Shripatrao Chougule Arts and Science College Malwadi-Kotoli

GREEN INITIATIVE REPORT

2022-23

Prepared By

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GREEN INITIATIVE REPORT

1.0: PREAMBLE:

The survival of human race depends upon the surrounding environment. Various environmental factors play critical role in well-being of all living organisms on earth. But in this era of industrialization, we are mainly focusing upon development and economic prosperity and very less attention is provided towards environment. We are continuously over-exploiting the natural resources to raise our standard of living, which in turn leads to environmental degradation. Human activities have led to various kinds of pollution such as air pollution, water pollution, soil pollution etc. This polluted environment leads to the adverse impacts on health of animals, plants and human beings. Along with different kinds of pollution which are faced at local or regional level, we are also facing global issues such as ozone layer depletion and global warming. Now all these things have resulted into increasing world-wide concern about environmental issues.

India is a developing country, which is facing the problem of population explosion. So, there is a burden on available natural resources. This population explosion has resulted in conversion of forest lands for agricultural or residential purpose. It has helped in improving the lifestyle but on the other side it is exploiting the environment. Deforestation has lead to destruction of natural habitats of animals. It has caused extinction of many plants as well as animals.

Along with this, we are also facing the issue of solid waste management. It has lead to soil pollution and groundwater pollution. Areas near cities are often used as solid waste dumping site. People living nearby these areas are facing various health problems and the waste dumping sites can also catch fire sometimes. Industries, commercial areas and residential areas are contributing to the noise pollution as well.

All these anthropogenic activities have caused profound impact on rural areas, urban areas, oceans and forest lands. This indiscriminate development is against principle of sustainable development. After 1970, impacts of these activities were taken into consideration and various conferences were held at international level and many conventions were signed. But still, the problem of environmental degradation is continuously increasing. Therefore, now there is a need of focusing on environment friendly technology. At the same time, we have to reduce the waste generation and switch to reuse and recycling. We should try for sustainable development which will foster the socio-economic prosperity and will secure the life of future generations. For this, efforts should be taken at individual, institutional, national and international level.

GENRAL INTRODUCTION:

The green initiative was first conducted in the United State of America in 1970s.
By 1992, approximately half of the local authorities of UK undertook the green audit completely or partially. The United Nations Conference on Environment and Development (UNCED), which was held at Rio de Janeiro, motivated all the countries to act cautiously to save the earth with sustainable approach. Most of the countries have accepted their national strategy for sustainable development which includes the policy and programmes aimed to promote geo-biodiversity and protect environment. This Rio spirit shows significant progress

in most of the countries and they have changed and upgraded the environmental situation to the possible extent. Some of the Asian countries were also motivated from the summit and played same role within their limits. India is the first country in the world to make environmental audit compulsory. According to gazette notification, all Industries were communicated to submit the reports of the environmental audit to their concerned State Pollution Board, giving details of water, raw materials and energy resources used and products and waste generated by them in their operations from 1992.

Green initiative is a tool to protect the environment by adopting concept of conservation of natural resources.

Sustainable use can be ensured by auditing the use of ecological components. The initiative is known as regular and systematic review and appraisal of the factors and forces that contributes to realization of objectives.

University has conducted a green audit with specific goals as:
1. Identification and documentation of green practices followed by university.
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.

Objectives:

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

BENEFITS OF GREEN INITIATIVETO EDUCATIONAL INSTITUTIONS

There are many advantages of green audit to an Educational Institute:
1. It would help to protect the environment in and around the campus.
2. Recognize the cost saving methods through waste minimization and energy conservation.
3. Empower the organization to frame a better environmental performance.
4. It portrays good image of institution through its clean and green campus.

OBJECTIVE AND SCOPE

The broad aims/benefits of the eco-auditing system would be:
- Environmental education through systematic environmental management approach
- Improving environmental standards
- Benchmarking for environmental protection initiatives
- Sustainable use of natural resource in the campus.

• Financial savings through a reduction in resource use
• Curriculum enrichment through practical experience

• Development of ownership, personal and social responsibility for the College campus and its environment
• Enhancement of College profile
• Developing an environmental ethic and value systems in young people

2.0 ENVIRONMENTAL POLICY:

"Clean Campus and Green Campus"

ENVIRONMENTAL MISSION:

For effective implementation of the Environmental Policy, the College has constituted Environmental forum. The structure of the forum is given in below:

1. IQAC Coordinator – Dr. Babasaheb.N.Ravan
2. Faculty Member- Dr.Bharati S.Shinde
3. Faculty Member- Ms. Rutuja Nale
4. Student Representative – Ms. Kajal R. Patil
5. Student Representative – Ms. Geeta K. Patil

- To imbibe awareness of plastic use and create interest for use of cotton.
- To convince importance of water in life and its proper use.
- To turn towards economical use of power energy and oil.
- To develop sense of using solar energy in various fields and save energy
- To implement buy back policy for E-wastage.
- To create consciousness of tree plantation and its proper cultivation.

COLLEGE PROFILE:

About College:

"Nahi Dayanen Sadrusham Pavitra Mahi Vidyate" Hon'ble Dr. K S. Chougule got inspired by this motto and established the institute Dayangangs Shikshan Prasarak Mandal Malwadi in 1995, with a view to make provision of higher education for the rural masses. particularly the girl students who were deprived of this facility for centuries together. Taking into consideration the social situation and need of the time Hon. Dr. K., S. Chougule established Shripatrao Chougule Arts & Science College in 1998 The dream of providing Higher education to the girls has been fulfilled up to certain extent. Hou. Dr. K. S. Chougule, who has been awarded the D.Litt. Degree by International Tamil University USA has made available the Education facility from Pre-Primary to Post Graduate levels for the underprivileged hilly area. Recently the institute has started Seven Vocational Courses. The college has emerged as a significant hub of educational, social & cultural activities.

Vision:

We aspire to be an institution of higher education catering to the diverse needs of rural student providing them stimulating teaching learning environment to develop them into socially responsible person.

Mission:

To enable students to develop intellectually to make them responsible citizens to face the global challenges confidently.

Aims and Objectives:

1. Quest For Excellence
2. Respect for Human Values Promotion of Research and Scientific temperament
3. Knowledge and Skill for lively hood
4. Environment Consciousness Global Stewardship
5. Inclusiveness and tolerance

NAME AND ADDRESS OF COLLEGE:

Year of establishment of the college	1995
Principal	Dr.Smt.Vandana Prakash Patil
Name of college	Shripatrao Chougule Arts and Science College Malwadi-Kotoli
Address	At.Post.Kotoli, Tal.Panhala, Dist.Kolhapur
City	Kolhapur
State	Maharashtra
Phone No	02328-299899
Website	www.sccmk.ac.in

Details of Programmes Offered by the College:

Programme Level	Name of Programme
UG	B.A.
UG	B.Sc.
UG	B. Voc
PG	M.A.

Table No. 1: Number of students enrolled during the year

Sr. No.	Class	Male	Female	Total admissions
1	B.A.	266	242	**508**
2	B. Sc.	310	152	**462**
3	B. Voc	130	144	**274**
4	M.A.	115	96	**211**

Summary of admission during the year

Year	Male	Female	Total Admission
2022-23	821	634	**1455**

Table No. 2: Total strength of students and staff on campus during the last year

Year	Students	Teaching staff	Non – Teaching Staff	Total
2022-23	1455	39	11	**1505**

COLLEGE ORGANOGRAM:

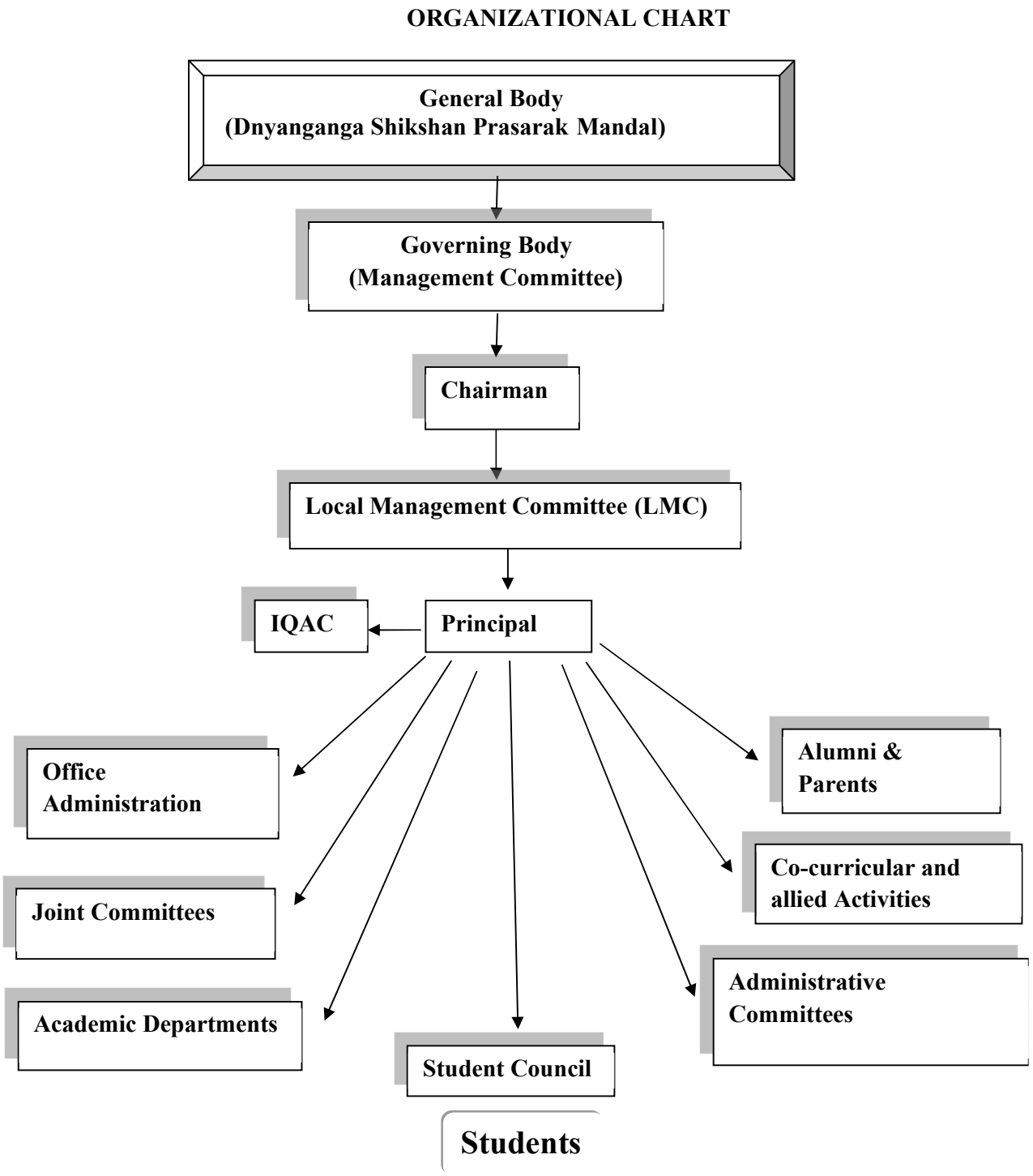

Figure 1: Organogram of the college

3.0 THE SCOPE OF THE GREEN INITIATIVE IS DEFINED IN TERMS OF:

3.1. Geographical Location of the College Campus
3.2. Its Environmental Aspects.

3.1. Geographical Location:

Physical Infrastructure:

Table No. 3: Details of area:

Location	Rural
Campus area in square	589.554 sq.m.
Built-up area in square	2604.36 sq.m.

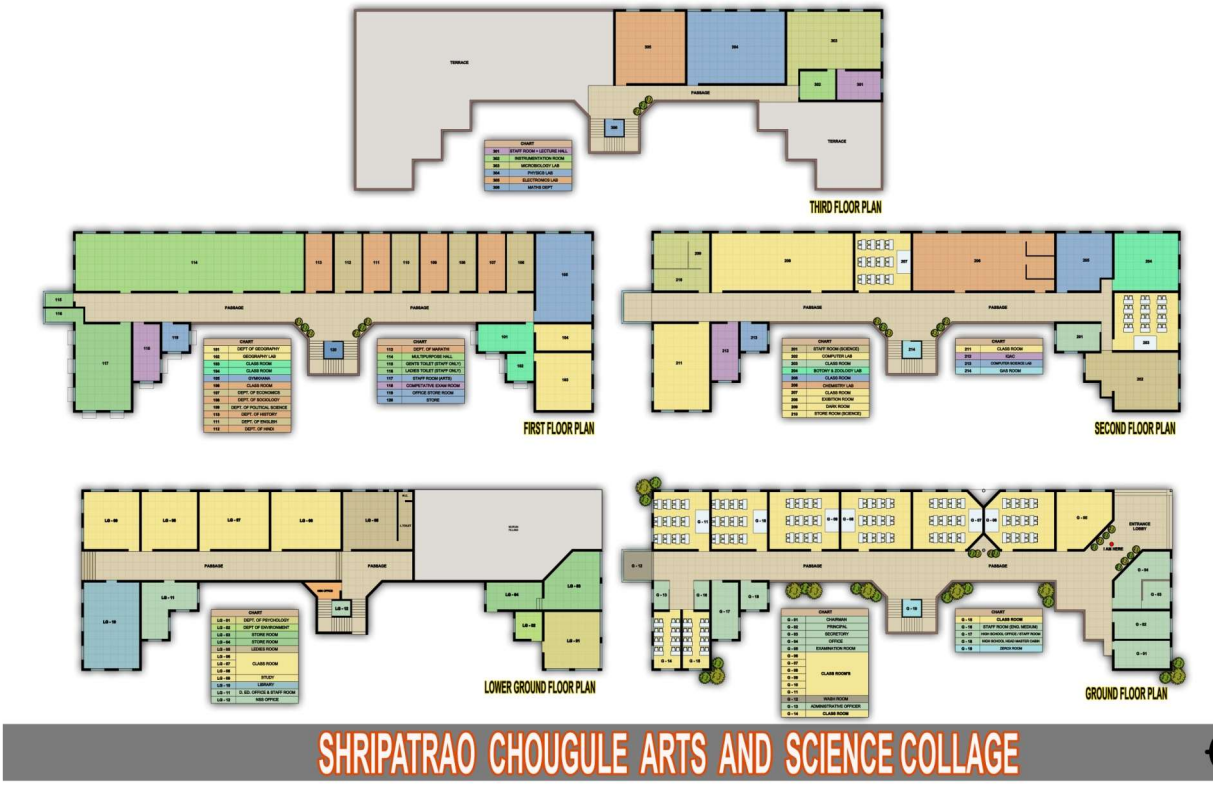

Fig .02: Physical Infrastructure of the college

LAND USE PATTERN OF COLLEGE:

Table No. 4: Land Use Pattern

Land use pattern	**Area(m^2)**
Total area	589.554 sq.m./3238 sq.m.
Area occupied by buildings	2604.36 sq.m./747.74 sq.m.
Ground	6072 sq.m.
Botanical garden	1227.57 m.
Check dam	Nil
Greenhouse	Nil
Open space	2490 sq.m.

Geographical details of the college area including, boundary pillar with Global Positioning System Coordinates with elevation of the area is given in table no. 3.

Geographical details of the college area

Boundary Pillar (BP) No.	**Latitude (N)**	**Longitude (E)**	**Elevation (m) MSL**
1	16.46'39"	74.2'39"	635

Fig .3: Location of the college area s shown on Google Earth map

3.2 SCOPE OF GREEN INITIATIVE IN TERMS OF ENVIRONMENTAL ASPECTS:

3.2.1. Energy Conservation: Energy conservation is the effort made to reduce the consumption of energy by using less of an energy service. This can be achieved either by using energy more efficiently (using less energy for a constant service) or by reducing the amount of service used

3.2.2. Use of Renewable Energy: Renewable energy is useful energy that is collected from renewable resources, which are naturally replenished on a human timescale, including carbon neutral sources like sunlight, wind, rain, tides, waves, and geothermal heat.

3.2.3 Efforts for Carbon Neutrality: carbon-neutral (or carbon neutrality) is the balance between emitting carbon and absorbing carbon emissions from carbon sinks.

3.2.4 Plantation: It is usually large group of plants and especially trees under cultivation

3.2.5 Water Management: Water management is the control and movement of water resources to minimize damage to life and property and to maximize efficient beneficial use.

3.2.6 Hazardous Waste management: Hazardous waste management involves reducing the number of hazardous substances produced, treating hazardous wastes to reduce their toxicity, and applying sound engineering controls to reduce or eliminate exposures to these wastes.

3.2.7 E-Waste Management: E-waste or Waste Electrical and Electronic Equipment are loosely discarded, surplus, obsolete, broken, electrical or electronic devices

3.2.8 Quality of water, air and noise: Water quality describes the condition of the water, including chemical, physical, and biological characteristics, usually with respect to its suitability for a particular purpose such as drinking or swimming.

3.3: Energy Audit

Introduction

Energy audit is an inspection, survey and analysis of energy flows for energyconservation in building or a system to reduce the amount of energy input intothe system without adding a negative impact on the output. Energy audits aremeans to understand the flow of energy starting from the source to its final use.

As per the Energy Conservation Act, 2001, Energy auditing is the verification, monitoring and analysis of use of energy including submission oftechnical report containing recommendations for improving energy efficiencywith cost benefit analysis and an action plan to reduce energy consumption.

Green audits are assigned to criteria 7 of the National Assessment and Accreditation Council, which is a self-governing organization that provides various institutions with grades based on their criteria for accreditation.

Essentially requirement for an Energy Audit is a part of the criteria 7 and is vital to the accreditation process. This accreditation provides a college with anopportunity to present itself as

an esteemed institution without impeccable values, infrastructural advantage and endless opportunities it could provide itsstudents.

Need for Energy Audits:

Energy audits help analyse and determine good institutional practices; whether they are eco-friendly or sustainable. With the world constantly changing, development, unfortunately, results in large-scale utilization of natural resources. Now natural resources are not just used for the supply of products. Energy, water are all basic commodities that are used generously by all. With the threat of depleting resources looming over our heads, it is imperative to determine how much we use and where we waste resources toensure efficient usage. Energy audits provide opportunities to determine the same and help the organization to reflect, improve and expand their processesand shift to clean green resource utilization. Apart from this, it helps instillconsciousness among people as part of the institution towards the environment and sustainable resource utilization.

Goals of Energy Auditing:

- Identification of strengths and weaknesses in green practices.
- Analyze and suggest solutions for problems identified.
- Identify and assess environmental risk.
- Motivate staff for optimal sustainable use of available resources.
- Increase environmental awareness throughout the campus.
- Collect baseline data of environmental parameters and prepare plans forissues before they become problems.

Objectives of Energy Audit:

- Analyze current practices and determine their impact on theenvironment.
- Identify and analyze significant environmental issues.
- Continuous assessment for better environmental performance.
- Establish and implement a green energy strategy in the campus andsensitize the faculty and students.

Benefits to Educational Institutions:

- Improve the energy utilization within and outside the campus premises.
- Help recognize cost-effective green strategies that enable conservation ofenergy.
- Empower people linked to the organization to move towards conscious environmental thinking and practice.
- It helps improve the image and builds a positive impression of theinstitution for its green and clean resource use.

3.3.1 ENERGY POLICY:

A key component of the College Sustainability Program is energy conservation. Listed below are several guidelines that are intended to manage and reduce energy consumption on all college campus. These guidelines should be followed by all faculty, staff, administration, and students. The Energy usage Policy of college is to manage energy in such a systematic way to minimize its impact on the environment. It will help us to embed efficiency and environmental awareness into our everyday activities, thus helping us to realize our responsibilities and commitment to conservation of natural resources and to limit its usage.

Policies:

- To assess source energy usage and measure its impact on the environment.
- To install photovoltaic solar panels for the generation of alternate energy.
- To install LED bulbs in the whole campus to save energy.
- To develop systematic waste management mechanism.
- To develop rainwater harvesting unit.
- To undertake tree plantation drive.
- To monitor and respond to emerging environmental and energy issues. To strengthen our employees' and students' environmental knowledge and skills to improve our own environmental performance.

3.3.2 ENERGY CONSUMPTION:

Electricity is used for illuminating the rooms, fans, computers, Laboratory equipment, and pumps and for cooling rooms (AC).

Number of rooms under use in college: 15

Details of various sources of energy consumption units are given in table No.5.

Table No.5: Sources of Energy Consumption

Sr. No.	Energy sources	Electricity/generator/solar lamps
1.	No. of laptops	**07**
2.	No. of tube lights	**13**
3.	No. of computers	**35**
4.	No. of CFC bulbs	**18**
5.	No. of UPS	**01**
6.	No. of fans	**10**
7.	No. of fridge	**01**

8.	No. of generators	**01**
9.	No. of A.C.	**01**
10.	No. of LED bulbs	**19**
11.	Electric pump 1 HP	**01**
12.	No. of Smart T. V	**01**
13.	No. of printers and Xerox machines	**05 +1**
14.	Hot air oven	**01**
15.	Incubator	**01**

3.3.3 ENERGY REQUIREMENT: sanctioned load (6.00 kw)

Electricity supplied from the Maharashtra State Electricity Board is the main source energy for the activities on the campus. In addition to the regular supply, energy consumed (KW) during the last year is shown in tabular as well as graphical form.

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Table No. 6: Energy consumption during the Year 2022-23
Consumer No- 255010029081

Month	**Consumption (In units)**
January 23	872
February 23	0
March 23	0
April 23	0
May 23	0
June 22	892
July 22	813
August 22	728
September 22	859
October 22	803
November 22	891
December 22	1054
Average	**6912**

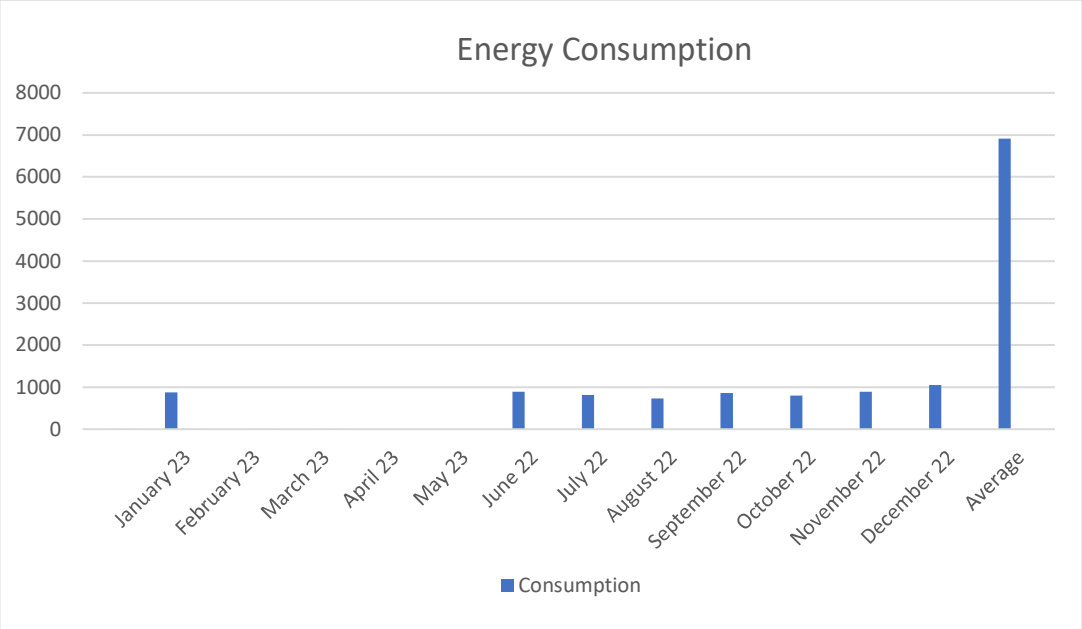

Fig. 04: Graphical representation of energy consumption during 2022-23

Energy conservation measures taken up by the College:

During the month of June 2022 to December 2022 energy requirement was met from the Maharashtra Electricity Board. College is aware of environmental impacts of consumption of conventional energy supplied by MSEB. Initially College had install Solar Panels as a renewable energy source. Hence, college has adopted following measures to minimize the energy consumption.

1. Switching over to the use of LED bulbs as a replacement to conventional high energy consumption bulbs
2. College has encouraged use of e-mail instead of sending notices and faxing documents.
3. Most of the fans carry three stars rating of electrical appliances.
4. Awareness amongst students was carried out and accordingly sign boards are displayed at strategic locations for conservation of energy and students positively responding.

3.3.4: USE OF RENEWABLE ENERGY:

Use of solar system:

Considering the grooving energy demand from various sectors our college has decided to go for use of nonconventional energy resources for all its internal consumptions by installing roof top solar panels.

College has installed solar water heater in the boy's hostel and in college ampus.

Solar Energy: Percentage of annual power requirement of the Institution met by the renewable energy sources (current year data):

Annual power requirement met by renewable energy sources (in KWH): Presently college has installed solar heater in the boy's hostel.

Total power requirement	Renewable energy source	Renewable energy generated and used	Percentage
687 KWH/Year	Solar Heater	12.4 KWH/Year	1.80

Plate No.1 Renewable Energy Source

Solar system installed on top of boy's hostel

Solar Panels installation in college building

3.3.5 EFFORTS FOR CARBON NEUTRALITY:

Thinking about carbon footprints is a simple way of thinking about ways to reduce environmental pollution. By reducing our carbon footprints, each one of us can contribute to making the earth a safer, better place to live. Estimates suggest that almost half of our carbon footprint is due to electricity and 17% is due to lighting alone.

Carbon footprint is the amount of Green House Gases like carbon dioxide, methane, nitrous oxide emissions emitted by a building, organization etc. It relates to the amount of greenhouse gases we are producing in our day-to-day lives through burning fossil fuels for electricity, heating, transportation etc.

At Shripatrao Chougule College, carbon footprint for indoor lighting in office building is considered. The performance of the building by using LED lights reduces the building carbon foot print. The carbon foot print is for –

1. Incandescent Light
2. CFL
3. LED Lights

Electricity:

By and large, half of our carbon footprint is due to electricity and 17 % is due to lighting alone. Electricity in turn can be produced by coal, natural gas, petroleum, and other. Electricity is produced from different sources and how much GHG released is shown is shown in table no. 7.

Table No. 7: Electricity produced from different sources

Source	**Million metric tons of CO_2 emission for 1 year**	**Electricity generation (Billion kWh) for 1 year**
Coal	1788	1882
Petroleum	106	119
Natural gas	337	562
Other	14	22
Non fossil fuels	None	1106
Total	**2245**	**3621**

Since close to 2245 million metric tons of CO2 emitted by total electricity generation per year. A single kilowatt-hour of electricity will generate 619 grams of CO2 emissions.

1. Incandescent Light

Incandescent lamp is a source of light which produce light when the filament is being heated. It can release 80% electrical energy converted into heat energy. We can calculate how much CO2 will be emitted by 40-watt incandescent bulb.

Power Consumption- 40 watts

- Operation per day- 10 hours
- Power Consumption per annum-146000 watt
- Electricity per hour (kwh) - 0.04 (1 kWh=619g CO2 can be released)
- Lighting Carbon Emission per year/lamp (146*619g) -90.3 kg.

A single 40 watts incandescent bulb will generate 90.3 kilograms of CO2 for every year. The reduction of carbon footprint is none for this lamp.

2. Compact Fluorescent Light

CFL produce less heat and more visible light compare than incandescent lamp. We can calculate how much CO2 will be emitted by 14-watt incandescent bulb.

Power Consumption- 14 watts

- Operation per day- 10 hours
- Power Consumption per annum-51100 watt
- Electricity per hour (kwh) – 0.014 (1 kWh=619 g CO2 can be released)
- Lighting Carbon Emission per year/lamp- (51.1*619g) - 31.6 kg.

A single 14 watts CFL lamp will generate 31.6 kilograms of CO2 for every year. The reduction of carbon footprint is none for this lamp. CFL contains harmful mercury which creates mercury emission. Estimated suggestion led lights only will reduce our carbon foot print over than other lights.

3. LED Lights

LED lights consumes low power and energy efficient over than other lights. Not even a single point we can't compare led lights with other lighting. We can calculate how much CO2 will be emitted by 8-watt LED lamp -

- Power Consumption- 8 watts
- Operation per day- 10 hours
- Power Consumption per annum-29200 watt
- Electricity per hour (kwh) – 0.008 (1 kWh=619 g CO2 can be released)
- Lighting Carbon Emission per year/lamp (29.2 *619g) - 18 kg.

A building's carbon footprint from led lighting can be reduced by 68%.

- Reduction in Carbon Footprint (tons)-0.122(12.28 kg)

The 8-watt LED equivalent will only be responsible 18 kilograms of CO2 over the same time span.

Table No. 8: Carbon foot prints

	Incandescent Bulb	LED light
Power Consumption(watt)	40	8
Electricity(kwh)	0.04	0.008
Hours of Operation Per Day	10	10
Carbon Emissions (tons) per year/lamp	0.903	0.18
Reduction in Carbon Footprint (tons) / lamp	--	0.12

- LED light can reduce our carbon footprint by 0.12 tons per year.
- Led light does not contain mercury; it is a big benefit for this lamp.
- Incandescent, it is 5.8 mg from power plant.

The 8-watt LED equivalent will only be responsible 18 kilograms of CO2 over the same time span.

Based on above comparisons, LED emerges as the BEST option to reduce carbon footprint.

At Shripatrao Chougule College, all together there are 37 rooms (including, class rooms, offices, labs etc.) 195 LED lamps.

Details of CO_2emitted from these lights is given in table 9.

Light	**No. of bulbs**	**CO_2 emitted per lamp / year**	**Total CO_2 emitted per year**
LED (Bulbs+ Tubes)	32	18.0	576
CFC	18	31.6	568.8
Total	50	**--**	**1144.8 kg**

CO2 emitted from utilizing all types of bulbs per year is 828.8 kg/yr. Presently, College has taken initiative to replace Incandescent bulbs and CFL bulbs by LED. During the last year

energy consumption of LED bulbs against the total energy requirement has been decreased. This has shown substantial reduction in the C02 emission per year. If all 50 bulbs are replaced by 8-Watt LED bulbs, CO2 emitted per year would be 50 x 18 kg = 900 kg / year. This means college can reduce CO2 by 244.8 kg / year (1144..8 kg- 900 kg). It is suggested to replace all bulbs by LED bulbs in a phase manner. Further, all the fans should be replaced in phased manner energy efficient five-star rating fans.

3.4 PLANTATION:

The college campus area is 589.554 sq.m. Total number of plants as on 2022-23 is about 195. Details of plantation with respect to Botanical name, local name and quantity is given table no. 10.

DETAILS OF PLANTATION IN COLLEGE:

Table no. 10: List of Plants in campus area

Sr. No.	Botanical Name	Local Name	Quantity
1.	Carica papaya	Papaya	1
2.	Psidium guajava	Guava	1
3.	Trema orientalis (L.) Blume	Charcoal tree	4
4.	Corylus colurna	Hazelnut	2
5.	Juglans nigra L.	Black walnut	3
6.	Terminalia catappa	Indian Almond	1
7.	Moringa oleifera Lam	Drumstick	1
8.	Musa paradisiaca L.	Banana	2
9.	Phyllanthus emblica	Indian gooseberry	1
10.	Anacardium occidentale	Cashew Nut	1
11.	Eucalyptus globulus Labill	Black walnut	1
12.	Guazuma ulmifolia Lim	Rudrakshi	1
13.	Caesalpinia pulcherrima	Peacock Flower	6
14.	Gmelina arborea	Sivan	2
15.	Phyllostachys nigra	Black bamboo	20
16.	Polyalthia longifolia	Ashok	18
17.	Bougainvillea spectabilis	Bougainvillea	5
18.	Cocus nucifera L.	Coconut	25
19.	Mangifera indica L.	Mango	10
20.	Eucalyptus camaldulensis	Red gum	3
21.	Acacia auriculiformis	Ear leaf	6
22.	Duranta erecta	Golden duranta	15
23.	Annona reticulata	Custard apple	1
24.	Polyalthia longifolia	Ashok	20

25.	Ficus religiosa	Sacred fig	2
26.	Albizia julibrissin	Persian silk tree	8
27.	Magnolia champaca (L.) Baill	Son chafa	1

Table no. 11: List of Planted Medicinal Plants

Sr. No.	Botanical Name	Common Name	Family	Medicinal Use	Quantity (No.)
1	Terminalia catappa	Indian almond	combretaceae	T.catappa leaves is used to scabbles, leprosy wounds and other skin diseases	1
2	Carica papaya	Papaya	cariceae	Unripe papaya has been used as a folk medicine, e.g., to relieve menstrual pain, improve ingestion, wound healing, and heart disease.	1
3	Juglans nigra L.	Black walnut	juglandaceae	They have been associated with many health benefits like reduce heart disease risk and weight loss	3
4	Phyllanthus emblica	Indian gooseberry	phyllanthaceae	The plant is used both as a medicine and as a tonic to build up lost vitality and vigor	3
5	Eucalyptus globulus Labill	Black walnut	myrtaceae	Eucalyptus oil is also used in creams and ointments to relieve muscle and joint pain and in some mouthwashes	1
6	Guazuma ulmifolia Lim	Rudrakshi	malvaceae	Mutamba tree has been used as traditional medicine to treat several pathological conditions, such as diarrhea, coughs and gastrointestinal and cardiovascular disorders	1
7	Gmelina arborea	Sivan	lamiaceae	The whole plant is used in medicine. It is astringent, bitter, digestive, cardiotonic, diuretic, laxative and nervine tonic.	2
8	Phyllostachys nigra	Black bamboo	poaceae	They are used internally in the treatment of fevers, vomiting and nosebleeds.	20
9	Ficus religiosa	Sacred fig	moraceae	It is used traditionally as antiulcer, antibacterial, antidiabetic, in the treatment of gonorrhea and skin diseases.	2

Plate No. 2 Plant Species in college campus

3.5 WATER AUDIT:

Water plays a key role in every environmental system. Water is an amazing material with unique properties that affect life on earth. The earth holds the same water in the same quantity as it did when it was formed. The earth's water continuously circulates from the ocean to the atmosphere, then to the land and back. The atmospheric water cycle helps us to get a regular supply of fresh water every year. Thus, fortunately the worlds freshwater supply is continually collected, purified, recycled and distributed in the earth's hydrological cycle. Water is so integral to life that we frequently take it for granted. Freshwater is an irreplaceable resource that we are managing poorly. Despite its importance, water is one of our most poorly managed resources. Even if the Institute gets assured good amount of rainfall, the water is not retained in the ground due to the limitations like topographical features and seasonal rains. hence regulation of water cycle by nature is proper In the area covered by build structures and roads, the rainwater does not percolate into the ground. Hence water conservation measures should be adopted.

3.5.1 WATER CONSUMPTION:

The institute has one water connection of local body. The water is used for domestic consumption and for drinking purpose after filtration.

3.5.2 QUALITY OF WATER:

College is committed to provide good quality of water by installing water filter system. Water supplied by the corporation is tested for various physic-chemical and microbiological parameters from the filter system. Water supplied by the to the students after filter/ RO system is moderately hard (Hardness is 120 mg/l) whereas, the highest desirable limit is 100 mg/l. Most Probable Number (MPN) is 0 / 100 ml. as against the recommended W.H.O standard of 0 / 100ml. Hence, filtered water is suitable for drinking. Copy of the analysis report is displayed on the filter as information to the students.

Plate No. 3 Drinking Water Quality Report

Est : 15-8-1995, Reg. No. F-10983
Dnyanganga Shikshan Prasarak Mandal, Malwadi Sanchalit
SHRIPATRAO CHOUGULE ARTS AND SCIENCE COLLEGE
Malwadi-Kotoli, Tal. Panhala, Dist. Kolhapur. (Maharashtra)
(Senior, Junior - Arts & Science) Jr. College Index No. J 23.10.012
• Accredited by NAAC, Bangalore with CGPA of 2.73 on four point scale at B+ grade
• Permanently affiliated to Shivaji University, Kolhapur.
Ph. : (02328) 299899 Web site : www.sccmk.ac.in
• B. VOC - Aporoved by UGC
• M.A. Regular Mode
• M. Sc. (Mathematics) - Distance Mode
E-mail ID : shripatraochougulecmk@yahoo.in
Founder President : Hon'ble Dr. K. S. Chougule M.A. & D.Litt. (International Honours)
Ex. Member of the Senate, Shivaji University, Kolhapur.
Ex. Sabhapati, Construction & Health Committee Z. P. Kolhapur.

Ref. No. : 0989 | 2022-2023 Date : 25/01/2023

Water Analysis

Name of the Party: Shripatrao Chougule Arts and Science College-Malwadi-Kotoli
Nature of Samole: Bore Well Water
Sample Analysed on: 17/01/2023

Sr.	Paramet	Value	Highest	Maximum Permeable Limit
1	PH	7.2	6.5-8.5	6.5-9.2
2	Total	90	100	500
3	Magnesium	11	50	150
4	Alkalinity	25	100	200
5	Chloride	22	200	600
6	MPN/100	0	0	10
7	Sodium	3	20	-

NOTE: All the value unless otherwise started are in mg/l: except PH
MPL: Most Probable Number of Coliform Bacteria.
REMARK: Water is Suitable for domestic use.

Analysed by
(Ms. Rutuja P. Nale)

Checked Bv
I/C. Principal
Shripatrao Chougule Arts And Science College, Malwadi-Kotoli, Tal.Panhala.

न हि ज्ञानेन सदृश्यम् पवित्र महि विद्यते ।

WATER CONSERVATION:

Clean, fresh water is a limited resource. With all the severe droughts happening in the world, the limited supply of fresh water is becoming one of our most precious resources. Every person on earth needs water to survive. Without it, many of us would get sick and even result in death. While almost 70% of the Earth is made up of water, many parts of the world suffer from clean water shortage. Conserving water is important because it keeps water pure and clean while protecting the environment. Conserving water means using our water supply wisely and be responsible. As every individual depends on water for livelihood, we must learn how to keep our limited supply of water pure and away from pollution. Keeping our water supply safe and pure will protect the water for the generations to come.

Many believe that our water supply infinite. However, our supply is quite the opposite. It is important that we must not pollute your water as many do not realize just how important and scarce water is. Humans are not the only species on Earth that requires water for survival. In fact, every species on this planet needs water to live and survive. Without water, the aquatic life will stand no chance of survival. It is highly important that we save water that is essential to our sustainability.

EFFICIENT USE OF WATER:

Enormous amounts of water is wasted, without reason, through leaking taps and open taps waste. In many cities, more than half the available supply is lost through these leakages and rotting of pipelines. In Institute campus instruction boards are displayed at every washroom to avoid wastage of water. Students are instructed to close the taps when they are not in use. Taps and pipelines are regularly checked for leakages and repaired if needed. Leaking taps are immediately replaced by new handy taps.

3.5.3 WATER MANAGEMENT:

Demand Analysis of water requirement: Residential based population on the campus and off the campus is given table No.12.

Table No. 12: Population strength on campus

Year	Students	Teaching staff	Non – Teaching Staff	Total
2022-23	1455	39	11	**1505**

During the past year maximum strength of population on degree college campus was in the1505.

College is by and large non-residential based. Water requirement for drinking and other purposes (Wash room, Plantation etc.) is calculated at the rate of 10 lit per person per day. Based on this assumption water demand analysis is given in table No. 13.

Table No. 13: Water demand Analysis

Type	Total Number of People	Requirement of water	Total Requirement of water
Non-Residential	1505	@ 10 lit / day	15050 lit / day

On an average requirement of water per day is about 15050 lit / day. This demand is met through supply of water from municipal corporation throughout the year. However, one RO water purifiers are placed in college campus, for the students and staff.

Considering high rainfall in the area, college should make efforts for rainwater harvesting.

Rain water harvesting:

Type of System: -Roof top water harvesting

Type of roof : Flat roof

Table No.14: Rain Water Harvesting

Sr. No.	Details	Type surface	Area
			Sq. mtr
1	College Building	Sloping roof	177.89

Considering the average annual rainfall of about 400mm, it is quite possible to harvest about 4,000 lit of water per day during the effective rainfall days of the rainy season.

Plate No. 4 Rain Water Harvesting

Presently, roof top harvesting is done only on one building and water collected is utilized for Laboratory work.

3.6 WASTE MANAGEMENT:

WASTE WATER DISPOSAL METHOD:

Total water demand for domestic consumption on college campus is 15050 lit / day. By and large, it is assumed that 30 % waste water is generated during college hours i.e., 15050 lit / day ÷ 0.3= 50,166 litre/day. Total 50,166 liters waste water generated, part of this domestic waste water is disposed off to septic tank.

Table No. 15. No of Toilets Campus

Sr. No	No of WCs + Urinals		Total
	Male	Female	
1	21	12	33

During the last year average strength of student and staff on campus is 1505. Ratio of number of people and WCs and urinals is 1:45.60

Male: 845 Female students: 660
Ratio of WCs+ Urinals for Male: 1:40.23
Ratio of WCs + urinals for Female – 1:55

As per the WHO guidelines they should be 1: 30 for male and 1: 20 for female. However, for all practical purpose, minimum requirement should be at least 1: 30 for female and 1: 40 for male.

Waste water is disposed of through septic tanks.

3.6.1 HAZARDOUS WASTE MANAGEMENT:

Hazardous waste is a waste that make it potentially dangerous or harmful human health or environment. The universe of hazardous waste is large and diverse. Hazardous waste can be liquid, solids or contained gases. There is no such hazardous waste on the campus. Some of the action taken for cleaning campus is given below:

-

- The campus has been declared as plastic free zone
- The College aims to make the campus plastic-free by avoiding non-biodegradable products such as plastic glasses, cups, plates and straws in the Institute canteen and instructing students to avoid bringing plastic materials.
- Bins are placed in different parts of the campus for the segregation of plastic, paper and food waste.
- The college aims for an ecofriendly campus and to make this a reality, the use of ecofriendly bags and files are encouraged.
- The staff and students have taken the initiative to take up campus cleaning programme through extension activities.
- Students are trained to use paper bags and a promotion of the same is held.
- The campus is also declared tobacco free and smoking free zone.

3.6.2 SOLID WASTE MANAGEMENT:

As a policy matter College has banned usage plastic bags on the campus. College has taken precautions to collect solid waste through dust bins. The dustbins are helpful to maintain clean atmosphere sanitate ion of college campus. Dustbins are placed on various places. Each classroom carries one recycled dustbin. The main aim of using dustbins is to clean the campus, to collect waste material and to create awareness of cleanliness among the students.
Solid waste collected is segregated into degradable and non-degradable

3.6.3 PAPER WASTE MANAGEMENT:

Major part of the solid waste generated at the college campus is a paper. Though paper is biodegradable material, it is having good potential of recycling thus will help in conserving the resources and trees indirectly. Institute follows the green practice like use of one-sided paper, paperless activities like e-mailing all notices instead of printingit of paper, putting the information on what's app groups are also practiced in the college to reduce the use of paper. Thus, Reduce, Reuse and Recycle, 3 R principles of solid waste management are followed in the Institute for waste management.

Table No. 16 List of Dustbins

Sr. No.	Place	No. of Dustbins
1	Lower Ground Floor	03
2	Ground Floor	05
3	First Floor	03
4	Second Floor	05
5	Third floor	02
Total		**18**

3.6.4 e-Waste Management:

Computers and their peripherals are the only source of electronic waste on the campus. As on date there are about thirty-five computers, seven laptops, five printers and one Xerox machines. Piling up of e- waste is discouraged on the campus. College disposes off the old computer / peripherals under the buyback scheme with local venders. The certificate of Shree Samarth IT Solutions has been attached here with:

Plate No. 5 e-waste Certificate

ssembled & Branded Computer
Repairs of Computers & Printers
Computer Consumables
Cartridge & Ribbons

Shree Samarth IT Soluion
Bhagava Chawk,Kasaba Bawada , Kolhapur.
Contact : 73855507358

Date: - 08/01/2022

CERTIFICATE

It is Certified to Shripatrao Chougule Arts & Science College,Mlawadi-Kotoli.That they have well classified E-waste and give to recycle.

This E-waste is forwarded for further process of recycle and reuse.

Yours faithfully

Sumit M. Ulape
For Shree Samarth IT Solution, Kolhapur
Ph. 7385507358

Plate No. 6 Measures for Waste Reduction

Laboratory Glass Waste

Laboratory Liquid Waste

Reuse of Waste Filter Paper

3.7 GREEN INITIATIVES PROGRAMME:

College has initiated large number of Environmental awareness programme through college and NSS. Activities are given due publicity through local newspapers. Some of the high lights are given below**:**

Table No. 17: List of some activities during the year 2022-23

Sr.No.	Activity	Date	Location	Description
1	N.S. S. Cleanliness camp	14 August 2022	College Campus	Cleanliness camp
2	N.S. S. Cleanliness camp	29 August 2022	College Ground	Cleanliness camp
3	N.S. S. Cleanliness camp	17 September 2022	Kodoli Village	15 Days Cleanliness Campaign
4	Wall Paper Presentation	19 September 2022	College Campus	Ozone Awareness Program
5	Lecture (Dr.Bharati Shinde)	22 September 2022	College Campus	Awareness of Environment Conservation
6	Best Practices	24 September 2022	College Campus	Vermi composting plant
7	River side area Cleanliness Camp	25 September 2022	Kololi Village	River area Cleanliness Campaign
8	N C C Department Poster Presentation	30 September 2022	College Campus	World Tourism Day (Nature Tourist Places)
9	N C C Cleanliness camp	04 Oct 2022	Kotoli Village	Cleanliness camp
10	N C C Cleanliness camp	04 Oct 2022	Kotoli Village	Gandi Jayanti Missiion street play Cleanliness camp
11	N S S Cleanliness camp	03 Oct 2021	Jotiba Temple area	Cleanliness camp

12	Zoology	13 Oct 2022	College Campus	Celebration of world animal day
13	N S S Cleanliness camp	22 Oct 2022	Masai Plateau	Cleanliness Camp Plastic Free Campaign
14	Lecture Delivered by Dr.Rajendra Podre	7 Dec 2022	College Campus	Ecosystem and Environment
15	Chemistry	13 January 2023	College Campus	Waste Management
16	Lead College Workshop Lecture Delivered by Dr.S.Y.Jadhav	23 January 2023	College Campus	Cultivation and Conservation of Medicinal Plant in Western Ghats
17	B,Voc Department	27 January 2023	College Campus	Distribution of Cotton Bags
18	Lecture Delivered by Dr.B.G.Patil	16 March 2023	College Campus	Climate Change and Weather Forecasting
19	Geography Dept Lecture Delivered by Dr.Mahadev Hande	23 March 2023	College Campus	World Water Day Awareness of Water
20	N.S. S. Cleanliness camp	19 April 2023	Jotiba Temple Area	Cleanliness camp
21	Lecture delivered By Dr.B.N.Ravan	25 January 2023	College Campus	Environment awareness
22	Wall Paper Presentation	08 June 2023	College Campus	Celebrate World Environment Day Organized by Department. Of Geography

Plate No. 7 Activities during 2022-23

Kotoli Village and Riverside area Cleanliness Camp (World River Day): (26/09/2022)

Poster Presentation for World Tourism Day (Nature Tourist Places) Organized by NCC Department (30/09/2022)

Lecture delivered By Dr.B.N.Ravan " Environment awareness" (25/01/2023)

Staff Academy Lecture delivered By Dr.Bharati .S.Shinde "Environment Conservation is the need of the hour" (22/09/2022)

Staff Academy Lecture delivered By Dr.Bharat G.Patil "Climate change and weather forecasting" (16/03/2023)

Dept Of Geography Organized Lecture on "Water Management" (23/03/2023)

Physics Poster presentation For Ozone layer Depletion (19/09/2022)

Celebrate World Environment Day Organized by Dept. Of Geography Cleanliness Camp for Sacred Groves (13/06/2023)

Plant of Vermi composting by Department of Botany

Biodiversity Conservation Guest lecture Dr.D.S Jadhav and Dr.V.B.Shimple

Lecture delivered By Dr. Rajendra Pondre "Ecosystem and Environment" (07/12/2022)

Kotoli Village Cleanliness comp organized by NSS (03/10/2022)

Jotiba Temple Cleanliness comp organized by NSS (15/04/2023)

Program Organized by B,Voc Department Distribution of Cotton Bags (27/01/2022)

3.8 ENVIRONMENT AWARENESS TAGS:

Environmetal awareness is having an understanding of the environment, the impact of human behaviour on it and the importance of its protection. Hence,college has taken some Environmental awareness measures. College has prepared following tags related to environment:

1. Keep Calm and Save the Environment
2. Use of Plastic Bags Strictly Prohibited
3. Save the Trees
4. Do Not Waste the Water
5. No Smoking

Plate No. 8 Environment Awareness Tags

FINDINGS AND SUGGESTIONS:

After a thorough analysis of green practices and environmental aspects of college the audit team has come with following findings and suggestions.

FINDINGS:

- The college campus strictly follows green practices. All students, staff and faculty members participate actively in keeping campus clean and green.
- Though the campus is small the college has tried to keep it green by planting trees and landscaping in the premises.
- Solid waste segregation and management is followed in the premises.
- Drinking water quality is maintained as per the standards by frequent water quality analysis at Environment laboratory.
- Large windows provided for natural ventilation reducing power consumption.
- College has installed Solar system for energy conservation.

4.0 SUGGESTIONS FOR IMPROVEMENT:

College has taken good number of green initiatives for the protection of environment. However, for getting better results following suggestions may be considered by the college in phased manner.

1. Presently total 13 tube lights, 19 LED and 18 CFL bulbs. All the tube lights should be replaced by LED bulbs in a phase manner during next 2 yrs. Further, all the fans should be replaced in phased manner energy efficient five-star rating fans.
2. As there is sufficient place for storage water and roof top area more efforts be made harvest rainwater so that water consumption can be reduced to save electrical energy.
3. It is recommended to construct underground storage tank for storing harvested water
4. Representative plant species be appropriately labeled with botanical name/English name/local name.
5. Considering the present strength of the college, it is suggested to construct additional WCs + Urinals, 7 for male and 8 for female. Altogether, it expected to have 14 for male and 26 for female.

Overall, the performance of Institute is good in green initiative front and can take somemore green initiatives for sustainable future.

Website: www.cncvcw.edu.in Ph.No. (0231) 2535405
CHH.SHAHU INSTITUTE OF BUSINESS EDUCATION & RESEARCH TRUST'S
COLLEGE OF NON-CONVENTIONAL VOCATIONAL COURSES FOR WOMEN
Affiliated to Shivaji University, Kolhapur, Maharashtra, India
University Road, Kolhapur – 416 004
Accredited by NAAC with B++ Grade (4th Cycle)
Dr. R. A. SHINDE
Secretary & Managing Trustee

Ref.No. CNCVCW/2023-24/

Date: 09/12/2023

Certificate

This is to certify that **Energy Audit** Report for the acedamic year 2022-23 of the **"Shripatrao Chougule Arts and Science College Malwadi-Kotoli"** has prepared by us based on the documents submitted by the collge and visit conducted by the Auditor.

Report Prepared and Submitted by

Ms. Pooja S. Sarolkar
Lead Auditor
EMS (ISO 14001:2015)
International register of Certificated Auditors (CQI-IRCA)
Certificated No. 22/IN/102387678088

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