ZEP NISARGMITRA BAHUUDDESHIYA SANSTHA,
NAGBHID
DIST. CHANDRAPUR

GREEN AUDIT

CERTIFICATE

2019 - 2020

This is to certify that, **Gramgeeta Mahavidyalaya, Chimur** has been observed that the carbon emission rate on the campus is highly noteworthy. Our organization has conducted green Audit of the campus and the college is certified with "A" – Grade.

सचिव/सचिव
ग्राम निसर्गमित्र बहु. संस्था,
नागभीड, जि. चंद्रपूर-441209

Date:

Director

SEMANA VIDYA VA VAN VIKAS PRASHIKSHAN MANDAL, GADCHIROLI'S
Reg.No. F2301/Gad./Mah.

Gramgeeta Mahavidyalaya

Arts, Commerce & Science (Granted)
Chimur, Dist. Chandrapur (M.S.) - 442903
Email : gmcchimur@gmail.com | Web.: www.gmcchimur.org

Principal
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Ref.No.: GMC/2088/01/2020 **Date :** 22/10/2020

प्रति,

झेप निसर्गमित्र बहुउद्देशिय संस्था,

नागभिड, जिल्हा चंद्रपूर.

विषय : महाविद्यालयाचे 'GREEN AUDIT' करुन मिळण्याबाबत.

महोदय,

वरील विषयास अनुसरुन, नॅक मुल्यांकनाकरीता महाविद्यालयाचे 'GREEN AUDIT' करुन घेणे आवश्यक आहे. तरी आपण आमच्या महाविद्यालयाचे 'GREEN AUDIT' करुन द्यावे हि विनंती.

आपला विश्वासू

Principal
Gramgeeta Mahavidyalaya
Chimur, Dist. Chandrapur

Gramgeeta Mahavidyalaya Dist. Chandrapur

अध्यक्ष/सचिव
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SEMANA VIDYA VA VANVIKAS PRASHIKSHAN MANDAL

GADCHIROLI'S

GRAMGEETA MAHAVIDYALAYA, CHIMUR

GREEN AUDIT OF THE COLLEGE PREMISES

ACADEMIC SESSION 2019-20

GREEN AUDIT ASSESSMENT

Dr. YUVRAJ G. BODHE,

Assistant Professor & H.O.D. Department of Microbiology

CONTENTS:

1. Introduction :

Green 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.

Green 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 green audit one gets a direction as how to improve the condition of environment.

Benefits of Green Audit:

There are many advantages of green 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 built positive impression for the upcoming NAAC visit.

Environmental Consciousness:

Green Audit is assigned to the criterion VII of NAAC. The intention of green audit is to upgrade the environmental condition in and around the institution. It is performed by considering some environmental parameters like water and wastewater management, energy conservation, waste management, air monitoring, etc. for making the institution more eco-friendly. 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 green clubs will make the student a good citizen of country.

College Profile:

Name of Institution	:	**Semana Vidya Va Vanvikas Prashikshan Mandal's Gadchiroli.**
Name of College	:	**Gramgeeta Mahavidyalaya , Chimur Pimpalneri Road, Chimur, Ta- Chimur, Dist. – Chandrapur.**
Establishment of College	:	**13/07/2009**
Name of Principal	:	**Dr. Amir A. Dhamani**
Pioneers	:	**Shri. Vijay N. Wadettiwar**
No. of Students	:	**600**
Faculty	:	**17**
Facilities	:	**A well-equipped campus with a good infrastructure, with modern classrooms, good indoor, playground facilities and qualified staff., NSS Office, Library has established in 2009 and having the collection of 3940+ print books, 23+ print journal & magazines, various subscribed online-books & e- journals.**

Extension Activity	:	**College conducts 28 courses under the guidance of Semana Vidya Va Vanvikas Prashikshan Mandal for the excellence of students. The college has a good number of extension activity like plantation of trees, river cleanliness, cleaning of public places and Village, Govern, River cleanliness seminars, Environmental awareness campaigns, No Vehicle Day etc.**
Area Of College	:	**21165.05 sqm (5.25 Acres)**
Mail Id of College	:	**gmcchimur@gmail.com**

Methodology Used for Green Audit

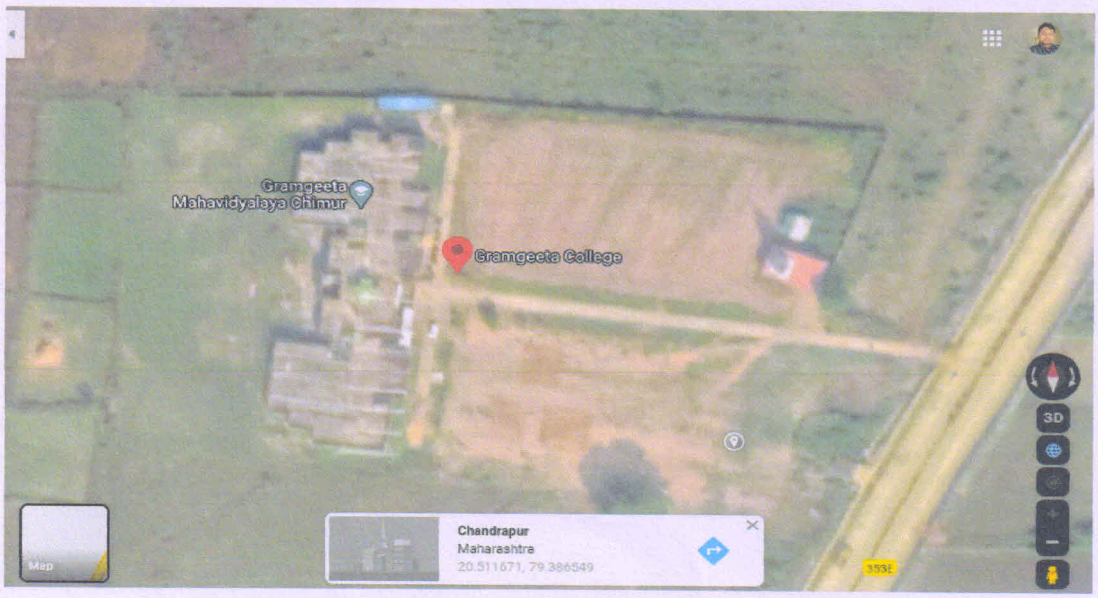
The college has conducted Green Audit in the year 2019-20, on a yearly basis. The audit was done in three phases.

Oral Interview 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, Air and noise quality status, other activities of nature club, etc. should be gathered for the audit purpose. For collecting data related to these different areas, specific questionnaires were prepared for oral interviews of the staff and students.

Gramgeeta College, Chimur at a glance:

Gramgeeta College, Chimur, is situated at South-East of Maharashtra at 79.833 longitude and 19.8178 latitude, in the Chandrapur district. It covers an area of about 7.95 ha.



Satellite image of Gramgeeta College, Chimur Campus

2. OBJECTIVES OF THE STUDY:

The main objective of the green audit is to promote the Environment Management and Conservation in the College Campus. The purpose of the audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green Audit are:

- Enhancement of college profile.
- To secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use on the campus.
- To bring out a status report on environmental compliance.
- To adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time reduce a sizable amount of atmospheric carbon-di-oxide from the environment.
- To document the floral and faunal diversity of the college.
- To create a green campus.
- More efficient resource management.
- Financial savings through a reduction in resource use.

3. LAND USE ANALYSIS:

The total built up area is 62% and open space & plantation area is 38%.

Add college pic with facility

Botanical Garden

Playground

General Library

Main Faculty Building with Administrative Office

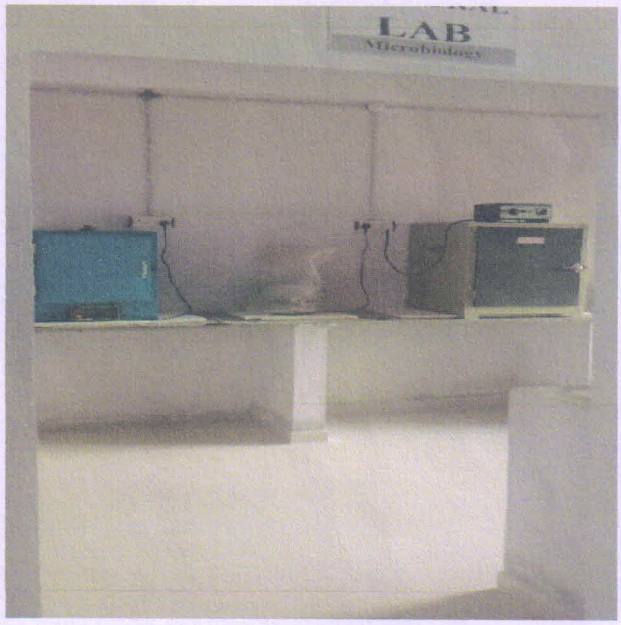
Cycle Stand

Toilet (South-West)

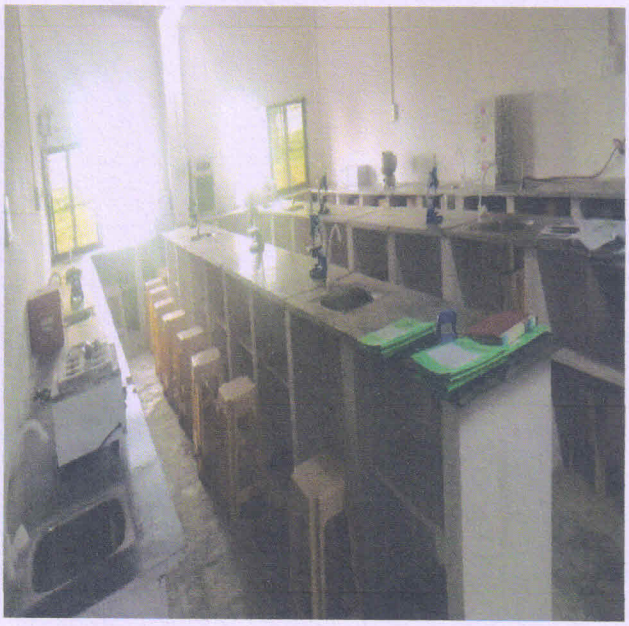
Girl's Common Room and Toilet

DrinkingWater

Botanical Garden & Playground

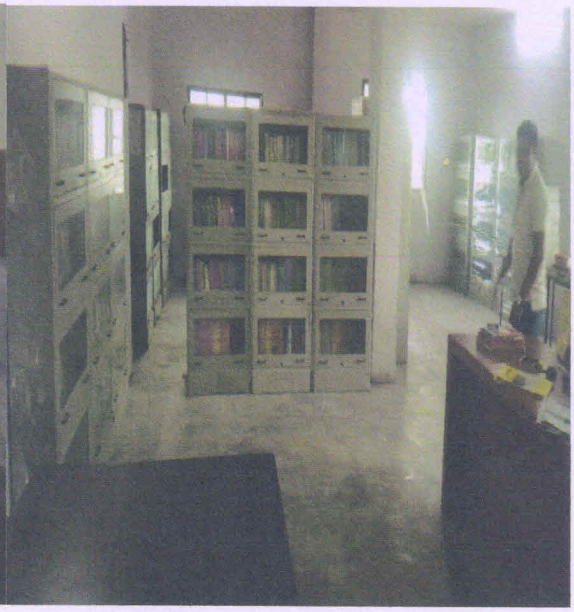


Microbiology Culture lab.



Zoology lab.

Environment Science lab.



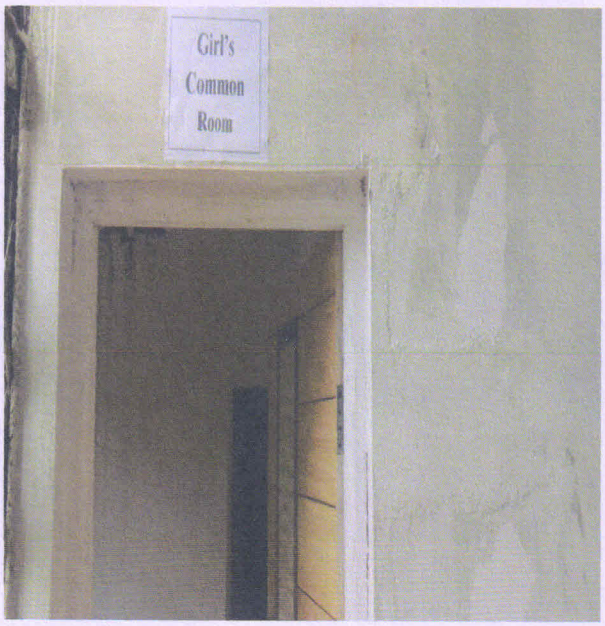
Library

Physics lab.

Computer lab.

Girls Toilet

Boy's Toilet



Girls common room

4. FLORAL (TREE) DIVERSITY OF THE COLLEGE

Diversity is a precious resource and if managed appropriately, extinction of species of species can be prevented. Biodiversity is the degree of nature the variety in Biosphere. Plants provide fuel, fodder, food, fiber and fertilization i.e. "Five F". It is expected that at least 33% of the total area should be occupied by trees. Our college Gramgeeta Mahavidyalaya, Chimur is within the geo-position between 9.833 longitude N and 19.8178 latitude E in Chandrapur. It encompasses an area of about 5.25 acres. The area is immensely diverse with a variety of tree species performing a variety of functions. Most of these tree species are planted in different periods of time through various plantation programmes organized by the authority and have become an integral part of the college. The trees of the college have increased the quality of life, not only the college fraternity but also the people around of the college in terms of contributing to our environment by providing oxygen, improving air quality, climate amelioration, conservation of water and preserving soil. Many animals are dependent on these trees mainly for food and shelter. Flowers and fruits are eaten by monkeys, and nectar is a favorite of birds and many insects. Leaf covered branches keep many animals, such as birds and squirrels, out of reach of predators. The strength, long lifespan and regal stature of trees give monument – like quality. They also remind us the glorious history of our institution. The following are the tree species with whom we are being attached-

Table No. 1: List of tree species of College

Sr. No.	Picture	Common Name	Botanical Name
1.		Palm tree	***Roystonea spp.***

2.		Gulmohar	***Delonix***
3.		Cycas	***Cycas***
4.		Ashoka	***Polyalthia longifolia***
5.		Karanj	***Pongamia pinnata***
6.		Babul	***Acacia nilotica***

7.		Palash	***Beutea monosperma***
8.		Neem	***Azadiracta indica***
9.		Pipal	***Ficus religeosa***
10.		Copper pod	***Peltophorum pterocarpum***

11.		Jamun	***Syzygium cumini***
12.		Ritha	***Sapindus mukorossi***
13.		Imli	***Tamarindus indica***
14.		Amaltash	***Cassia fistula***
15.		Sisam	***Dalbergia sissoo***

16.		Weeping fig	***Ficus benjamina***
17.		Shiwan	***Gmelena arboria***
18.		Kate- sawar	***Bombax Ceiba***

19.		Tagar	***Tabernaemontana divaricata***
20.		Tulsi	***Ocimum sanctum***
21.		Adulsa	***Adhatoda vasica***
22.		Kambarmodi	***Tridax procumbance***
23.		Sadabahar	***Catharanthus roseus***

24.		Datura	***Datura metal***
25.		Aloe vera	***Aloe barbadensis***
26.		Shatawari	***Asparagus***
27.		Air plant	***Bryophyllum***

28.		Sarso	***Brassica***
29.		Basil	***Ocimum bassilicum***
30.		Wild indigo	***Tephrosia purpurea***

5. FAUNAL DIVERSITY IN THE COLLEGE CAMPUS

The Gramgeeta College of Chandrapur district falls in the Sub-Tropical climate region, and enjoys monsoon type of climate. The highest temperature is recorded just prior to the onset of monsoon (around June- early July).

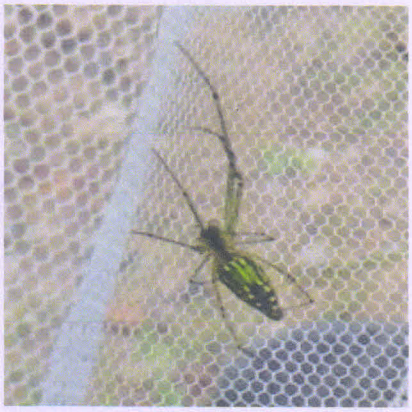
Table No.2: List of Faunas found in the College

Sr. No.	FAUNAL GROUP	SCIENTIFIC NAMES
1	**Spiders**	*Tarantula* sps. (House Spider) and Giant wood spider.
2	**Moths & Butterflies**	Blue Tiger (*Triumala limniace*), *Junonia atlites atlites (*Grey Pansy), Commander (*Moduza procris procris), Opodipthera eucalypti* (Emperor Gum Moth), *and Papilio* sps. (Pupa of Tiger Butterfly).
3	**Other Insects**	*Apis dorsata, Melipona meliponini sps* (Stingless bee), *Dysdercus cingulatus* (Red cotton Bug), *Tipula furka* (Crane fly), *Crocothymis cervilia* (Male), *Hyles euphorbiae* caterpillar, Hairy Caterpillar and Dragon fly.
4	**Amphibians**	Egg froth of Frogs, *Duttaphrynus melanostictus (Assian common toad) and Polypedates maculates* (Indian Tree Frog).
5	**Reptiles**	*Naja naja (Spectacled Cobra),* Indian Rat Snake (Dhaman), Huge Monitor Lizard, *Garden Lizard (Calotes versicolor) and Hemidactylus mabouia* (House gecko),
6	**Birds**	*Acridotheres tristis (Common myna); Athene noctua (little owl);* Crane (Migratory bird), *Parrus domesticus* (Sparrow), Ibis and *Leptoptilos javanicus.*
7	**Mammals**	*Seminopithecus entellus* (Hanuman langur)

Photographs of Faunal Diversity Found in Gramgeeta College, Chimur.

SPIDERS.

***Tarantula* sps. (House Spider)**



Giant wood spider

MOTHS & BUTTERFLIES

Blue Tiger (*Triumala limniace*)

*Junonia atlites atlites (*Grey Pansy)

Commander (*Moduza procris procris)*

Opodipthera eucalypti (Emperor Gum Moth)

Papilio sps. (Pupa of Tiger Butterfly

1. OTHER INSECTS

Apis dorsata

Hairy Caterpillar

Melipona meliponini sps (Stingless bee)

Dysdercus cingulatus (Red cotton Bug)

Ichneumon Fly

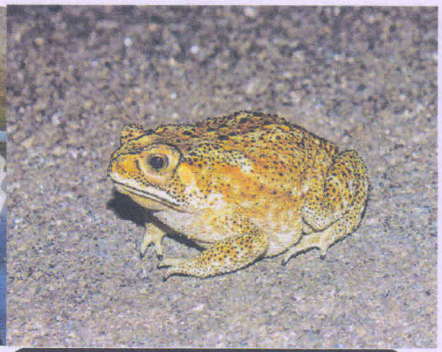
Crocothymis cervilia (Male)

***Hyles euphorbiae* caterpillar**

Dragon fly *Tholylimis tillarga*

AMPHIBIANS

Egg froth of Frogs



Duttaphrynus melanostictus
(Asian common toad)

Polypedates maculates
(Indian Tree Frog)

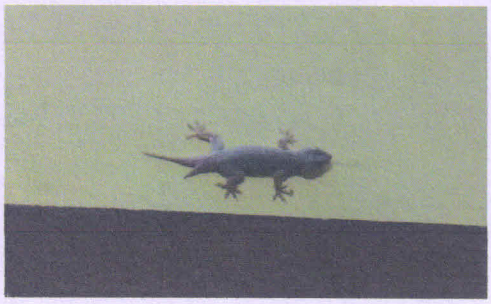
REPTILES

Naja naja
(Spectacled Cobra)

Indian Rat Snake (Dhaman)

Huge Monitor Lizard

Eggs of *Naja naja*



Hemidactylus mabouia
(House gecko)

Garden Lizard

AVES (BIRDS)

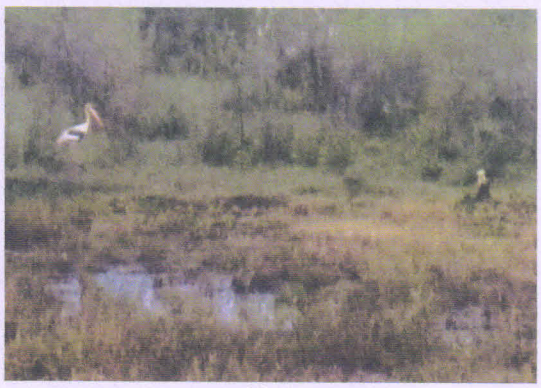
***Acridotheres tristis* (Common myna)**

Little owl (*Athene noctua*)

***Parrus domesticus* (Sparrow)**

Crane (Migratory bird)

Ibis



Leptoptilos javanicus

MAMMALS

Seminopithecus entellus (Hanuman langur)

6. Water and Wastewater Audit:

Water which is precious national natural 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 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. 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:

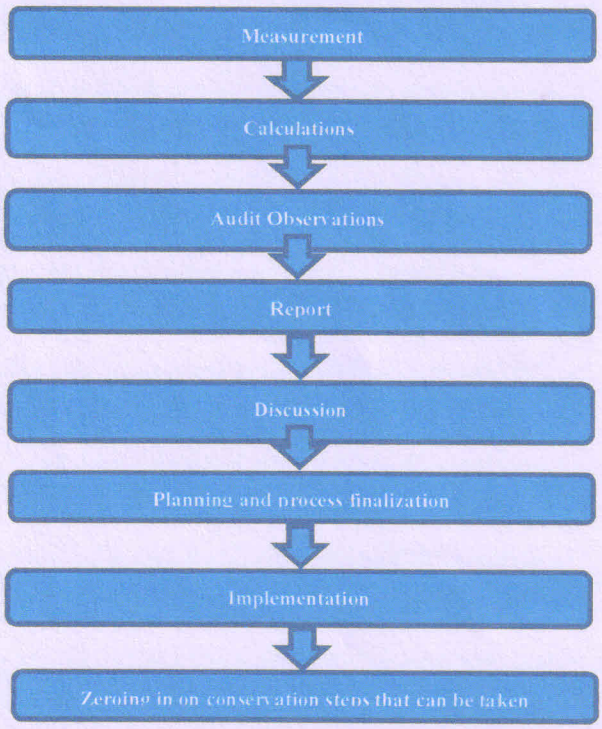
It is observed that a number of factors like climate, culture, food habits, work and working conditions, level and type of development, and physiology determine the requirement of water. The community which has a population of between 20,000 to 100,000 requires i.e., 100 to 150 litres per person (Capita) per day. The communities with a population can consume over 100,000 — 150 to 200 litres person (Capita) per day. As per the standards provided by WHO.

Approximately 2 litres per student water is required; (10-15 litres per student if water-flushed toilets), Administration requires (Staff accommodation not included) 5150 litres per day, Staff requires 30 litres per person per Capita per day and for Sanitation purposes it depends on technology.

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 residence halls, academic buildings, on campus and on grounds. Wastewater is referred as the water which is transported off the campus. The wastewater includes sewerage, as well as wastewater from chemical and biological laboratories which ultimately going down in sink or drainage system.

Water Audit Process:

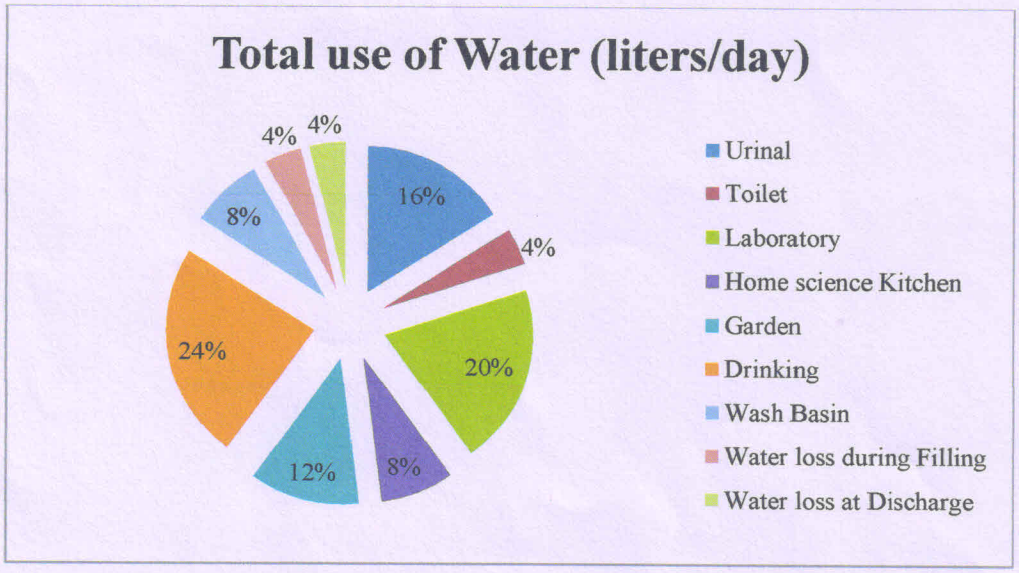


Overall water consumption in Gramgeeta Mahavidyalaya, Chimur

From the data collected for water audit of Gramgeeta Mahavidyalaya, Chimur, the water distribution and water consumption pattern is noticed as follow. The college is having the main building for the administrative work and for teaching work (Labeled A building). Daily water consumption by Main Building is as follow.

Table No. 3: Overall water consumption in Gramgeeta Mahavidyalaya, Chimur (liters/day).

Daily water consumption by A Building										
Site	Urinal	Toilet	Laboratory	Home science Kitchen	Garden	Drinking	Wash Basin	Water loss during Filling	Water loss at Discharge	Total
Total use of Water (liters/day)	400	100	500	200	300	600	200	100	100	2500
Percentage	16	4	20	8	12	24	8	4	4	100



Rain Water Harvesting

A rainwater harvesting system comprises components of various stages - transporting rainwater through pipes or drains, filtration and storage in tanks for reuse or recharge. Catchments: The catchment of a water harvesting system is the surface which directly receives the rainfall and provides water to the system. The basic rainwater harvesting system is more of a plumbing job

than a technical job, as all the outlets form the buildings terrace is connected through pipes to an underground tank which stores water or a dugwell, which serves the purpose of recharging wells and bore wells. In our college, the rainwater is collected from the catchment to the harvesting system, using gravity. The water is collected in the tank at the Botanical garden wherefrom it is carried out for various purposes, like watering the plants in green shade, composting unit etc.

7. Solid waste audit:

Solid waste generation and its management is a flaming problem in the all over world. Rate of generation of solid waste is very high and however, we do not have satisfactory technology to manage the generated waste. Solid waste refers to all non-liquid waste. Solid waste can create significant health problems and a very unpleasant living environment if not disposed of safely and appropriately. Thus, it is essential to manage the solid waste appropriately to reduce the load on waste management system. The intention of this inventory is to find out the quantity, volume, type and current management practice of solid waste generation in the Gramgeeta Mahavidyalaya, Chimur. This report will help for further solid waste management and to go for green campus development.

Generation of solid waste in Gramgeeta Mahavidyalaya, Chimur:

Table No. 4: Category wise solid waste generation at Gramgeeta Mahavidyalaya, Chimur (kg/month)

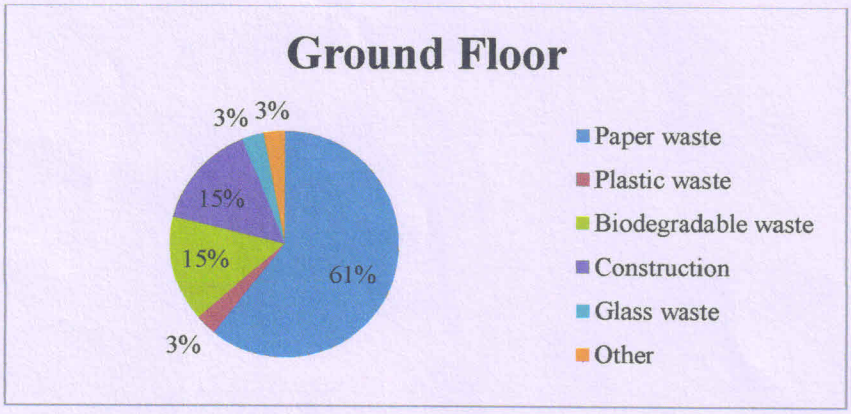
Category of waste	Paper waste	Plastic	Biodegradable-waste	Construction waste	Glass waste	Other (Stationary waste from institute)	Total solid waste
Quantity kg/month	2.5	0.3	25.9	20	0.8	10.4	59.9
Percentage (%)	4.1	0.5	43.2	33.3	1.3	17.3	100

Throughout the study period 59.76 kg/month of solid waste was generated. On the basis of obtained results in which highest quantity of solid waste is Paper waste is about 4.7 kg/month and Biodegradable-waste and is about 36.9 kg/month which is at second place. Plastic waste is just about 0.96 kg/month because they have already taken initiative for remove plastic from the college campus.

Table No. 5: Category wise solid waste generation at Floors and rooms in college campus (kg /month)

Floor/Rooms	Paper waste	Plastic waste	Biodegradable waste	Construction waste	Glass waste	Other	Total
Ground Floor	2	0.1	0.5	0.5	0.1	0.1	3.3
Office/Principal cabin	0.4	0.1	0.1	0	0.2	5	5.8
Total	2.4	0.2	0.6	0.5	0.3	5.1	9.1

Here, this college campus is having only one building with two floors. Therefore, it is divided into the floor wise and office and canteen was taken into account separately.



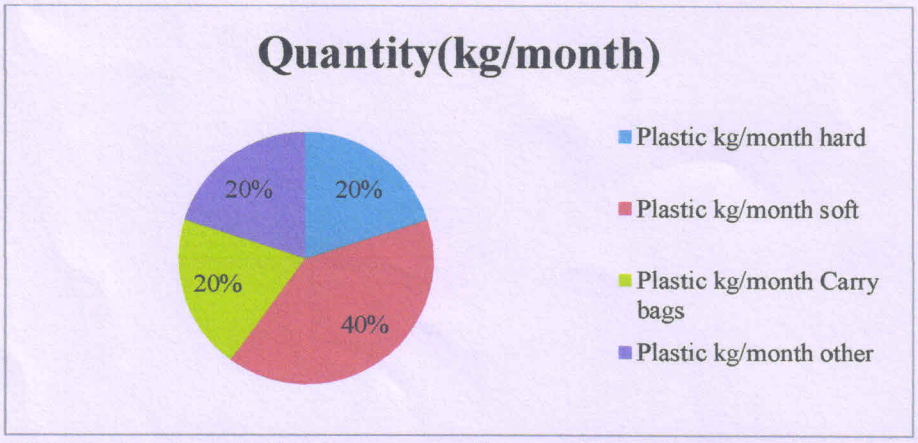
Graph : Floor wise distribution of Solid waste at Gramgeeta Mahavidyalaya, Chimur (kg / month):

In the various buildings of college 59.76 kg of total solid waste is generated in a month. Among the total waste ground floor is with 2.85 kg/month. First floor is having generation around 2.71 kg/ month

Table No.6: Plastic waste generation and its distribution in college campus:

Category	Plastic kg/month				Total
	Hard	Soft	Carry Bags	Other	
Quantity(kg/month)	0.1	0.2	0.1	0.1	0.45
Percentage	22.22	44.44	22.22	22.22	100

Within the plastic waste soft plastic and carry bags comprises maximum amount than other type of plastic. Carry bags around 41% of total plastic at campus. Soft plastic is 31% and other amounts 17% of the total.



Graph : Categorization of plastic waste at Gramgeeta Mahavidyalaya, Chimur (kg / month):

WASTE MANAGEMENT

The biological reusable waste generated (fallen leaves and broken branches) is processed as organic manure for the plants available in the college campus with the help of composting unit in our college.

8. E-waste:

- Throughout the study period 59.76 kg of solid waste was generated.
- Highest quantity of solid waste is biodegradable waste and is about 36.9 kg/month.
- The total waste 8 % is paper waste which is around 4.7 kg/month.
- There are only Arts and Commerce faculty departments were present that leads to campus free from hazardous waste.
- Some of the classrooms were found without paper solid waste baskets.
- There is need some improvements into the collection of solid waste.
- Solid waste is to be segregated at the source.

Gramgeeta Mahavidyalaya, Chimur which is having only Science, Arts and Commerce faculty in their college campus.

E-waste generated in the College is of Schedule II. Generation of e-waste is apparent at every educational institute. Especially, at the college level there is less number of equipment's and instruments running for administrative as well as for scientific execution. Computers, Printers, laptops, scanners, internet routers and Xerox machines are must in the administrative work. The wire required for the connectivity also gets included in the e waste. E-waste from Gramgeeta Mahavidyalaya, Chimur is disposed by Semana Vidya Va Vanvikas Prashikshan Mandal. E-waste from the colleges ware collected centrally at one place and get disposed.

9. Ambient Noise Monitoring Status:

Ambient noise monitoring was carried out in different areas of college campus like at classroom corridor and front gate. The monitoring was also done for Diesel generator in working i.e. on and off condition. The sampling was done using calibrated Sound Level Meter (AZ 8921) 23 by logarithmic scale in Decibels (dB). The noise readings were collected in the college campus and calculated. The details of noise status in college campus are given below in the Table No. 3.8 and Graph No. 3.8

Table No. 7. Ambient Noise levels in Gramgeeta Mahavidyalaya, Chimur

Sr. No.	**Site Name**	**Results dB (A0leq)**	**Standard (Day Time) Db (A) Leq**
1	Classroom Corridor	25	55
2	Front gate	28	55
3	Seminar hall	22	55

Note: - 1. All parameters show in dB (A) Leq.
2. All Results are carried during day time.
3. Day time means from 6.00 a.m. to 10.00 p.m.

It is observed from the table that the Ambient Noise levels in classroom corridor and front gate is on higher side as compared to the standards of Central Pollution Control Board for day time. Classroom corridor noise levels higher because of sound echo.

Since the college is located near city main road and main entry road in colony situated around college, the major source of noise is automobile noise, rolling noise. The human communication and transportation are causing the high level sound. It is advisable to increase the green cover in the surrounding to avoid the noise. The diesel generator is installed outside of college campus, so its noise levels are below CPCB standards. It is used during emergency conditions of electricity cutoff.

10. Details of tree census in College campus:

The beginning of the 21st century brought growing concern about global warming, climate change, food security, poverty, and population growth. CO_2 is a principle component causing global warming. Atmospheric carbon dioxide levels have increased to 40% from preindustrial levels to more than 390 parts per million CO_2.

The present status of tree cover and vegetation carbon storage assessment of area under Gramgeeta Mahavidyalaya, Chimur Campus. In an era of global warming and climate change; carbon emission, carbon sequestration, mitigation, adaptation are the keywords in academia. Carbon sequestration is a phenomenon of converting atmospheric carbon i.e. CO_2 in to other pools of carbon such as vegetation, soil, etc. in various forms to mitigate global warming. It is one of the important clauses of Kyoto Protocol.

Current tree census methodology has adopted from the guidelines set by Indian Institute of Remote Sensing, Dheharadoon, Govt. of India.

Total number of trees enumerated in Gramgeeta Mahavidyalaya, Chimur campus:

Sr. No.	Common Name	Botanical Name
1.	Palm tree	***Roystonea spp.***
2.	Gulmohar	***Delonix***
3.	Cycas	***Cycas***
4.	Ashoka	***Polyalthia longifolia***
5.	Karanj	***Pongamia pinnata***
6.	Babul	***Acacia nilotica***
7.	Palash	***Beutea monosperma***
8.	Neem	***Azadiracta indica***
9.	Pipal	***Ficus religeosa***
10.	Copper pod	***Peltophorum pterocarpum***
11.	Jamun	***Syzygium cumini***
12.	Ritha	***Sapindus mukorossi***
13.	Imli	***Tamarindus indica***
14.	Amaltash	***Cassia fistula***
15.	Sisam	***Dalbergia sissoo***
16.	Weeping fig	***Ficus benjamina***
17.	Shiwan	***Gmelena arboria***
18.	Kate- sawar	***Bombax Ceiba***
19.	Tagar	***Tabernaemontana divaricata***
20.	Tulsi	***Ocimum sanctum***
21.	Adulsa	***Adhatoda vasica***
22.	Kambarmodi	***Tridax procumbance***
23.	Sadabahar	***Catharanthus roseus***
24.	Datura	***Datura metal***

25.	Aloe vera	***Aloe barbadensis***
26.	Shatawari	***Asparagus***
27.	Air plant	***Bryophyllum***
28.	Sarso	***Brassica***
29.	Basil	***Ocimum bassilicum***
30.	Wild indigo	***Tephrosia purpurea***

Table No. 8: Total number of trees enumerated in Gramgeeta Mahavidyalaya, Chimur campus

11.Carbon sequestration:

It describes long-term storage of carbon dioxide or other forms of carbon to either mitigate or defer global warming and avoid dangerous climate change. It has been proposed as a way to slow the atmospheric and marine accumulation of greenhouse gases, which are released by burning fossil fuels. Vegetation carbon pool having the potential of 560 Pg (Pg: Petagram= billion ton) of carbon storage globally. In the current study the focus is given on the assessment of existing carbon stock stored Gramgeeta Mahavidyalaya, Chimur campus in the form of woody vegetation by enumerating every tree species. Overall **9.8754 tons of CO_2** has captured and stored by the woody plants present in the college campus. A single tree consumes **0.0218 tons** of CO_2 approximately annually consequently, as the campus possess **50** mature woody plants **1.09 tons** of CO_2 is consumed yearly by all woody vegetation on the college campus.

12. CARBON FOOTPRINT:

- About 90% of the students of the college use bicycle as the main mode of transport.
- Compulsory ENVS paper of 50 marks in the Gondwana University Syllabus for all the students of B.A. II, B.Com. II and B.Sc. II to develop Environmental Awareness.
- Seminars and awareness programmes are conducted periodically on nature and natural resources.
- Moderate amounts of bio-fertilizers are used in the college.
- The college is using LED lights as much as practicable.
- College already has a well maintained garden.
- The college celebrates "Vana Mahotsav", (Tree Plantation) an annual tree plantation program in the campus where teachers plant trees in the campus.
- Negligible amounts of washing liquids are used in the college and all the toilet cleaners are eco-friendly.

13. Oxygen released

Woody vegetation in Gramgeeta Mahavidyalaya, Chimur campus has released **27613.423 kg** of oxygen in their lifetime till date. Released oxygen is directly proportional to CO2 sequestrate in the ratio of 32/12 thus it is supposed to release **0.912 kg** of oxygen annually. It is assumed that a single tree supports oxygen demand of two people for their life. Thus, the 50 woody vegetations in College campus are supporting 100 people around the campus.

14. Electricity and energy audit:

Energy sources utilized by all the buildings, departments and services of college include electricity, liquid petroleum and LPG. Major use of the energy is at office, canteen, hostel and laboratories, for lighting, transportation, cooking. Electricity is supplied to the college campus by Maharashtra State Electricity Board. There is no provision of generating electricity on site.

Fuel consumption by vehicles on campus is also an important criterion for energy audit. Two two-wheelers and two four-wheelers were observed on the campus. "No Vehicle Day" was observed on Saturday during green audit visit. 27

Energy consumption of the college:

It includes all Departments, office, classrooms and principal cabin. The collected data shows the Ground floor has maximum number of major energy consuming equipments. Environmental protection through activities conducted. Following data is taken from the energy audit prepared by Maharashtra State Electricity Board office, Chimur.

Table No. 9. Total Energy Consumption difference Gramgeeta Mahavidyalaya, Chimur

Sr. No.	Year	Energy Consumption	Remark
1	2019-2020	4178	Energy consumption is seen noteworthy decrease in during the observation period
2	2020-2021	2554	

The energy consumption is 4178 KWH and 2554 KWH for the years 2019-20 and 2020-21 respectively. Thus the observations show the noteworthy decrease in the electricity consumption during study period. This is because of the use of LED bulbs and methods adopted by the college to conserve the energy in the campus.

15. CONCLUSION AND MANAGEMENT PLAN

Taluka Agriculture Office, Chimur Tal- Chimur, Dist.- Chandrapur has conducted a Green Audit of Gramgeeta Mahavidyalaya, Chimur in the academic year 2019-20. Green auditing is the process of identifying and determining whether institution practices are eco-friendly and

sustainable. The main objective of college to carry out green 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.

16. Conclusions:

From the green audit conducted by college following are some of the conclusions which can be taken for improvement of the college campus to become environmental friendly college campus.

1. College takes efforts to dispose majority waste by using proper methods.
2. Confidential paper waste is disposed properly.
3. Glass waste is to be disposed properly.
4. Electricity consumption is more at some departments.
5. Use of CFL lamps is minimum. Its use should to be encouraged and now converted to LED lights.
6. Toilets and bathrooms are consuming more water.
7. Roof top rain water harvesting should be initiated which is useful for filling up of tanks on campus.
8. Water filtration systems are functioning properly.
9. E-waste segregation, handling and disposal are properly done.
10. Air quality on the campus is good.

17. Recommendations:

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

1. College should develop its own Environmental Policy by using the guidelines in Green 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 college should develop internal procedures to ensure its compliances with environmental legislation and responsibility be fixed to carry out it in practice.

4. Wherever possible the waste should be reused or recycled.

5. All street lighting should be changed to LED lights to save electricity.

18. 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 Gramgeeta Mahavidyalaya, Chimur 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 college has to give more efforts to improve its environment.

Environment Management Plan 2019-20 Sector	**Strengths**	**Weakness**	**Suggestions**	**Priority**
Solid Waste				
1. Paper	Pulping of major portion of papers i.e. answer sheets, bills and other administrative papers. Use of one sided papers in many departments and main office	Multiple numbers of copies required for office work.	Towards paperless office: More use of e-mails, e-money transfer and advance IT technology for communication.	Medium
2. Plastic	Reuse of plastic at some departments	Some of the classrooms were found without paper solid waste baskets	There is need some improvements into the collection of solid waste. Ban on Plastic carry bags in College premises	Medium
3. Biodegradable waste	Garden sweepings are used for composting.	Burning of dry bio-degradable waste at some places	There is need some improvements into the collection of solid waste.	Medium

19. AUDIT FRAMEWORK AND DETAILED FINDINGS

The following audit framework is used for conducting Green Audit in 2018-19. The framework also lists the findings and observations for every criterion.

Control Objective	**Control(s)**	**Audit Observation**
Green Campus	Establish a Garden in the campus	College already has a well maintained Botanical garden.
	Encourage the faculties and students to plant trees in the garden.	The college celebrates "TREE PLANTATION", an annual tree

		plantation program in the campus where teachers plant trees in the campus.
	Minimize the use of fertilizers and pesticides in college grounds, opting for the use of compost produced on site wherever possible	Moderate amounts of bio-fertilizers are used in the college.
	Ensure that all cleaning products used by college staff have a minimal detrimental impact on the environment, i.e. Are biodegradable and non-toxic	Negligible amounts of washing liquids are used in the college and all the toilet cleaners are eco-friendly
	Dispose the chemical waste generated from the laboratories in a scientific manner	Most of the waste generated is water soluble and ultimately disposed through normal sewage system, diluted largely so bio magnifications is negligent.
Waste Management	Make full use of all recycling facilities provided by Nagar Panchayat and private suppliers, including glass, cans, white colored and brown paper, batteries, print cartridges, cardboard and furniture.	No, the college does not have any such recycling device to carry on the procedure.
	Waste, green waste and non-recycled collected from kitchens, gardens, offices and rooms.	The college has set up a Composting unit.
		Compost plant that ensures proper treatment of all organic wastes.
	Recycle or safely dispose of dry wastes, computers and electrical appliances.	All dry wastes (paper, metal, glass, other dry waste, e-waste, etc.) Are separated in different bins in the college and resell to the local vendor
	Provide sufficient, accessible and well-publicized collection points for recyclable waste, with responsibility for recycling clearly allocated	The college has set up separate bins to ensure proper segregation and collection of the various wastes. The responsibility of recyclable waste is however still not taken up the college.
	Make specific arrangements for events, such as community events, seminars and conferences in order to both arise consciousness among students and others and also to minimize the waste produced and maximize what is recycled/reused	The college organized several seminar and community program by the departments to ensure both consciousness and awareness among students and community members.
	Dispose all waste, whether solid or otherwise, in a scientific manner and ensure that it is not released directly to the environment	Yes, the college disposes all wastes, whether solid or otherwise, in a scientific manner and ensure that it is not released directly to the environment.
	To recycle and reuse of college wastes and garden waste	College wastes and garden wastes commonly are recycled to form nutrient rich quality organic manure for agricultural purpose.
Water Management Energy	Repair sources of water leakage, such as dripping taps.	Regular checking and maintenance of pipelines are done to control water wastage.

Management	Minimize wastage of water and use of electricity during water filtration process, if used, such as Aquaguard filter.	Yes, the college has aquaguard filters installed.
	Use an efficient and hygienic water storage mechanism to minimize the loss of water during storage	The college has three (03) water tanks.
	Encourage to decrease excess water usage.	Though water is used nominal in the college, but to ensure a further minimal rate, placards and warnings are set up in the college premise.
	Appreciate that it is preferable to purchase electricity from a company that invests in new sources of renewable and carbon-neutral electricity	The college has SOLAR pannels. The college also has 1 generator for the supply of emergency electricity to save our ecosystem.
	Give preference to the most energy efficient and environmentally sound appliances available, this includes only using energy-saving light bulbs. Encourage staff, students and conference guests to save energy through visible reminders, incentives and information to increase awareness. This particularly concerns turning off electrical appliances when not in use	The college is using LED lights as much as practicable Yes, the college has put reminder notes in classrooms and other relevant places to turn off electric appliances when not in use.
	Monitor and understand the importance of different sources of college energy consumption.	The college puts the main switch off when there is no need of electricity
	Ensures that all electronic and electrical equipment, such as computers, are switched off when not in use and is generally configured in power saving mode when such option is available	It is practiced.
Carbon Footprint	Ensure use of eco-friendly transport option	About 90% of the students and 30% teaching and non-teaching staffs of the college use bicycle as the main mode of transport. The college also encourages transport by bicycle to students.
	Promote environmental awareness as a part of course work in various curricular areas, independent research projects, and community service	UGC projects on sustainable development / natural resources. Compulsory ENVS paper of 50 marks in the University Syllabus for all the students of B.A. II, B.Com. II and B.Sc. II to develop Environmental Awareness.

Gramgeeta Mahavidyalaya Chimur 403 Dist. Chandrapur

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