

# Green Auditing



GOVT. DEGREE COLLEGE,

AVANIGADDA -521121

A REPORT

2021-22

- Principal  
GOVT. DEGREE COLLEGE  
AVANIGADDA, Krishna Dt. 521121.





# GOVT. DEGREE COLLEGE

AVANIGADDA-521121, KRISHNA DT. (A.P).

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**Dr. D. Uma Rani,**  
M.A., Ph.D.

## Executive Summary

### PRINCIPAL

The purpose of the present green audit is to identify, quantify, describe and prioritize the framework of Environment Sustainability in compliance with the applicable regulations, policies and standards.

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead to sustainable development and at the same time reduce a sizable amount of atmospheric carbon-di-oxide from the environment.

Green auditing is a process whereby an organization's environmental performance is tested against its environmental policies and objectives. Green audit is defined as an official examination of the effects a college has on the environment. As a part of such practice, internal environmental audit (Green Audit) is conducted to evaluate the actual scenario at the campus. Green audit can be a useful tool for a college to determine how and where they are using the most energy or water or resources; the college can then consider how to implement changes and make savings. It can also be used to determine the type and volume of waste, which can be used for a recycling project or to improve waste minimization plan. It can also create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact on campus. Green auditing promotes financial savings through reduction of resource use. It gives an opportunity for the development of a sense of ownership, personal and social responsibility for the students and teachers. Thus it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent. A clean and healthy environment aids effective learning and provides a conducive learning environment. There are various efforts around the world to address environmental education issues.


In Govt. Degree College, Avani Gadda, the audit process involved initial discussion in the Staff meetings to clarify policies, activities, records and the co-operation of staff and students in the implementation of mitigation measures. Staff and students were given inputs - how to collect the data for the green audit process. This was followed by staff and students' collection of data, review of records, observation of practices and observable outcomes. In addition, the approach ensured that the students and staff are active participants in the green auditing process in the college.

The baseline data prepared for the Govt. Degree College, Avani Gadda will be a useful tool for campus greening, resource management, planning of future projects, and a document for implementation of sustainable development of the college. Existing data will allow the college to compare its programs and operations with those of peer institutions, identify areas in need of improvement, and prioritize the implementation of future projects.

The green audit reports assist in the process of attaining an ecofriendly approach to the sustainable development of the college.

Hope that the results presented in the green auditing report will serve as a guide for educating the college community on the existing environment related practices and resource usage at the college and spawn new activities and innovative practices.

We are happy to submit this green audit report to the authorities of Govt. Degree College, Avanigadda.

  
Deputy Executive Engineer  
Boiler Maintenance Division  
Sub-Div-4, Stage-IV  
Dr. NTTPS, Borebattipalem - 521 456

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## **1. INTRODUCTION:**

The green audit aims to analyze environmental practices within and outside the university campuses, which will have an impact on the eco-friendly atmosphere. Green audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of university environment. It was initiated with the motive of inspecting the effort within the institutions whose exercises can cause threat to the health of inhabitants and the environment. Through the green audit, a direction as how to improve the structure of environment and there are include several factors that have determined the growth of carried out the green audit.

### **NEED FOR GREEN AUDITING**

Green auditing is the process of identifying and determining whether institutions practices are eco-friendly and sustainable. Traditionally, we are good and efficient users of natural resources. But over the period of time excess use of resources like energy, water, are become habitual for everyone especially, in common areas. Now, it is necessary to check whether our processes are consuming more than required resources? Whether we are handling resources carefully? Green audit regulates all such practices and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion it is necessary to verify the processes and convert it in to green and clean one. Green audit provides an approach for it. It also increases overall consciousness among the people working in institution towards an environment.

### **GOALS OF GREEN AUDIT**

Govt. Degree College, Avanigadda has conducted a green audit with specific goals as:

- Identification and documentation of green practices followed by university.
- Identify strength and weakness in green practices.
- Analyze and suggest solution for problems identified.
- Assess facility of different types of waste management.
- Increase environmental awareness throughout campus
- Identify and assess environmental risk.
- Motivates staff for optimized sustainable use of available resources.
- 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.

### **BENEFITS OF GREEN AUDIT TO EDUCATIONAL INSTITUTIONS**

There are many advantages of green audit to an Educational Institute:

- It would help to protect the environment in and around the campus.
- Recognize the cost saving methods through waste minimization and energy conservation.
- 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 through green initiatives the upcoming NAAC visit.

## **2. 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

### 3. Energy & Green Infrastructure:

#### DETAILS OF TREES AND PLANTS IN CAMPUS

	SCIENTIFIC NAME	COMMON NAME	Count of the plants
1	<i>Mangifera indica</i>	Mamidi	02
2	<i>Millettia pinnata</i>	Ganuga	11
3	<i>dirachta indica</i>	Neem,	05
4	<i>Phoenix sylvestris:</i>	Indian Date,	02
5	<i>Prunus amygdalus</i>	Almond Plant)	02
6	<i>Colocasia esculenta</i>	Taro / Chama	02
7	<i>Cocos nucifera</i>	Coconut	07
8	<i>Syzygium cumini</i>	Malabar Plum, JavaPlum,	03
9	<i>Ficus benjamina</i>	Weeping Fig	22
10	<i>Phyllanthus emblica</i>	Indian Gooseberry	03
11	<i>Euphorbia tirucalli</i>	Pencil Tree, Pencil Cactus,	01
12	<i>Wodyetia</i>	Bushy Tail Of A Fox.	35
13	<i>Chlorophytum comosum</i>	Common Spider Plant	08
14	<i>Citrus limon</i>	Lemon	01
15	<i>Hibiscus rosa-sinensis</i>	Mandara	04
16	<i>Cycas circinalis</i>	Queen Sago	04
17	<i>Ocimum tenuiflorum</i>	<i>Tulasi</i>	<i>Around the campus</i>
18	<i>Aloe vera</i>	Kalabanda	06
19	<i>Ficus religiosa</i>	Bodhi Tree	02
20	<i>Musa acuminata</i>	<i>Banana</i>	10
21	<i>Psidium guajava</i>	Guava, Apple Guava	03
22	<i>Epipremnum aureum</i>	Devil's Ivy	02
23	<i>Kalanchoe pinnata</i>	Life Plant, Miracle Leaf	02
24	<i>Murraya koenigii</i>	Curry Tree	01
25	<i>Tithonia diversifolia</i>	Mexican Sunflower	02
26	<i>Rosa 'Mister Lincoln</i>	Rose	07
27	<i>Dracaena trifasciata</i>	Ladyfinger Cactus	05
28	<i>Peltophorumpterocarpum</i>	Copperpod, YellowFlame	04
29	<i>Acanthocereus tetragonus</i>	Triangle Cactus	01
30	<i>zamioculcas zamiifolia</i>	Zanzibar Gem, Emerald Palm	02



## ROOF TOP SOLAR PANELS

Roof top solar panels are installed on the main building. Solar Panels convert sunlight into electricity by using photovoltaic (PV) cells. PV cells are made of materials that generate electrons when exposed to light. The electrons flow through a circuit and produce direct current (DC) electricity, which can be used to power various devices or be stored in batteries. Solar panels are also known as solar cell panels, solar electric panels, or PV modules.

Solar panels are arranged in groups called arrays or systems. A photovoltaic system consists of one or more solar panels, an inverter that converts DC electricity to alternating current (AC) electricity, and other components such as controllers, meters, and trackers. A photovoltaic system is used to provide electricity for off-grid applications, such as remote to feed electricity back into the grid and earn credits or payments from the utility company. This is a grid-connected photovoltaic system.

Some advantages of solar panels are that they use a renewable and clean source of energy, reduce greenhouse gas emissions, and lower electricity bills.



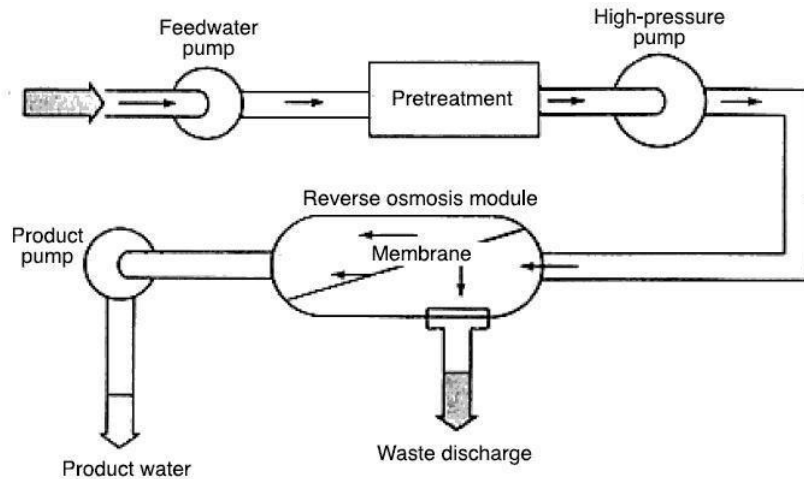


## RO PLANT:

RO plant is provided inside the campus to supply water to the entire campus.

### RO Water Treatment Plant

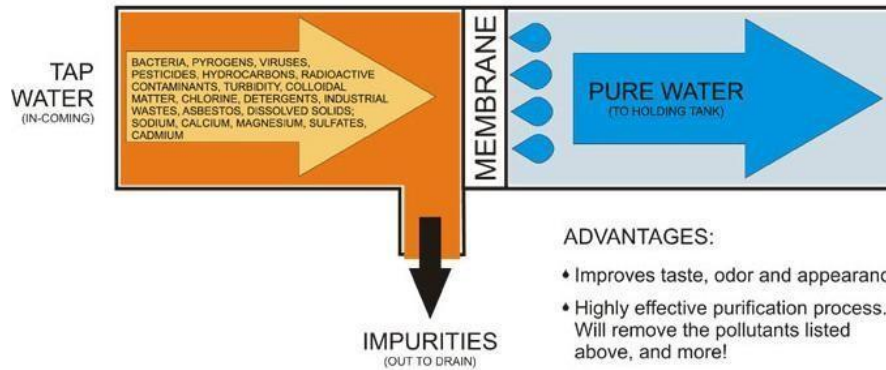
#### *Reverse Osmosis Plant Simple Process*



Reverse osmosis RO water treatment plant process is that allows the removal of unwanted particles (salts) from a solution. Reverse Osmosis water treatment plant is also used to treatment of water like removal of hardness, microorganism, salts and impurities in order to improve the color, odour, taste or properties of the fluid.

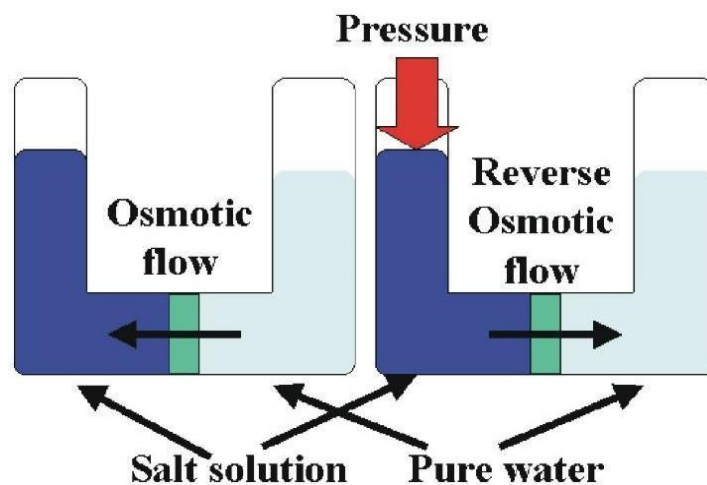
“Cross flow” is the advanced Reverse Osmosis RO water treatments Technology that allows a partially semi permeable Reverse osmosis RO membrane to clean itself continually. As some of the fluid passes through the membrane, the rest continues downstream, sweeping the rejected species away from it. Reverse Osmosis water treatment plant process requires a HPP (high pressure pump) to push the fluid through the membrane like high pressure and large driving force. For Brackish water approximately 10 to 20 bar applying as a osmotic pressure in solution to separate salt water as rejection and good water as product.

As concentration of the salts (fluid) being rejected increases, so does the driving osmotic force. Reverse Osmosis water treatment system is used to reject, sugar, bacteria, salts, proteins, particles, dyes, and other constituents. Separation of ions with reverse osmosis water treatment filtration is aided by charged particles. This means that dissolved ions that carry a charge, such as salts, are more likely to be rejected by the membrane . The larger the charge and the particle, the more likely it will be rejected.



### Water Treatment Plant Designs

- Pre-chlorination : This is made to disinfect the raw water from any infections.
- First Filtration: By the pressure Sand filters to remove Turbidity and Suspended solids.
- De-chlorination dosing: To remove the remaining Chlorine after the pressure sand filter.
- Antiscalent dosing: It is very important to prevent Calcium Sulfate from scaling.
- Acid dosing: It is very important to prevent calcium carbonate from scaling by Sulfuric acid 98%.
- Second filtration: It is by the cartridge filter (5micron) is important to remove any particles exceed 5 micron size.
- Feeding water High TDS raw water will pass through the semi permeable membrane under the high pressure, after boosting with high pressure (Osmotic Pressure ) approx 12 – 16 bar the membrane output water will treated and reduce to the required TDS .
- Adjusting PH value by Sodium hydroxide 49%
- Post chlorination dosing for disinfection by Sodium hydrochloride 12%







**Drinking water facility for Students**

## **RAINWATER HARVESTING**

The rainwater harvesting strengthens the water supply to the campus lakes as well as enhance water level of wells in the campus through ground water recharging process. Small pits with a weep hole placed at regular intervals that are constructed with a brick or stone masonry wall are known as recharge pits. Perforated coverings can be used to cover the pit's top. Filter media ought to be put in the pit's bottom.

The catchment area, the intensity of the rainfall, and the rate of soil recharging may all be used to determine the pit's capacity. Typically, the pit's dimensions range from 1 to 2 metres in width to 2 to 3 metres in depth, depending on the depth of the preceding stratum.

Small dwellings and shallow aquifers can be recharged in these holes.



**GREENSCAPPING: Location: 16.02956/80.91518**

**Mangifera indica (Mango)**



Total number of plants:02  
Age: 1year

**Millettia pinnata ( Ganuga)**



Total number of plants: 10  
Age: 01-12 years



**Azadirachta indica**

(margosa, neem, nimtree or Indian lilac)



Total number of plants: 04  
Age: 01-08years

**Phoenix sylvestris:**

silver date palm, Indian date, sugar date palm or wild date palm



Total number of plants: 002  
Age: 01year



**Prunus amygdalus** (Almond Plant)



Total number of plants: 02  
Age: 10years

**Colocasia esculenta** (Taro / chama (చామ))



Total number of plants: 02  
Age: 05Months

## **Cocos nucifera**



Total number of plants: 07  
Age: 10YEARS

## **Syzygium cumini**

(Malabar plum, Java plum, black plum, jamun, jaman, jambul, or jambolan Java Plum)



Total number of plants: 02  
Age: 10YEARS



## **Ficus benamina**

(weeping fig, benjamin fig or ficustree)



Total number of plants: 20  
Age: 10 YEARS

## **Phyllanthus emblica**

(emblic, emblic myrobalan, myrobalan, Indian gooseberry)



Total number of plants: 02  
Age: 10 YEARS

## **Euphorbia tirucalli**

Indian tree spurge, naked lady, pencil tree, pencil cactus, fire stick, aveloz or milk bush<sup>L</sup>



Total number of plants: 01  
Age: 04YEARS

## **Wodyetia**

bushy tail of a fox.



Total number of plants: 35  
Age: 10YEARS

***Chlorophytum comosum***

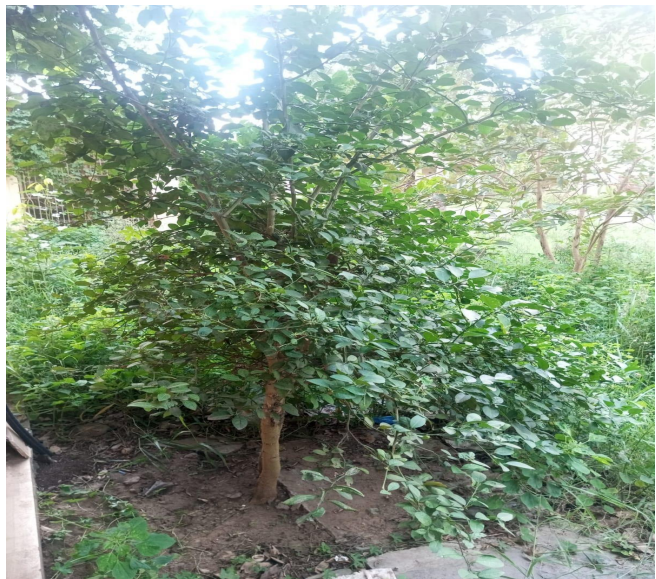
spider plant or common spider plant



Total number of plants: 08  
Age: 1YEAR

***Citrus limon***

Lemon



Total number of plants: 01  
Age: 1YEAR



**Hibiscus rosa-sinensis**  
*mandaram*



Total number of plants: 04  
Age: 5YEARS

**Cycas circinalis**  
(queen sago)



Total number of plants: 04  
Age: 6months



## **Ocimum tenuiflorum**

Holy basil, *tulsi* or *tulasi*



Total number of plants: around the campus

Age: 01year

## **Aloe vera**

(kalabanda)



Total number of plants: 06

Age: 4years

## ***Ficus religiosa***

Bodhi tree, pimple tree, peepul tree, peepal tree, pipala tree, ashvattha tree  
Sacred fig



Total number of plants: 02  
Age: 6months

## ***Musa acuminata*** *Banana*



Total number of plants: 10  
Age: 6months

## ***Psidium guajava***

Guava, yellow guava, lemon guava, or apple guava



Total number of plants: 02

Age: 05 years

## ***Epipremnum aureum***

Golden pothos, Ceylon creeper,  
hunter's robe  
ivy arum, house plant,  
money plant, silver vine,  
Solomon Islands ivy,  
marble queen, and taro vine.



Total number of plants: 02

Age: 01 year

## **Kalanchoe pinnata**

cathedral bells, air plant, life plant, miracle leaf, and Goethe plant



Total number of plants: 02  
Age: 06 months

## **Murraya koenigii**

Curry tree



Total number of plants: 01  
Age: 5Years



## ***Tithonia diversifolia***

marigold, Mexican tournesol, Mexican sunflower,  
Japanese sunflower or Nitobe chrysanthemum.



Total number of plants: 02  
Age: 5Years

## ***Rosa Mister Lincoln*** ( rose)



Total number of plants: 07  
Age: 3Years

**Dracaena trifasciata**



Total number of plants: 05  
Age: 1Year

**Mammillaria elongata**  
gold lace cactus or ladyfinger cactus



Total number of plants: 01  
Age: 03 months



## **Peltophorum pterocarpum**

copperpod, yellow-flamboyant, yellow flametree, yellow poinciana or yellow-flame



Total number of plants: 03

Age: 10 years

## **Acanthocereus tetragonus**



Total number of plants: 01

Age: 03 months

## *zamioculcas zamiifolia*

Zanzibar gem, ZZ plant, Zuzu plant, aroid palm, eternity plant and emerald pal



Total number of plants: 01

Age: 10 months

#### 4. WASTE MANAGEMENT:

The college promotes waste management to maintain Reduce, Reuse, Recycle (RRR) policy in the campus. This institution manages three types of Permanent Waste management mechanism effectively for eliminating or minimizing the wastage on the campus with the help of students and staff.

- Solid Waste Management: Waste paper and disposable are the main Solid wastes on the campus. Awareness is created among students in this regard through orientation classes and by arranging signboards in important locations. Measures are being taken for safe disposal in a planned manner by separating into biodegradable and non-degradable materials.

Swatcha campus by NSS students. Students and staff participated in swacha campus. Students cleaned the campus and have dug wastage accumulation pits.



- Bio-degradable waste: The Vermi-Compost unit is maintained by the Departments of Aqua culture. The biodegradable waste is shifted to Vermi- compost unit for biodegradation and for reuse.
- Liquid Waste Management: The liquid chemical waste coming out of the laboratories is neutralized and disposed safely. The waste water generated by RO Plants is being channelized into college garden to grow flowering plants and number of fruits bearing plants. Rainy season rain water floods the campus from all directions. To hold and absorb this running water, the students of NSS and NCC have dug 02 recharge pits/rainwater harvesting pits in the college and store the water. This water helps to raise the level of water table in the college.
- The non-degradable wastes: The non-degradable wastes are separated into recyclable and disposable ones. Plastics, glass and scrap metal wastes are collected and sold or deposited periodically into pits. Frequently NSS and NCC volunteers collect plastic waste incinerate on the campus to maintain campus as plastic free campus.
- E-waste Management: Not much e-waste is generated in the institution on a daily basis. The electronic waste in the college includes discarded electrical or electronic devices such as used electronic parts, burned electric bulbs, wires, computer peripherals certified broken or unusable. This material is usually set apart for reuse, resale, salvage, recycling, or disposal. The Physics club which was started in the college this year is taking care of e waste in the college and is planning to recycle e waste collected from the neighbouring houses and villages. E-waste generated in the campus is disposed in scientific and eco-friendly manner. As electronic gadgets usage is increasing rapidly, the e – waste is being generated with double speed. It is creates a lot pollution to mother earth. Hence, an e waste collection centre is inaugurated by Physics Club on the occasion of World Earth Day. Our club members collect e waste from the neighbours or friends, and dump in the department. We will separate copper from the wires mainly and detach the components from the circuits. After checking their working condition, we use the suitable components for our practical and remaining is kept in the department. We are planning to tie up with e waste collection centres of Hyderabad for sending the waste which cannot be managed by us.





Students removing Copper from E-waste

## 5. WATER MANAGEMENT

Water conservation is a key activity as water availability affects on the development of the campus as well as on all area of development such as farming, industries, etc. Keeping this view water conservation activity is carried out.

### SOURCES OF WATER

A Main source of water is Ground water is extracted to fulfill the requirement. The study observed that the Water tanker supply system, Tube well and Municipal connection are major sources of water in college. Water is used for drinking purpose, toilets and gardening. The waste water from the RO water purifier is used for gardening purpose. No loss of water is observed, neither by any leakages, nor by over flow of water from overhead tanks. The data collected from all the departments is examined and verified. On an average the total use of water in the college is 1000 L/day, which include for domestic, gardening purposes and for drinking purpose. Rain water harvesting units are also functional for recharging ground water level.



Drinking water for Students



## 6. ENERGY MANAGEMENT

Energy source utilized by the campus is electricity only. Total average energy consumption is determined as 2814 KWH/month. The entire campus including common facility centres are equipped with lamps and tube lights. Besides this, photovoltaic cells are also installed in the campus as an alternate renewable source of energy. The Solar power generated is supplied to Andhra Pradesh State Electrical Board. Computers are set to automatic power saving mode when not in use. Solar panels are installed in building as to promote renewable energy.

### Energy Utilization

The total energy utilization of the college for different purposes is approximately 2814 KWH/month. Increased production of solar energy a type of nonconventional category of energy will be a good energy management system for Govt. Degree College, Avanigadda.

Electricity charges per month is Rs.30000/month approx. Energy saving through the replacement of incandescent bulbs, CFL lamps and tube lights to LED light could be a good option. Energy efficient electrical equipments especially fans and pump sets can be replaced against old ones. Awareness programs for the stakeholders to save energy may also increase sustainability in the utilization of various energy source.







Solar Panels on the Rooftop of main Building

## **7. SUMMARY**

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

Govt. Degree College, Avanigadda has conducted a “Green Audit” in the academic year 2021-2022. The main objective to carry out green audit is to check the green practices followed by the college and to conduct a well-defined audit report to understand whether the college is on the track of sustainable development.

## **8. CONCLUSION**

Considering the fact that the institution is predominantly a Government college, there is significant environmental awareness both by faculty and students. The environmental awareness initiatives are substantial. The installation of solar panels and rain water harvesting system are noteworthy. Besides, environmental awareness programmes initiated by the administration shows how the campus is going green. Few recommendations are added to curb the menace of waste management using eco-friendly and scientific techniques. This may lead to the prosperous future in context of Green Campus & thus sustainable environment and community development. As part of green audit of campus, we carried out the environmental monitoring of campus including Illumination and Ventilation of the class room. It was observed that Illumination and Ventilation is adequate considering natural light. From the green audit following are the conclusions, which can be taken for improvement in the campus.

- E- waste are segregated, handled and disposed properly in an eco-friendly manner.
- Reducing the use of one-time use plastic bottles, cups, folders, pens, bouquets, decorative items will be useful to solve the problem of plastic pollution to some extent.
- Rainwater is collected to recharge the ground water level table.

## 9. RECOMMENDATIONS

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

- An environmental policy document has to be prepared with all the recommendations and current practice carried by the college.
- A frequent visit should be conducted to ensure that the generated waste is measured, monitored and recorded regularly and information should be made available to administration.
- The solid waste should be reused or recycled at maximum possible places.
- Food waste generated in campus is mostly from is collected from dining areas. The food waste need to be diverted to nearby farm.
- Use reusable resources and containers and avoid unnecessary packaging where possible.
- Always purchase recycled resources where these are both suitable and available.
- Reduce the absolute amount of waste that is produced from college staff offices.
- Make full use of all recycling facilities provided by City Municipality and private suppliers, including glass, cans, white, coloured and brown paper, plastic bottles, batteries, print cartridges, cardboard and furniture.
- Provide sufficient, accessible and well-publicized collection points for recyclable waste, with responsibility for recycling clearly allocated.
- Installation of LED lamps instead of CFL and replacing the old tube lights with the new LED tubes.
- Cleaning of tube-lights/bulbs to be done periodically, to remove dust over it.
- Gardens should be watered by using drip/sprinkler irrigation system to minimise water use.



## 10. Annexure



Our lushy green eco-friendly campus



## GOVT. DEGREE COLLEGE

(AFFILIATED TO KRISHNA UNIVERSITY)

AVANIGADDA, NAAC-B

ISO 50001:2011, ISO 14001:2015, ISO 9001:2015



### **CERTIFICATE OF GREEN (ENVIRONMENT & ENERGY) CAMPUS AUDIT**

Govt.Degree College, Avanigadda has been assessed by M.UMA VIJAY CHAND, ADE, VTPS, Vijayawada for the comprehensive study of Environmental Impact on Institutional working frame work to fulfil the requirement of

### **Green (Environment & Energy) Audit**

The Green initiatives carried out by the Govt.Degree College, Avanigadda have been verified on the report submitted and was found to be satisfactory.

The efforts taken by the Staff & Students of Govt.Degree College, Avanigadda towards the Green Campus and sustainability are highly appreciated and noteworthy.

**Date of Audit: 6-Nov-2021**

  
Deputy Executive Engineer  
Public Information Division  
Sub-Div-1, Bangalore

Dr. NTPS, Bangalore - 561 438



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**Dr. D. Uma Rani,**  
M.A., Ph.D.  
PRINCIPAL

Report on Postponement of Green Audit (Energy and Environment)  
for the academic year 2020-21 due to COVID-19

The decision to postpone the scheduled green audit for the academic year 2020-21 due to the ongoing COVID-19 pandemic was made based on health and safety concerns, travel restrictions, and challenges related to remote work arrangements.

Once the COVID-19 situation stabilizes and conditions improve, we are fully committed to rescheduling the green audit. Our dedication to environmental responsibility remains unwavering, and we view this postponement as a temporary measure to prioritize safety. This breathing time will be used to design a structured policy for the ensuing audit.



*D. Uma Rani*  
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**Dr. D. Uma Rani,**  
M.A., Ph.D.

**PRINCIPAL**

## Green Audit Report of Government Degree College Avanigadda 2019-20

### 1. Introduction:

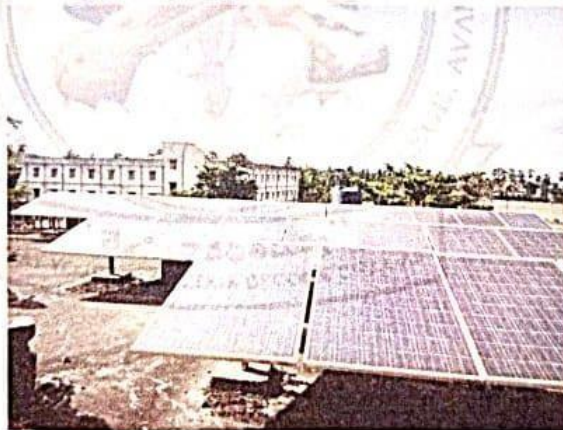
The Green Audit Report aims to assess the environmental sustainability practices and initiatives of Government Degree College Avanigadda. This report highlights the college's efforts, identifies areas for improvement, and provides recommendations for enhancing its eco-friendly initiatives.

### 2. Methodology:

The audit involved on-site visits and data collection. The criteria used for evaluation were energy consumption, water usage, waste management, transportation, sustainable procurement, green building practices, education and awareness, biodiversity preservation.

### 3. Energy Consumption:

The college's energy consumption is mainly attributed to lighting and electronic equipment. Energy-efficient lighting has been implemented in some areas, but there's potential for further improvements. Solar panels are installed on the roof top. Recommendation: Conduct an energy audit to identify opportunities for energy-saving retrofits, such as upgrading lighting to LEDs and optimizing electrical systems.



Solar panels on the rooftop

### 4. Water Usage:

The college relies on municipal water supply and has adequate water-saving features. RO plant is installed which provides drinking water to the entire college. An average of 1000L per day of water is used in the campus. Recommendation: initiate a water conservation awareness campaign, and explore more rainwater harvesting possibilities. The rainwater harvesting strengthens the water supply to the campus lakes as well as enhance water

level of wells in the campus through ground water recharging process.



**RO plant drinking water for students**

#### 5. Waste Management:

Limited waste segregation and recycling efforts are observed. Waste water from RO plant is diverted to the trees in the campus for gardening. Solid waste is dumped into dustbins provided in common areas and wet waste is dumped into vermicompost bin. Recommendation: Implement a more comprehensive waste management system, with clear bins for different waste streams, and educate the college community about proper waste disposal practices.



**Vermicomposting**

#### 6. Transportation:

Public transportation options are available nearby, but personal vehicle use is common among students and staff. However, the college runs in collaboration with local transit

authorities i.e., APSRTC for discounted student passes. Recommendation: Encourage sustainable transportation alternatives by providing bike racks, promoting carpooling,

7. Green Building and Infrastructure:

While the college buildings have basic energy-efficient features, there's potential for enhanced green design elements. Recommendation: Incorporate sustainable building design principles in future construction and renovation projects, including passive cooling techniques and renewable energy integration.

8. Education and Awareness:

The college has a structured sustainability education program on Environment Science. It has integrated environmental topics into the curriculum prescribed by the affiliated university Recommendation: organize workshops, seminars, and awareness campaigns to promote sustainability among students, faculty, and staff.

9. Biodiversity and Green Spaces:

The campus has green spaces with native plantings. Recommendation: Develop a landscaping plan that includes more native plants to support local biodiversity.

GREENSCAPPING:

**DETAILS OF TREES AND PLANTS IN CAMPUS**

	<b>SCIENTIFIC NAME</b>	<b>COMMON NAME</b>	<b>Count of the plant</b>
1	<b>Millettia pinnata</b>	<b>Ganuga</b>	<b>11</b>
2	<b>A zadirachta indica</b>	<b>Neem,</b>	<b>05</b>
3	<b>Prunus amygdalus</b>	<b>Almond Plant)</b>	<b>02</b>
4	<b>Cocos nucifera</b>	<b>Coconut</b>	<b>07</b>
5	<b>Syzygium cumini</b>	<b>Malabar Plum, JavaPlum,</b>	<b>03</b>
6	<b>ficus benjamina</b>	Weeping Fig	22
7	<b>Phyllanthus emblica</b>	<b>Indian Gooseberry</b>	<b>03</b>
8	<b>Euphorbia tirucalli</b>	<b>Pencil Tree, Pencil Cactus,</b>	<b>01</b>
9	<b>Wodyetia bifurcata</b>	<b>Bushy Tail Of A Fox.</b>	<b>35</b>
10	<b>Hibiscus rosa-sinensis</b>	<b>Mandara</b>	<b>04</b>
11	<b>Ocimum tenuiflorum</b>	<i>Tulasi</i>	<i>Around the campus</i>
12	<b>Aloe vera</b>	<b>Kalabanda</b>	<b>06</b>
13	<b>Musa acuminata</b>	<i>Banana</i>	<i>10</i>
14	<b>Psidium guajava</b>	<b>Guava, Apple Guava</b>	<b>03</b>
15	<b>Murraya koenigii</b>	<b>Curry Tree</b>	<b>01</b>
16	<b>Tithonia diversifolia</b>	<b>Mexican Sunflower</b>	<b>02</b>
17	<b>Rosa 'Mister Lincoln</b>	<b>Rose</b>	<b>07</b>
18	<b>Peltophorumpterocarpum</b>	<b>Copperpod, YellowFlame</b>	<b>04</b>





**Millettia pinnata**  
(Ganuga)  
Total number of plants: 10  
Age 01-06 years



**Azadirachta indica**  
(margosa, neem, or Indian lilac)  
Total number of plants: 04  
Age: 01-6 years



**Prunus amygdalus**  
(Almond Plant)  
Total number of plants: 02  
Age: 6years



**Cocos nucifera**  
(Coconut)  
Total number of plants: 07  
Age 6Years



**Syzygium cumini**  
(Malabar plum, Java plum, black plum, jamun, jaman, jambul, or jambolan Java Plum)  
Total number of plants: 02  
Age 6Years



**Ficus benjamina**  
(weeping fig, benjamin fig<sup>l</sup> or ficustree)  
Total number of plants: 20  
Age: 6Years



**Phyllanthus emblica**  
(emblic, emblic myrobalan, myrobalan, Indian gooseberry)  
Total number of plants: 02  
Age: 6Years



**Euphorbia tirucalli**  
Indian tree spurge, naked lady, pencil tree, pencil cactus, fire stick, aveloz or milk bush<sup>l</sup>  
Total number of plants: 01  
Age: 01Year



**Wodyetia bifurcata**  
(bushy tail of a fox.)  
Total number of plants: 35  
Age: 6Years





**Hibiscus rosa-sinensis**  
**(mandaram)**  
**Total number of plants: 04**  
**Age: 1Years**



**Ocimum tenuiflorum**  
**Holy basil, *tulsi* or *Tulasi***  
**Total number of plants:**  
**around tha campus**  
**Age:0-6 months**



**Aloe vera**  
**(kalabanda)**  
**Total number of plants: 03**  
**Age:1year**



**Musa acuminata**  
**Banana**  
**Total number of plants: 5**  
**Age:6months**



**Psidium guajava**  
**Guava, yellow guava, lemon**  
**guava, or apple guava**  
**Total number of plants: 02**  
**Age:02 years**



**Murraya koenigii**  
**Curry tree**  
**Total number of plants: 01**  
**Age: 2Years**



**Tithonia diversifolia**  
**marigold, Mexican**  
**tournesol, Mexican**  
**sunflower, Japanese**  
**sunflower or Nitobe**  
**chrysanthemum.**  
**Total number of plants: 02**  
**Age: 1Year**



**Peltophorum pterocarpum**  
**copperpod, yellow-**  
**flamboyant, yellow**  
**flametree, yellow**  
**poinciana or yellow-flame**  
**Total number of plants: 03**  
**Age:6 years**



**Rosa Mister Lincoln**  
**( rose)**  
**Total number of plants: 07**  
**Age 1Year**

#### 10. Recommendations and Action Plan:

- Establish an energy management committee to oversee energy-saving measures and conduct regular audits.
- Introduce water-saving campaigns, install water-efficient fixtures, and explore rainwater harvesting.
- Implement waste segregation bins across the campus and establish a recycling program.
- Promote sustainable transportation options and develop a campus transportation plan.
- Adopt a sustainable procurement policy and support local eco-friendly vendors.
- Incorporate green design principles in future construction projects.
- Integrate sustainability topics into the curriculum and organize awareness events.
- Develop a biodiversity enhancement plan with native plantings

#### 11. Conclusion:

The Green Audit Report recognizes the importance of Government Degree College Avanigadda's commitment to environmental sustainability. Implementing the recommendations will enhance the college's green initiatives, reduce its environmental footprint, and contribute positively to the community and future generations. Ongoing monitoring and periodic audits are essential to ensure the successful implementation of these recommendations.

*D. Jyothi*

Name and Signature of the Auditor  
**D. JYOTHI**, M.Sc., B.Ed.,  
LECTURER IN BOTANY  
SRB & CVR Govt. Degree College  
VIJAYAWADA, Krishna Dist.



*D.* Principal  
GOVT. DEGREE COLLEGE  
AVANIGADDA, Krishna Dt. 521121.

# Green Auditing



GOVT. DEGREE COLLEGE,  
AVANIGADDA -521121

A REPORT

2018 - 19



  
Principal  
GOVT. DEGREE COLLEGE  
AVANIGADDA, Krishna Dt. 521121.





# GOVT. DEGREE COLLEGE

AVANIGADDA-521121. KRISHNA DT. (A.P).

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**Dr. D. Uma Rani,**  
M.A., Ph.D.  
**PRINCIPAL**

## **GREEN AUDIT REPORT OF GOVERNMENT DEGREE COLLEGE AVANIGADDA 2018-19**

### **Introduction:**

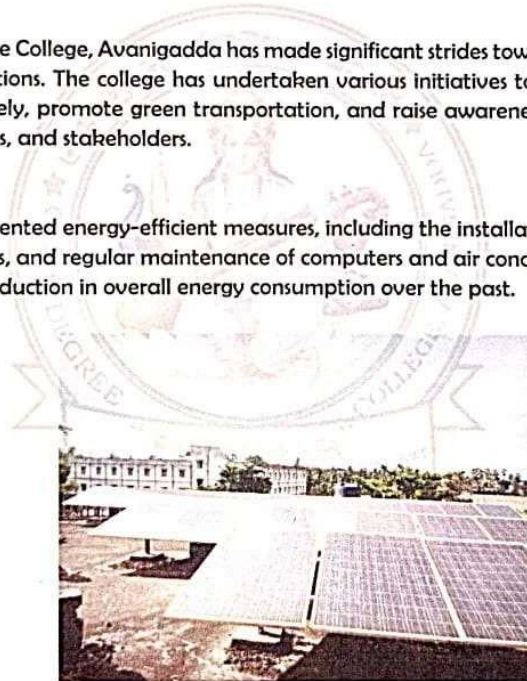
The Green Audit Report of Government Degree College, Avani Gadda presents an assessment of the institution's environmental practices, resource management, and sustainability initiatives. Conducted over for the academic year 2018-19, this report aims to provide insights into the college's efforts towards reducing its environmental footprint, promoting eco-friendly practices, and fostering a culture of sustainability.

### **Executive Summary:**

The Government Degree College, Avani Gadda has made significant strides towards incorporating sustainable practices into its operations. The college has undertaken various initiatives to reduce energy consumption, manage waste effectively, promote green transportation, and raise awareness about environmental issues among its staff, students, and stakeholders.

### **Energy Management:**

The college has implemented energy-efficient measures, including the installation of LED lighting, s in classrooms and corridors, and regular maintenance of computers and air conditioners. These efforts have led to a considerable reduction in overall energy consumption over the past.



Solar Panels on the roof top



An effective waste management system is in place, including separate bins for recycling and composting across the campus. The college has recycling facilities and composting centers. This has resulted in a decrease in waste sent to landfills and an increase in the recycling rate.



vermicomposting

#### Water Conservation:

Government Degree College, Avanigadda has embraced water-saving technologies such as low-flow faucets and the implementation of a rainwater harvesting system. The waste water from the RO water purifier is used for gardening purpose. No loss of water is observed, neither by any leakages, nor by over flow of water from overhead tanks. On an average the total use of water in the college is 1,000 L/day, which include for domestic, gardening purposes and for drinking purpose. Waste water from RO plant is diverted to the plants for watering. Rain water harvesting units are also functional for recharging ground water level.



RO plant drinking water for students




### Green Spaces and Biodiversity:

The college has dedicated efforts to maintain green spaces on campus and support local biodiversity. Regular tree planting drives and the establishment of a campus garden have enhanced the overall environmental quality of the college.

#### DETAILS OF TREES AND PLANTS IN CAMPUS

	SCIENTIFIC NAME	COMMON NAME	Count of the plant
1	<i>Millettia pinnata</i>	Ganuga	11
2	<i>Azadirachta indica</i>	Neem,	05
3	<i>Prunus amygdalus</i>	Almond Plant)	02
4	<i>Cocos nucifera</i>	Coconut	07
5	<i>Syzygium cumini</i>	Malabar Plum, JavaPlum,	03
6	<i>ficus benjamina</i>	Weeping Fig	22
7	<i>Phyllanthus emblica</i>	Indian Gooseberry	03
8	<i>Euphorbia tirucalli</i>	Pencil Tree, Pencil Cactus,	01
9	<i>Wodyetia bifurcata</i>	Bushy Tail of A Fox.	35
10	<i>Hibiscus rosa-sinensis</i>	Mandara	04
11	<i>Ocimum tenuiflorum</i>	<i>Tulasi</i>	<i>Around the campus</i>
12	<i>Aloe vera</i>	Kalabanda	06
13	<i>Musa acuminata</i>	<i>Banana</i>	10
14	<i>Psidium guajava</i>	Guava, Apple Guava	03
15	<i>Murraya koenigii</i>	Curry Tree	01
16	<i>Tithonia diversifolia</i>	Mexican Sunflower	02
17	<i>Rosa 'Mister Lincoln</i>	Rose	07
18	<i>Peltophorumpterocarpum</i>	Copperpod, YellowFlame	04

#### GREENSCAPPING:

		
<p><b>Millettia pinnata</b> ( Ganuga) Total number of plants: 10 Age 01-07 years</p>	<p><b>Azadirachta indica</b> (margosa, neem, or Indian lilac) Total number of plants: 04 Age: 01-7 years</p>	<p><b>Prunus amygdalus</b> (Almond Plant) Total number of plants: 02 Age: 7years</p>



**Cocos nucifera  
(Coconut)**  
**Total number of plants: 07**  
**Age 7Years**



**Syzygium cumini  
(Malabar plum, Java plum, black plum, jamun, jaman, jambul, or jambolan Java Plum)**  
**Total number of plants: 02**  
**Age 7Years**



**Ficus benjamina  
(weeping fig, benjamin fig or ficustree)**  
**Total number of plants: 20**  
**Age: 7Years**



**Phyllanthus emblica  
(emblic, emblic myrobalan, myrobalan, Indian gooseberry)**  
**Total number of plants: 02**  
**Age: 7Years**



**Euphorbia tirucalli  
(Indian tree spurge, naked lady, pencil tree, pencil cactus, fire stick, aveloz or milk bush)**  
**Total number of plants: 01**  
**Age: 02Year**



**Wodyetia bifurcata  
(bushy tail of a fox.)**  
**Total number of plants: 35**  
**Age: 7Years**



**Hibiscus rosa-sinensis  
(mandaram)**  
**Total number of plants: 04**  
**Age: 1Years**



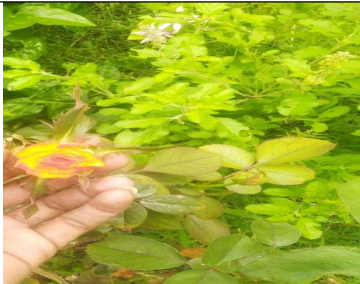


**Ocimum tenuiflorum  
(Holy basil, *tulsi* or *Tulasi*)**  
**Total number of plants:  
around the campus**  
**Age: 0 – 6months**



**Aloe vera  
(kalabanda)**  
**Total number of plants: 03**  
**Age: 1year**



 <p><b>Musa acuminata</b> Banana Total number of plants: 5 Age:6months</p>	 <p><b>Psidium guajava</b> Guava, yellow guava, lemon guava, or apple guava Total number of plants: 02 Age:02 years</p>	 <p><b>Murraya koenigii</b> Curry tree Total number of plants: 01 Age: 2Years</p>
 <p><b>Tithonia diversifolia</b> marigold, Mexican tournesol, Mexican sunflower, Japanese sunflower or Nitobe chrysanthemum. Total number of plants: 02 Age: 1Year</p>	 <p><b>Peltophorum pterocarpum</b> copperpod, yellow-flamboyant, yellow flametree, yellow poinciana or yellow-flame Total number of plants: 03 Age:6 years</p>	 <p><b>Rosa Mister Lincoln</b> ( rose) Total number of plants: 07 Age 1Year</p>

#### Transportation and Emissions:

Promotion of sustainable transportation options such as cycling, walking, and carpooling has led to a decrease in single-occupancy vehicle usage. This has resulted in a reduction in carbon emissions from commuting.

#### Curriculum and Awareness:

The college has integrated sustainability into its curriculum across various disciplines. Environmental workshops, seminars, and awareness campaigns are conducted regularly to educate students and staff about eco-friendly practices and the importance of environmental conservation.



**Challenges and Recommendations:**

While Government Degree College, Avanigadda has made commendable progress in its sustainability endeavors, there are areas that warrant further attention. These include:

**Plastic Reduction:** Implement strategies to reduce single-use plastic on campus, including the introduction of reusable alternatives and encouraging students and staff to adopt plastic-free practices.

**Community Engagement:** Strengthen engagement with the local community by organizing sustainability events, collaborating with local environmental groups, and initiating community clean-up drives.

**Conclusion:**

The Green Audit Report of Government Degree College, Avanigadda is commitment to sustainability and environmental responsibility. By continuing to enhance existing initiatives and addressing the identified challenges, the college can serve as a model for sustainable practices within the higher education sector and the broader community.

*D. Jyothi*

Name and Signature of the Auditor  
**D. JYOTHI**, M.Sc., B.Ed.,  
LECTURER IN BOTANY  
SRB & CVR Govt. Degree College  
VIJAYAWADA, Krishna Dist.



*D. ...*

Principal  
GOVT. DEGREE COLLEGE  
AVANIGADDA, Krishna Dt. S...

# Green Auditing



**GOVT. DEGREE COLLEGE,  
AVANIGADDA -521121**

**A REPORT**

**2017-18**



*D. [Signature]*  
Principal  
GOVT. DEGREE COLLEGE  
Avanigadda, Andhra Pradesh



# GOVT. DEGREE COLLEGE

AVANIGADDA-521121. KRISHNA DT. (A.P).

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**Dr. D. Uma Rani,**

M.A., Ph.D.

**PRINCIPAL**

Green Audit Report of Government Degree College Avani Gadda – 2017-18

## 1. Introduction:

The Green Audit Report of Government Degree College Avani Gadda aims to assess the college's current environmental sustainability practices and to recommend strategies for improvement. This report focuses on various aspects of the college's operations, infrastructure, and policies that contribute to its ecological footprint. This comprehensive Green Audit Report serves as a roadmap for Government Degree College Avani Gadda to enhance its environmental sustainability practices and contribute to a more eco-friendly future.

## 2. Methodology:

The audit was conducted through a combination of data collection and site visits. Data on energy consumption, water usage, waste management, transportation, procurement, and other relevant areas were analyzed.

## 3. Biodiversity and Green Spaces:










Biodiversity preservation efforts were lacking, and green spaces were underutilized generally. The report suggests creating native plant gardens, establishing wildlife habitats, and incorporating green spaces into campus planning.

### DETAILS OF TREES AND PLANTS IN CAMPUS

	SCIENTIFIC NAME	COMMON NAME	Count of the plant
1	Millettia pinnata	Ganuga	11
2	zadirachta indica	Neem,	03
3	Prunus amygdalus	Almond Plant)	02
4	Cocos nucifera	Coconut	07
5	Syzygium cumini	Malabar Plum, JavaPlum,	03
6	Fi cus benjamina	Weeping Fig	22
7	Phyllanthus emblica	Indian Gooseberry	03
8	Wodyetia bifurcata	Bushy Tail Of A Fox.	35
9	Hibiscus rosa-sinensis	Mandara	04
10	Ocimum tenuiflorum	Tulasi	<i>Around the campus</i>
11	Aloe vera	Kalabanda	03
12	Musa acuminata	Banana	05
13	Psidium guajava	Guava, Apple Guava	03
14	Murraya koenigii	Curry Tree	01
15	Tithonia diversifolia	Mexican Sunflower	01
16	Rosa 'Mister Lincoln	Rose	03
17	Peltophorumpterocarpum	yellow-flamboyant	02



**GREENSCAPPING:**

 <p><b>Millettia pinnata</b> (Ganuga) Total number of plants: 10 Age 01-06 years</p>	 <p><b>Azadirachta indica</b> (margosa, neem, or Indian lilac) Total number of plants: 04 Age: 01-6 years</p>	 <p><b>Prunus amygdalus</b> (Almond Plant) Total number of plants: 02 Age: 6years</p>
 <p><b>Cocos nucifera</b> (Coconut) Total number of plants: 07 Age 6Years</p>	 <p><b>Syzygium cumini</b> (Malabar plum, Java plum, black plum, jamun, jaman, jambul, or jambolan Java Plum) Total number of plants: 02 Age 6Years</p>	 <p><b>Ficus benjamina</b> (weeping fig, benjamin fig or ficustree) Total number of plants: 20 Age: 6Years</p>
 <p><b>Phyllanthus emblica</b> (emblic, emblic myrobalan, myrobalan, Indian gooseberry) Total number of plants: 02 Age: 6Years</p>	 <p><b>Euphorbia tirucalli</b> (Indian tree spurge, naked lady, pencil tree, pencil cactus, fire stick, aveloz or milk bush) Total number of plants: 01 Age: 01Year</p>	 <p><b>Wodyetia bifurcata</b> (bushy tail of a fox.) Total number of plants: 35 Age: 6Years</p>





**Hibiscus rosa-sinensis**  
**(mandaram)**  
**Total number of plants: 04**  
**Age: 1Years**



**Ocimum tenuiflorum**  
**Holy basil, *tulsi* or *Tulasi***  
**Total number of plants:**  
**around tha campus**  
**Age:0 – 6 months**



**Aloe vera**  
**(kalabanda)**  
**Total number of plants: 03**  
**Age:1year**



**Musa acuminate**  
**Banana**  
**Total number of plants: 5**  
**Age:6months**



**Psidium guajava**  
**Guava, yellow guava, lemon**  
**guava, or apple guava**  
**Total number of plants: 02**  
**Age:02 years**



**Murraya koenigii**  
**Curry tree**  
**Total number of plants: 01**  
**Age: 2Years**



**Tithonia diversifolia**  
**marigold, Mexican**  
**tournesol, Mexican**  
**sunflower, Japanese**  
**sunflower or Nitobe**  
**chrysanthemum.**  
**Total number of plants: 02**  
**Age: 1Year**



**Peltophorum pterocarpum**  
**copperpod, yellow-**  
**flamboyant, yellow**  
**flametree, yellow**  
**poinciana or yellow-flame**  
**Total number of plants: 03**  
**Age:6 years**

### 3. Energy Consumption:

The college's energy consumption was evaluated, including electricity usage and heating/cooling systems. It was observed that energy-efficient lighting was lacking in the buildings. Recommendations include upgrading lighting to LEDs and implementing energy-efficient systems. Roof top solar panels are installed on the main building. Solar Panels convert sunlight into electricity by using photovoltaic (PV) cells. PV cells are made of materials that generate electrons when exposed to light. They use a renewable and clean source of energy, reduce greenhouse gas emissions, and lower electricity bills.



### 4. Water Usage:

Water consumption patterns were analyzed, revealing excessive water usage in landscaping and plumbing. RO plant is provided inside the campus to supply water to the entire campus. Recommendations include installing low-flow fixtures, adopting rainwater harvesting systems, and promoting water conservation awareness. The waste water from RO plant is diverted to the trees and plants and used for watering.

#### **RO PLANT**



### 5. Waste Management:

Waste management practices were assessed, and it was noted that recycling and

composting programs were limited. The college should consider expanding waste segregation efforts, educating students and staff about proper disposal, and partnering with local recycling facilities.

**6. Transportation:**

Limited sustainable transportation options were available for students and staff. Recommendations include establishing bike racks, promoting carpooling, and collaborating with local transport authorities to provide discounted public transportation options.

**7.. Green Building and Infrastructure:**

Existing college buildings were found to have minimal green features and lacked energy-efficient designs. Suggestions include conducting energy audits, retrofitting buildings with insulation, and incorporating sustainable design principles in new construction projects.

**8. Education and Awareness:**

Environmental awareness initiatives were limited. The college should introduce environmental education programs, workshops, and awareness campaigns to promote sustainable practices among students and staff.

**9.Recommendations and Action Plan:**

- Develop an energy-efficient lighting and HVAC upgrade plan.
- Install low-flow fixtures and rainwater harvesting systems.
- Expand waste segregation and recycling programs.
- Establish a sustainable transportation promotion campaign.
- Implement a sustainable procurement policy.
- Conduct energy audits and retrofit buildings.
- Launch environmental education workshops and awareness campaigns.
- Create biodiversity-rich areas and enhance green spaces.

**10.Conclusion:**

The Government Degree College Avanigadda has significant potential to enhance its environmental sustainability practices. By implementing the recommendations outlined in this report, the college can reduce its ecological footprint, contribute to the community's well-being, and create a culture of environmental responsibility among its stakeholders. Ongoing monitoring and periodic updates to the green audit will be crucial for ensuring continuous improvement.



A handwritten signature in blue ink, appearing to be "D. Jyothi".

*Principal*  
GOVT. DEGREE COLLEGE  
AVANIGADDA, Krishna Dt. 521121.

A handwritten signature in blue ink, appearing to be "D. Jyothi".

Name and Signature of the Auditor  
**D. JYOTHI**, M.Sc., B.Ed.,  
LECTURER IN BOTANY  
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VIJAYAWADA, Krishna Dist.