



# **SGT UNIVERSITY**

## **GREEN AUDIT REPORT**

**2023-2024**

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Prepared by  
**EHS ALLIANCE**

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# Certificate



## CERTIFICATE

PRESENTED TO

# SGT UNIVERSITY

Budhera, Gurugram-Badli Road, Gurugram- 122505, Haryana, India.

Has been assessed by EHS Alliance Services for the comprehensive study of environmental impacts on institutional working framework to fulfill the requirement of

## GREEN AUDIT

**ACADEMIC YEAR 2023-24**

The green initiatives carried out by the institution have been verified on the report submitted and was found to be satisfactory.

The efforts taken by the management and the faculty towards environment and sustainability are appreciated and noteworthy.

A handwritten signature in blue ink, appearing to read 'H. Singh'.

SIGNATURE



11.06.2024  
DATE OF AUDIT

EHS ALLIANCE SERVICES, PLOT A-72, SURYA VIHAR, GURUGRAM, 122001  
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## Acknowledgement

EHS Alliance Services extends its heartfelt gratitude to the management of SGT University for entrusting us with the crucial task of conducting the Green Audit. We deeply appreciate the cooperation provided by all teams involved, which facilitated the successful completion of the assessment.

Firstly, we would like to express our sincere thanks to **Dr. Sumat Parkash Aggarwal, Pro-Vice Chancellor (SGT University)**, for giving us the opportunity to evaluate the environmental performance of the campus.

Our appreciation also goes to **Prof. (Dr.) Joginder Yadav, Registrar, SGT University**, for his unwavering support and guidance, without which the project could not have been completed.

Additionally, we are grateful to the other staff members who actively participated in data collection and field measurements. We also extend our thanks to

Dr. Archana Chaudhary                      Chairperson, Environment Committee

Mr. Gaurav Chaudhary                      Admin Officer

Dr. Shikha Sharma                          Secretary, Environment Committee



## Disclaimer

The EHS Alliance Services Audit Team has prepared this report for SGT University based on data provided by the university representatives and the expert judgment of our team. While every reasonable effort has been made in the preparation of this report, the details contained herein have been compiled in good faith based on the gathered information.

It is important to note that the conclusions have been drawn using the best available estimates. No representation, warranty, or undertaking, express or implied, is made, and the Audit Team accepts no responsibility for any direct or consequential loss arising from the use of the information, statements, or forecasts in this report.

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**Signature**

**LEAD AUDITOR**

## Concept & Context

The National Assessment and Accreditation Council (NAAC) in New Delhi has mandated that all Higher Educational Institutions (HEIs) must submit an annual Green, Environment, and Energy Audit Report starting from the academic year 2019-20. This requirement falls under Criteria 7 of the NAAC guidelines. NAAC, an autonomous organization in India, assigns grades (A, B, or C) to institutions based on their accreditation scores. Additionally, conducting a Green Audit aligns with the Corporate Social Responsibility (CSR) of HEIs, ensuring they contribute to reducing global warming through Carbon Footprint reduction measures.

In response to the NAAC directive on green auditing, the management decided to conduct an external environmental assessment by a qualified professional auditor. The green audit aims to examine the environmental practices within and around the campus that directly or indirectly impact the atmosphere. Green auditing involves the systematic identification, quantification, recording, reporting, and analysis of various environmental components within the campus.

The audit was initiated to review the institution's practices that may pose risks to the health of its inhabitants and the environment. Through the green audit, the university seeks guidance on improving its environmental structure and incorporating measures to protect the environment. This audit focuses on various aspects, including Green Campus, Waste Management, Water Management, Air Pollution, Energy Management, and Carbon Footprint reduction.

Outlined below are the concepts, structure, objectives, methodology, and tools of analysis used in the audit:

## Introduction

Nowadays, educational institutions are increasingly mindful of environmental considerations, leading to the introduction of new and innovative concepts to make them sustainable and eco-friendly. To preserve the environment within their campuses, many educational institutes are adopting various approaches to address environmental challenges. These include promoting energy conservation, recycling waste, reducing water consumption, implementing water harvesting systems, and more.

However, the activities conducted by these institutions can also have adverse environmental impacts. A Green Audit is an official inspection that assesses the environmental effects of a college or university. It is conducted to evaluate the current environmental scenario on campus. Green audits are valuable tools for determining how and where an institution is using the most energy, water, or resources. This information helps the institution decide on changes to implement for savings. Additionally, it can identify the nature and volume of waste, which can be used to develop recycling projects or improve waste minimization plans.

Green auditing and implementing mitigation measures benefit the institution, the students, and the environment. It promotes health awareness, environmental awareness, values, and beliefs. It helps

staff and students understand the environmental impact of their institution better and supports financial savings through reduced resource usage. Furthermore, it fosters a sense of personal and social responsibility among students and teachers. The audit process involves primary data collection, site walkthroughs with university or college teams, and the assessment of policies, activities, documents, and records.

## Overview Of University

SGT (Shree Guru Gobind Singh Tricentenary) University, Gurugram, spans over 70 acres of lush green campus, enveloped in serene beauty and a tranquil environment. Situated at Chandu-Bhudera on the outskirts of Gurgaon, it is less than five kilometers from the Delhi border at Daurala, offering convenient access from Indira Gandhi International Airport.



SGT University was established by the Haryana Private Universities (Amendment) Act No. 8 of 2013 to provide educational opportunities to all segments of society under the umbrella of Dashmesh Educational Charitable Trust. The Trust was founded in 1999 with the noble mission of spreading the teachings of Shree Guru Gobind Singh Ji, the great philosopher and social reformer who believed that "the spread of learning is the best service to mankind." The foundation for the university's growth was laid in 2002 with the establishment of the SGT Dental College.

In an ever-evolving work environment, SGT University fosters a culture of continuous learning to develop future innovative leaders of international repute. These leaders are quick to learn and

implement new skills, understand changing customer needs, and can revamp operations effectively with a significant return on investment.

SGT University's modern infrastructure and learner-centric pedagogy fully support its students. The university is focused on investing in "Nurturing Future Leaders" to produce resourceful and productive employees at all levels, from "Green Graduates" to "Tenured Senior Managers." The university is determined to instill domain-specific skills and soft skills in its emerging innovative leaders, making them future-ready. At SGT University, the focus is on developing skills and behaviors that align with a good cultural fit and the right academic background.

## Facilities in campus

### Hostel:

SGT University provides separate hostels for girls and boys with round-the-clock security. Each hostel features separate dining rooms, recreation rooms, and study rooms.

### Transport Services:

The university operates 60 buses across NCR and neighboring areas, serving both students and staff. Bus facilities are also available for hostellers for city visits, with charges based on actual usage.

### Playgrounds:

SGT University offers a variety of sports facilities, including playgrounds for basketball, volleyball, football, table tennis, cricket, and badminton, promoting the all-round development of students.

### Canteen:

The spacious cafeteria provides a wide variety of snacks to students and staff at reasonable rates.

### Labs:

The Department of Anatomy at SGT Medical College, Hospital, and Research Institute features a well-equipped museum, dissection hall, and research lab, with facilities for tissue processing, special staining, and research in genetics and embryology.

### Gym:

SGT University offers well-equipped gyms in both the girls' and boys' hostels.

### Seminar Hall:

The Seminar Hall is an ideal venue for seminars and lectures by medical professionals, offering students insights into various fields. These sessions provide first-hand info & opportunities for students to ask questions and clear their doubts.

### Library:

The university's fully air-conditioned library, designed for comfort and natural lighting, can accommodate 450 users at a time. It offers modern facilities and resources, including CD-ROMs, online databases, books, journals, theses, WHO publications, and more.

## Vision & Mission

**Vision:** To nurture individual excellence through value-based, cross-cultural, integrated, and holistic education, adopting contemporary and advanced methods blended with ethical values, contributing to building a peaceful and sustainable global civilization.

**Mission:**

- To impart higher education that meets global standards and the changing needs of society.
- To provide access to quality education and improve the quality of life at individual and community levels through innovations and ethical research.
- To engage with and promote the growth and welfare of the surrounding community through extension and outreach activities.
- To develop socially responsible citizens, fostering ethical values and compassion through community engagement and promotion activities.
- To create a competitive and coordinated environment where individuals develop skills and a lifelong learning attitude to excel in their endeavors.
- To develop Centers of Excellence to achieve cutting-edge technology in all fields.

Presently, SGT University offers over 160 courses, including undergraduate, postgraduate, and PhD programs, across 18 faculties:

- Faculty of Mass Communication & Media Technology
- Faculty of Hotel & Tourism Management
- Faculty of Fashion & Design
- Faculty of Commerce & Management
- Faculty of Engineering & Technology
- Faculty of Agricultural Sciences
- Faculty of Education
- Faculty of Law
- Faculty of Science
- Faculty of Indian Medical System
- Faculty of Naturopathy and Yogic Sciences
- Faculty of Allied Health Sciences
- Faculty of Behavioral Sciences
- Faculty of Dental Sciences
- Faculty of Nursing
- Faculty of Medicine & Health Sciences
- Faculty of Physiotherapy
- Faculty of Pharmacy

## Audit Participants

On behalf of the university

Name	Designation
Prof. S.P. Aggarwal	Pro Vice-Chancellor (Admin)
Dr. Joginder Yadav	Registrar
Prof. Nishith Kumar Mishra	Director IQAC
Dr. Archana Chaudhary,	Associate Professor, FOSC
Mr. Gaurav Chaudhary,	Admin. Officer
Dr. Mohit Sharma,	Hospital Quality Assurance Cell (HQAC)
Dr. Bhoopesh Kumar Sharma	Associate Professor, FOSC
Ms. Rachna	Assistant Professor, FON
Mr. Mohit Deswal	Assistant Professor, FAHS
Mr. Sarvjit Singh Jaswal	GM Administration
Mr. Umesh Kothari	Administrator
Mr. Anurag Khajuria	Registrar Office
Dr. Shikha Sharma	Assistant Professor, FDSC
Mr. Sripal Singh	Member, Environment Committee
Mr. Vijay Ghai	Assistant Manager Admin

On behalf of EHS Alliance Services

Name	Position	Qualifications
Dr. Uday Pratap	<i>Co-Auditor</i>	<i>Ph.D., EMS: Lead Auditor ISO14001:2015, QCI-WASH</i>
Mr Puneet Kaushik	<i>Co-Auditor</i>	<i>M.Sc. M. Tech (Environment Science &amp; Engineering), Energy Auditor, Post Diploma in Industrial Safety Management</i>
Mr Arun Prabath	<i>Co-Auditor</i>	<i>Environment Expert</i>

# Executive Summary

Green auditing is a crucial step in identifying and assessing whether an institution's practices are sustainable and environmentally friendly. Traditionally, we have been responsible and efficient users of natural resources. However, over time, excessive use of resources such as water, electricity, and petrol has become a habit, especially in urban and semi-urban areas. Now is the right time to evaluate if our processes consume more resources than necessary and whether we are using these resources wisely.

A green audit helps standardize these practices and provides a more efficient way to use natural resources. In the era of climate change and resource depletion, it is essential to reassess and transform processes to make them green and sustainable. A green audit offers a method to achieve this and raises overall awareness among individuals within the institution about maintaining an eco-friendly environment.

This is the fourth green audit conducted at the SGT campus to meet NAAC criteria. This audit primarily focused on various greening indicators, including energy consumption in terms of electricity and fossil fuels, soil quality, water usage, vegetation, waste management practices, and the campus's carbon footprint. Initially, a questionnaire was distributed to gather information about the existing resources and consumption patterns of students and staff at SGT University.

## Green Audit Analysis

### 1.1 General Information

Does any Green Audit conducted earlier?	Yes, This is fourth time SGT University has gone for External Green Audit in a systematic way of monitoring their environmental eminence.																										
What is the total strength (people count) of the Institute?	<table border="0"> <tr> <td colspan="3"><b>Students</b></td> </tr> <tr> <td>Male: 4522</td> <td>Female: 4233</td> <td>Total: 8747</td> </tr> <tr> <td colspan="3"><b>Teachers</b></td> </tr> <tr> <td>Male: 349</td> <td>Female: 379</td> <td>Total: 728</td> </tr> <tr> <td colspan="3"><b>Non-Teaching Staff</b></td> </tr> <tr> <td>Male: 1199</td> <td>Female: 347</td> <td>Total: 1546</td> </tr> <tr> <td colspan="3"><b>Total Strength</b></td> </tr> <tr> <td>Male: 6070</td> <td>Female: 4959</td> <td>Total: 11029</td> </tr> </table>			<b>Students</b>			Male: 4522	Female: 4233	Total: 8747	<b>Teachers</b>			Male: 349	Female: 379	Total: 728	<b>Non-Teaching Staff</b>			Male: 1199	Female: 347	Total: 1546	<b>Total Strength</b>			Male: 6070	Female: 4959	Total: 11029
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What is the total number of working days of your campus in a year?	There are one hundred eighty working days in a year.																		
Where is the campus located?	The campus is located at Budhera, Gurugram-Badli Road, Gurugram (Haryana)-122505																		
Which of the following are available in your institute?	<table border="0"> <tr> <td>Garden area</td> <td>Available</td> </tr> <tr> <td>Playground</td> <td>Available</td> </tr> <tr> <td>Kitchen</td> <td>Available</td> </tr> <tr> <td>Toilets</td> <td>Available</td> </tr> <tr> <td>Garbage Or Waste Store Yard</td> <td>Available</td> </tr> <tr> <td>Laboratory</td> <td>Available</td> </tr> <tr> <td>Canteen</td> <td>Available</td> </tr> <tr> <td>Hostel Facility</td> <td>Available</td> </tr> <tr> <td>Guest house facility</td> <td>Available</td> </tr> </table>	Garden area	Available	Playground	Available	Kitchen	Available	Toilets	Available	Garbage Or Waste Store Yard	Available	Laboratory	Available	Canteen	Available	Hostel Facility	Available	Guest house facility	Available
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Which of the following are found near your institute?	<p><b>Municipal Dump Yard:</b> Not in the vicinity of the institute</p> <p><b>Garbage Heaps:</b> No garbage heap</p> <p><b>Public Convenience:</b> Public convenience is available</p> <p><b>Sewer Line:</b> Approximately 4 km of sewer line within the campus</p> <p><b>Stagnant Water:</b> No stagnant water</p> <p><b>Open Drainage:</b> None</p> <p><b>Industry (Type):</b> None</p> <p><b>Bus/Railway Station:</b> Budhera Bus Stand, Garhi Hashru Railway Station</p> <p><b>Market/Shopping Complex:</b> Available</p>																		

## 1.2 Waste Minimization And Recycling

Does your institute generate any waste? If so, what are they?	<p>Yes, the following types of waste are generated by the campus</p> <ul style="list-style-type: none"> <li>• Biodegradable waste – Horticulture waste and food waste</li> <li>• Non-biodegradable waste – Paper and plastic waste</li> <li>• Biomedical waste – sanitary disposal waste</li> <li>• E-waste</li> </ul> <p>The University takes measures to manage the solid waste on the campus by the method of segregation at the source, composting of biodegradable waste, recycling of electronic waste, and restricting the use of plastics.</p> <p>The campus has color coded waste bins for bio-degradable (green) and non-biodegradable (blue) wastes for segregation.</p> <p>The biodegradable waste is converted into compost using the composting facility in the university. The compost is used in the nursery and campus garden.</p>
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<p>What is the approximate amount of waste generated per day? (in KG approx.)</p>	<p>Biodegradable waste - 50 Kg  Non-biodegradable waste - 50 Kg  Hazardous Waste - 10 Kg (BMW)  E-waste - 2 Kg</p>
<p>How is the waste generated in the institute managed? By Composting, Recycling, Reusing, Others (specify)</p>	<ul style="list-style-type: none"> <li>• University avoids use of single use plastic on the campus</li> <li>• Composting is done for horticulture waste management.</li> <li>• BMW of SGT University is being managed by the Biotic Waste Limited. Solid waste (Both dry and wet) is managed by Gurugram Waste Management System Pvt Ltd</li> <li>• Oil and hazardous waste is managed by Shiv Shakti Oil and Lubricants and Gujarat Enviro Protection and Infrastructure (Haryana) Pvt. Ltd</li> <li>• Greenobin is managing paper waste by doing bulk recycling.</li> <li>• SGT University is in collaboration with Earth Zone Recycling. They collect e-waste (computers, mobile, printers, servers, printers) in the campus, and send for recycling.</li> <li>• Bi-annual one week collection drive is organized by campus.</li> </ul>
<p>Do you use recycled paper in institute?</p>	<p>Yes, SGT University collaborate with third party recycle vendor for management of the used paper</p>
<p>How would you spread the message of recycling to others in the community?</p>	<p>University conducts regular awareness campaigns, workshops, and seminars to educate students, faculty, and staff about the importance of recycling and its positive impact on the environment. These initiatives include</p> <ul style="list-style-type: none"> <li>• Seminars and add-on courses for students</li> <li>• MoUs with NGOs</li> <li>• Reuse waste paper for poster makings</li> <li>• Nukkar-Natak by Students to increasing awareness</li> <li>• Part of Environment education</li> </ul>
<p>Can you achieve zero garbage in your institute? If yes, how?</p>	<ul style="list-style-type: none"> <li>• The university does not encourage use of single use plastic.</li> <li>• University converts the biodegradable garden and kitchen waste into compost.</li> <li>• The dry waste is reduced by using digital medium to circulate messages rather than printed paper.</li> <li>• The University practices the RRR principle.</li> <li>• The University collaborates with paper recycling services to recycle its paper.</li> </ul>

### 1.3 Greening the Campus

Is there a garden in your institute?	Yes, about 794534 sq ft areas are developed as Gardens.
Do students spend time in the garden?	Yes, students spend around 2-4 Hours during winters.
What are total number of Plants in Campus?	Plant type with approx. count Full grown Trees            1,573 Small Trees                    6,66 Hedge Plants                 2,47,586 Grass Cover                  7,94,534 Sq ft
Is the SGT campus having any Horticulture Department? (If yes, give details)	Yes, Total 65 staff deployed in horticulture 1 - Head 4 – Supervisor 60 – gardeners
How many Plantation Drives organized by campus per annum?	Five Plantation Drives are organized by campus in last Financial Year 2022-2023. A total 113182 plants were planted
How many trees and plants were planted in last drive? And, what is the survival rate?	Number of trees planted in 2023-24        8840 Plants damaged                                    35 Plants survived                                    355 Survival rate                                         91%
Is there any Plant Distribution Program for Students and Community?	The SGT University has a practice where all guests are given a planter as a gift rather than a bouquet of flowers
Is there any Plant Ownership Program?	Yes

### 1.4 Miyawaki Urban Forest

<b>Total area</b>	<b>3046 sq.m.</b>
<b>Block area plantation</b>	<b>7704</b>
<b>Plantation for pathway, Pond, Sitting and Parking area etc.</b>	<b>746</b>
	<b>8450 Plant</b>

## Miyawaki Urban Forest

Block	Plants	Scientific Name	Plant (Nos)	Block
<b>A</b>	Jamun	Syzygium cumini	500	
	Amrud	Psidium guajava	500	
	Harshringar	Nyctanthes arbor-tristis	350	
	Chandni	Tabernaemontana coronaria	500	
	Nerium	Nerium oleander	150	
		<b>Total</b>	<b>2000</b>	<b>500</b>
<b>B</b>	Neem	Azadirachta indica	300	
	Moringa	Moringa oleifera	300	
	Pahari Papri	Holoptelea integrifolia	300	
		<b>Total</b>	<b>900</b>	<b>300</b>
<b>C</b>	Shisham	Dalbergia sissoo	300	
	Kanji	Millettia pinnata	300	
	Champa	Plumeria alba	300	
	Chir	Pinus roxburghii	300	
		<b>Total</b>	<b>1200</b>	<b>300</b>
<b>D</b>	Emli	Tamarindus indica	300	
	Senna	Cassia siamea	300	
	Shahtoot	Morus alba	300	
	Amaltash	Cassia fistula	300	
		<b>Total</b>	<b>1200</b>	<b>300</b>
<b>E</b>	Belpatra	Aegle marmelos	150	
	Bakayan	Melia azedarach	150	
	Gulmohar	Delonix regia	150	
	Custard apple	Annona squamosa	100	
	Mosambi	Citrus limetta	50	
		<b>Total</b>	<b>600</b>	<b>150</b>
<b>F</b>	Lasoda	Cordia dichotoma	300	
	Mosambi	Citrus limetta	300	
	Kanji	Millettia pinnata	300	
		<b>Total</b>	<b>900</b>	<b>300</b>
<b>G</b>	Neem	Azadirachta indica	150	

	Gulmohar	Delonix regia	150	
	Champa	Plumeria alba	150	
	Chandni	Tabernaemontana coronaria	150	
		<b>Total</b>	<b>600</b>	<b>150</b>
<b>H</b>	Emlī	Tamarindus Indica	150	
	Aonla	Phyllanthus emblica	150	
	Moringa	Moringa oleifera	150	
		<b>Total</b>	<b>450</b>	<b>150</b>
<b>I</b>	Jamun	Syzygium cumini	150	
	Pilkhan	Ficus infectoria	150	
	Kanji	Millettia pinnata	150	
	Chandni	Tabernaemontana coronaria	150	
		<b>Total</b>	<b>600</b>	<b>150</b>
	<b>Total block</b>		<b>2300</b>	



## 1.5 Water and Wastewater Management

<p>List uses of water in your institute</p>	<p>Basic use of water in campus:</p> <table border="0"> <tr> <td>Drinking</td> <td>–</td> <td>317.83 KL/month</td> </tr> <tr> <td>Gardening</td> <td>–</td> <td>251.95 KL/month*</td> </tr> <tr> <td>Kitchen and Toilets</td> <td>–</td> <td>1152.04 KL/month</td> </tr> <tr> <td>Hostel</td> <td>–</td> <td>4320.00 KL/Month</td> </tr> <tr> <td>Others</td> <td>–</td> <td>381.49 KL/month</td> </tr> <tr> <td>Total</td> <td>=</td> <td>6423.30 KL/Month</td> </tr> </table> <p>* SGT University uses fresh water apart from 4787 KL treated water</p>	Drinking	–	317.83 KL/month	Gardening	–	251.95 KL/month*	Kitchen and Toilets	–	1152.04 KL/month	Hostel	–	4320.00 KL/Month	Others	–	381.49 KL/month	Total	=	6423.30 KL/Month
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Others	–	381.49 KL/month																	
Total	=	6423.30 KL/Month																	
<p>How does your institute store water? Are there any water saving techniques followed in your institute?</p>	<p>SGT University relies on tanker for water supply as a primary source and 3 bore wells as a secondary source. 4 Overhead Water Tanks and 03 Underground Water tanks installed for storage of water.</p> <p>SGT University ensures regular maintenance of water tanks and checking of water quality standards on the campus. The water tanks and water coolers are checked every 3 months, and RO systems are regularly changed.</p> <p><b>Saving Techniques</b></p> <ul style="list-style-type: none"> <li>• Avoid overflow of water-controlled valves are provided in water supply system.</li> <li>• Close supervision for water supply system.</li> <li>• Push taps are installed</li> <li>• Water Conservation awareness for new students</li> <li>• Sprinklers usage for gardening and grass cover</li> </ul>																		
<p>Locate the point of entry of water and point of exit of waste water in your institute.</p>	<p><b>Entry</b> – SGT University uses tankers for water and have borewells as a secondary source</p> <p><b>Exit</b> – From Canteen, Toilets, bathrooms and Hostels through covered drainage which is connected to sewage treatment plant</p>																		
<p>Write down ways that could reduce the amount of water used in your institute</p>	<p><b>Basic ways:</b></p> <ul style="list-style-type: none"> <li>• The university ensures that the faucets in the washrooms and water filtration units are checked regularly and do not have any leakages.</li> <li>• University has initiated the installation of auto push taps to reduce water wastage.</li> <li>• Periodic Water Conservation awareness for new students</li> <li>• University has initiated Use of sprinklers for gardening</li> <li>• University has adopted drip irrigation for small plants</li> </ul>																		

## 1.6 Animal Welfare

List the animals (wild and domestic) found on the campus (dogs, cats, squirrels, birds, insects, etc.)

Approx. 5 Dogs, 3 cats, 100+ Squirrels, 20+ species of Birds including peacock, and Butterflies are found in campus. A variety of bird's species and other flora and fauna available, so institute is doing their bit for bio diversity conservation.

Does your institute have a Biodiversity Program or a KARUNA CLUB?

Yes, SGT environment committee actively participates in activities including feeding the birds, planting fruit-based plants for birds, organizes biodiversity awareness campaigns, etc.

## 1.7 Carbon Emission

Electricity used per year - CO2 emission from electricity

$(\text{electricity used per year in kWh}/1000) \times 0.84$   
 $= 7659990/1000 \times 0.84$   
 $= 6434.39 \text{ tons}$

LPG/PNG used per year - CO2 emission from LPG/PNG

$(\text{LPG/PNG used per year in kg}/1000) \times 2.99$   
 $= 73758/1000 \times 2.68$   
 $= 197.67 \text{ tons}$

Diesel used per year - CO2 emission from HSD (Diesel)

$(\text{diesel used per year in litre}/1000) \times 2.68$   
 $= 273139/1000 \times 2.99$   
 $= 816.69 \text{ tons}$

Transportation per year (car) CO2 emission from transportation (Bus and Car)

SGT University has 66 buses and 26 cars out of which 6 bus and 16 cars run on petrol & diesel  
 $6 \times 1 \times 2 \times 180 / 100 \times 0.01 + 16 \times 2 \times 2 \times 180 / 100 \times 0.02$   
 $= 0.43 + 2.37 = 2.80 \text{ tons}$

\*Calculation have been done for only diesel / petrol vehicles.

Total CO2 emission / year cumulative by electricity usage + bus and car transportation = 7451.55 tons.

## 1.8 Carbon Absorption

There are 2569 full grown trees and 28172 semi grown trees of different species and approximately 235735 shrubs/hedge plants.

Carbon absorption capacity of one full grown tree 22 kg CO2 Therefore Carbon absorption capacity of 1987 full-grown trees  $2569 \times 22 \text{ kg CO}_2 = 56.52 \text{ tons of CO}_2$ .

The carbon absorption capacity of 28172 semi-grown trees is approx. 35% of that of full-grown trees. Hence the carbon absorption  $28172 \times 6.8 \text{ kg of Co}_2 = 191.57 \text{ tons of Co}_2$

There are approximately Hedge Plants 235735 of various species being raised in the gardens and grown in the areas where no buildings are built Carbon absorption of bush plants varies widely with their species. Certain bushes absorb very high level of CO<sub>2</sub> where as some others absorb very low level of CO<sub>2</sub>. In the absence of a detailed scientific study, 200g of CO<sub>2</sub>, absorption is taken per bush (in consultation with Environmental Science specialists). Based on this, total carbon absorption of bushes is  $235735 \times 200 \text{ g} = 47.15 \text{ tons of CO}_2$

The lawns on the campus have buffalo grass, Mexican grass and indigenous grass species and cover a total area of 794534sq. ft. Carbon absorption capacity of a 10 sq. ft. area of lawn is 1 g per day Therefore, carbon absorption by lawn area  $794534 \times 365 \times 0.1 \text{ g CO}_2 = 29 \text{ tons of CO}_2$

Grand total of carbon absorption capacity of the campus is 324.24 tons.

## Green Initiatives By campus

- **Solid Waste Management**
  - University does composting for horticulture waste
  - Reduce the use of paper by supporting the digitization of attendance and internal assessment records.
  - Reduce the requirement of printed books by updating the e-books and e-journals collection of the University library.
  - Take initiatives to spread awareness amongst students about food wastage and ways of minimizing it
  - The habit of reusing and recycling non-biodegradable products
  - Organizing workshops for students on solid waste management.
  - There is a ban on single-use plastic and plastic crockery in the campus.
  - Systematically engage with the 3Rs of environment friendliness (Reduce, Reuse & Recycle).
- **Liquid Waste Management**
  - Maintain leakproof water fixtures.
  - Minimize the use of water by constructing more Indian-style toilets instead of Western-style toilets.
  - Continued employment of a caretaker to take immediate steps to stop any water leakage through taps, pipes, tanks, toilet flush etc.
  - Reuse of wastewater generated by the Reverse Osmosis (RO) system in washrooms.
- **Waste Water Management**
  - The University has two Sewage Treatment Plants (STP) with a capacity of 275 KLD.
  - There are two Effluent Treatment Plant (ETP) units with capacities of 40 KLD and 10 KLD respectively.

- **E-waste Management**
  - The University has a separate storeroom for the safe storage of electronic waste. Periodically, the University disposes of e-waste through an auction process to concerned agencies.
  
- **Renewable Energy**
  - A solar power plant with a capacity of 910 KW is installed on the building roof, supplying approximately 20% of the campus's total power.
  
- **Solar water heaters are installed on campus.**
  
- **Tree Plantation Drives**
  - Five plantation drives were conducted, with a total of 113,182 trees, ornamental plants, and hedge plants planted this financial year, achieving a survival rate of more than 80%.
  
- **Air Pollution Reduction**
  - Personal vehicles belonging to students are not allowed on campus to reduce air pollution.
  
- **Rainwater Harvesting**
  - SGT University has 12 traditional rainwater harvesting units and an additional 12 units with modular filters.
  
- **Green Committee Initiatives**
  - Van Mahotsav day was celebrated on 1 July because Van Mahotsav is regarded as a festival of life. The motto behind kicking off Van Mahotsav was spreading awareness of saving mother earth.
  - National Tree Day was celebrated on 28 July to inspire students to learn about the local environment while playing an active role in their community. Activities range from planting bush-tucker gardens, through to building habitat for native wildlife, nature play, and school competitions were carried out.
  - A plantation drive was carried out on Earth Day, April 22 to demonstrate support for environmental protection.

## Recommendations

- **Purchase Policy:** Environmental parameters should be included in the purchase policy to achieve a cradle-to-grave approach for sustainability.
- **Water Monitoring:** Water meters should be installed in every building to monitor per capita water consumption.
- **Bore Well Permission:** Obtain bore well permissions from the authorized government department.
- **Water Conservation:** Increase the use of drip irrigation and customized sprinklers to conserve water on campus.
- **Tap Flow Rate:** Regularly monitor the flow rate of taps, ensuring it does not exceed 2.5 liters per minute.
- **Awareness Campaigns:** Organize plantation awareness campaigns in nearby schools and local communities to balance carbon emissions and absorption.
- **Training Programs:** Arrange training programs on environmental management systems and nature conservation for schools and local residents.
- **Staff Involvement:** Engage lower hierarchy staff in environmental awareness programs and campaigns.
- **Awareness Messaging:** Increase the display of messages in various locations to raise awareness about water and energy savings.
- **Green Building Guidelines:** Follow green building guidelines for future expansion projects on campus, as per NBC 2016.

## Conclusion

This audit involved extensive consultations with all teams and interactions with key personnel on a wide range of environmental issues. SGT University has an Environmental Committee dedicated to the sustainable use of resources.

Overall, 60% of the SGT campus is designated for landscaping. The University is mindful of the environmental impacts of its actions and makes significant efforts to act responsibly. Although the University performs well, the recommendations in this report suggest numerous ways to enhance its sustainability practices.

Key areas for improvement include the periodic monitoring of water usage. We highly recommend installing water meters in each building/block and preparing a water balancing report.

## References

- The Environment [Protection] Act – 1986 (Amended 1991) & Rules-1986 (Amended 2010)
- The Petroleum Act: 1934 – The Petroleum Rules: 2002
- The Central Motor Vehicle Act: 1988 (Amended 2011) and The Central Motor Vehicle Rules:1989 (Amended in 2005)
- Energy Conservation Act 2010.
- The Water [Prevention & Control Of Pollution] Act – 1974 (Amended 1988) & the Water (Prevention & Control of Pollution) Rules – 1975
- The Air [Prevention & Control Of Pollution] Act – 1981 (Amended 1987) The Air (Prevention & Control of Pollution) Rules – 1982
- The Gas Cylinders Rules – 2016 (Replaces the Gas Cylinder Rules – 1981)
- E-waste management rules 2016
- Electrical Act 2003 (Amended 2001) / Rules 1956 (Amended 2006)
- The Hazardous Waste (Management and Handling and Trans-boundary Movement) Rules, 2008 (Amended 2016)
- The Noise Pollution Regulation & Control rules, 2000 (Amended 2010)
- The Batteries (Management and Handling) rules, 2001 (Amended 2010)
- <https://urban-forests.com/impacts-2/co2/>
- <https://www.ecomatcher.com/how-to-calculate-co2-sequestration/>

## Annexure - Photographs of Environment Consciousness



Well maintained  
campus



Well ventilated  
building



Lush green  
campus



Sports Ground



Paving stone  
installed in  
campus



Color coded  
dustbins



Ornamental  
plants in campus



Indoor plants in  
campus



Smart Classrooms



Library



Cafeteria



Parking area



Sprinklers for gardening



Green campus



Washing machines in hostel for water conservation



Plantation drive



Environment Day Celebration



Earth Day Celebration



Solar PV installed



Solar lights installed



Rainwater harvesting



Push tap



Urinals to save water



Solar Lights



Drinking water treatment



Indoor plants



Save Trees - Awareness message display

■ ■ ■ **END OF REPORT**