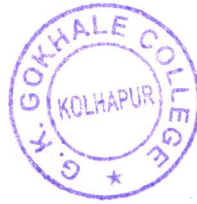




**GOPAL KRISHNA GOKHALE  
COLLEGE, KOLHAPUR**



**GREEN ENERGY  
& ENVIRONMENT  
AUDIT REPORT**

**(2021-2022)**



## **GREEN INITIATIVE REPORT**

### **1. Introduction:**

The term “Green” indicates eco-friendly or not damaging the environment. Human activities are directly or indirectly damaging the environment and it in to different environmental issues. Change in the eco system is occurred mostly due to the increase in world population, enormous advancement in science & technology & globalization. The problems arise due to this are global warming, depletion of ozone layers, air pollution, water pollution etc. Green Audit also called as Environmental Audit is the most efficient & ecological way to solve such a environmental problems. Further clean and healthy environment is one of the desired pre-requisites in any educational institution. To fulfill this, our institution emphasizes on adopting good green practices and creates environment awareness amongst all its stakeholders. Active participation of stakeholders facilitates this process of making campus eco-friendly. The strategies used to make campus eco-friendly are adopting energy conservation practices, effective waste management, waste water treatment and plantation for making the campus clean, green and healthy.

### **2. Objectives of the green audit:**

1. To identify and implement opportunities to save energy.
2. Encourage everybody to avoid pollution and to see that proper steps are being taken to control or to prevent pollution.
3. To reduce solid and liquid waste and adopt green methods to dispose waste and monitor the processes.
4. Minimize human exposure to risks from environmental health and safety problems Encourage to adopt Green culture and to contribute in resource conservation In order to achieve above objectives following action plan is prepared and activities are continuously monitored.

### **3. Scope and Goals of Green Audit:**

A clean and healthy environment aids effective learning and provides a conducive learning environment. There are various efforts around the world to address environmental issues. Green Audit is the most efficient and ecological way to manage environmental problems.



It is the responsibility of each individual who are the pan of economical, financial, social, environmental factor. It is necessary to conduct green audit in college campus because students become aware of the green audit, its advantages to save the planet and they become good citizen of our country. Thus Green audit becomes necessary at the college level. A very simple indigenized system has been devised to monitor the environmental performance of Gopal Krishna Gokhale college, Kolhapur. The aim of this is to help the institution to set environmental examples for the community, and to educate the young learners. Botanical garden of GKG College is unique feature not only for institute but also for the city. With objective of conservation of plants species as well as urban pollution minimization plantation is done in front of college building. It has variety of species are like Cycas, Dioon and Zomia. Green screens have proved it's' efficacy in dust and sound pollution minimization. School children visit to learn floral diversity in the botanical garden. College has formed Garden Committee specially to maintain the garden during holidays. Thus special efforts are taken by all staff members in green conservation.

#### **4. Main activities to sustain green performance are:**

1. Curriculum included with Environmental studies as subject at second year for all undergraduate students.
2. Plantation and tree nurturing in campus.
3. Use of energy efficient devices.
4. Use of minimum prints with utilization both sides of paper.
5. Use of recycled waste water for gardens and trees.
6. Display boards to aware stakeholders to avoid wastage of water and energy.
7. Promotion of eco friendly campus and avoid litter.

#### **5. Profile of the Institute:**

<b>Location</b>	<b>Urban</b>
Campus area	1.2 acres
Class Room	31
Laboratory	08
Seminar Hall	02



## **6. College and its environment**

College has maintained around 61 plant species. Some are rare species also maintained. Visitors around the city, school students took advantage to learn species with different importance. Garden committee is taking special efforts to maintain the garden during vacation. Such treasure conservation is global need for environment management. Institute has given a role model project by its conservation.

- Enhancement of college profile
- Developing an environmental ethic and value systems in youngsters.
- Green auditing should become a valuable tool in the management and monitoring of environmental and sustainable development programs of the college.

## **7. Awareness in students about environmental issues:**

Awareness in any person is result of education and knowledge. When it is given through explanatory ways using day today illustrations it helps to makes him wise and decisive. Second year curriculum of all branches (Arts, Commerce and Science, Computer Application) has compulsory environmental subject and field work as per University and honorable SC mandate. It helps to create awareness through education in students and help them to think about environmental problems. It emphasizes understanding relation with nature and its influence on mankind and vice a versa. Every year second year students undergo industrial or nature visit to study relevant problem and he has to prepare a project report on environmental issues. This helps them to nurture interest in nature and its connectivity to mankind is understood. It builds critical thinking skills and helps students make informed and responsible decisions. Visual aids are used to videos on Environmental issues such as global warming, deforestation, acid rain and with other relevant themes. It helps raise awareness in students about environmental issues which depicts through discussion and interactions. Visual aids help to educate and sensitize students on environmental matters. It also creates eco friendly attitude among them. Interaction with students about their perspective on these issues and problem solving is carried out. Further college has established Paradise Nature Club and Eco Club through which lectures and various programs are organized in order to increase environmental awareness. Various days related environment are observed by arranging guest lecture based on particular theme. Listed below are the activities carried out by the institution in order to maintain Green Campus.





Sr. No.	Date	Activity
1.	28/08/2021	Tree Plantation
2.	09/06/2022	Speech On Environment Awareness
3.	07/06//2022	Oath of environment conservation
4.	23/03/2022	Awareness rally on energy conservation
5.	27/04/2022	Visit Botanical Garden to Shivaji University Botanical Garden

### **8. Garden:**

College frontages of about half acre have been cultivated with various plants. It has been divided into beautiful landscaping, Gymnosperms, Angiosperms and plants. Institute is interested in extending the garden into its 5 acre area available at Race course area, sambhaji Nagar, Kolhapur. Infrastructure includes concrete fencing above which wire fencing is placed. It is provided with a sufficient water facility through bore-well, watering is done with garden pipes. Hanging plants are covered around the girls & boys seat out.

#### **Hedges and Edges:**

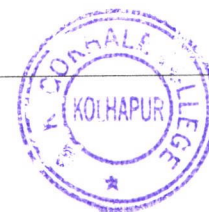
To provide different sections within the garden edging by different Plants is essential with different species, this edging can be done. Similarly Hedge bordering with concrete fencing, different beautiful flowering vines climbers can be done.

#### **Shrubbery:**

Collection of shrubs with beautiful long lasting flower with various Shapes ofleaves, branching will be helpful to improve the structure of borders. It can include certain important medicinal plants also.

#### **Palmatum:**

Palms are the princes of plant world as they are sculturstic for any view. The elegant palms suggest 'Youthfulness' always help to eliminate depression. palms are essential to study and conserve for Botany students due to their some unique characters.

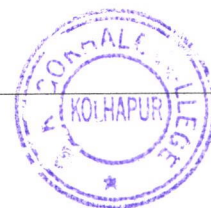


## Botanical garden

The College is unique feature not only for institute but also for the city. With objective of conservation of plants species as well as urban pollution minimization plantation is done in front of college building. It has variety of species with rare Gymnosperms like *Cycas*, *Dioon* and *Zamia*. Green screens have proved its' efficacy in dust and sound pollution minimization. School children visit to learn floral diversity in the botanical garden. College has formed Garden Committee specially to maintain the garden during holidays. Thus special efforts are taken by all staff members in green conservation. Attempt has made for valuation of the garden in following list garden:

### List of Plants in Botanical Garden

Sr. No	Name of the Plant	No. of. Plant
<b>1</b>	<b>Palmsatum</b>	
	1) <i>Chrysilidocarpouslutscens</i>	172
		10
	in plastic bags	6
	Plants in small earthen pots	3
	Plts.In medium earthen	1
	Plts. In large earthen pots	152
	Ground Plantation	
	2) <i>Cycasrumphi</i>	2
	3) <i>Cycas revolute</i>	30
	4) <i>Roysteniaregia</i> (Bottle palm)	18
	5) <i>Zamia furferacea</i>	14
	6) <i>Rhaphishimilis</i>	7
	7) <i>Fan palms</i> <i>Different varieties Bismarkia</i> <i>Nobilis, lis, Washingtoniafilifera</i>	18
	8) <i>Ranvenellamadagascrensis</i> (Travellers palm)	4
	9) Chapenge palm	2
	10) Other palms	10
<b>2</b>	<b>Other ornamental plants as focal points</b>	
	11) <i>Becaurniarecurvata</i>	8
	12) <i>Ficusbenjamina</i>	20
	13) <i>Araucaria exelsa</i>	39
	14) <i>Yucca varigata</i>	5
<b>3</b>	<b>Flowering ornamentals</b>	



	15) <i>Ixora sp.</i>	2
	16) <i>Jatropacurcas</i>	1
	17) <i>Euphorbia mili</i>	17
	18) <i>Malphigia sp.</i>	1
	<i>Dracaena sp. &amp; similamonocots</i>	
	<i>Dracaena sp. (yellow stripped)</i>	10
	19) <i>D. sanderiana</i>	1
	20) <i>Pleomelereflexa</i>	2
<b>4</b>	<b>Varities in Scheflera</b>	
	21) <i>S. Varigata &amp; other sp.</i>	19
<b>5</b>	<b>Indoors</b>	
	22) <i>Philodendron sp.</i>	54
	23) <i>Aglonema sp.</i>	14
	24) <i>Syngonium sp.</i>	15
	25) <i>Nephrolepis sp.</i>	5
	26) <i>Anthurium sp.</i>	8
	27) <i>Spathephyllum sp.</i>	3
	28) <i>Bird of paradise</i>	2
	29) <i>Alsophila sp. (tree fern)</i>	2
6	<b>Bonsai</b>	
	30) <i>Ficus sp.</i>	42
	31) <i>Adenium sp.</i>	7
	32) <i>Sanseveria sp.</i>	2
7	<b>Hangings</b>	
	33) <i>Peperomia, Chlorophytum</i> <i>Asperagus, Nephrolepis, other</i>	70
8	<b>Aquatics</b>	
	34) <i>Water lilies</i>	7
9	<b>Agaves</b>	

### 9. Green Practice:

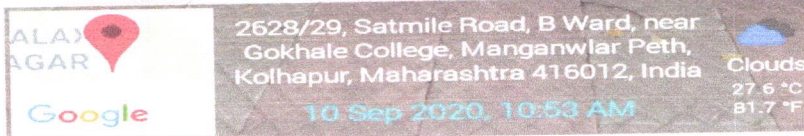
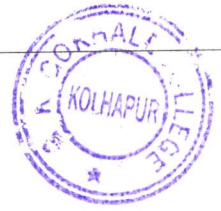
The institute has undertaken different green practices, keeping in mind the deteriorating environmental scenario. Institute takes necessary measures to ensure the environmental sustainability. The major objective of these practices is to enlighten the students regarding the environmental decay and climate change in order to develop them as an environmental conscious





agent of social transformation. The institute aims to develop and sustain the greenery of the campus and convert it into an oxygen hub and demonstrate the necessity of the approach of 'thinking green and act green'. The institute emphasizes on making the students aware with the importance of renewable energy-sources. The environmental consciousness is developed among the students by enlightening them through organizing guest lectures and workshops. The garden of the college is not only an oxygen hub of the area, but it also serves another purpose of conservation of endangered species of vegetation. Along with the campus, the college has also developed a bio-diversity garden at Peth-Vadgaon. To encourage the students for environment consciousness, the institute has started a short term courses 1) Certificate Course in Gardening and Nursery Management 2) Medicinal Plant Identification and Conservation 3) Certificate course in Horticulture and Nursery Management, Through these courses, the green practice movement of the city is enhanced. Under green practices, the institute has motivated botany and zoology departments to undertake a pilot project of vermicompost. Our zoology department has also undertaken project of measuring sound pollution in campus. Through this club different documents, information and government resolutions are convey to the student. In order to create awareness among the public different rallies were organized in association with NCC and NSS units of the college. The institute has also undertaken different measures for waste management. The green campus and bio-diversity park at Peth-Vadgaon can be seen as significant physical evidences of success of the painstaking efforts taken by the college to realize the objectives of green initiatives. Over these years, the use of natural lights, LED installation and student awareness regarding energy saving are proved helpful in reducing the energy consumption. The institute saves money and avoids the side-effects of chemicals by using the Vermi Compost fertilizers produced by the project. There are many successful students of Certificate Course in and Nursery management, who have developed their own gardens and nurseries in the city. The institute has successfully operated the Solid Waste Disposal Facilities and demonstrated it as pilot project to the other institutes. The efforts of the institute for the environmental sustainability are also recognized by the government by confronting the prestigious Vanashri award to our college.





### Green Campus Audit

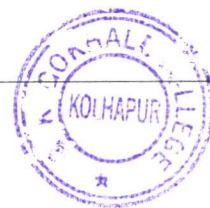
- Regular planting of trees in the campus are inadequate.
- Display boards to all plants identified are lacking.
- Water uses for gardens are high.
- No arboretum is set up in the college campus.
- There is only very few fruit trees in the college to attract birds.
- Registry for flora and fauna on the campus is lacking.

### 10. Suggestion and remarks about green campus for the institute:-

present plantation cultivated the systematic and proper way. It will help to remove sound pollution.

① keep record of waste management.

② maintain cleanliness or rain water harvesting projects.



### 11. Present Energy consumption and conservation:

Energy cannot be seen, but we know it is there because we can see its effects in the forms of heat, light and power. This indicator addresses energy consumption, energy sources, energy monitoring, Lighting, appliances, and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment. An old incandescent bulb uses approximately 60w to 100w while an energy efficient light emitting diode (LED) uses only less than 10 w. Taken into account of this benefit college used LED lights everywhere in college after 2014. Energy auditing deals with the conservation and methods to reduce its consumption related to environmental degradation. It is therefore essential that any environmentally responsible institution examine its energy use practices. College uses the low power consumption regulators in college campus to save the energy also college displayed boards against the energy degradation. Instead of computer and TVs college use LED monitor.

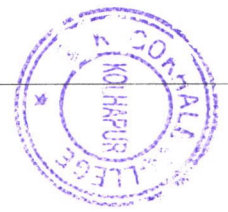
### 12. Suggestion and remarks about energy management:-

- ① organize workshop & energy consumption for students.
- ② students give the projects on energy usages.
- ③ few top floor new classroom can be connected with solar panels.

### 13. Waste Management:

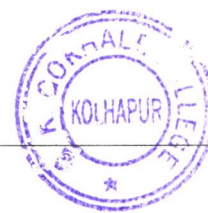
1) **Solid waste management:** The College has developed a system of waste management that not only helps to maintain the cleanliness, but it also demonstrates the good habits of waste management. The intention behind the establishment of such systems is to motivate other institutes, companies and organizations to adopt these systems and contribute into the pollution-free and clean territory. Institute practices separation of Solid Waste very effectively on the campus. The College has installed separate dustbins to collect biodegradable solid waste like tree droppings, paper-cups, waste papers etc. The waste bins are placed separately for dry and wet waste at every corner of the corridor, laboratories, library, classrooms, wash rooms and common room. College Canteen uses degradable and washable plates to serve the food. The use of plastic





**2) E waste Management:** Due to advancement in technology, electronic gadgets are part and parcel of our life and improper disposal of these products is harmful for living beings. We have to take care of the disposal of outdated e-products. The college has a separate system of e-waste





and thermocol sheets are strictly prohibited on the campus. The students were motivated to use the card-sheets for their projects, wall-paper, poster presentations and models instead of plastic boards, flexi-posters or thermocol. This practice has significantly decreased the solid waste from campus. The students of Botany and Zoology department make a project on vermi-composting where the dust, food scraps, paper scraps, plant material etc. are dumped in the pit. The compost is used for the plants on the campus. This project is also treated as a pilot-project as the practice is displayed to the stake-holders on every possible event and motivated them to accept it for the best practice of their building, housing-society or colony. This project has also decreased the use of chemical fertilizers used on the campus for the gardening purposes. This activity has reduced the possibility of soil pollution, happened due to the excess use of chemical fertilizers. College has displayed various boards of slogans to create awareness about environment. Single side used papers are reused for writing and printing purposes in the office and all the departments of the college. This practice has not only proved very helpful in reducing the waste but it also decreased much paper consumption. The college has also taken initiative of paper-less office. Most of the office work is paperless by the use of software which minimizes the waste. The admission, scholarship, examination, etc. processes are administered with the student-friendly software. Old newspapers, used papers and journal files, workshop scrap etc. are given for recycling to external agencies. Plastic waste is collected and properly handed-over to the vendors on the regular basis. Exhaust fans and fume hoods are Installed in the laboratories that contribute to maintain the pollution-free campus. Instead of throwing out the glass-wares used in the laboratories are reused. Sanitary napkins are disposed of using disposable machine at ladies' room. The training of disposing sanitary-napkins is given to the girl students. Students are also imparted awareness and education about solid waste, plastic waste, E-Waste. They were trained to adopt healthy waste management practices even at their home. They are also motivated to work as an ambassador of cleanliness in their colonies and villages. The botany department runs a course of Gardening and Nursery Management, where the faculties deliver lectures on the refuse, reduce, reuse, and recycle. Students and staff participated in different awareness rallies and waste collection campaigns. The NSS unit of the college, every year sets a cleanliness campaign in the city or in nearby village. The motif behind this campaign is to clean the area and create awareness among the people.



management that strictly monitors the proper disposal of e-waste. E-waste like non-working computers, monitors, and printers from office and all computer labs are properly collected and donated to the Energy Conservation of India for recycling and reuse wherever possible. The cartridges of printers are refilled outside the college campus. UPS Batteries are recharged and repaired by the suppliers. Some of the old computers are repaired and reused. Some parts of computers are used for other systems. The problems of e-waste disposal are frequently addressed by conducting lectures by faculties and experts. The students were made aware with the different habits of them that create e-waste.

**3) Liquid Waste Management:** All the labs of the college have facilities for proper disposal of liquid waste. The waste water generated in the science laboratories is processed and used for watering the plantation on the campus. This practice has reduced the dangers of exposing the harmful chemicals to the society by discharging it in the drainage and it also helped to make the campus green. Rota-vapour is used for distillation and recovery of solvents. Use of dilute solutions and double burette methods for titrations ensures minimum consumption of chemicals. Liquid Waste from the wash rooms is transported to the municipal sewage line. The efforts are frequently taken to cultivate the habits of using the water economically. There is routine check-up and maintenance of the taps, drainage and water pipelines.

**14. Suggestion and remarks to institute:-**

- ① ~~not~~ Dust pollution and sound pollution record can be maintained.
- ② for the zero waste management projects use the plastic bucket.
- ③ develop waste management model.

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