



**GURUKULA KANGRI (DEEMED TO BE UNIVERSITY)  
HARIDWAR**



**GREEN AUDIT REPORT: 2022**

**GREEN AUDIT**

**2022  
REPORT**

**Assessing Sustainability**

**GREEN AUDIT CELL  
GURUKULA KANGRI (Deemed to be University)  
(Deemed to be University U/S 3 of UGC Act 1956)  
HARIDWAR - 249404,  
UTTARAKHAND, INDIA**

# **GREEN AUDIT - 2022**

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2022

“ASSESSING SUSTAINABILITY”



GURUKULA KANGRI (DEEMED TO BE UNIVERSITY),  
HARIDWAR, INDIA

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## CITATION

Green Audit: Report (2022) Published by Green Audit Cell, Gurukula Kangri (Deemed to be University), Haridwar, India

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## Green Audit - 2022

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# Green Audit 2022

## CERTIFICATE

This is to certify that

**GURUKULA KANGRI (DEEMED TO BE UNIVERSITY)**

Haridwar, Uttarakhand

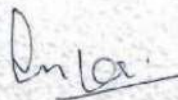
has achieved the standards for Green Cover, Buildup and Landscape  
Environment Conservation and Awareness responsibility with  
academic accountability for the Universities during the

**Green Audit 2020 - 2022**

(This certificate is issued after Green Audit Report and on-site assessment)



Prof. Gulshan K. Dhingra,  
Shri Dev Suman University,  
Rishikesh Campus, Rishikesh



Dr. C. K. Jain,  
National Institute of  
Hydrology, Roorkee



Dean, Green Audit  
Gurukula Kangri (Deemed to be University),  
Haridwar

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## INTRODUCTION

Green Audit was initiated with the beginning of 1970s with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. It exposes the authenticity of the proclamations made by multinational companies, armies and national governments with the concern of health issues as the consequences of environmental pollution. It is the duty of organizations to carry out the Green audit of their ongoing processes for various reasons such as; to make sure whether they are performing in accordance with relevant rules and regulations, to improve the procedures and ability of materials, to analyse the potential duties and to determine a which can lower the cost and add to the revenue. Though Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Green Audit. Some of the incidents like Bhopal Gas Tragedy (Bhopal; 1984), Chernobyl Catastrophe (Ukraine; 1986), Exxon-Valdex Oil Spill (Alaska; 1989), have cautioned the industries that setting corporate strategies for environmental security elements have no meaning until they are implemented.

The term “Green” means eco-friendly or not damaging the environment. This can acronymically be called as “Global Readiness in Ensuring Ecological Neutrality” (GREEN). Green Audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. Green accounting can be defined as systematic identification quantification, recording, reporting & analysis of components of ecological diversity & expressing the same in financial or social terms. “Green Auditing”, an umbrella term, is known by another name “Environmental Auditing”. The ‘Green Audit’ aims to analyze environmental practices within and outside the college campus, which will have an impact on the eco-friendly ambience. It was initiated with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. Through Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Green Audit. The green audit is a tool that organizations use to identify their environmental impacts and assess their compliance with applicable laws and regulations, as well as with the expectations of their various stakeholders. It also serves as a means to identify opportunities to save money, enhance work quality, improves employee health, safety and morale, reduce liabilities and achieve other form of business values. This concept has got its origin in recent past and suddenly got acceleration due to growth in population, needs has increased causing the increase in GAP between demand and supply.

Educational institutions have broad impacts on the world around them, both negative and positive. The activities pursued by campus can create a variety of adverse environmental impacts. But they are also in a unique position as educational institutions to be leaders in pursuing environmentally sustainable solutions. 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. 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 for sustainable development and at the same time reduce a sizable amount of atmospheric carbon-di-oxide from the environment. The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory that all Higher Educational Institutions should submit an annual Green Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

On the occasion of **World Environment Day - 2015** an initiative was taken by Gurukula Kangri Vishwavidyalaya and expressed its commitment to sustainability while forming a committee to conduct audit of campus and its facilities. Vishwavidyalaya has taken a number of positive steps to reduce its environmental impact. But many areas remain in which substantial improvements can be made. This report serves to highlight some accomplishments of and to make recommendations for improving the campus Green and environmental sustainability.

### **Phases of Green Audit**

#### **Phase – I: Pre – Audit**

- Plan the Audit
- Selection of Audit Team (External experts and Members for Current Audit)
- Collect the Background Information
- Start assessing the certain environmental factors required for prior to On – Site Phase

#### **Phase – II: On – Site**

- Understand the significance of Green Audit
- Conduct the Audit and collect the information in prescribed format
- Make an inventory for all the observations during the audit

#### **Phase – III: Post – Audit**

- Prepare the Draft report on the information collected during audit
- Generate a Final Report
- Submit the Report to higher authorities of Institution with action plans to overcome the flaws
- Share all the current status and recommendations with all the Heads and Deans of Institution
- Time to time check the action plan

For the current Green Audit, the focused was made on following indicators, covering an extremely wide range of environmental impacts:

1. **Green Cover Audit**
2. **Build-up Environment Audit**
3. **Landscape Environment Audit**

**OBJECTIVES**

Green Audit is assigned to the Criteria of NAAC, National Assessment and Accreditation council which is a self-governing organization of India that declares the institutions as Grade A, B or C according to the scores assigned are the time of accreditation.

The intention of organizing Green Audit is to upgrade the environment condition in and around the institutes, colleges, companies and other organizations. It is carried out with the aid of performing tasks like waste management, energy saving and others to turn into a better environmental friendly institute.

To conduct the Green Audit, Green Audit Cell, Gurukula Kangri (Deemed to be University) has made a self-inquiry on various parameters of the campus with the following objective:

- To establish a baseline of existing environmental conditions with focus on natural and physical environment.
- securing the environment and cut down the threats to human health.
- To make sure that rules and regulations in terms of environmental laws are taken care of.
- To understand the current practices of sustainability with regard to the use of water and energy, generation of wastes, purchase of goods, transportations, *etc.*
- To avoid the interruptions in environment that are more difficult to handle and their correction requires high cost
- To suggest the best protocols for adding to sustainable development
- To promote environmental awareness through participatory auditing process
- To create a report that documents baseline of good practices and provide future strategies and action plans towards improving environmental quality for future.



## Significance of Green Audit

One of the major threats arising from urbanization and increase in population on earth is over-development and unmanaged utilization of resources. To monitor this there are a number of environmental management techniques that can be used to minimize the effects of development. One of the techniques associated with environmental management programmes is that of Green Audit or Environmental Auditing. The purpose of this management tool is to measure the actual and potential environmental impacts in the ecosystems.

In the present time, the pollution is significantly increasing day-by-day due to the industries and factories. It is causing serious health problems to the human being and also polluting the environment. It can also make an adverse effect on the mental, social, and economic ability of the person. It becomes imperative to save the people from dangerous chemicals and waste of the industries because people have to live in the green environment to lead a healthy life. It is important for the government to regulate rules and regulations for the industries to make the environment neat and clean. For this purpose, there is a strict need to employ environmental inspectors who can perform Green audits to prevent the pollution.

Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being and he bears a solemn responsibility to protect and improve the environment for present and future generation." Most countries today face environmental threats due to the increase in pollution of the atmosphere, water and land. Wildlife habitats continue to be threatened. Water contamination and air pollution are critical problems facing most countries. Environment related problems are linked closely to the rapid growth of population, as well as to technological advancements.

Green auditing or environmental audit is a process of extracting information about a company that provides a realistic assessment of how the company affects the environment and also a set of environmental objectives and targets to reduce the effects. Eco-auditing is a systematic multidisciplinary method used periodically to assess the environmental performance of a project. Eco-auditing evolved as a management tool in the USA in 1980s. It has been promoted in Europe by the International Chamber of Commerce and by some multinational corporations as a means of getting effective environmental management. But, in developing countries, the eco-auditing concept is still a theoretical concept. However, India has modified its Companies Act to include a requirement for eco-audits. This it is very important for each organization to conduct its environmental audits or green audit to ensure that we are working in the direction of sustainable development.

Green audits are necessary to evaluate the impact of industries and their manufacturing on the natural resources. The environmental auditing is an important process to make sure continuous development in the environmental management. The environmental auditor appropriately monitors



the system for safe disposal of waste in the industries to ensure the safety of the natural resources. It also lessens the interference of the government directly since the environmental auditor can examine the required standards and present the report to the government.

A good environmental auditing system needs a constant effort to monitor and analyse the industrial working system to create the analysis on pollution being generated. The major objective of performing **green audit** is controlling the pollution. It also helps in improving the production safety and to making sure the prevention and reduction of the chemical waste. It also provides performance reviews of institutional working facilities and its possible impact on the surroundings.

The environmental auditor has to detect the existing environmental compliance problems and make recommendations to the manufacturers for reducing the pollution to save the environment.

**While enforcing the Green Audit effectively,**

- Will help to maintain the environment and its resources in institution
- Highlight the problems from energy loss to water loss.
- Minimize the waste and use the resources efficiently.
- Give the better approach to environmental conditions and its improvisation
- Helps in awareness activities for students.

Can participate in national programmes like SWACHH BHARAT MISSION, NAMAGI GANGE, WATER CONSERVATION, SWASTH BHARAT *etc.*

## PART – I: GREEN COVER



- |   |          |   |
|---|----------|---|
| <b>a. Area under Green Cover in Vishwavidyalaya</b> | <b>:</b> | <b>50% of Entire<br/>Vishwavidyalaya Campuses</b> |
| <b>b. No. of Trees in Vishwavidyalaya</b>           | <b>:</b> | <b>3272</b>                                       |
| <b>c. No. of Plants in Vishwavidyalaya</b>          | <b>:</b> | <b>9203</b>                                       |

You've probably heard that trees produce oxygen, but have you ever wondered just how much oxygen one tree makes? The amount of oxygen produced by a tree depends on several factors, including the species of tree, its age, its health, and the tree's surroundings. A tree produces a different amount of oxygen in summer compared to winter. So, there is no definitive value.

Here are some typical calculations:

"A mature leafy tree produces as much oxygen in a season as 10 people inhale in a year."

"A single mature tree can absorb carbon dioxide at a rate of 48 pounds/year and release enough oxygen back into the atmosphere to support two human beings."

"One acre of trees annually consumes the amount of carbon dioxide equivalent to that produced by driving an average car for 26,000 miles. That same acre of trees also produces enough oxygen for 18 people to breathe for a year."



"A 100-foot tree, 18 inches' diameter at its base, produces 6,000 pounds of oxygen."

"On average, one tree produces nearly 260 pounds of oxygen each year. Two mature trees can provide enough oxygen for a family of four."

#### Sources

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- Stancil, Joanna Mounce. The Power of One Tree - The Very Air We Breathe. U.S. Department of Agriculture. March 17, 2015.
- Villazon, Luis. How many trees does it take to produce oxygen for one person? BBC Science Focus Magazine.



'Green cover' refers to a broad range of strategies to integrate green, permeable and reflective surfaces into cities and towns, which are home to 89 per cent of our population. Surface temperatures in urban areas can be 10°C to 20°C higher than in the air temperatures because buildings, roads and other hard surfaces absorb and store heat. High temperatures, due to climate change, will further intensify the impacts of urban heat.

Unlike hard surfaces, trees and vegetation (sometimes called green infrastructure) provide shade, and cool and clean the air by evapotranspiration. Other benefits are better health and wellbeing for urban-dwellers, more biodiversity and wildlife in urban areas, and better regulation of localised flooding.

Types of urban green cover include bushland, private and community gardens, parks, greenways, habitat corridors, street trees, roof gardens and plant-covered walls, as well as reflective and permeable walls, pavements and other surfaces. Protecting local green spaces, designing eco-friendly buildings and creating urban networks of green space can help to minimise the impacts of urban heat in our cities and towns.

Gurukula Kangri (Deemed to be University), Haridwar is one of the oldest institution of India committed for maintaining cultural heritage while moving towards a better future with scientific and sustainable perspective. In terms of environment, the Vishwavidyalaya is very rich with number of exotic species of plants, conservation measure of water undertaken *viz.* awareness, conservation of water from distillation assemblies *etc.*, recycling of waste to convert it into compost and vermi-compost *etc.* In recent years steps like formation of Eco-club, awareness camps and workshops, celebration days like Himalayan Day and World Environment Day while planting trees and motivated lectures are taken place within all the campuses of Vishwavidyalaya.

Conducting green audit is also another step while assessing the present condition and improve wherever is required in terms of green cover from energy conservation to water conservation, planting trees to awareness programmes.



## PART – II: BUILD-UP ENVIRONMENT



In the engineering and social sciences, the term **built environment**, or **built world**, refers to the human-made environment that provide the setting for human activity, ranging in scale from buildings to cities and beyond. It has been defined as "the human-made space in which people live, work and recreate on a day-to-day basis". The built environment encompasses places and spaces created or modified by people to serve their needs of education, office, accommodation, organisation and representation.

Currently, built environments are typically used to describe the design, construction, management, and use of these man-made surroundings as an interrelated whole as well as their relationship to human activities over time (rather than a particular element in isolation or at a single moment in time). It is the science to understand the drawing upon areas such as economics, law, public policy, public health, management, geography, design, engineering, technology, and environmental sustainability. Within the field of public health, built environments are referred to as building or renovating areas in an effort to improve the community's well-being through construction of "aesthetically, health improved, and environmentally improved landscapes and living structures".



An accessible physical environment benefits everyone, not just persons with disabilities. Measures should be undertaken to eliminate obstacles and barriers to indoor and outdoor facilities including schools, medical facilities, and workplaces. These would include not only buildings, but also footpaths, curb cuts, and obstacles that block the flow of pedestrian traffic.

An accessible government building is one, where persons with disabilities have no barrier in entering it and using all the facilities therein. This covers the built environment – services, steps and ramps, corridors, entry gates, emergency exits, parking – as well as indoor and outdoor facilities including lighting, signages, alarm systems and toilets.



Identifying accessible buildings requires annual accessibility audits that determine if a building meets agreed upon standards. Once a building is deemed fully accessible, an annual audit is not necessary, but should be required for any proposed changes to the structure or systems contained therein. A full audit can then be done on a less frequent basis. Standards of accessibility should be as consistent as possible with international standards, such as those of the ISO, taking into account the local context. In regards to the built environment, ISO 21542:2011, Building Construction – Accessibility and Usability of the Built Environment, delineates a set of requirements and recommendations concerning construction, assembly, components and fittings.

While these things in mind the audit for build-up environment, we assessed all the infrastructure the Vishwavidyalaya have in all the campuses, having mixed infrastructure from old to new.

Almost all the building is having plantation and green cover around them. In terms of safety almost all the departments are having Fire extinction system installed. With the earlier initiatives of Green audit cell, eco-club and authorities the campus is almost free from noise pollution inside the campus but a minimum was there due to Vishwavidyalaya campus are situated on the National Highways.

In many departments, earlier it was found that there are no rest rooms for females as well as differently abled persons in the main campus and Faculty of engineering but after the recommendations of Green Audit Cell in 2018 today the entire campus is equipped with all the basic facilities for females and differently abled persons. In last Green Audit report, the committee has recommended the development of students' knowledge and constructive thinking is recreation room which is still to be in consideration. We suggest and recommend a common recreation room inside each campus to be created for all the students.

With the current assessment it is clearly found in the build-up environment there are certain things which require upgradation and maintenance. We also recommend that all the conferences halls available in the different departments should be given some name of eminent researchers of the respective fields or eminent alumni's of the Vishwavidyalaya and there biography with a photograph should be there in the conference hall. It will lead to students more aware about the researchers of India and great alumni's of Vishwavidyalaya.





| S. No. | Name of Department   | Building Types                                | Area in Sq. ft | Eco-friendly | Fire prevention provisions | Aesthetic appeal | Serenity of Classrooms | Ladies Rest Room | Recreation Room | Provision for differently abled | Toilets, Men, Women, differently abled |
|--------|--|---|----------------|--------------|----------------------------|------------------|------------------------|------------------|-----------------|---------------------------------|--|
| 1.     | Sanskrit Department, Kanya Gurukul Parisar, Haridwar   | concrete                                      | -              | Y            | Y                          | Y                | Y                      | -                | -               | -                               | woman-02                               |
| 2.     | Kanya Gurukul Parisar, Haridwar  | Centre Approved                               |                | -            | Y                          | -                | Y                      | N                | N               | N                               | Y                                      |
| 3.     | Hindi Department, Kanya Gurukul Parisar, Haridwar  |   |                |              |                            |                  |                        |                  |                 |                                 |  |
| 4.     | Hindi Department, GK(DU), Haridwar   | L-type  | 2200 sq. ft    | -            | -                          | -                | -                      | -                | -               | -                               | common                                 |
| 5.     | Department of Mechanical engineering   | Educational                                   | 23100          | Y            | Y                          | Y                | Y                      | NA               | NA              | Y                               | Y                                      |
| 6.     | Registrar office + Establishment I and II + IT cell  | New Structure                                 | 6000           | Y            | Y                          | Y                | -                      | -                | -               | -                               | 3Male and 1 Female                     |
| 7.     | Department of Mathematics and Statistics   | Ground and 1 <sup>st</sup> floor              | 9600           | Y            | Y                          | Y                | Y                      | N                | N               | Y                               | Y                                      |
| 8.     | Department of Philosophy   | Concrete                                      | 600            | Y            | Y                          | Y                | Y                      | -                | -               | -                               | 02 women                               |
| 9.     | Kanya Gurukul Campus, Dehradun   | Concrete                                      | -              | NA           | Y                          | Available        | Available              | Available        | Available       | Available                       | Available                              |
| 10.    | Department of Physical Education and Sports (main building)<br>Gym, Badminton Hall. Squash courts and stores | Office and classrooms                         | 13950.028      | Y            | Y                          | Y                | Y                      | Y                | Yes             | Ramp                            | Fulfilled                              |
|        |  | Gym, Badminton Hall. Squash courts and stores | 13661          | Y            | Y                          | Y                | Y                      | Y                | Yes             | N                               | Fulfilled                              |
| 11.    | Department of Microbiology, KGC  | Multistory                                    |                | -            | Y                          | Y                | Y                      | -                | -               | -                               | -                                      |
| 12.    | Department of Mathematics and Statistics, Kanya Gurukul Campus, Haridwar                                     | Multistory                                    |                | -            | Y                          | -                | Y                      | -                | -               | -                               | -                                      |