**

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

The College has implemented the Rain Water Management Project. The College has installed Pipes from the terrace and the Rain water falling on the terrace is gathered and is used to increase the underground water table.

**Photograph of Rain Water Carrying Pipe:**



## **CHAPTER VI**

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

**6.1 Internal Tree Plantation:**

The College has well maintained Tree plantation.

**Photograph of Tree Plantation**

