# Green Audit Report

## (2022-23)

Shri. Swami Vivekanand Shikshan Sanstha's

## Ramkrishna Paramhansa Mahavidyalaya

Tambari Vibhag, Osmanabad – 413501 (Maharashtra)

Green Audit report Submitted by

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## Acknowledgement

We express our sincere gratitude to the Honorable Principal & Management of Ramkrishna Paramhansa Mahavidyalaya, Osmanabad for awarding us the assignment of Green Audit of their Osmanabad Campus.

We are also thankful to various Head of Departments & other Staff members for helping us during the field measurements.


Kedar Khamitkar
Energy Auditor
Certified by Bureau of Energy Efficiency, Ministry of Power, Gov. of India
Empanelled Consultant MAHAURJA (Govt. of Maharashtra Institution

## Executive Summary

| Objective | Observation | Recommendation |
|---|---|---|
| Green Cover - Plantation of Trees | Plantation of trees is started in the campus and the green cover is extended every year in the campus. At Present 7% area campus is having the Green cover. | It is recommended to increase the Green Cover Further. |
| Use of Renewable Energy | Institute has been installed 100 Watt Wind Solar Hybrid Power Plant. | It is recommended to install additional Solar Power Plant of 50 KW |
| Water Conservation | Recommended to Install Sign Boards. "Save Water save Lives " Awareness for Water Conservation. | It is recommended to install taps with reduced water flow |
| Rain Water harvesting | Rainwater harvesting has been installed. | Good initiative for water conservation |
| Avoid Misuse/ wastage of water | RO water providing safe drinking water. | Waste water can used for Gardening. |
| | Encourage to reduce the water usage | Recommended for waste Water treatment |
| Bio Waste Management | The Bio Waste – Food Waste generated in the campus is proposed to be feed stock for Bio Gas plant | Recommended for Bio gas plant. |
| Non Bio Waste | Non Bio Waste – Plastic Bottles / Paper Waste Metals waste is being collected in the dust bins placed across the campus. | It is proposed to install plastic bottle crusher, which can be sold as a Feed stock for the Plastic industry. |
| E Waste | E Waste – All Electronic Junk is generated in the campus in the form of Used Computer key boards/ Mouse/ CPU's/ Damaged Printers etc. | An agreement is in place with local Company to pick up the E waste every six month |
| Carbon Foot Print | Mostly staff commute in the S.T. Buses | Found Awareness in the Staff |
| Transportation | Mostly Students commute in the ST Bus from City / rural Areas | Found Awareness in the Students |

# Chapter No.I Scope of Work & Green Audit Methodology

Ramkrishna Paramhansa Mahavidyalaya Osmanabad entrusted the work of conducting a detailed Green Audit of campus with the main objectives are as bellows:

## Objectives of Green Audit:

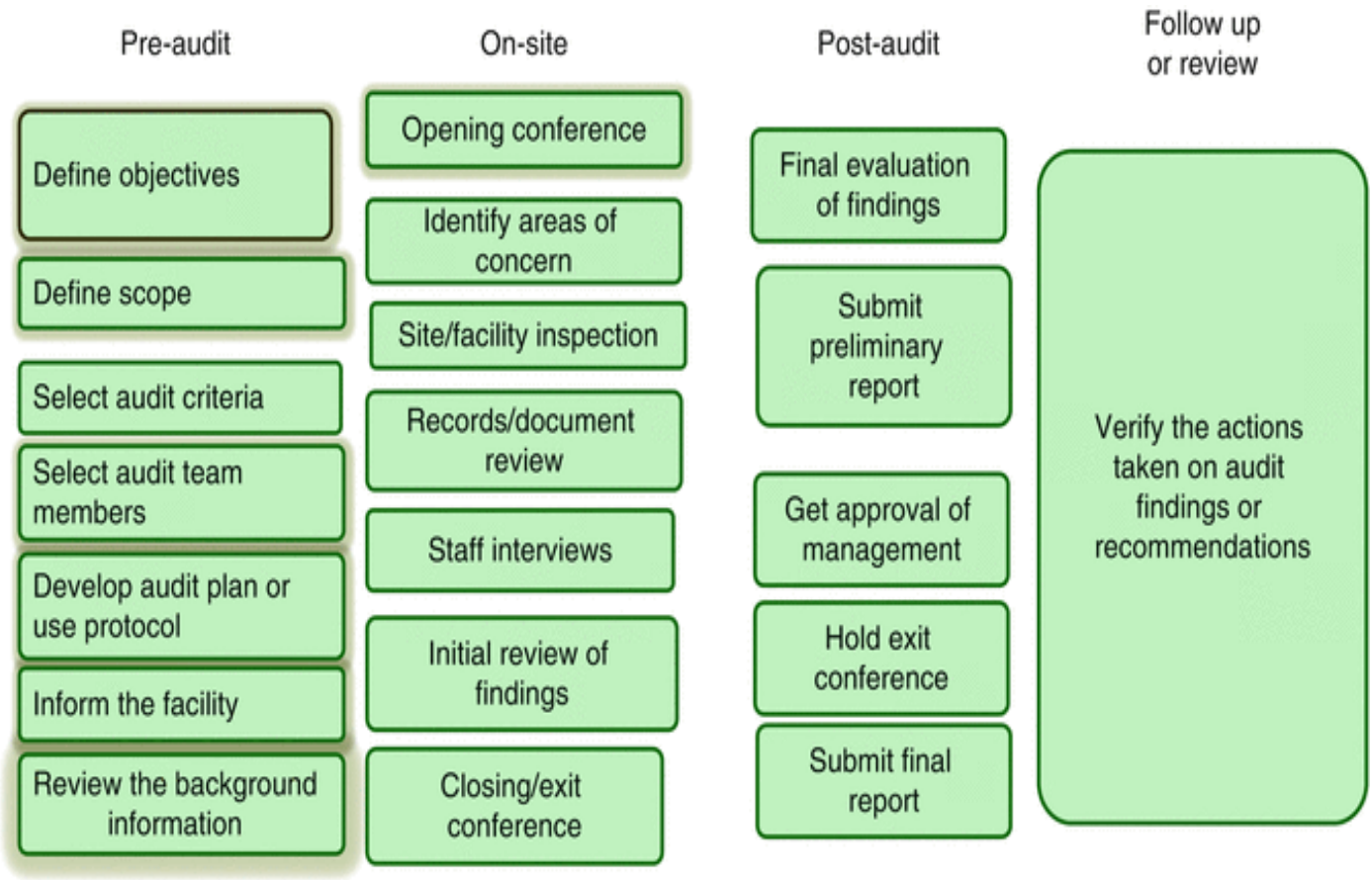
1. To examine the current practices, which can impact on environment such as of resource utilization, waste management etc.
2. To identify and analyze significant environmental issues.
3. Setup goal, vision, and mission for Green practices in campus.
4. Establish and implement Environment Management in various departments.
5. Continuous assessment for betterment in performance in green

## Need of Green Audit:

Green auditing is the process of identifying and determining whether institutions practices are eco-friendly and sustainable. Green audit regulates all such practices and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion it is necessary to verify the processes and convert it in to green and clean one. Green audit provides an approach for it. It also increases overall consciousness among the people working in institution towards an environment.

## Methodology of Green Audit:

Green Audit conducted with specific methodology as follows:



## Goals of Green Audit:

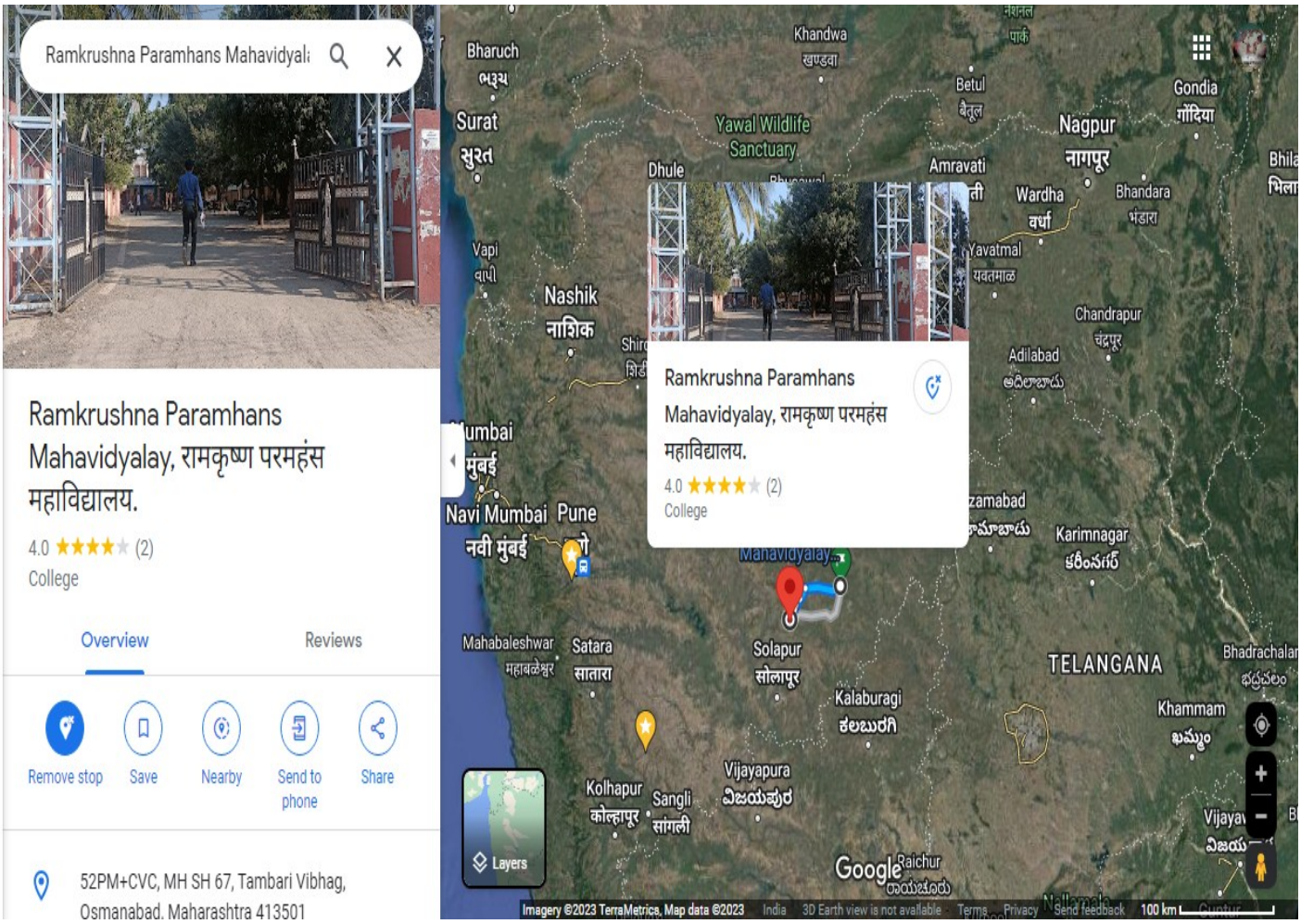
Conducted a green audit of Ramkrishna Paramhansa Mahavidyalaya Osmanabad Campus with specific goals as:

1. Identification and documentation of green practices followed by the Institute.
2. Identify strength and weakness in green practices.
3. Analyze and suggest solution for problems identified.
4. Assess facility of different types of waste management.
5. Increase environmental awareness throughout campus
6. Identify and assess environmental risk.
7. Motivates staff for optimized sustainable use of available resources.
8. The long-term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental Issue before they become problem.

## Chapter No.2 Introduction about the Institute

Vivekanand Education sanstha is one of the most renowned education institutes of paschim maharashtra. This institute was founded on June 1954. Dr. Bapuji Salunke was the founder person of this institute. The sanstha got founded in the sacred city Kolhapur first. After that, The journey of the institute started. In last 55 years, Sanatha established it's work not only in all over the Maharashtra but also in some parts of the Karnataka. Now a days there are 330 institutes which are running under Institute. Dr. Bapuji Salunke, his son Abhaykumar Salunke & some other teachers & mass leaders helped the sanstha to reach that glory.

| Sr. | Head | Particulars |
|---|---|---|
| I. | Name | Ramkrishna Paramhansa Mahavidyalaya |
| 2. | Address | Tambari Vibhagh, Osmanabad 413501 (M.S.) |
| 3. | Degree Courses Offered | BSc; MSc; BCom; MCom; MA |



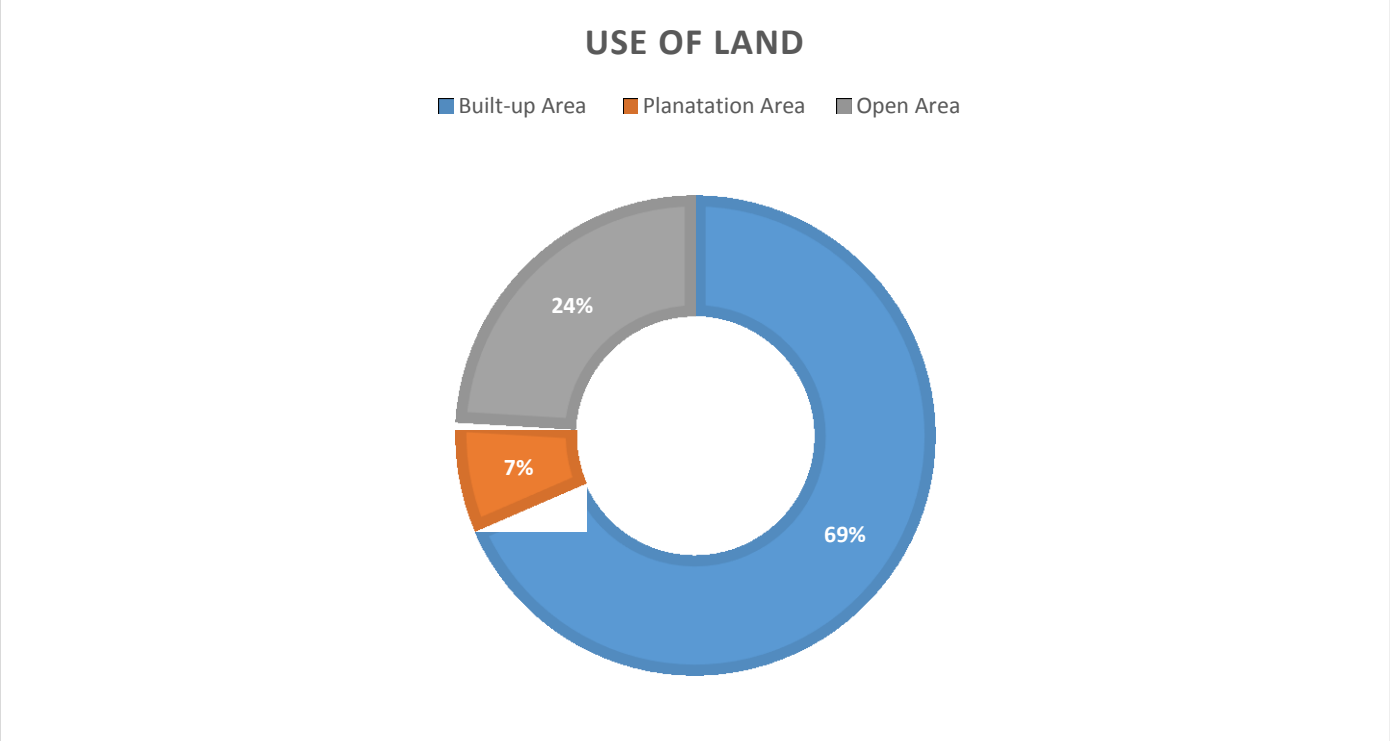

Ramkrishna Paramhansa Mahavidyalaya, Osmanabad

AERIEL VIEW OF COLLEGE CAMPUS (SOURCE GOOGLE EARTH)

## Chapter No.3 Categories of Land Use

Plantation of trees is started in the campus and the green cover is extended every year in the campus.

**Audit Framework and detailed findings of the Audit:**




**Observations** At Present 7% area campus is having the Green cover.

# Chapter No. 4 Green Cover - Plantation of Trees

**Bio diversity Garden at Ramkrishna Paramhansa Mahavidyalaya.**

RP Mahavidyalaya have different type of trees, while the rest of the land was covered with grass and shrubs. Today, with the efforts of staff, faculty, and students who have planted over 473 trees, the campus is cloaked in greenery one acres.


## List of Plants in RP Mahavidyalaya :

| Sr. No. | Plant Name | Type | Nos. |
|---|---|---|---|
| 1 | *Abutilon Indicum* | Shrub | 2 |
| 2 | *Acacia Arebica* | Tree | 3 |
| 3 | *Acacia Auriculiformis* | Tree | 1 |
| 4 | *Acalypha Hispida* | Herb | 1 |
| 5 | *Achyrantes Aspera* | Herb | 4 |
| 6 | *Aegle Marmelos* | Tree | 1 |
| 7 | *Albizia Procera* | Tree | 1 |
| 8 | *Allamanda Cathartica* | Shrub | 5 |
| 9 | *Alstonia Scholaris* | Tree | 4 |
| 10 | *Amarnthus Viridis* | Herb | 3 |
| 11 | *Annona Reticulata* | Tree | 1 |
| 12 | *Annona Squmosa* | Tree | 4 |
| 13 | *Anthocephylus Cadamba* | Tree | 11 |
| 14 | *Araucaria Columnaria* | Tree | 1 |
| 15 | *Azadiracta Indica* | Tree | 12 |
| 16 | *Bryophyllum Pinnatum* | Herb | 4 |
| 17 | *Caesalpinia Pulcherima* | Tree | 1 |
| 18 | *Caiba Pentandra* | Tree | 3 |
| 19 | *Cajanus Cajan* | Shrub | 1 |
| 20 | *Calotopis Procera* | Shrub | 5 |
| 21 | *Cassia Siania* | Tree | 8 |
| 22 | *Catheranthus Roseus* | Herb | 6 |
| 23 | *Citrus Medica* | Tree | 1 |
| 24 | *Cocus Nucifera* | Tree | 3 |
| 25 | *Codiaeum Variegatum* | Shrub | 1 |
| 26 | *Crinum Asiaticum* | Herb | 1 |
| 27 | *Cupressus Semipervirens* | Shrub | 1 |

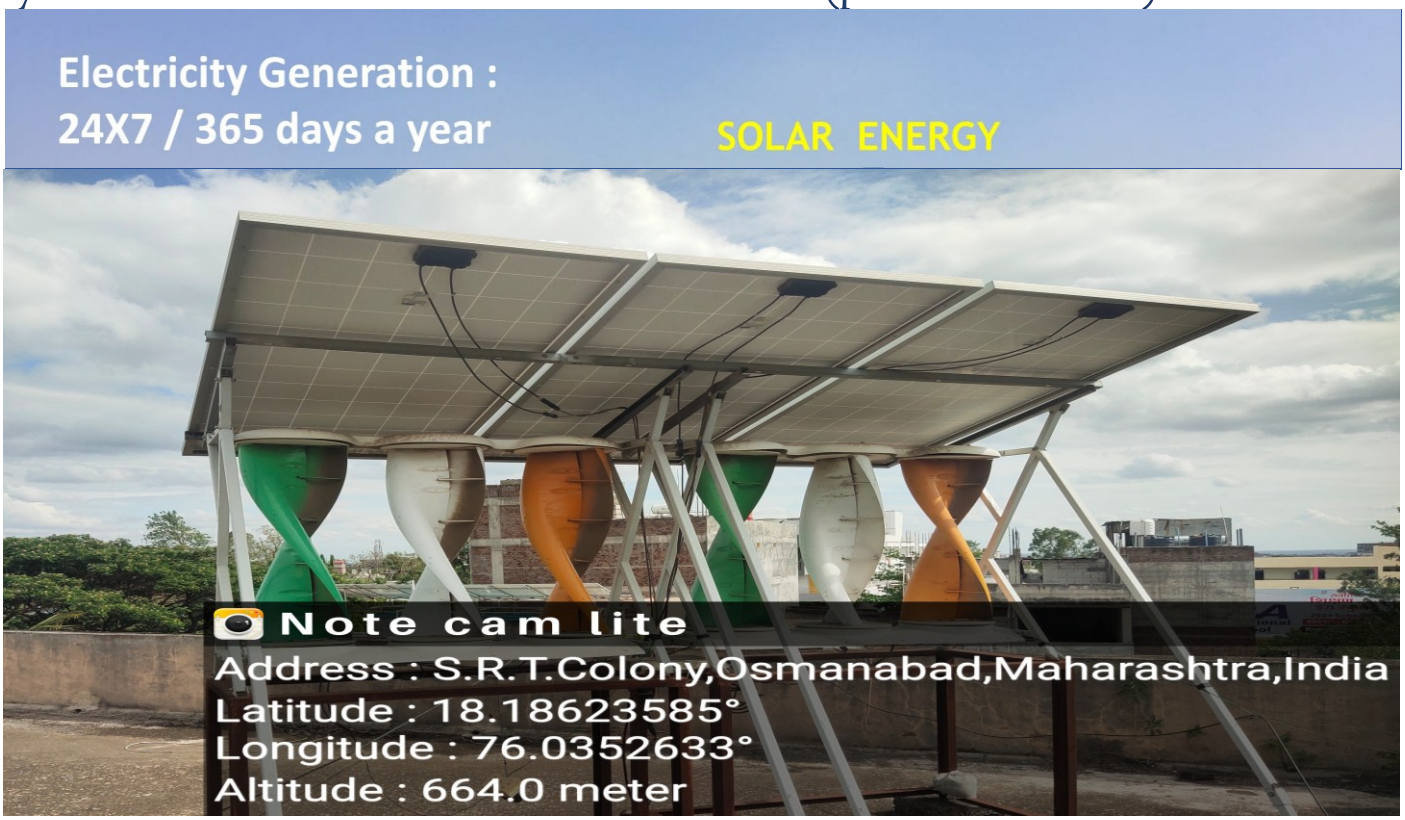
| | | | |
|---|---|---|---|
| 28 | *Cycas Revoluta* | Tree | 4 |
| 29 | *Cyprus Rotundus* | Herb | 6 |
| 30 | *Cymbopogon Schoenanthus* | Herb | 1 |
| 31 | *Dalburgia Sissoo* | Tree | 5 |
| 32 | *Datura Metal* | Herb | 1 |
| 33 | *Dracena Marginata* | Shrub | 1 |
| 34 | *Dypsis Lutescence* | Shrub | 70 |
| 35 | *Euphorbia Milli* | Herb | 15 |
| 36 | *Mimusops Elengi* | Tree | 2 |
| 37 | *Eucalyptus Globulus* | Tree | 2 |
| 38 | *Evolvulus Alsinoides* | Herb | 2 |
| 39 | *Feronia Elephantum* | Tree | 2 |
| 40 | *Ficus Bengalensis* | Tree | 1 |
| 41 | *Ficus Benjamina* | Shrub | 7 |
| 42 | *FicusRacemosa* | Tree | 5 |
| 43 | *Grevillea Robusta* | Tree | 4 |
| 44 | *Hibiscus rosa sinensis* | Shrub | 10 |
| 45 | *Hamelia Patens* | Shrub | 1 |
| 46 | *Ixora Coccinia* | Sharub | 2 |
| 47 | *Jusminum Multiflorum* | shrub | 2 |
| 48 | *Lantana Camera* | Shrub | 8 |
| 49 | *Leucaena Leucocephala* | Tree | 5 |
| 50 | *Livistonia Chinensis* | Shrub | 1 |
| 51 | *Mangifera Indica* | Tree | 3 |
| 52 | *Manilkara Hexandra* | Tree | 6 |
| 53 | *Manilkara Zapota* | Tree | 1 |
| 54 | *Millingtonia Hortensis* | Tree | 1 |
| 55 | *Moringa Oleifera* | Tree | 1 |
| 56 | *Targetes Erecta* | Herb | 7 |

| | | | |
|---|---|---|---|
| 57 | *Nerium Odorum* | Shrub | 8 |
| 58 | *Nycthanthus Arbor Tristis* | Tree | 1 |
| 59 | *Ocimum Tenuliforum* | Herb | 2 |
| 60 | *Argimon Mexicana* | Herb | 2 |
| 61 | *Pancratium Zeylanicum* | Herb | 1 |
| 62 | *Opunti A* | Shrub | 2 |
| 63 | *Phonix Sylvestris* | Shrub | 1 |
| 64 | *Pithocellobium Dulce* | Tree | 2 |
| 65 | *Plumeriz Alba* | Shrub | 1 |
| 66 | *Polyalthia Longifolia* | Tree | 78 |
| 67 | *Portulaca Grandoflora* | Herb | 2 |
| 68 | *Psidium Gujava* | Tree | 2 |
| 69 | *Ricinus Communis* | Shrub | 1 |
| 70 | *Rosa Chinensis* | Shrub | 11 |
| 71 | *Roystonia Regia* | Tree | 2 |
| 72 | *Santalum ALBUM* | TREE | 6 |
| 73 | *Syzygium Cuminii* | Tree | 1 |
| 74 | *Tabarnemontana Coronaria* | Shrub | 2 |
| 75 | *Tamrindua Indica* | Tree | 6 |
| 76 | *Tectona Grandis* | Tree | 37 |
| 77 | *Terminalia Catappa* | Tree | 2 |
| 78 | *Tradescantia Pallida* | Herb | 5 |
| 79 | *Murraya Coneghi* | Tree | 5 |
| 80 | *Delonix Regia* | Tree | 4 |
| 81 | *Thuja Plocata* | Shrub | 5 |
| 82 | *Withania Somnifera* | Herb | 6 |
| 83 | *Wodyetia Bifurcata* | Herb | 9 |
| 84 | *Carica Papaya* | Tree | 5 |
| | | **Total @** | **473** |

# Biodiversity at Ramkrishna Paramhansa Mahavidyalaya Osmanabad


## Chapter No. 5: Use of Clean & Green Energy Wind Solar Hybrid Power Plant

Institute has been installed Solar & Wind power Hybrid system plant. "Hybrid" electric system that combines wind electric and solar electric (photovoltaic or PV)




**Observations :** Institute has been taken good initiative for energy conservation.
Capacity: 100 Watts

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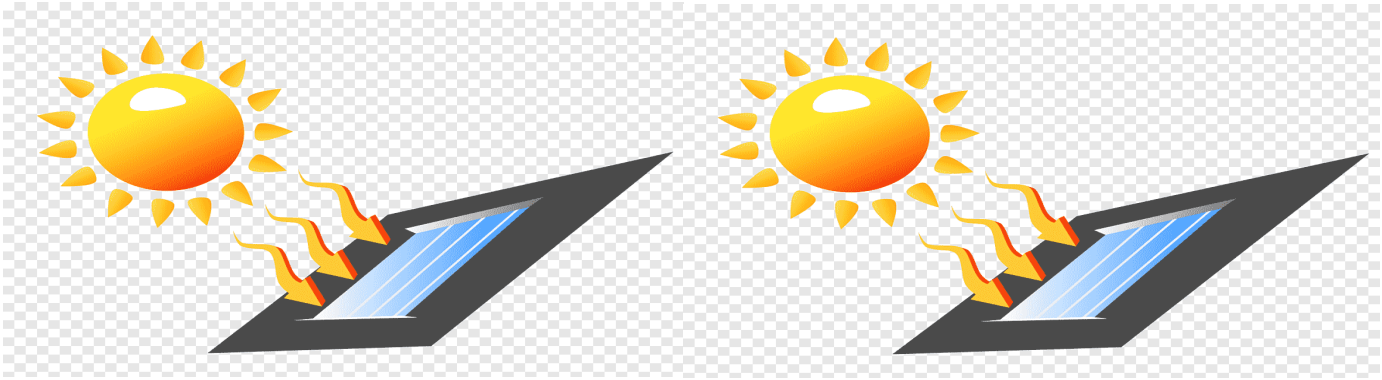
Percentage of Annual Power requirements met through renewable energy Sources
Current year data is 4%
Electricity Generated 300 Units/Year
Electricity Imported 60950 Units / Year

**Suggestions :**

1. Install Occupancy Sensors to minimize electricity unknown losses.
2. Install Solar Street Lights to Minimize Electricity Import during Night.
3. Install additional Roof top Solar Generation plant of 50 KW Capacity.



# Chapter No. 6: Study of Waste Management

## Environmental consciousness and sustainability friendly initiatives

The internal communication of the College is through Internet within the staff members. There are hardly any Drives, CDs used for day to day operations. Hence as far as the e-waste is concerned hardly any waste is generated during the day to day operations. In addition to this the College authorities have already finalized Authorized e-Waste management agency to dispose of the old equipment.


## Observations : Solid Waste management at RP Mahavidyalaya

1. The college is taking care of cleanliness and hygiene every time. Daily garbage is collected and segregated into degradable and non-degradable waste by housekeeping personnel.
2. Plant leaves, all the non-toxic, biodegradable waste is collected and used for making compost through the Vermicomposting process for which pits having size 5.5 x 1.7 x 0.6 have been made in the campus.
3. Waste material like plastic, papers, glass, metal, newspapers etc. are collected and sold out to authorize scrap vendors for its recycling from time to time.
4. Non-degradable waste is collected separately. Institute has tied up with the local Municipal Committee for the disposal of non-degradable solid waste. This waste is collected in the vehicle and handed over to the Municipal Corporation garbage collecting unit.
5. College is adopting almost paperless concept by digitization of office procedures through tally ERP, examination work and daily attendance is maintained using software, thus, reducing paper-based waste.
6. One side printed papers are reused for printing drafts before final document, circulating notice, meeting minutes, and notes in office practices. This reduce paper usage and paper wastage.

## Separation of waste


## Organic Compost prepared in college campus


## Observations:

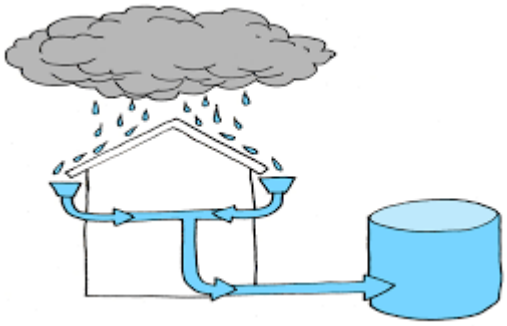
Found Good Management of the various types of degradable and non-degradable waste in the Campus.

## Water Management :

Water scarcity is serious problem throughout the world for both urban & rural community. Urbanization, industrial development & increase in agricultural field & production has resulted in overexploitation of groundwater & surface water resources and resultant deterioration in water quality. The conventional water sources namely well, river and reservoirs, etc. are inadequate to fulfill water demand due to unbalanced rainfall. While the rainwater harvesting system investigate a new water source.

### Rain Water Harvesting System

Rainwater harvesting is the simple process or technology used to conserve rainwater by collecting, storing, conveying and purifying of rainwater that runs off from rooftops, parks, roads, open grounds, etc. for later use.



### Rain Water Harvesting Recharge Points at RP Mahavidyalaya Campus


### Observations : Rain water Harvesting.

Institute has been installed Rainwater Harvesting. Good Initiative !

## Water Management Best Practices: Water Conservation


Observations : Water Sprinklers used for gardning.

Institute has been taken good initiative for water conservation.


**WATER AUDIT - AN APPROACH TO WATER CONSERVATION**

# Chapter No. 7 : Carbon Foot printing

**A Carbon Foot print** is defined as the Total Greenhouse Gas emissions, emitted due to various activities. In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities. The College Imports Electrical Energy during Night for various Electrical gadgets.

**Basis for computation of CO2 Emissions:**

The basis of Calculation for CO2 emissions due to Electrical Energy are as under

□□ I Unit (kWh) of Electrical Energy releases **0.8 Kg of CO2** into atmosphere

Based on the above Data we compute the CO2 emissions which are being released in to the atmosphere by the College due to its Day to Day operations

**Observations:** The College Imports Electrical Energy for various Electrical gadgets.

Annual Import = 60950 KWH/year

Calculations:

Electricity: **Input value (in KWh/Yr.) X 0.85 (Emission Factor)**

**= Output value in (Kg of $CO_2$)**

**= 51807 Kg of $CO_2$**

**Suggestions:**

1. Reduce the Electricity Import during Day & Night install additional solar power plant of 50KW Capacity.
2. Install Occupancy Sensors to minimize losses in Lighting System.

## Chapter No. 8 : Best Practices & Activities

## Best Practices & Activities

Several significant and fruitful awareness programs both students and staff of the Campus are arranged every year in the campus. Reflections from students are Evident how effective such awareness programs conducted in the campus. Major programs conducted in the campus during the last Five years.

**Campaigns:** Nature camps, field trips and some of these activities are year round programs and others are regular year wiser semester wise or any other stipulated time bound programs.

Environmental education through systematic environmental management approach.

**5th June World Environment day Celebrations!**

Tree Plantation Campaign Students & Staff participated in campaign.

## Ramrishna Paramhansa Mahavidyalaya declared their Environment Policy.

### Policy Document On Environment and Energy Usage

- To install LED bulbs in the complete campus to save energy
- To operate institute building in most efficient energy manner.
- Maximum use of Renewable Energy.
- Encourage a culture of Energy conservation on campus.
- To take additional measures to continuously improve our energy consumption.
- To develop and maintain Energy Management System based on ISO: 50001.
- To encourage use of advanced technology to minimize energy consumption.
- To engage in dialogue with the government agencies, and actively work with the local organizations in the areas of environment, energy efficiency and sustainable development.
- To strengthen our employees' and students' environmental knowledge and skills in order to improve our own environmental performance.
- To provide information and training opportunities on energy saving measures.
- To train our employees and students through our Enviro Club to make them 'Go Green Specialists' and partners to plant trees each year.

**Principal**