

# Mhaisal Mahavidyalaya, Mhaisal

Tal.MirajDist.Sangli

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## DVV CLARIFICATION

### Metrics Level Deviations

**Metric ID**  
**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

- ❖ Green Audit/ Environmental audit
- ❖ Energy Audit
- ❖ Clean and Green Campus indicatives
- ❖ Beyond the campus environmental promotion activities



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01	Self Declaration
02	Environment and Energy Usage Policy
03	Action Taken Report
04	Audit Reports of Green Audit Environmental Audit Energy Audit
05	Beyond Campus environmental activities



Senapati Prataprao Gujar Education Society Kandewadi's  
**Mhaisal Mahavidyalaya, Mhaisal**

Tal. Miraj Dist. Sangli  
Email :- mhaisalcollege@gmail.com

Founder Chairman :- Late Hon. Babasaheb Kupekar (Former Maharashtra Assembly Speaker)

Chairman	Secretary	I/C Principal
Hon. Shri. Balasaheb Kupekar (B.Sc. Agri) Ex. Treasurer, Western Maharashtra Devsthan Samiti	Shri. Bharma Arjun Patil	Dr. Namadev R. Gavali M.A., M.Phil., Ph.D Mobile No. 9767747592

Ref. No-MHAI/ 3182/13 | 2023-24

Date 30 SEP 2023

## **DVV DECLARATION**

This is to clarify that, the college has facilities and initiatives for all of the given measures. The college has provided the policy document, geo tagged photographs and other such instruments and such facilities with captions, brief report of the facilities provided.

**Hence this certificate issued**



*Gavali*  
HON. I/C PRINCIPAL  
MHASAL MAHAVIDYALAYA, MHASAL  
TAL. MIRAJ DIST. SANGLI.

Senapati Prataprao Gujar Shikshan Sanstha Kandewadi  
**MHAISAL MAHAVIDYALAYA, MHAISAL**

**THE ENVIRONMENT AND ENERGY USAGE POLICY**

The Environment and Energy usage policy of Mhaisal Mahavidyalaya, Mhaisal intends the management of the energy mostly to help the conservation of Environment. Primarily the policy means to save the energy and control the unnecessary use of it. Secondly it tries to practice the ways of the usage of renewable energy resources as the alternate mode of energy. The Environment and Energy policy is mandatory for all the components of the institution and is applicable to all the stakeholders and various programmes and activities organized by the institution. Along with this policy, the Eco-Friendly Campus Cell runs the objectives to save energy and conserve the environment. Such activities create the awareness of our responsibilities and commitment to environment. .

**Policies:**

- To assess our energy usage and measure its impact on the environment.
- To save the energy by nurturing the habits of turning off the unnecessary lights and shut down the monitor in the time of intervals.
- Use LED or compact fluorescent bulbs as much as possible.
- To reduce local air pollution by promoting the use of bicycles, public transportation and practicing 'No Vehicle Day'on Every Months Saturday.
- To motivate and practices tree plantation drive.



*Jirabhi*  
I/O PRINCIPAL  
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TAL.-MIRAJ, DIST.-SANGLI.

॥ कर्मण्येवाधिकारस्तेना कलेषु वा ॥

**Senapati Prataprao gujar Shikshan Sanstha Kandewadi,s**  
**MHAISAL MAHAVIDYALAYA, MHAISAL**  
**Tal.Miraj Dist.Sangli**

**Clean and Green Campus Initiative**  
**Action taken and Achievement Report**

Mhaisal Mahavidyalaya, Mhaisal is well-known college in Rural Area of Karnataka-Maharashtra State Boarder Area in Sangli District (Maharashtra) with the mission of the social accountability among students. Besides the college sensitises students towards environmental commitment. The college is situated in Mhaisal Village.

The college management, faculties and students are very keen to develop the campus green, eco-friendly, healthy and plastic free under the departments of NSS various programmes are organised to make the campus clean and green, to develop sensitivity and awareness towards the nature. The activities such as tree plantation, cleaning the campus, plastic collection, e-waste collection, guest lectures, etc. related to environmental issues are conducted by various departments.

The college has implemented Water Drip System in the campus. The college also participates in government drives for tree plantation and other environment programmes. To check our efforts for green initiatives, we have done Green, Environment and Energy Audit.

All the efforts lead the college towards green, clean and healthy campus.

**Action Taken under Green Campus Initiatives**

1. Drive of Tree plantation in Mhaisal and Kavtheguland Village
2. Organized No Vehicle Day in College
3. Organization of Guest Lectures to sensitise students towards nature.
4. Organized Various types of programmes to promote environment
5. Cleanliness Drives.
6. Plastic and Waste collection in college.



  
**H.C PRINCIPAL**  
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**TAL.-MIRAJ, DIST.-SANGLI.**

**GREEN  
CAMPUS  
INITIATIVE**



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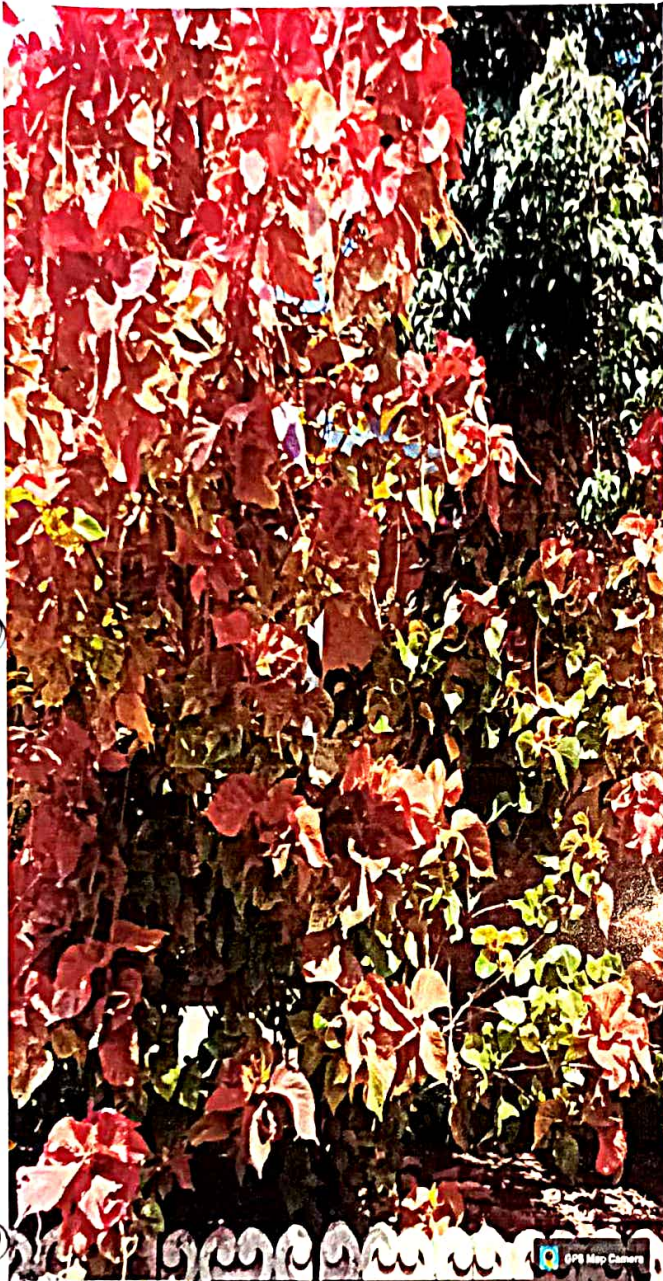


Mhaisal  
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GPS Map Camera

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**TAL.-MIRAJ, DIST.-SANGLI**



**Mhaisal Mahavidyalaya, Mhaisal**

**Clean and Green Campus Initiatives**



Prepared by

**Department of Environmental Science,**

**Shivaji University, Kolhapur- 416004**

2022-23



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Senapati Prataprao Gujar Shikshan Sanstha Kandewadi's  
**MHAISAL MAHAVIDYALAYA, MHAISAL**

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**Principal Message**

Today, the universe is facing problems like global warming and deforestation. There are several aspects responsible for climate change. Safe drinking water scarcity, drought, and flood are nowadays. All these environmental issues are only discussed at the global level, but the fact is that regional and local activities are responsible for making such cases global.



In the dire need to protect our planet from environmental pollution, it is the responsibility of everyone not to contribute to activities that may harm the environment. College is where students, faculty and staff gather daily to run the teaching and learning process. This process requires infrastructure, energy, water, chemical and support facilities. The college has to look after these things' optimum and economical use. It is necessary to conserve energy from non-traditional sources. Also, it is essential to avoid the entry of monoxide and other gaseous pollutants into the environment. The scarcity of water and its pollution are the hot topics. We must save the available water and keep it free from pollution. The campus must be clean and green to have a pleasant atmosphere for the teaching-learning process. We must make maximum efforts towards carbon neutrality. In this direction, along with plantation, the origination of other nature-related activities and the creation of awareness among the people is necessary.

To be environmentally conscious, every college must undertake a green audit of the premises and facilities. I am pleased to state that the Department of Environmental Science, Shivaji University Kolhapur, is under the guidance of the green audit team, and they have conducted the green audit of our college very keenly. Their suggestions are undoubtedly helpful for us for the improvement.



*Gwalik*  
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Date: 23/12/2022

## Certificate

This is to certify that the Department of Environmental Science, Shivaji University, Kolhapur has assessed detailed "Clean and Green Campus Initiatives" of "Senapati Prataprao Gujar Shikshan Kandewadis, Mhaisal Mahavidyalaya, Mhaisal" during the academic year 2022-2023. This report was evaluated in accordance with the applicable standards prescribed by the Indian Institute of Remote Sensing, Dehradun, India, Ministry of Environment, Forest and Climate Change, New Delhi and Intergovernmental Panel on Climate Change (IPCC) and Central Pollution Control Board (CPCB), New Delhi. The report involves Solid waste generation, safe waste disposal practices, green inventory, biomass estimation, carbon sequestration potential of the campus. 'Environmental Management Plan', is also included in the report which can be followed to minimize environmental impacts. The performance of college was found to have good quality with respect to sustainable Clean and Green Practices. Even though ample amount of work can be done in this area.

The opportunities of sustainable green practices and well consideration of suggested Environmental Management Plan can make the college role model to other institutions as well. In an opinion and to the best of our information and according to the information given to us, said Clean and Green Initiatives gives a true and fair view in conformity with environmental auditing principles accepted in India.



*A. Adhar*  
Head

Dr. (Mrs.) Aasawari Jadhav  
i/c. Head & Assistant Professor  
Department of Environmental Science  
Shivaji University, Kolhapur

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### 1.1 Clean campus initiatives:

Waste management is very important issue to solve many environmental problems. It is a process of regular identification, quantification, documenting, reporting and monitoring of environmentally important components in a specified area. Through this process is the regularly monitored within and outside of the concerned sites which have direct and indirect impact on surroundings. It can be one of the initiatives for such institutes to account their energy, water resource use as well as wastewater, solid waste, E-waste, hazardous waste generation.

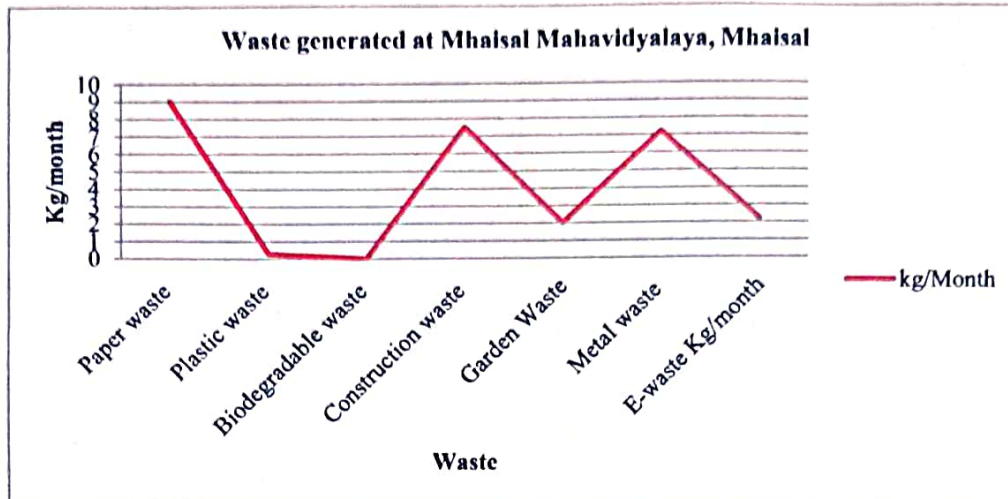
Solid waste management is a term that refers to the process of collecting and treating solid wastes. As long as people have been living in settlements, garbage and solid waste has been an issue. In recent years, it is observed that per capita waste generation has increased due to the changing life style. Improper disposal of solid waste is responsible for pollution of air, water and soil. Disposal of solid waste on open area leads to develop bad odor in the surrounding also it may develop unhygienic conditions. Improper waste disposal is root cause for spreading the infectious diseases among the human and animal. So, it is important to take some steps for the proper management of solid waste followed by reduce, reuse and recycle 3R principle. The intention of this inventory is to find out the quantity of waste generation and disposal methods which are currently followed at Mhaisal Mahavidyalaya, Mhaisal.

Solid waste audit of college was conducted by grouping the college into Office and Library and Staffroom and Classroom. Different types of waste are generated in the college campus. Dustbins are fixed in the building which is used for collection of waste.

#### 1.1.1 Generation of solid waste in college:

Table No.1.1.1: Category wise solid waste generation in college (kg/month)

Waste type	Paper Waste	Plastic Waste	Biodegradable Waste	Construction Waste	Metal waste	Garden Waste	E-Waste	Hazardous Waste
Quantity (Kg/Month)	9	0.3	0	7.5	7.2	2	2.2	0
Quantity (Kg/ Year)	90	03	0	75	72	20	22	0



Graph No. 1.1.1: Category wise solid waste generation in college (kg/month)

The average amount of solid waste generated per month in Mhaisal Mahavidyalaya, Mhaisal is approximately 28.2 kg/month. On the basis of observations, the highest quantity of solid waste generated is Paper Waste which is about 9 kg/month is generated in the institution and that is given to the vendor every six month.

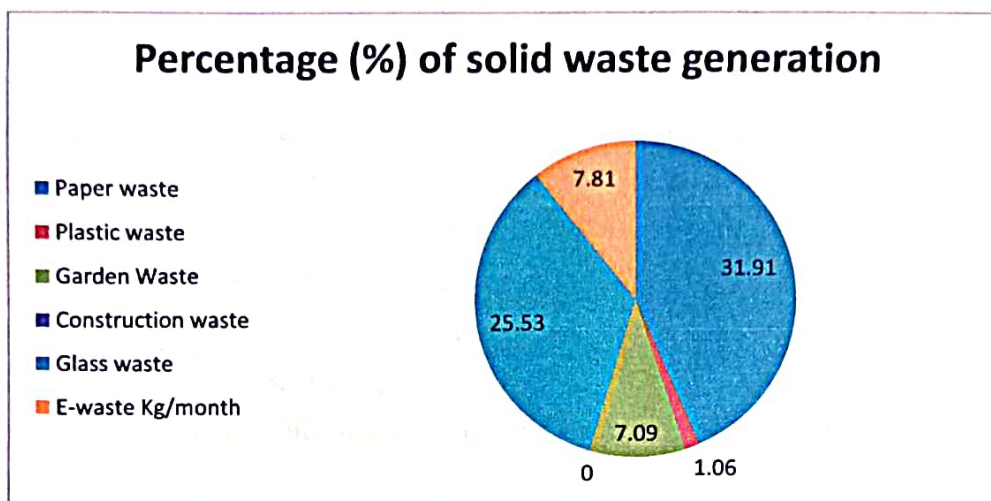
Besides, the above mentioned waste, Metal Waste is generated in the form of Iron road and roof top. Approximately 7.5 kg/ month Construction Waste is generated in the wooden waste.



Figure1: Some construction waste and metal waste

**Table No. 1.1.2: Percentage of category wise solid waste in the college (kg/month)**

Category	Paper Waste	Plastic Waste	Biodegradable Waste	Construction Waste	Metal waste	Garden Waste	E-Waste	Hazardous Waste
Percentage (%)	31.91	1.06	0	26.60	25.53	7.09	7.81	0



**Graph No. 1.1.2: Percentage of solid waste generation in the college (kg/month)**

Percentage wise distribution of different sources of solid waste is shown in the above graph. The maximum percentage of solid waste generated is of Paper waste which is approximately 31.91 % and minimum percentage of Plastic waste generated is about 1.06 %.

**1.1.3 Plastic Waste:**

**Table No. 1.1.3: Plastic waste generation and its distribution in the college**

Category	Plastic Kg/month				Total
	Hard	Soft	Carry Bags and Water bottles	Other	
Quantity	0.2	0	0.1	0	0.3
Percentage	66.7	0	33.3	0	100

Plastic waste in the form of packaged food wrappers, carry bags etc. is approximately 0.3 kg/ month. Plastic wastes are difficult to dispose because it is non-biodegradable waste or it takes many years to degrade naturally. It can cause adverse impacts on environment.

#### **1.1.4 Hazardous waste audit of the college:**

Hazardous waste is waste that has substantial or potential threats to public health and environment. The sources of hazardous waste in the college are do not exist. In addition, there are no laboratories.

#### **1.1.5 E-waste generation in the college:**

Generation of e-waste is found in every educational institute. All discarded electronic appliances are called as E-waste. This waste requires special treatment for disposal. So, it is also called as special waste. It is observed that the e-waste generated at college is of Schedule II category. Computers, printers, CPU's, UPS, fused bulbs and tubes are used for administrative work. The wire required for the network connectivity and for electricity also gets included in the E-waste. This E-waste consists of 2 desktops.

#### **1.4 Eco-friendly solid waste management practices:**

The college follows following eco-friendly solid waste management practices.

##### **1. Paper waste recycling:**

Paper waste is handed over to the vendor for recycling every six months. This waste includes newspapers (Sakal newspaper- Lokmat newspaper) as well as office work paper.

##### **2. Collection of waste:**

For waste collection dustbins are provided wherever required on the campus, different dustbins are provided according to nature of waste such as, dry waste and wet waste. In classrooms also dustbins are provided.



*Figure2: Dustbins are provided for waste collection*

### 3. Environmental activities

Six banners were placed on the college campus, containing encouraging phrases not to use plastic and to preserve the planet.



*Figure 3: Collection of banners from a college campus*

#### **Key Observations:**

- The average waste generated in the college is app.28.2 Kg /month
- Highest quantity of solid waste is Paper waste which is around 9 Kg/month.
- Over all the waste generated in the college is handed over to Municipal Corporation.
- Paper waste is given to the vendor for recycling to Nilesh Traders.
- Cleanliness is maintained at college.
- waste is stored at site.
- Solid waste is disposed instead of burning it on campus.



## 2.1 Green Campus Initiatives of Mhaisal, Mahavidyalaya, Mhaisal College

The area is diversified, with a good variety of tree types providing various functions. The bulk of these tree species currently make up an important part of the campus because they were planted throughout a variety of time periods through various planting programmes managed by the authority. The college's trees have improved the quality of life for not only the college fraternity but also the surrounding community by enhancing air quality, reducing climate change, conserving water, preserving soil, supporting wildlife, and regulating climate by reducing the effects of the sun, rain, and wind. In order to keep things cool in the summer, leaves absorb and filter the sun's radiant radiation. These trees provide shelter and food for a variety of birds, among others. Birds and numerous insects enjoy the nectar of flowers and plants. Numerous creatures, including birds and squirrels, are protected from predators by the leaf-covered branches. Numerous species exhibit an almost infinite range of shapes, forms, textures, and vivid colours. Even individual trees alter in appearance as the seasons change throughout the year. The durability, longevity, and regal grandeur of trees give them the appearance of monuments. They also serve as a reminder of the institution's illustrious past. It has been determined that a belt of shady trees inside or/and around the college's perimeter reduces noise, dust, and storms. As a result, the institution has been essential in preserving the environment of the entire village of Mhaisal and its surroundings.

Mhaisal, Mahavidyalaya, Mhaisal is situated in Sangli district Maharashtra at longitude 74.7038940E and latitude 16.745320N the elevation of the institute from the sea level is 578 m.

The climate in the area is ideal for the cultivation of a wide variety of plants. A total of 100 trees were counted, each having a girth of more than 10 cm and a height of more than 4 ft. Based on data supplied by the Institution, a total of 5 species of woody trees were recognized during the visit. During the inventory, *Ficus Microcarpa* and *Dypsis lutescens* were observed the most on campus. Though the campus is very small, but Mhaisal, Mahavidyalaya, Mhaisal Collage has planted trees that have a better capability for carbon sequestration. The Institute took the initiative to plant native plants, which is the best way to protect the area's biodiversity.



**Figure 4: Google Earth Image Mhaisal, Mahavidyalaya, Mhaisal (Source: Google Earth)**

**2.1.1 Total number of trees enumerated on Mhaisal, Mahavidyalaya, Mhaisal College campus: 100**

Total 100 numbers of trees with more than 10 cm girth and height more than 4 feet have been enumerated. Girth and height of every tree has been measured.

**2.1.2 Total No. of species identified on Mhaisal, Mahavidyalaya, Mhaisal campus: 5**

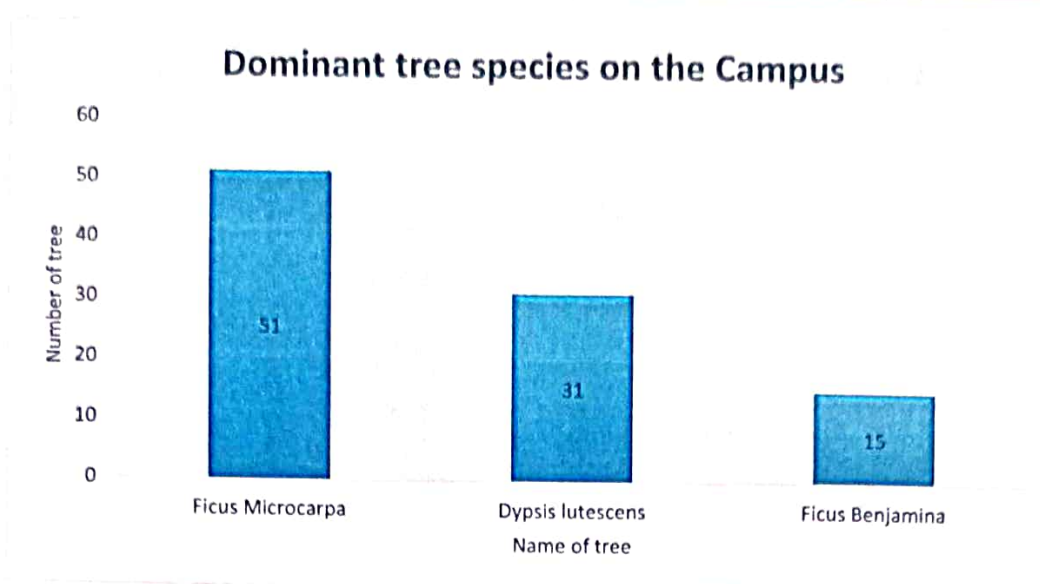
About 5 species have been identified during the census. It shows a comparatively good diversity of tree species on the campus.

**2.2 Species with the highest population:**

**Table No.2.1: Species with the Highest Population**

Sr.No.	Species name	Common Name	No. of trees observed
1	<i>Ficus Microcarpa</i>	Chinese banyan	51
2	<i>Dypsis lutescens</i>	Bamboo palm	31
3	<i>Ficus Benjamina</i>	Benjamin	15

During the inventory, *Ficus Microcarpa* and *Dypsis lutescens* were discovered to have the greatest population on campus, followed by *Ficus Benjamina*. The species *Dypsis lutescens* and *Ficus Microcarpa*, which has a population of 81 individuals, is the most populous species on campus. The *Ficus Benjamina* contributes 15 trees on the campus.



**Graph No.2.1: Dominant tree species on campus**

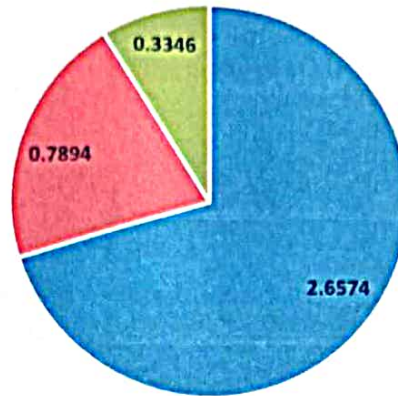
### 2.3 Total Biomass:

The mass of biological organisms that are alive and moving around in an environment at any particular time is known as biomass in ecology. Species biomass, which is the mass of one or more species, or community biomass, which is the mass of all the species in a community, are both examples of biomass. Microorganisms, plants, and animals can all be a part of it. The mass can be expressed as the overall mass in the community or as the average mass per unit area. During the most recent tree census, 3.88 tonnes of total biomass of woody vegetation were discovered on the campus of Mhaisal, Mahavidyalaya, Mhaisal College.

**Table No.2.2: Total biomass of trees in tons on the campus**

Sr. No.	Botanical Name	Common Name	Total Biomass in tons
1	<i>Dypsis lutescens</i>	Bamboo palm	2.6574
2	Ficus Microcarpa	Chinese banyan	0.7894
3	Ficus Benjamina	Benjamin	0.3346

**Species with highest Total Biomass in tons on the campus**



■ Dypsis lutescens ■ Ficus Microcarpa ■ Ficus Benjamina

**Graph No.2.2: Species with highest total biomass in tons on the campus**

*Dypsis lutescens* shows the highest biomass on the campus. Followed by *Ficus Microcarpa* and *Ficus Benjamina* are ranked at second and third place.

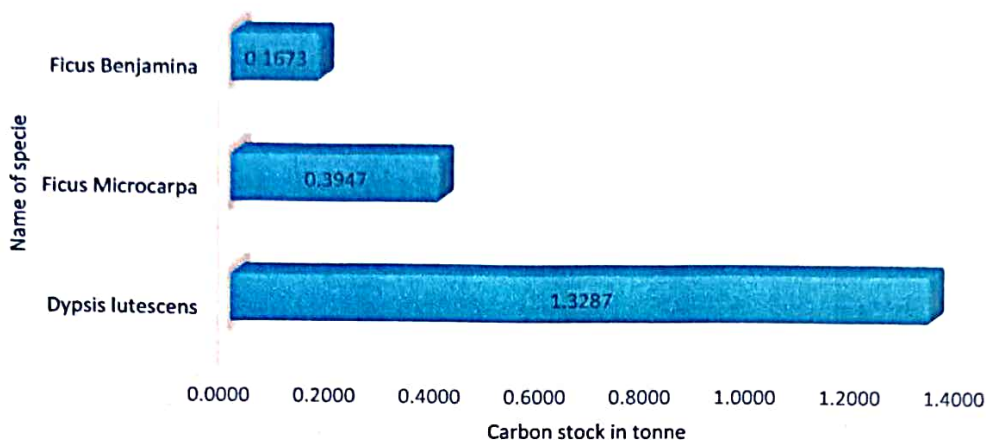
**2.4 Carbon stock:**

Forests and trees act as natural carbon stores, but this carbon is released when the trees are fallen and the area deforested. The amount of carbon stored within an area of land varies according to the type of vegetation cover. 1.94 tons of total carbon stock are present on the campus.

**Table No.2.3: Carbon stock of trees in tons on the campus**

Sr. No.	Botanical Name	Common Name	Carbon stock in tons
1	<i>Dypsis lutescens</i>	Bamboo palm	1.3287
2	<i>Ficus Microcarpa</i>	Chinese banyan	0.3947
3	<i>Ficus Benjamina</i>	Benjamin	0.1673

### Species with highest Carbon stock in tons



**Graph No.2.3: Species with highest carbon stock in tons on the campus**

#### 2.5 Carbon Sequestration:

Long-term storage of carbon dioxide or other types of carbon is referred to as carbon sequestration, and it is done to either delay or mitigate global warming and prevent disastrous climate change. It has been suggested as a strategy to reduce the amount of greenhouse gases that are released when fossil fuels are burned and accumulate in the atmosphere and ocean. The worldwide storage capacity of the vegetation carbon pool is 560 Pg (Pg: Petagram = billion tones). The current study focuses on evaluating the amount of carbon that is currently stored on the campus of Mhaisal, Mahavidyalaya, Mhaisal College, in the form of woody vegetation by listing every type of tree that grows there. Overall, the woody plants on the college campus have been able to trap and store 7.128 tons of CO<sub>2</sub>. A single tree consumes 0.0218 tons of CO<sub>2</sub> approximately annually consequently, as the campus possess 100 mature woody plants 2.27 tons of CO<sub>2</sub> is consumed yearly by all woody vegetation on the college campus.

#### 2.6 Oxygen released:

19.1 tonnes of oxygen have been released by the vegetation on the campus of Mhaisal, Mahavidyalaya, Mhaisal College. Released oxygen and CO<sub>2</sub> sequestration are compared 32:12, which shows a direct correlation. Therefore, it will only emit oxygen once each year. One tree is said to be able to meet the oxygen demands of two people for the rest of their lives. As a result, the 100 trees on the college campus offer shade to the over 200 residents of the area.

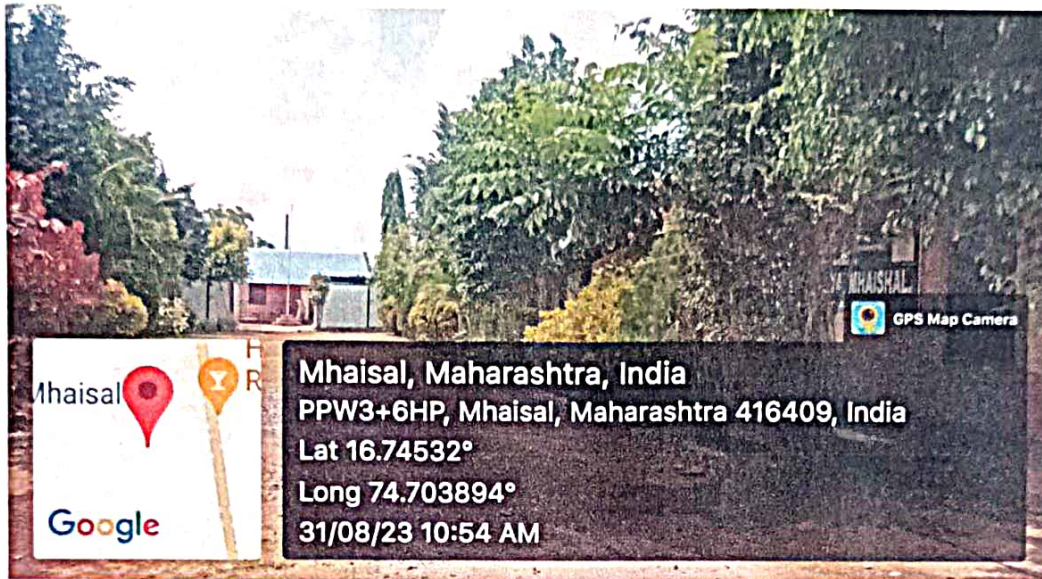
#### List of tree species observed on campus:

Sr. No.	Name of species	Botanical Name
1	<i>Dypsis lutescens</i>	Bamboo palm

2	Ficus Microcarpa	Chinese banyan
3	Ficus Benjamina	Benjamin
4	<i>Monoon Longifolium</i>	Ashoka
5	<i>Aclypha Wilkesiana</i>	copperleaf

**Key Observation:**

- Institute does not have common campus with other school and college.



*Figure 5: campus*

- The Institute takes good initiative for green cover by planting trees on the campus.
- Well-maintained tree plantation on the campus.



*Figure 6: Well-maintained campus*

## CONCLUSION

The Department of Environmental Science at Shivaji University, Kolhapur, conducted a green audit at Mhaisal, Mahavidyalaya, Mhaisal College, during the academic year 2022–2023. "Green audits" are procedures used to identify and assess whether institutional policies are ecologically responsible and sustainable. Examining the green practices being implemented at the college and conducting a well-planned audit to ascertain where we are on an environmental soundness scale are the main objectives of the college's green audit.

### **Conclusions:**

The following are some findings from the team's green audit that can be used to improve the college campus and make it more environmentally friendly:

1. The institute has made attempts to keep the campus green.
2. The campus's tree biodiversity is particularly strong.

### • **Recommendations:**

The primary recommendations for enhancing the campus environment are listed below.

1. Events involving human-made fire should be avoided on campus.
2. The institute needs to put up a report on flora.
3. It is possible to start drip irrigation for gardens and botanical gardens.
4. In order to prevent fire occurrences on campus, fire lines should be getting ready.



**ENVIRONMENT MANAGEMENT PLAN:**

For the Mhaisal, Mahavidyalaya, Mhaisal College, Maharashtra, we have developed an Environment Management Plan (EMP) by understanding the dynamics of the current scenario of resource usage and current practises of green inventory. This plan will prioritise the areas where the institution needs to make more environmental improvements while outlining the benefits, drawbacks, and solutions for maintaining a clean, green campus.

**Environment Management Plan 2022-23**

<b>Sector</b>	<b>Strengths</b>	<b>Weakness</b>	<b>Suggestions</b>	<b>Priority</b>
<b>Tree Vegetation</b>	There is lots of space for plantation	-	Avoid monoculture, variety of species should be planted in campus area	Medium
<b>Paper waste</b>	Paper waste is disposed through vendor.	-	Use paper less policy	Medium
<b>Plastic waste</b>	-	-	Segregation of plastic waste should be done at source by using designated dustbin.	Medium
<b>Garden waste</b>	Garden waste is used for the composting.	-	-	High
<b>E-waste</b>	-	There is no authorized vendor for disposal of E-waste	E-waste should be disposed properly through authorized vendor only.	High

Mhaisal Mahavidyalaya



**Senapati Prataprao Gujar Shiskhan  
Sanstha Kandewadi's**

**Mhaisal Mahavidyalaya, Mhaisal  
Environmental Audit**



**Prepared by  
Department of Environmental Science,  
Shivaji University, Kolhapur-416004  
2022-23**



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**Dr. (Mrs.) Asawari S. Jadhav**

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(\*All the members in audit team are Lead Auditors ISO 14001: 2015 and Internal Auditors ISO 9001:2015, ISO 14001: 2015 and ISO 50001: 2018)

**Prepared by  
Department of Environmental Science,  
Shivaji University, Kolhapur**

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Estd: 1962  
NAAC 'A' Grade

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Date: 23/12/2023

## Certificate

This is to certify that the Department of Environmental Science, Shivaji University, Kolhapur has conducted detailed "Environmental Audit" of "Senapati prataprao Gujar Shikshan Sanstha Kandewadis ,Mhaisal Mahavidyalaya,Mhaisal" during the academic year 2022-2023. The green audit was conducted in accordance with the applicable standards prescribed by Central Pollution Control Board, New Delhi and Ministry of Environment, Forest and Climate Change, New Delhi. The audit involves water, wastewater, energy, air, green inventory, solid waste etc and gives an 'Environmental Management Plan', which the institute can follow to minimize impact on the institutional working framework. The performance of Institute was found to have good quality with respect to sustainable Green Practices. In an opinion and to the best of our information and according to the information given to us, said green audit gives a true and fair view in conformity with environmental auditing principles accepted in India.

A handwritten signature in black ink, appearing to read 'Aaswari Jadhav'.

Head

Department of Environmental Science,  
Shivaji University, Kolhapur  
**Dr. (Mrs.) Aaswari Jadhav**  
VC, Head & Assistant Professor  
Department of Environmental Science  
Shivaji University, Kolhapur



Senapati Prataprao Gujar Shikshan Sanstha Kandewadi's

**MHAISAL MAHAVIDYALAYA, MHAISAL**

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**Principal Message**

Today, the universe is facing problems like global warming and deforestation. There are several aspects responsible for climate change. Safe drinking water scarcity, drought, and flood are nowadays. All these environmental issues are only discussed at the global level, but the fact is that regional and local activities are responsible for making such cases global.



In the dire need to protect our planet from environmental pollution, it is the responsibility of everyone not to contribute to activities that may harm the environment. College is where students, faculty and staff gather daily to run the teaching and learning process. This process requires infrastructure, energy, water, chemical and support facilities. The college has to look after these things' optimum and economical use. It is necessary to conserve energy from non-traditional sources. Also, it is essential to avoid the entry of monoxide and other gaseous pollutants into the environment. The scarcity of water and its pollution are the hot topics. We must save the available water and keep it free from pollution. The campus must be clean and green to have a pleasant atmosphere for the teaching-learning process. We must make maximum efforts towards carbon neutrality. In this direction, along with plantation, the origination of other nature-related activities and the creation of awareness among the people is necessary.

To be environmentally conscious, every college must undertake a green audit of the premises and facilities. I am pleased to state that the Department of Environmental Science, Shivaji University Kolhapur, is under the guidance of the green audit team, and they have conducted the green audit of our college very keenly. Their suggestions are undoubtedly helpful for us for the improvement.



*Gwalke*  
**I/C PRINCIPAL**  
MHAISAL MAHAVIDYALAYA, MHAISAL  
TAL. MIRAJ, DIST. SANGLI

## **Chapter - I Introduction**

### **1.1 Environment Audit, a Tool for Environmental Protection:**

The modernization and industrialization are the two important outputs of twentieth century, which have made human life more luxurious and comfortable. On the other hand, they are responsible for voracious use of natural resources, exploitation of forests and wildlife, producing massive solid waste, polluting the scarce and sacred water resources and finally making our mother Earth ugly and inhospitable. Today, people are getting more familiar to the global issues like global warming, greenhouse effect, ozone depletion and climate change and so on. Now, it is considered that this is the final call by mother Earth. The time has come to wake up, unite and combat together for sustainable environment.

Environment Audit is the most efficient ecological tool to solve such environmental problems. Such audit was invented in late 1970s with the motive for inspecting the work conducted within the organization. It is systematic identification, quantification, recording, reporting and analysis of components of ecological diversity and expressing the same in financial or social terms. Through Environment Audit one gets a direction as how to improve the condition of environment.

### **1.2 Benefits of Environment Audit:**

There are many advantages of Environment Audit if is implemented properly:

- It would help to protect the environment in and around the campus.
- Recognize the cost saving methods through waste minimization and energy conservation.
- Find out the prevailing and forthcoming complications.
- Empower the organization to frame a better environmental performance.
- It portrays good image of institution through its clean and green campus. Finally, it will help to build positive impression for the upcoming NAAC visit.

### **1.3 NAAC Criteria VII Environmental Consciousness:**

Environment Audit is assigned to Eco-club. The criterion VII of NAAC. National Assessment and Accreditation Council that is a self-governing organization that declares the institutions as Grade A, Grade B or Grade C according to the scores assigned at the time of accreditation of the institution. The intention of Environment Audit is to upgrade the environmental condition in and around the institution. It is performed by considering some

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## Chapter - 1 Introduction

### 1.1 Environment Audit, a Tool for Environmental Awareness

The modernization and industrialization are the two important aspects of sustainable economy, which have made human life more convenient and comfortable. On the other hand, they are responsible for excessive use of natural resources, degradation of forests and wildlife, producing massive solid waste, polluting the water and air, water resources and finally making our mother Earth ugly and inhospitable. Today, people are getting aware of various global issues like global warming, greenhouse effect, ozone depletion and climate change and so on. Now, it is considered that this is the final call by mother Earth. The time has come to wake up, unite and combat together for sustainable environment.

Environment Audit is the most efficient ecological tool to achieve better environmental performance. Such audit was invented in late 1970s with the motive for inspecting the waste management within the organization. It is systematic identification, quantification, recording, reporting and analysis of components of ecological diversity and expressing the same in financial or social terms. Through Environment Audit one gets a direction as how to improve the condition of environment.

### 1.2 Benefits of Environment Audits

There are many advantages of Environment Audit if it is implemented properly.

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environmental parameters like water and wastewater management, energy conservation, waste management, air monitoring, etc. for making the institution eco-friendlier.

Students are the major strength of any academic institution. Practicing green actions in any educational institution will inculcate the good habit of caring nature in students. Many environmental activities like plantation and nurturing saplings and trees, cleanliness drives, bird watching camp, no vehicle day, rain water harvesting visits to ecologically important places through Eco clubs will make the student a good citizen of country.

## **Chapter II**

### **Methodology**

The College has conducted Environment Audit in the year 2022-23, on a yearly basis.

The audit was carried out in three phases.

#### **2.1 Questionnaire survey:**

It includes administrative issues associated with the planning of audit, selecting the personnel for the audit team, preparing the audit protocol used by organization, obtaining background information, etc. The scope of the audit was defined at this step. It was decided that the information related to Water and Wastewater management, Energy conservation, Green belt, Carbon inventory, Solid waste management, Hazardous waste management, Air and noise quality status, activities of nature club, etc. should be gathered for the audit purpose. For collecting data related to these different areas, specific questionnaires were prepared.

#### **2. 2 Onsite visit and observations:**

The data related to above mentioned areas was collected by visiting each and every facility of College campus. The questionnaires were filled up according to the present situation. Photographic documentation was also done with the help of sophisticated camera.

#### **2.3 Data analysis:**

After collection of secondary data, the reviews related to each environmental factor were taken by the Environment Audit team. The data was tabulated, analyzed and graphs were prepared using computer. Depending upon the observations and data collected, interpretations were made. The lacunas and good practices were documented. The Environmental Management Plan (EMP) was prepared for the next academic year in order to have better environmental sensitization. Finally, all the information was compiled in the form of Environment Audit Report.

---

### Environmental Auditing Process

Planning



Choosing audit  
team



Inspecting site/  
Collection of data



Analysing results  
of audit



Evaluating audit

### Chapter III

#### Overview of Environment Audit

Senapati Prataprao Gujar Shikshan Sanstha Kandewadis Mhaisal Mahavidyalaya, Mhaisal .The College has Building Block A as Administration including Principle Office Office, Library, Staff Room. Departments. Garden and sports ground. Gymkhana .

Mhaisal Mahavidyalay is situated in Sangali district Maharashtra at longitude  $74^{\circ}14'48.71''E$  and latitude  $16^{\circ}40'3.41''N$  the elevation of the institute from the sea level is 620 m. The Institute's campus is 1 acres in size.

#### Google Earth Image



### College Profile In Brief

<b>Name of The College:</b>	Mhaisal Mahavidhalaya, Mhaisal
<b>Establishment:</b>	2009
<b>Pioneers:</b>	Late Babasaheb Kupekar
<b>No. of Students:</b>	427
<b>Faculty And Non-Teaching Staff:</b>	18
<b>Facilities:</b>	College conducts different courses for the excellence of U.G Degree
<b>Research And Extension Activity</b>	The college has a good number of extension activities like plantation of trees, cleanliness drive, cleaning of public places and village, seminars, workshops, environmental awareness campaigns etc.
<b>Area Of College:</b>	1 acer

### **3.2 Water and Wastewater Audit:**

Water which is precious natural national resource available with fixed quantum. The availability of water is decreasing due to increasing population of nation, as per capita availability of utilizable water is going down. Due to ever-rising standard of living of people, industrialization, urbanization, demand of fresh water is increasing day by day. The unabated discharge of industrial effluent in the available water bodies is reducing the quality of these ample sources of water continuously. Hence, the National Mission on Water Conservation was declared by the then Prime Minister Hon. Dr. Manmohan Singh in 2003 and appealed to all citizens to collectively address the problem of water shortage, by conserving every drop of water and suggested for conducting water audit for all sectors of water use.

Water audit can be defined as a qualitative and quantitative analysis of water consumption to identify means of reducing, reusing and recycling of water. Water Audit is nothing but an effective measure for minimizing losses, optimizing various uses and thus enabling considerable conservation of water in irrigation sector, domestic, power and industrial as well. A water audit is a technique or method, which makes possible to identify ways of conserving water by determining any inefficiencies in the system of water distribution. The measurement of water losses due to different uses in the system or any utility is essential to implement water conservation measures in such an establishment.

#### **Importance of Water Audit:**

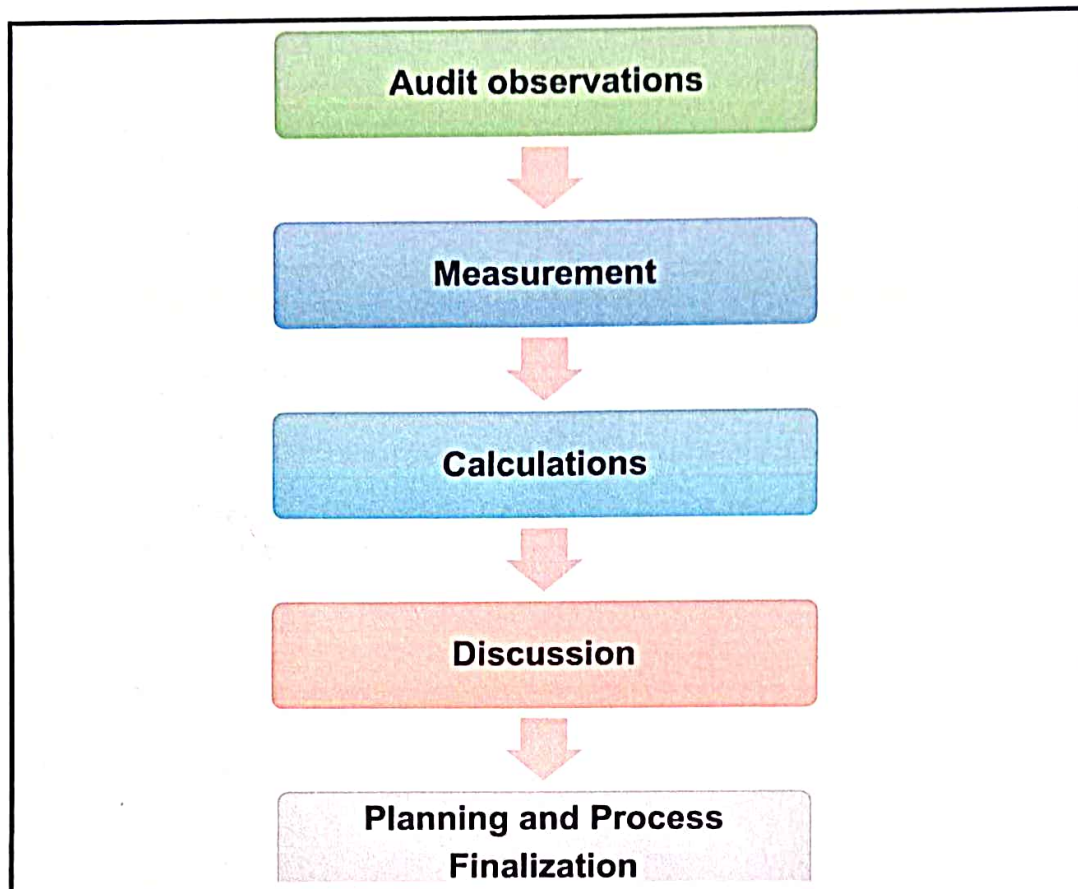
It is observed that a number of factors like climate, culture, food habits, work and working conditions, level and type of development, and physiology determine the requirement of water. The community which has a population between 20, 000 to 1, 00, 000 requires 100 to 150 liters per person (capita) per day. As per the standards provided by WHO Regional office for South East Asia Schools require 2 liters per student for drinking; 10-15 liters per student if water-flushed toilets, Administration requires (Staff accommodation not included) 50 liters per person per day, Staff accommodation requires 30 liters per person per day and for sanitation purposes it depends on technology.

#### **3.2.1 Water Audit:**

Water usage can be defined as water used for all activities, which are carried out on campus from different water sources. This includes usage in all residential halls, academic buildings, on campus and on grounds. Wastewater is referred as the water, which is transported off the campus. The wastewater includes sewerage, residence, hall waters used in cooking, showering, clothes washing as well as wastewater from chemical and biological laboratories which ultimately going down in sink or drainage system.

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## Water Audit Process



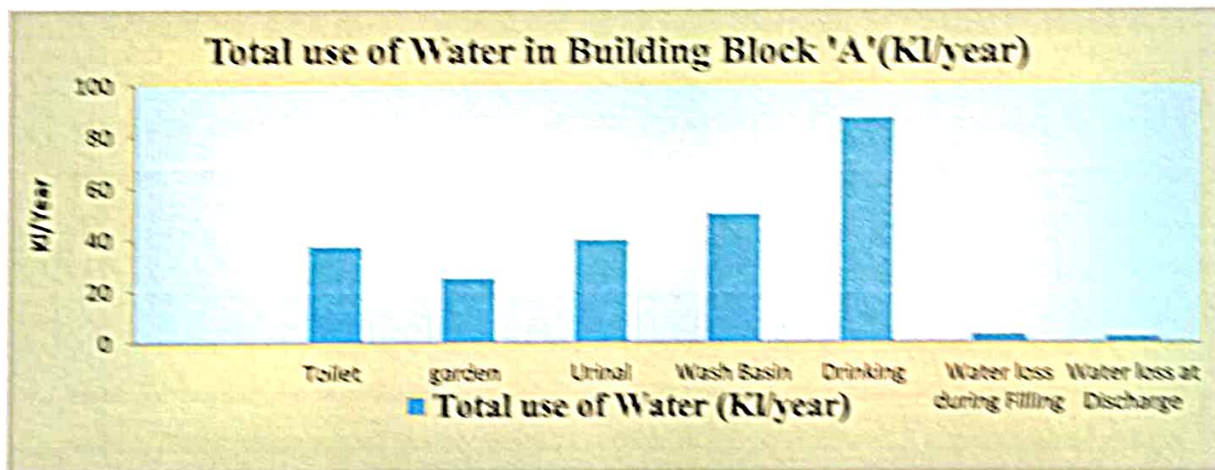
### 3.2.2 Water consumption in college:

From the data collected for water audit of Mhaisal Mahavidyalaya, Mhaisal the water distribution and water consumption pattern is noticed. The Mahavidyalaya is divided in different sectors such as administration section and other departments, and support services. For the water audit purpose, the college campus area is categorised into one .Building Block A as Administration including Principle Office Office, Library, Staff Room, Departments, Garden and Sports Ground., Gymkhana .

### 3.2.2. Water consumption at Building Block 'A':

**Table No. 3.2.1: Sector wise calculated use of water in Building Block A**

Sl. No.	Sector	Total daily use (Kl/day)	Total yearly use (Kl/year)	Percentage %
1	Toilet	0.300	37.50	14.67
2	Garden	0.200	26.25	9.75
3	Urinal	0.400	50.00	19.56
4	Wash Basin	0.400	50.00	19.56
5	Drinking	0.700	67.50	34.23
6	Water loss during Filling	0.025	3.12	1.22
7	Water loss at Discharge	0.020	2.15	0.98
<b>Total</b>		<b>2.045</b>	<b>255.65</b>	<b>100</b>



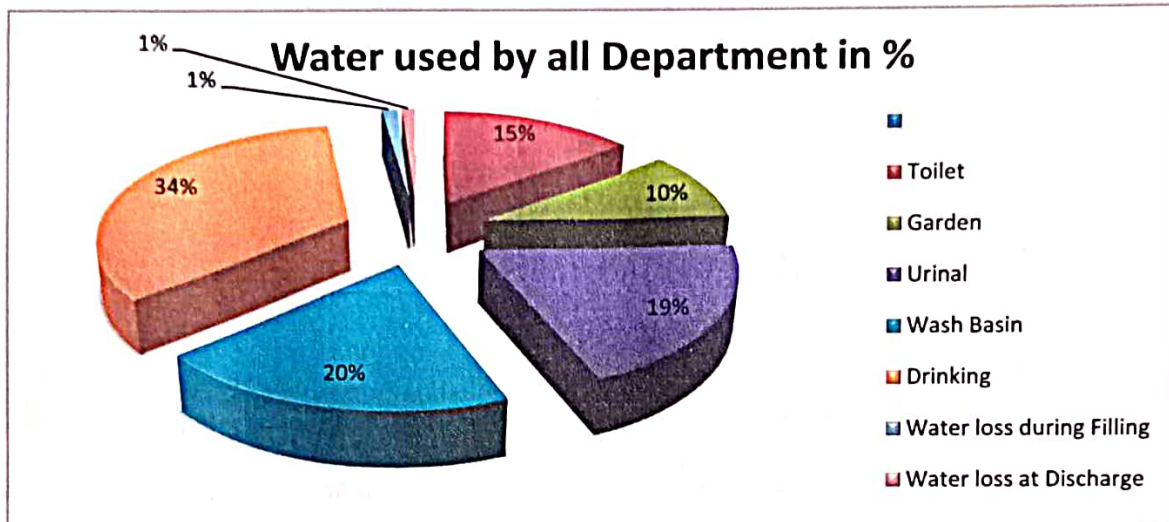
**Graph No. 3.2.1 Total water consumption yearly by Building block 'A'**

It is revealed from the data in Table No. 3.1 and Graph No. 3.2.1 that total 2.045 Kiloliter daily and yearly 255.60 Kiloliter water is used. In the Building block 'A' which is Building Block A as Administration including Principle Office Office, Library, Staff Room, Departments, Garden and sports ground ,Gymkhana purpose for daily and also calculated yearly. From above data, it is observed that the maximum water consumption was for drinking which is 0.700 Kilolitre/day i.e. 67.50 Kilolitre/year. Water loss during filling of water in tank was noted as 0.025 Kilolitre/day i.e. 3.12 Kilolitre/year and water losses at discharge were



found to be 0.020. Kilolitre/day i.e. 2.15 Kilolitre/year.

Average daily water consumption by Maishal Mahavidyalaya ,Maishal



**Graph No. 3.2.4 Average Daily Water consumption by Maishal Mahavidyalaya ,Maishal**

Graph No. 3.2.4 shows the total percent of water consumed by Maishal Mahavidyalaya ,Maishal in 2022-23. As per the graph, Drinking, Washbasins, Urinal, are the major sources of utilization comprising, 34%, 20 %, and 19% respectively. The other uses namely Garden purpose consume relatively less water with daily waterrequirement of 9.78 % in the year 2022-23.

### 3.2.3. Sewage Treatment Facility at Mahavidyalaya :

Maishal Mahavidyalaya ,Maishal has wastewater release into grampanchayat waste water plant. Water supply to college form Kolhapur Municipal Corporation and underground well water. Water management is very good in college .College followed 3 R principal as reduce, recycle and reuse of water.

### Key Observations:

- The calculation revealed that highest water use sector is drinkingy which consumes average 34% water and remaining 66 % water consumption further divided into other sectors in such Washbasins, Urinals, Toilet and garden etc.
- The college has done Water conservation.
- College has sustainable water practices dip irrigation for gardening , and water collection tank for different water use, which are all in working condition.



Fig no. 1 Gents Washroom

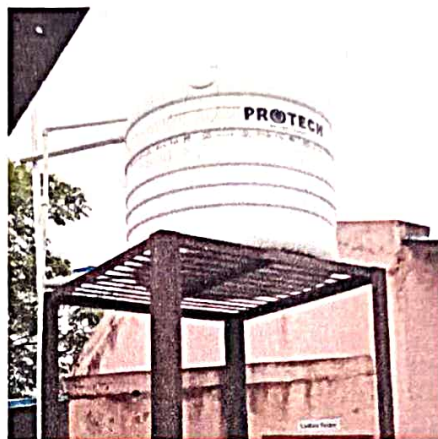


Fig No.2 Water storage

### 3.3.1 Ambient noise monitoring status:

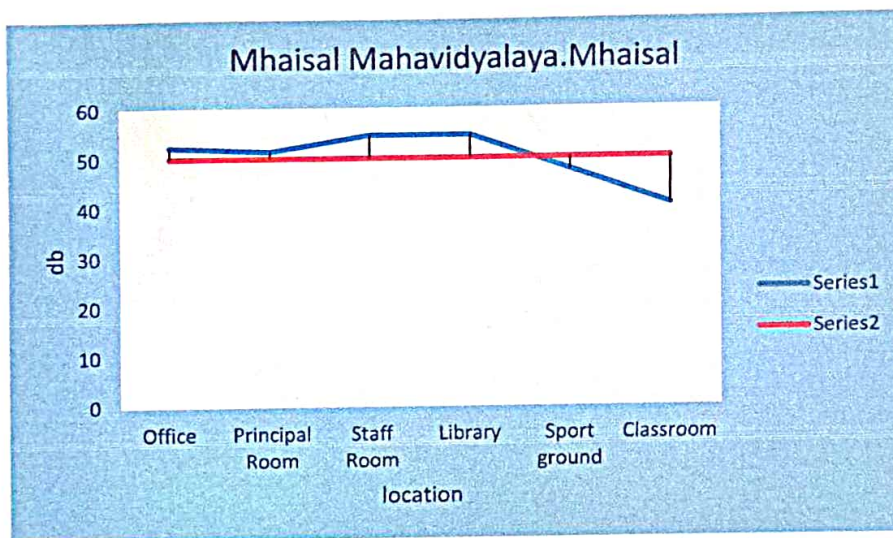
Ambient noise monitoring was carried out in different areas of Mahavidyalaya campus like classrooms, and outside campus. The sampling was done using calibrated Sound Level Meter (AZ 8921) by logarithmic scale in Decibels (dB). The noise readings were collected in the mahavidhalaya campus and calculated. The details of noise status in Maishal Mahavidyalaya ,Maishal are given Table No. 3.13 and Graph No. 3.12.

**Table no 3.13 Ambient Noise Levels in Maishal Mahavidyalaya ,Maishal**

Maishal Mahavidyalaya ,Maishal			
Sr. No	Site Name	dB (A)	Noise Std Day time
<b>Ground floor</b>			
1	Office	52.3	50
2	Principal Room	51.4	50
3	Staff Room	54.6	50
4	Library	54.6	50
5	Sport ground	47,5	50
6	Classroom	40.5	50

- Note: - 1. All Parameters are in dB(A) Leq.  
2. All Results are day time.  
3. Day time shall mean from 6.00 a.m. to 10.00 p.m.

It was observed the ambient noise levels in the Maishal Mahavidyalaya ,Maishal are on higher side as compared to the standards of Central Pollution Control Board for day time. This may be due to human communication in high sound in the Maishal Mahavidyalaya ,Maishal premises. Vehicles are generating in the high level sound .Echo generation in corridors is also a reason to monitor high levels of noise.



Graph No.3.12 Ambient Noise Levels in. Maishal Mahavidyalaya ,Maishal

The graph shows that ambient noise levels in. Ambient noise levels in Maishal Mahavidyalaya ,Maishal



Fig 3 Noise Monitoring



Fig 4 Noise Monitoring

**Conclusion**

- Indoor noise levels in college campus are higher than the day time noise standards of CPCB.

## **Chapter IV Conclusion and Management Plan**

The Department of Environmental Science, Shivaji University, Kolhapur has conducted a Environment Audit of in Mhaisal mahavidyalaya .Mhaisal the academic year 2022-23.

Environment Auditing is the process of identifying and determining whether college practices are eco-friendly and sustainable. The main objective of College to carry out Environment Audit is to check green practices followed by college and to conduct a well formulated audit to understand where we stand on a scale of environmental soundness.

### **Conclusions:**

From the Environment Audit conducted by team following are some of the conclusions, which can be taken for improvement of the college campus to become environment friendly campus:

1. Water Audit helps to quantify all forms of losses and helps in reducing the non- revenue water.
2. Mahavidyalaya can conduct more seminars, group discussions and eco-friendly activities on environmental education and awareness
3. Mahavidyalaya should maintain hygienic conditions and cleanliness in their premises
4. Air quality on the campus is good.

### **Recommendations:**

Following are some of the key recommendation for improving campus environment.

1. Mahavidyalaya should develop its own Environmental Policy by using guidelines given in Environment Audit document.
  2. The data related to all measured environmental parameters should be monitored and recorded regularly and information be made available to administration.
  3. The should develop internal procedures to ensure its compliances with environmental legislation and responsibility be fixed to carry out it in practice.
  4. Rainwater harvesting facility must be expanded
  5. To meet EPA standards for safe drinking, water samples should be tested by a certified laboratory.
-

**Environment Management Plan:**

By understanding the dynamics of present situation of resource utilization and current practices of waste disposal, we have prepared an Environment Management Plan (EMP) for the Mhaisal Mahavidyalaya, Mhaisal. This plan not only will provide the strengths, weaknesses and remedies for the green and clean campus but also give priority of the sector where the Mahavidyalaya has to give more efforts to improve its environment.

**Environment Management Plan 2022-23**

Sector	Strengths	Weakness	Suggestions	Priority
<b>Water</b>				
<b>Water utilization</b>	<ul style="list-style-type: none"><li>• Mahavidyalaya has drip irrigation system in garden .</li></ul>	<ul style="list-style-type: none"><li>• Over use of Water in urinary</li><li>Overuse of water at in toilets</li></ul>	<ul style="list-style-type: none"><li>• Installation of automatic water pumps to avoid overflowing losses</li></ul>	Medium
<b>Air and Noise</b>				
<b>Air and Noise</b>	Air quality is still in good condition	Noise levels overall in college is on higher side	The plantation can be increased by vertical gardening	Medium



**Visit of Shivaji University audit team to Mhaisal Mahavidyalaya ,Mhaisal**



Prepared by

Department of Environmental Science,  
Shivaji University Kolhapur - 416004



**Senapati Prataprao Gujar Shikshan  
Sanstha Kandewadi's  
Mhaisal Mahavidyalaya, Mhaisal  
Energy Audit**



**Prepared by  
Department of Environmental Science,  
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Date: 23/12/2022

## Certificate

This is to certify that the Department of Environmental Science, Shivaji University, Kolhapur has conducted detailed "Energy Audit" of "Senapati Prataorao Gujar Shikshan Sanstha Kandewadi's Mhaisal Mahavidyalaya, Mhaisal Tal. Miraj Dist. Sangli." during the academic year 2022-2023. The Energy audit was conducted in accordance with the applicable standards prescribed by 'Bureau of Energy Efficiency, Government of India'. Their audit involve code compliance, operations, maintenance, occupancy, and building systems etc and gives an 'Energy Management Plan', which the institute can follow to minimize impact on the institutional working framework. The analysis was based on a review of the rules governing energy efficiency and conservation, on data analysis, and on the findings of survey with key personnel in the campus's administrative management. The performance of college was found to have good quality even though some important aspects like increasing the use of solar energy and energy efficient equipments are to be considered seriously. In an opinion and to the best of our information and according to the information given to us, said Energy audit gives a true and fair view in conformity with energy auditing principles accepted in India.



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## Chapter I Introduction

### 1.1 Energy Audit, a Tool for Environmental Protection and Conservation

An energy audit is a survey that looks at how an organization uses its energy and looks for ways to conserve it. It refers to a method or system designed to lower the organization's energy consumption without lowering output. The audit offers recommendations for additional strategies and techniques for maximizing energy savings. Traditionally, fossil fuels, water, and wind have been used to produce electrical energy. The abundance of fossil fuels and their rates of depletion reinforce the need for alternative energy sources and electric energy conservation. Offering goods or services at the lowest cost and with the least degree of environmental damage is often the main goal of an energy audit and the control of energy consumption (Backlund and Thollander, 2015). Energy audits are required to identify areas for improvement, cost-saving opportunities, understand how fuel is used, where waste occurs, and identify potential savings.

The Energy Conservation Building Code (ECBC), introduced in 2017, establishes minimal standards for the design and construction of energy-efficient buildings throughout India. Additionally, it offers two extra sets of incremental specifications that buildings must meet in order to reach higher than necessary levels of energy efficiency (Gnanamangai *et al.*, 2021). In an effort to adopt energy-saving procedures in an organisation, the Bureau of Energy Efficiency (BEE) was established in 2002. Affixed to manufactured goods, energy-efficiency labels provide information on the products' energy efficiency (Ingle, 2014). In order to speed up energy efficiency efforts, BEE has created a system for labelling buildings' energy efficiency that corresponds with their star ratings. The BEE Star Rating Scheme is based on the real performance of the building and equipment in terms of specific energy usage, or "Energy Performance Indicator," by using star ratings to designate products that will be helpful for energy savings in a sustainable manner (Mishra and Patel, 2016).

## Chapter II Methodology

### 2.1 Background of Mhaisal Mahavidyalaya, Mhaisal Tal. Miraj Dist. Sangli Energy Audit preparation:



Satellite image of Mhaisal Mahavidyalaya, Mhaisal Tal. Miraj Dist. Sangli (Source: Google Earth)

Considering all this situation and adding national holidays in the total days, the audit process was carried out in three phases. For preparation of audit, the earlier data was compared with the present. At first, all the secondary data required for the study was collected from various sources, like concerned departments. A broad reference work was carried out to clear the idea of Energy Auditing. Different case studies and methodologies were studied and the following methodology was adopted for present audit. The methodology of present study is based on onsite visits, the personal observations and questionnaires survey tool. Initially, based on data requirement, sets of questionnaires were prepared. The surveyors then visited all the departments of the college and the questionnaires were filled. The generated data is subsequently gathered through various sections of college and used for further analysis. From the outcome of the overall study, a final report is prepared.

- Energy Auditing Process
- Planning
- Choosing audit team
- Inspecting site/ Collection of data

- Analyzing results of audit
- Evaluating audit

## **2.2 Survey by Questionnaire:**

Baseline data for Energy Audit report preparation was collected by questionnaire survey method. Questionnaires prepared to conduct the Energy Audit in the college campus is based on the guidelines, rules, acts and formats prepared by Ministry of Environment, Forest and Climate Change, New Delhi, Central Pollution Control Board and other statutory organizations. Most of the guidelines and formats are based on broad aspects and some of the issues or formats were not applicable for college campus. Therefore, using these guidelines and formats, combinations, modifications and restructuring was done and sets of questionnaires were prepared for energy audit. All the questionnaires comprise of group of modules. The first module is related to the general information of the concerned department, which broadly includes name of the department, month and year, total number of students and employees, visitors of the department, average working days and office timings etc. The next module is related to the present consumption of resources energy. There are possibilities of loss of resources like water, energy due to improper maintenances and assessment of this kind of probability is necessary in Energy Audit. One separate module is based on the questions related to this aspect. Another module is related to maintaining records, like records energy bill, equipment warranty specification, etc. For better convenience of the surveyor, some statistics like, basic energy consumption characteristics for electrical equipment etc. was provided with the questionnaires itself.

## Chapter III

### Observation and Result

#### 3.1 Electricity and energy audit:

Energy auditing is a tool for identifying energy efficiency potential and measures. Proper management of energy efficient systems can lead to significant cost savings and energy savings as well as increased comfort, lower repair costs, and extended machine life. An effective energy management program begins with a thorough energy audit. Energy audit evaluates the efficiency of all building and process systems that use energy. The auditor of the power starts at the meter used, finding all the energy sources that go into space. The auditor then identifies the streams of energy in each fuel, balances the distribution of energy into different functions, evaluates the efficiency of each of those functions, and identifies energy efficiency and cost-effectiveness.

- ❖ Audit activities, in general order, include:
  - Identify all energy systems
  - Check system status
  - Analyze the impact of improvements to those systems
  - Write up an energy audit report

The report documents the use and occupancy of the building and building systems equipment. The report also recommends ways to improve efficiency through improvements in operation and maintenance items, and through installation of energy conservation measures.

An energy source utilized by all the departments, of Mhaisal Mahavidyalaya, Mhaisal Tal. Miraj Dist. Sangli campus includes use of electricity. Major use of the energy is at office, Seminar hall, Principal cabin, library and various departments for lighting. Electricity is supplied to the college campus by Maharashtra State Electricity Board. The college has only one building with one ground floor.

#### 3.2 Energy consumption at building:

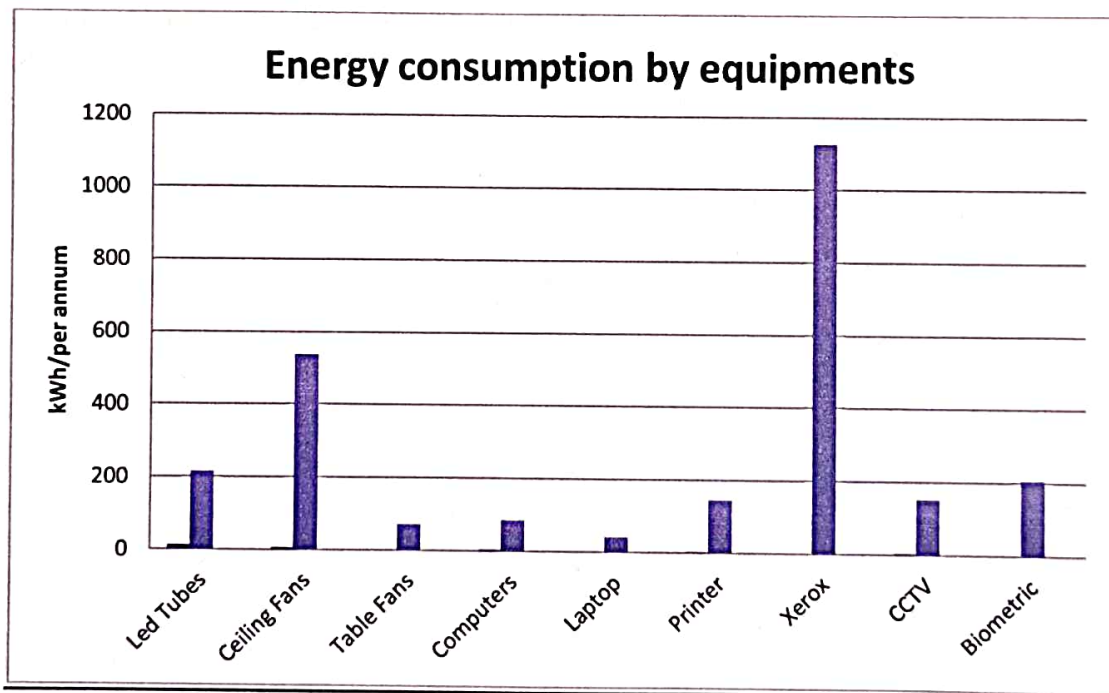
The college building includes Principal cabin, office, Seminar hall, library, classrooms and support services. The calculations are based on the data provided by the college and actual observations taken at the site.



The collected data of the college shows the energy consumption is about 2573.27 kWh/ Annum. The consumption of energy of each equipment is shown in the table in detail.

**Table No.3.1: Energy consumed per annum by equipments in Building**

Sr. No.	Equipments	Number	kWh/Per Annum
1	LED Tubes	14	215.02
2	Ceiling Fans	8	537.6
3	Table Fans	1	70
4	Computers	3	84
5	Laptop	1	40.25
6	Printer	2	144
7	Xerox	1	1126.4
8	CCTV	3	151.2
9	Biometric	1	204.8
	<b>Total</b>	<b>34</b>	<b>2573.27</b>



**Graph No.3.1: Energy consumed per annum by equipments in Building**

The energy-consuming equipment throughout the building uses 2573.27 kWh/Annum of power annually. Since there was maximum use of energy 1126.4 kWh/Annum for Xerox machine. Also 2 printers consume 144 kWh/Annum energy Moreover, in the assessments it was found that there are 14LED Tubes, which consumes energy i.e.215.02kWh/Annum. 8

Ceiling Fans use 537.6 kWh/ Annum and also 1 Table Fans uses 70kWh/Annum, 3 CCTV cameras use 151.2kWh/Annum, 3 computer and 1 laptop use 84kWh/Annum and 40.25kWh/Annum energy respectively. Also there is 1 biometric machine which uses energy of 204.8 kWh/Annum. (Graph No. 3.1)

### 3.3 Key Observations:

- The total energy consumption of college is 2573.27kWh/Annum
- Highest consumption of energy is by Xerox machine i.e. 1126.4 kWh/Annum.
- Installation of sensor based electrification items like fans, lights, etc. can save electricity.
- Installation of solar panels on building will be useful in conserving the natural resources.
- Unnecessary use of lights, fans and computers at some places when no one is using.

## Chapter IV Summary and Conclusion

### **Summary:**

Energy Audit is one of the important tools to check the balance of natural resources and its judicious use. Energy auditing is the process of identifying and determining whether institutional practices which are eco-friendly and sustainable. It is a process of regular identification, quantification, documenting, reporting and monitoring of environmentally important components in a specified area.

The Department of Environmental Science, Shivaji University, Kolhapur has conducted an "Energy Audit" of Mhaisal Mahavidyalaya, Mhaisal Tal. Miraj Dist. Sangli in the academic year 2022-23. The main objective to carry out energy audit is to check the Energy Audit practices followed by college and to conduct a well defined audit report to understand whether the college is on the track of sustainable development.

After completing the audit procedure of college for Energy Audit practices, there are following conclusions, recommendations and Energy Management Plan (EMP) which can be followed by college in future for keeping campus environment friendly.

### **Conclusion:**

From the Energy Audit, following are some of the conclusions which can be taken for improvement in the campus.

1. Installation of solar panels provides ample amount of electricity. Such solar modules should be installed wherever possible in the campus.
2. Use of LED lamps and Tube Lights is minimum and is to be encouraged.

**Recommendations:**

Following are some of the key recommendation for improving campus environment:

1. An environmental policy document has to be prepared with all the recommendations and current practice carried by college.
2. The college should develop internal procedures to ensure its compliances with environmental legislation and responsibility should be fixed to carry out it in practice.
3. Electrification of lights by solar power should be encouraged.
4. Installation of sensor based electrification items like fans, lights, etc. can save electricity.
5. Installation of solar panels and rain water harvesting system to building will be useful in conserving the natural resources.
6. Regular check-ups and maintenance of wire, and Electricity meter system should be done by engineering section to reduce over use, short circuit.
7. Science laboratories and support services using large amount of energy consumption; the system should develop energy conservation practices.

## Chapter V

### Energy Management Plan (EMP):

By understanding the dynamics of present situation of resource utilization and current Energy Audit practices, the Department of Environmental Science has prepared an "Energy Management Plan" for the Mhaisal Mahavidyalaya, Mhaisal Tal. Miraj Dist. Sangli. This plan will reveal the strengths and weaknesses and suggests remedies to develop Energy Audit campus. The EMP also gives suggestion for the priority of work to carry out.

#### Energy Management Plan

Energy Management Plan Sector	Strengths	Weakness	Suggestions	Priority
1. Electricity	Different types of the instrument is available	Insufficient use of solar energy for electricity generation.  Unnecessary use of lights, fans and computers at some places when no one is using.	Electrification of street lights by solar power.  Installation of sensor based electrification for fans, lights, etc. Use of solar pumps for water tanks.	Medium

**Beyond the  
Campus  
Environmental  
Promotion  
activities**



Senapati Prataprao Gujar Sikhshan Sansatha, Kandewadis

## Mhaisal Mahavidyalay, Mhaisal

### Extension and Outreach Programs: 2022-23

Name of Activity : **Cleanliness of Nadi Ghat area**  
Organizing Department : National Service Scheme (NSS)  
Collaborative Institute : Gram Panchayat Kavathegulangand  
Date of the Activity : 13<sup>th</sup> December 2022  
Number of Student Participant : 50  
Number of Teacher Participant : 03

#### Report of the Activity :

On the 4<sup>th</sup> day of the Special **NSS Camp** of the **National Service Scheme** department at **Mhaisal Mahavidyalay, Mhaisal**. The **river Ghat in Kavathegulangand village was cleaned**. The steps were cleaned by removing the soil accumulated on the steps of the ghats.



- **Volunteer cleaning the river ghat in Kavathegulangand village under Special NSS Camp**



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Senapati Prataprao Gujar Sikhshan Sansatha, Kandewadis

**Mhaisal Mahavidyalay, Mhaisal**

**Extension and Outreach Programs: 2021-22**

Name of Activity : **Clean the Road Around The River**  
Organizing Department : National Service Scheme (NSS)  
Collaborative Institute : Gram Panchayat Kavathegund  
Date of the Activity : 25<sup>TH</sup> MARCH 2022  
Number of Student Participant : 50  
Number of Teacher Participant : 03  
**Report of the Activity** :

The path to the river was cleaned on the fifth day of the **Special NSS Camp** of the **National Service Scheme** Department in **Mhaisal Mahavidyalaya Mhaisal**. Remove the carrot grass from the path the path was cleared.



- **Volunteer to eradicate all the carrot grass from the Riverside Road**



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## Mhaisal Mahavidyalay, Mhaisal

### Extension and Outreach Programs: 2021-22

Name of Activity : **Sterile and Plastic free College Premises**  
Organizing Department : National Service Scheme (NSS)  
Date of the Activity : 01<sup>ST</sup> AUGUST 2021  
Number of Student Participant : 76  
Number of Teacher Participant : 06

#### Report of the Activity :

The college was started after a long period of Corona epidemic. Before starting the college, the college premises were cleaned under the National Service Scheme Department in **Mhaisal Mahavidyalaya, Mhaisal**. The entire college campus was made plastic free. Also, the area was cleaned by removing carrot grass from the college premises. After cleaning the entire area, insecticide was applied there. This Program was coordinated by **Program Officer Dr. Reena Patil**.



**\* Volunteer while cleaning the college premises and making plastic free**



**\* After cleaning the College Premises**



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## Mhaisa Mahavidyalaya, Mhaisa

### Extension and Outreach Programs: 2019-20

Name of Activity : **Plastic free Gram Panchayat Premises**  
Collaborative Institute : Gram Panchayat Vijaynagar  
Organizing Department : National Service Scheme (NSS)  
Date of the Activity : 31<sup>st</sup> DECEMBER 2019  
Number of Student Participant : 50  
Number of Teacher Participant : 03

#### Report of the Activity :

Special NSS Camp of **National Service Scheme Department** in **Mhaisa Mahavidyalaya Mhaisa** was conducted at Vijayanagar sub. Dist. Miraj from 13 December 2019 to 5<sup>th</sup> January 2020. On 30-12-2019 the Special NSS Camp was inaugurated by **Sarpanch Honorable Vishnu Malharikare**. On the first day of Camp the Gram panchayat area was cleaned by eliminating carrot grass. At the same time, the **Gram Panchayat area was made plastic free.**



- Gram Panchayat volunteers in Vijayanagar Premises to make plastic free.
- The locality of after the volunteers collected plastic and garbage

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## Mhaisa Mahavidyalaya, Mhaisa

### Extension and Outreach Programs: 2018-19

Name of Activity : **Cleanliness of Mohan Nagar premises**  
Organizing Department : National Service Scheme (NSS)  
Collaborative Institute : Grampanchayat Vijaynagar  
Date of the Activity : 13<sup>TH</sup> JANUARY 2019  
Number of Student Participant : 50  
Number of Teacher Participant : 04

#### Report of the Activity :

On the 7th day, this crematorium area in **Mohan Nagar** was cleaned, and trees were planted in the Mohan Nagar school premises as part of the Special Camp of the **National Service Scheme** Department in **Mhaisa Mahavidyalaya, Mhaisa**. The Special Camp aimed to promote environmental awareness and community service among the students. The cleaning of the crematorium area was essential to maintain hygiene and respect for the deceased.



- **Volunteers while cleaning Mohan Nagar Crematorium premises.**

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- **Volunteers during tree plantation in Kumar Vidyamandir premises.**

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- **Volunteers digging pits for tree plantation in Kumar Vidyamandir area.**



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