Sadakathullah Appa College

*An Autonomous Institution, Re-Accredited by NAAC at an 'A' Grade, *ISO 9001 : 2015 Certified*

AQAR

(2021 – 2022)

CRITERION VII

INSTITUTIONAL VALUES AND BEST PRACTICES

7.1.6 QUALITY AUDITS ON ENVIRONMENT AND ENERGY

UNDERTAKEN BY THE INSTITUTION

ENVIRONMENT AUDIT

Submitted to

THE NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL (NAAC)

Rahmath Nagar, Tirunelveli-627011.Ph : 0462-2540763, Fax: 0462-2540033
E-mail: principal@sadakath.ac.in, Website : www.sadakath.ac.in

ENVIRONMENT AUDIT

2019-20 & 2020-21

AUDIT REPORT

Studied for

Sadakathullah Appa Educational Society's

Sadakathullah Appa College (Autonomous)

Rahmath Nagar, Tirunelveli - 627011, Tamil Nadu

Analysed by

Greenvio Solutions

26 January 2022

Disclaimer

Green Audit Team has prepared this report for the **Sadakathullah Appa Educational Society's Sadakathullah Appa College (Autonomous)** located at Rahmath Nagar, Tirunelveli - 627011, Tamil Nadu based on input data submitted by the College analysed by the team to the best of their abilities.

The details have been consolidated and thoroughly studied as per the various guidelines for Green Buildings available in National and International Standards; the report has been generated based on comparative analysis of the existing facilities and the prerequisites formulated by various standards. The inputs derived are a result of the inspection and research. These will further enhance and develop a Healthy and Sustainable Institution.

These can be implemented phase wise or as a whole depending on the decision taken by the Hon'ble Management and College. The warranty or undertaking, expressed or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

The audit is a thorough study based on the inspection and on-site investigation of data collected over a period of time and should not be used for any legal action. This is the property of Greenvio Solutions and should not be copied or regenerated in any form.

The Report is prepared by the Team of Greenvio Solutions under their brand and department – Sustainable Academe as Consultancy firm along with Ar. Nahida Shaikh as an Accredited Green Building Professional.

Greenvio Solutions

Developing Healthy and Sustainable Environments
We are an Environmental and Architectural Design Consultancy firm
Sustainable Academe is our department for conducting Audits
Palghar District, Maharashtra- 401208
sustainableacademe@gmail.com

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Sustainable Academe
Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

Contents

1. Introduction

1.1 About the Sadakathullah Appa Educational Society

It was established in the year 1971. The College with a vision by the Society for providing quality higher education to all, especially the Muslim, both men and women, and other deprived, disadvantaged, underprivileged sections of the society, is equally committed to inculcate the students with spiritual and moral values..

It is one of the premier Educational Societies in the country including some of the most distinguished and eminent Institutions and providing quality education with best state of the art facility and Infrastructure to the students.

1.2 Statements of the College

Vision - Sadakathullah Appa College, founded by the Muslim minority community, is committed to provide quality higher education to all especially the Muslims, both men and women and other deprived, disadvantaged, underprivileged sections of the society. It is equally committed to inculcate the students with spiritual and moral values. The college aims at producing good and useful citizens worthy of the great land.

Mission – The College has the following mission:

- To Offer Undergraduate And Postgraduate Courses In Humanities, Arts And Sciences
- To Undertake, Initiate And Promote Research Both Pure And Applied At M.Phil \ Ph.D Levels.
- To Offer Extension Services.

1.3 About the Institution

Ever since the British period the twin towns of Tirunelveli and Palayamkottai, intersected by the Perennial River Thamirabarani, have been great centres of learning. The Tirunelveli district has a sizeable Muslim population which necessitated the need for an institution of higher education. Due to the dedicated and sincere efforts of the Muslim elite, a College of

Arts and Sciences, named after the renowned Arabic scholar Sadakathullah Appa, was started in 1971. The motto of the College is My Lord, Vouchsafe Me Wisdom.

The College is located on a 40 acre sprawling campus and is run by Sadakathullah Appa Educational Society. It was first affiliated to Madurai Kamaraj University for 20 years. With the birth of the Manonmaniam Sundaranar University in 1990, the College was affiliated to it. It became co-educational in 1997.

The College aims at producing holistic personalities by introducing globally relevant subjects and imbibing in them aptitude for learning, internalizing of best practices, Institutional culture and commitment towards community. The Institution offers the following courses affiliated to Manonmaniam Sundaranar University, a dynamic institution of higher learning, set in a rural milieu of southern Tamil Nadu.

- **Graduation** – It offers the following Undergraduate courses.
    - Bachelor of Arts (B.A.) – Arabic, Tamil, English, History
    - Bachelor of Commerce (B. Com)
    - Bachelor of Science (B. Sc) – Chemistry, Microbiology, Nutrition and Dietetics, Physics, Zoology, Mathematics, Computer Science,
    - Bachelor of Computer Applications (B.C.A.)
    - Bachelor of Science (B. Sc I.T.) Information Technology
    - Bachelor of Library Science (B.L.I.Sc)
- **Post-Graduation** – It offers the following Post Graduation courses.
    - Masters in Arts (English, History)
    - Masters in Commerce
    - Masters in Science (Chemistry Physics, Mathematics, Computer Science, Microbiology, Zoology)
    - Masters in Philosophy (Physics, History, Maths)
- **Study Center –** The Institute has the following Study Centres in the premises.
    - Affiliated to M.S.University Distance Education Courses, Tamil Nadu
    - Affiliated to Indira Gandhi National Open University (I.G.N.O.U.), Delhi

1.4 The surrounding premises around the Institution

The Premises is situated amidst the landscape serene of **Tirunelveli district of Tamil Nadu State** with immense peace and calmness in the surroundings. The college is surrounded by Educational Buildings on the East side, Religious Buildings on the South-West in terms of important micro area divisions and Residential areas on the macro front from all the sides. There is a frontal approach which provides quite a beautiful appreciation space while approaching the premise; this area is surrounded by huge trees which positively complement the background-foreground aspect in terms of Natural space and built-form Architecture. It also provides ample shade which enhance the micro climate of the region. The location of college is feasible to the nearby essential amenities such as Public Health Center, Fire Station, Civic body-Public administrative buildings, Recreational gardens and Police Station.

1.5 Assessment of the College

Affiliations - The College is affiliated to Manonmaniam Sundaranar University, Tamil Nadu.

Certification – The institute has received the ISO, NIRF and AISHE Certifications

Recognitions - University Grant Commission (UGC) by 2(f) 12(b)

Accreditation - The following are details of the reaccreditation of the College.

Cycle	First	Second	Third
CGPA	75.00	3.11	3.40
Grade	B+	A	A
Year	2003	2009	2015

Table 1: NAAC Accreditation details of the College

The college is due to enter its Fourth cycle of NAAC soon.

1.6 Achievements of the College

The college has a tremendous track record of excellence in Built form and educational services provided, below are some of the achievements of the prestigious Institute.

1. The College was declared **an ISO 9001:2000 certified institution in 2009.**
2. The College was declared **an ISO 9001:2008 by the British Standards Institution (BSI) in 2011.**
3. The College was **conferred an Autonomous Status in 2007-2008.**

2. Institution overview

2.1 Populace analysis for Academic year 2019-20

2.1.1 Students data

The student data (shared by the College) shows there were total of **1,587 Girl and 2,069 Boys** students students and **a total of 3,656 students** in the premises.

2.1.2 Staff data

Type	Male	Female	Total
Teaching staff	76	91	**167**
Non-Teaching staff	49	35	**84**
Admin staff	06	02	**08**

Table 2: Staff data of the Institution for 2019-20

The staff data shows the premise has a total of **259** staff members.

2.2 Populace analysis for Academic year 2020-21

2.2.1 Students data

The student data (shared by the College) shows there were total of **1,520 Girl and 2,214 Boys** students and **a total of 3,734 students** in the premises.

2.2.2 Staff data

Type	Male	Female	Total
Teaching staff	79	86	**165**
Non-Teaching staff	53	34	**87**
Admin staff	06	02	**08**

Table 3: Staff data of the Institution for 2020-21

The staff data shows the premise has a total of **260** staff members.

2.3 Total College Area & College Building Spread Area

The **total site area is 40.52 acres** and the **total Built-up area of College is 1,01,000 sq.ft** for **a total of 3,994 footfalls.**

2.4 College Infrastructure

2.4.1 Establishment

The College is run by **Sadakathullah Appa Educational Society, Tamil Nadu**. The Building is a Reinforced Cement Concrete (RCC) framework building. **Overall the Infrastructure of the Building is excellent in terms of the Architecture Design and Green Building Design. The Premise covers quite a few of the requirements for a Green Habitat.**

2.4.2 Spatial Organisation

The overall ambience of the College is warm and inviting. The classrooms and other spaces have ample natural ventilation in the form of clear glass windows with fresh air ventilation. The architecture of the building is quite well designed. The colour palette not just helps the building to stand out but also provides an Institutional arena. It balances with the local architecture with the natural landscapes of huge trees all around. The design emphasis on providing calmness to the built form and gradually merges with the serene landscape.

The floor to floor height is more than 10 feet. There is no provision for lifts in the premise, whereas there are amenities such as CCTV, Fire extinguishers, Library and first aid box.

2.4.4 Operation and Maintenance of the premises

The interview session with the staff regarding the operation and working hours is summarized in the table. The Institutions are open Monday to Saturday for full day. Sunday is an off for all. Below mentioned in the table are the average working hours. The detail wise timing for each is mentioned below.

S. No.	Section	Spaces	Time	Hours / day	Days in a year
1	Main Institutional College	Student areas and Teaching faculty	8:00 a.m. to 6:15 p.m.	10:15	280
2	General areas	Admin areas and library, Passage, staircase, toilet	8:00 a.m. to 6:30 p.m.	10:30	300

Table 4: Schedule of the timings of the premises

3. Green Building Study Audit

3.1 About the Green Building Study Audit

It is a systematic study of the aspects which make the Institution a sustainable and healthy premise for its inhabitants.

3.2 Analysis for the Green Building Study Audit

The procedure included detailed verification for the following:

Energy Audit

- Analysis of the Lights, Fans, AC, Equipment
- Renewable energy
- Scope for reducing the current energy bills if any
- Improvement in the thermal comfort of the campus

Green Audit

- Green initiatives
- Hygiene audit
- Water Audit - Analysis of the current water consumption of campus; Scope to include Rain water harvesting and Waste water treatment in campus
- Waste Audit - Current waste produced, its segregation and usage; Strategies to be adopted for waste management and awareness

Environmental Audit

- Analysis of the current landscape + hardscape of campus
- Analysis of the flora and fauna of campus
- Strategies adopted at present to enhance vegetation
- Measures that can be adopted for ecological improvement of campus

3.3 Strategy adopted for Green Building Study Audit

The strategies included data collection from admin department, actual inventory, investigation to check the operation and maintenance, analysis of the data collected and preparation of the Report.

3.4 Timeline of the activities for Green Building Study Audit

- 09 August 2021 – Allotment and Initiation by the College
- 03 October 2021 – Survey of the Student and staff submitted
- 22 November 2021 – Data submitted by College
- 26 January 2022 – Submission of the Report

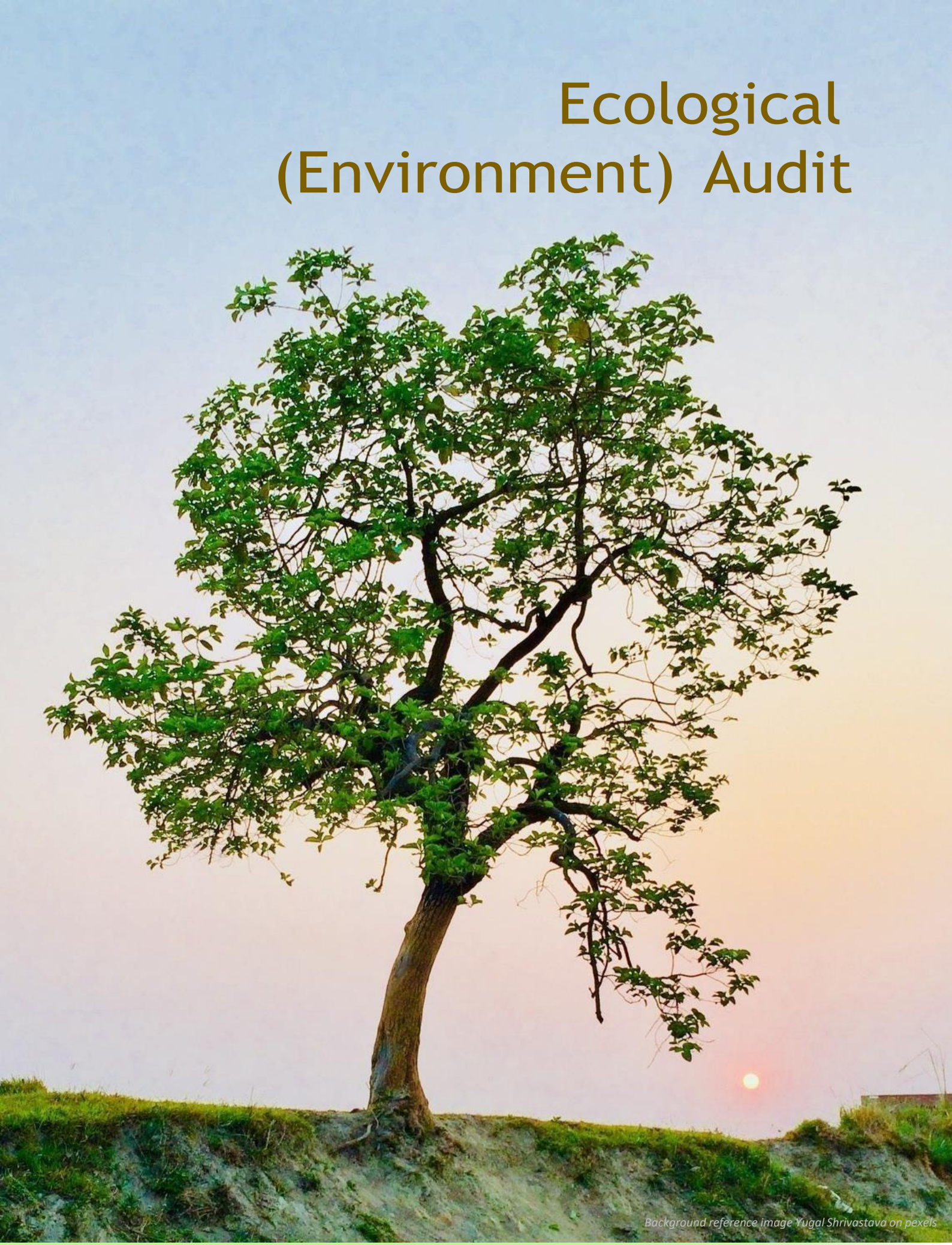
4. Site Study

The following listed are some of the positive site elements which are beneficial to the college in terms of tangible and intangible benefits.

- **Location -** The Sadakathullah Appa Educational Society's Sadakathullah Appa College (Autonomous) located at Rahmath Nagar, Tirunelveli - 627011 , Tamil Nadu and falls under the Tirunelveli Municipal Council of Tirunelveli District, situated in the Palayamkottai Taluka of the State of Tamil Nadu.
- **Neighbourhood context -** The premise is surrounding by open spaces and Residential, Religious and Educational areas on the immediate surroundings of the site.
- **Natural physical features –** The premise includes a rich biodiversity and huge number of plants in the adjacent open space. The site does not have major different in the land levels (contours).
- **Manmade features –** The premise is situated in a rural area amidst residential areas and open spaces with appropriate proximity to necessary amenities. There is sufficient appreciation space for entrance. The materials used for construction are RCC and the landscaping includes innumerable natural trees as well as potted plants.
- **Circulation –** There is a smooth transition of pedestrian traffic inside the premises due to the large entrance gate and the huge open space where vehicles of students and staff is parked.
- **Climate –** The climate here is tropical. When compared with winter, the summers have much more rainfall. The climate here is classified as Aw by the Köppen-Geiger system. The average annual temperature is 27.5 °C | 81.4 °F in Tirunelveli. The annual rainfall is 968 mm | 38.1 inch.

(Source: https://en.climate-data.org/asia/india/tamil-nadu/tirunelveli-2784/)

Ecological (Environment) Audit



Background reference image Yugal Shrivastava on pexels

5. Ecological (Environmental) Audit

Environment is an essential part for human survival. We co-exist with the environment and it cannot be termed as a separate entity. The Ecological audit helps to understand the flora, fauna that exists and steps that can be taken to improve the same. To denote if there are problems related to sound in and around the surrounding. In terms of the carbon footprint it helps in keeping a tab on the eco-friendly habits incorporated by the inhabitants of the premise. Health today is the topmost priority, a general understanding of the initiatives undertaken along with sufficient hygiene practices adopted. Universal design is applicable to all built and unbuilt spaces.

As part of our study we could state that the Institution has developed eco-friendly practices and sustainable solutions which are well reflected in the rich biodiversity of the Premises. Being situated near the city the appreciation space towards the main entrance provides a welcoming approach to the College.

The college has huge open space used by all. The students use it for as a leisure place for study and college ground is used for sports activities. There are ample resting spaces as part of building design which provide a resting and warm welcoming approach in the premise.

5.1 Open Spaces

There is a beautiful balance of natural and open spaces in the premise and the open/ vegetation spaces are balanced overall. The ground is used by students at present for sports and cultural gatherings. The design on the entire is such that the landscape and softscape spaces are very well oriented and located thus being extremely useful to Institutions in the site. **There are provisions for natural plantations which have enhanced the beauty of the space.**

There are adequate numbers of Maintenance staff allotted for the upgrading the open spaces and they have done an excellence job in terms of the duty allotted. The infrastructure committee too is involved in this process. The traditional tap and pipe facility is adopted for watering and the college has taken special provisions for the same. The spaces are watered daily insummer. T**he efforts to maintain the existing space are commendable.**

5.2 Biodiversity Audit

Sadakathullah Appa College is within the geo-position between latitude 8.722221◦ and longitude 77.76055◦ Tirunelveli, Tamil Nadu, India. It encompasses an area of about 40.52 Acres. The area is immensely diverse with a variety of tree species performing a variety of functions. Most of these tree species are planted indifferent periods of time through various plantation programmes organized by the authority and have become an integral part of the college.

The trees of the college have increased the quality of life, not only the college fraternity but also the people around the college in terms of contributing to our environment by providing oxygen, improving air quality, climate amelioration, conservation of water, preserving soil, and supporting wildlife, controlling climate by moderating the effects of the sun, rain and wind. Leaves absorb and filter the sun's radiant energy, keeping things cool in summer.

Many spices of birds are dependent on these trees mainly for food and shelter. Nectar of flowers and plants is a favourite of birds and many insects. Leaf-covered branches keep many animals, such as birds and squirrels; out of reach some of predators. Even individual trees vary their appearance throughout the course of the year as the seasons change. The strength, long lifespan and regal stature of trees give them a monument-like quality. A thick belt of large shady trees in the periphery of the college have found to bringing down noise and cut down dust and storms. **Thus, the college has been playing a significant role in maintaining the environment of the entire Sadakathullah Appa College premises and its surrounding areas.**

A flora survey was carried out to identify the total numbers of plants and trees every year. The landscape area has a variety of plantations constituting hundreds of surveyed trees in premise in the last few years as follows with detail description of each.

S. No.	Botanical Name	Family	Plant Name	Nos.
1	Ficus benghalensis L.	Moraceae	Banyan tree	3
2	Azadirachta indica L.	Meliaceae	Neem tree	124
3	Carica papaya L.	Caricaceae	Papaya	2
4	Monoon longifolium Soon.B.Xue & R.M.K.Saunders	Annonaceae	Netilingam	36
5	Delonix regina L.	Fabaceae	Gulmohar	17

6	Santalum album L.	Santalaceae	Sandal tree	1
7	Millettia pinnata (L.) Panigrahi	Fabaceae	Pungai tree	24
8	Citrus limon (L.) Osbeck	Rutaceae	Lemon tree	1
9	Cascabela thevetia (L.) Lippold	Apocynaceae	Manjal arali	3
10	Prumus dulcis Batsch.	Rosaceae	Badam tree	33
11	Phyllanthus emblica L.	Phyllanthaceae	Nelika	1
12	Ficus racemosa L	Moraceae	Aathi maram	1
13	Thespesia populnea (L.) Sol. ex Corrêa	Malvaceae	Poovarasam	6
14	Tamarindus indica L	Fabaceae	Tamarind	7
15	Phyllanthus acidus L	Phyllanthaceae	Malai nelli	2
16	Murraya koenigii L	Rutaceae	Curry tree	3
17	Saraca asoca (Roxb.) Willd.	Fabaceae	Ashoka tree	2
18	Mangifera indica L	Anacardiaceae	Mango tree	1
19	Moringa oleifera Lam	Moringaceae	Drumstick tree	1
20	Lindera triloba Thunb.	Lauraceae	Black forest	8
21	Morinda citrifolia L.	Rubiaceae	Noni tree	2
22	Morinda tinctoria Roxb.	Rubiaceae	Manjanathi tree	4
23	Ailanthus excelsa Roxb.	Simaroubaceae	Theepetti maram	1
24	Withania coagulans Dunal.	Solanaceae	Pannier poo maram	2
25	Vateria indica L.	Dipterocarpaceae	Vellai maram	1
26	Artocarpus heterophyllus Lam.	Moraceae	Jackfruit tree	2
27	Syzygium cumini (L.) Skeels.	Myrtaceae	Naval maram	8
28	Hibiscus rosa-sinensis L.	Malvaceae	Hibiscus	1
29	Phoenix sylvestris (L.) Roxb.	Arecaceae	Indian date palm	1
30	Cocos nucifera L.	Arecaceae	Coconut tree	3
31	Tectona grandis L.f.	Lamiaceae	Teak tree	3

Table 5: Details of the Flora in the premise

At present there are more than 304 plantations comprising of plants, trees, shrubs of 31 species. All of these are planted by the Staff, students and some have grown naturally. In addition to above trees, the Management contributed to establish Medicinal garden with medicinal plants was also started since 2016 onwards wherein 88 different varieties were conserved by the Department of Botany. The list of medicinal plants is as below.

S. No.	Botanical Name	Family	Plant Name
1	Ocimum Tenuiflorum L.	Lamiaceae	Holy basil
2	Chamaecostus Cuspidatus (Nees & Mart.) C.Specht & D.W.Stev.	Costaceae	Insulin plant
3	Curcuma Longa L.	Zingiberaceae	Turmeric
4	Centella Asiatica (L.)Urban	Apiaceae	Vallarai / Gotu kola
5	Ocimum Sanctum L.	Lamiaceae	Tulsi
6	Ocimum Thyrsiflora L.	Lamiaceae	Thai basil
7	Ocimum Basilicum 'Purpurascens' L.	Lamiaceae	Dark opal basil
8	Ocimum Tenuiflorum L.	Lamiaceae	Vayothiga tulsi
9	Ocimum Sanctum L.	Lamiaceae	Sweet tulsi
10	Justicia Adhatoda L.	Acanthaceae	Adathodai
11	Ruta Graveolens L.	Rutaceae	Common rue/aruvatham pachai
12	Solanum Trilobatum L.	Solanaceae	Thoothu valai
13	Hemidesmus Indicus (L.) R.Br.	Apocyanaceae	Naru munna
14	Asparagus Racemosus Willd.	Asparagaceae	Thaneervittan kilangu
15	Vitex Negundo L.	Lamiaceae	Nochi
16	Abutilon Indicum (Link) Sweet.	Malvaceae	Thuthi
17	Rhinacanthus Nastus (L.)Kurz	Acanthaceae	Nagamalli
18	Piper Negrum L.	Piperaceae	Milagu
19	Abrus Precatorius L.	Fabaceae	Rosary pea
20	Coleus Amboinicus Lour.	Lamiaceae	Karpoora valli
21	Elaeocarpus Serratus L.	Elaeocarpaceae	Ceylon olive
22	Pergularia Daemia (Forssk.) Chiov.	Asclepiadaceae	Veliparuthi
23	Bryophyllum Pinnatm (Lam.) Pers.	Crassulaceae	Miracle plant/ Rana kalli
24	Chamaecostus Cuspidatus (Nees & Mart.) C.Specht & D.W.Stev.	Costaceae	Insulin plant
25	Morinda Tinctoria Robx.	Rubiaceae	Manjanathi plant
26	Orthosiphon Stamineus Benth.	Lamiaceae	Poonai meesai
27	Alpinia Galanga (L.) Wild.	Zingiberaceae	Sitharathai
28	Hibiscus Sabdariffa L.	Malvaceae	Gongura / pulicha keerai
29	Andrographis Paniculata (Burm.F.) Nees	Acanthaceae	Nila vembu
30	Acorus Calamus L.	Acoraceae	Sweet flag / vasambu
31	Calotropis Procera (Aiton) W.T.Aiton	Apocynanceae	Roostertree / Vellai erukku

32	Clinacanthus Nutans (Burm.F.) Lindau	Acanthaceae	Visha pacha
33	Achyranthes Aspera L.	Amaranthaceae	Sarpa shanti
34	Senna Auriculata (L.) Roxb.	Fabaceae	Arua patta
35	Eupatorium Triplinerve (M.Vahl) R.King & H.Robinson	Asteraceae	Ayyappanai
36	Ocimum Thyrsiflora L.	Lamiaceae	Thai basil/Thiruneetru Pachilai
37	Gymnema Sylvestre R.Br.	Apocynanceae	Sirukurinjan
38	Solanum Nigrum L.	Solanaceae	Manathakkali
39	Gymnema Sylvestre R.Br.	Apocynanceae	Sirukurinjan/Sakkarakkoilli
40	Tinospora Cordifolia (Thunb.) Miers	Meinspermaceae	Seenthil kodi
41	Chamaecostus Cuspidatus (Nees & Mart.) C.Specht & D.W.Stev.	Costaceae	Insulin plant
42	Kalanchoe Pinnata Lam.Pers	Crassulaceae	Ranakalli
43	Terminalia Chebula Retz.	Combretaceae	Kadduakkaay
44	Plumbago Indica L.	Plumbaginaceae	Senkodiveli
45	Plumbago Auriculata Lam.	Plumbaginaceae	Neelakoduveli
46	Piper Longum L.	Piperaceae	Thippili kodi
47	Asparagus Racemosus Willd.	Liliaceae	Visha narayani
48	Pterospermum Acerifolium (L.) Willd.	Malvaceae	Thandrikai
49	Ixora Coccinea L.	Rubiaceae	Idly poo
50	Andrographis Paniculata (Burm.F.) Nees	Acanthaceae	Nila vembu
51	Chrysopogon Zizaniaides (L.) Roberty	Poaceae	Vetiver / khus
52	Hibiscus Rosasinensis L.	Malvaceae	Hibiscus
53	Teriminalia Arjuna (Roxb.) Wight & Arn.	Combretaceae	Arjun tree
54	Bryophyllum Pinnatm Lam.Pers	Crassulaceae	Miracle plant/ Rana kalli
55	Cinnamomum Tamala (Buch.-Ham.) T.Nees & C.H.Eberm.	Lauraceae	Tejpat/ Indian Bay leaf
56	Cissus Qadrangularis L.	Vitaceae	Velat grape / pirandai
57	Senna Auriculata (L.) Roxb.	Fabaceae	Avarampoo
58	Leucas Aspera (Willd.) Link	Lamiaceae	Thumbai
59	Leucas Aspera (Willd.) Link	Lamiaceae	Thumbai
60	Andrographis Paniculata (Burm.F.) Nees	Acanthaceae	Kariyal
61	Ficus Racemosa L.	Moraceae	Athi
62	Acorus Calamus L.	Acoraceae	Vasambu

63	Muehlenbeckia Platyclada (F. Muell.) Meisn.	Polygonaceae	Pazhuthara valli
64	Aloe Vera (L.) Burm.F.	Asphodelaceae	Katralai
65	Allium Sativum L.	Amaryllidaceae	Garlic
66	Alpinia Officinarum Hance	Zingiberaceae	Sitharathai
67	Nyctanthes Arbor-Tristisi L.	Oleaceae	Night-flowering jasmine/coral jasmine
68	Eryngium Foetidum L.	Apiaceae	African malli
69	Eupatorium Triplinerve (M.Vahl) R.King & H.Robinson	Asteraceae	Ayyappanai
70	Crossandra Infundibuliformis (L.) Nees.	Acanthaceae	Kanakambaram
71	Cardiospermum Halicacabm L.	Sapindaceae	Mudakathan keerai
72	Asparagus Racemosus (L.) Burm.F.	Liliaceae	Visha narayani
73	Centella Asiatica (L.)Urban	Apiaceae	Kesavardhini
74	Eclipta Prostrate (L.) L.	Asteraceae	Manjal karisalankanni
75	Cinnamomum Tamala (Buch.-Ham.) T.Nees & C.H.Eberm.	Lauraceae	Bay leaves
76	Withania Somnifera (L.) Dunal.	Solanaceae	Ashwagandhaamukkara
77	Orthosiphon Stamineus Benth.	Lamiaceae	Poonai meesai
78	Sida Acuta Burm.F.	Malvaceae	Aruvalmanai poondu
79	Convolvulus Arvensis L.	Convolvulaceae	Field bindweed/ sangu poo
80	Lawsonia Inermis L.	Lythraceae	Henna/ Maruthani plant
81	Crossandra Infundibuliformis (L.) Nees	Acanthaceae	White kanakambaram
82	Aloe Vera (L.) Burm.F.	Asphodelaceae	Katralai
83	Cymbopogon Citrates (DC.) Stapf,	Poaceae	Lemon grass
84	Bryophyllum Pinnatm Lam.Pers	Crassulaceae	Miracle plant/ Rana kalli
85	Pandanus Amaryllifolius Roxb.	Pandanaceae	Rambha
86	Combretum Indicum(L.) Defilipps	combertaceae	Mul sangu
87	Wrightia Tinctoria (Roxb.) R.Br., Mem. Wern. Soc.	Apocynaceae	Vetpalai
88	Helianthus Annuus L.	Asteraceae	Sunny matal

Table 6: Details of the Medicinal plants

Overall it can be concluded that there is an excellent maintenance executed for the more than sufficient plantations in the premises

5.3 Noise Audit

5.3.1 Macro level

On a macro level there are open grounds in the site. The approach road too has very minimal traffic. As the college is oriented amidst the residential areas with immense vegetation the noise levels do not affect the students and staff in their day to day functioning. The approach road too is pretty away. **Overall the noise level in terms of bad effect is extremely low and there are positive outcomes as per our analysis on macro level.**

5.3.2 Micro level

The college has an adequate open space covered with huge trees prevailing naturally in the premise which act as a noise barrier; in addition the Institution building is surrounded by Residential Buildings which further act as a benefit in reducing any noise pollution. There are bare minimum parking provisions provided in the premise which causes bare minimum noise as they are situated near the entrance which is a bit away from the College building. The college does not have generator thus there is no inconvenience or sound problem caused due to the same. There are no particular equipments which cause any noise effect. **Overall the noise levels inside the premises are low which is a good approach.**

5.4 Carbon Footprint Audit

5.4.1 Eco-friendly Commuting Practices

Based on data collection and discussion with staff the following points were noted:

- **Ease of commuting –** Owing to close proximity to public transport the access is very feasible and walk able.
- **Parent's commute -** There are 2 Parent-teacher meetings held in a year and the turn-out is around 40-60%
- **Vehicles details** – The provision provided by College includes s vehicle parking is allowed at present as follows.

S. No.	Type	Nos.	For (student/ Staff)
1.	Cars	35-40	Staff
2	Bikes	90	Staff and Students
3	Cycles	50-60	Students
4	Electric vehicles	8-10	Staff and Students

Table 7: Details of the Parking in the premise

- **Commute details** – The students and staff commute from multiple places. The details are summarised below.

5.4.2 Heat Island Reduction

The Institution has **adopted the following practices which are yielding positive results** in terms of Urban Heat Island Effect which refers to increase in temperature of the surrounding because of ineffective strategies.

- **Exposed roof areas –** The terrace is a flat roof which is absolutely clean and well maintained. The Buildings are covered with white paint and the Maintenance staff along with Management have taken ample measures to maintain the same. **There was no weathering of roof observed.** The current practices are well maintained.
- **Exposed non-roof hardscape areas -** There are pathway on all sides of the premises. These include some natural and potted plantations along the pathways. However, the trees are huge and the canopy is wide spread thus providing ample shade to the outdoor areas of the premise. Hence, there are no direct sunrays or similar effect affecting the students and staff. The college has an open space in the form of lush green carpet which acts as a solution for the urban heat island effect. This huge green space is a very good solution for reducing any harmful health consequences which may arise due to harsh sunlight.

There are adequate measures adopted in the premises to reduce heat island effect of Building roofs and in site.

5.4.3 Outdoor Light Pollution Study

The college compound lights are not upward looking thus, these do not cause light pollution.

5.5 Universal Campus

As per World Report on Disability, 2011 there are 180 million approx. Persons with Disabilities that makes it 15% of total population of India.

There are Ramps, Handrails along staircase and low height risers in the Staircases as part of universal campus initiatives. The design of the premises is appropriate for access with passages and corridors being wide enough in size and naturally ventilated. The doubly and singly loaded corridors are safe from fire safety aspect. The college has resting places (seating areas) in the outdoor along the trees thereby making it user friendly for the specially abled students. **The college can plan to have lifts in the future depending on the situation and facilities in addition to universal toilet.**

5.6 Fire Safety

The Institution has undertaken adequate fire safety measures. Each floor has an open staircase without any barriers for fire safety measures. These staircases are free of any kind of storage or combustible material. The windows in each classroom are at a low height with fresh air and natural light thereby adding to ample ventilation throughout the day. The college should adopt additional fire safety practices such as fire hydrant and others whenever the College undergoes further extension or renovation. The current facilities are however quite well maintained.

Our observation was that there are adequate Fire extinguishers in the premise. Though, there can also be provision for additional fire safety signages.

5.7 Survey Results

An online survey was conducted to analyse the views about the premise, following are some of the reviews.

5.7.1 Participation

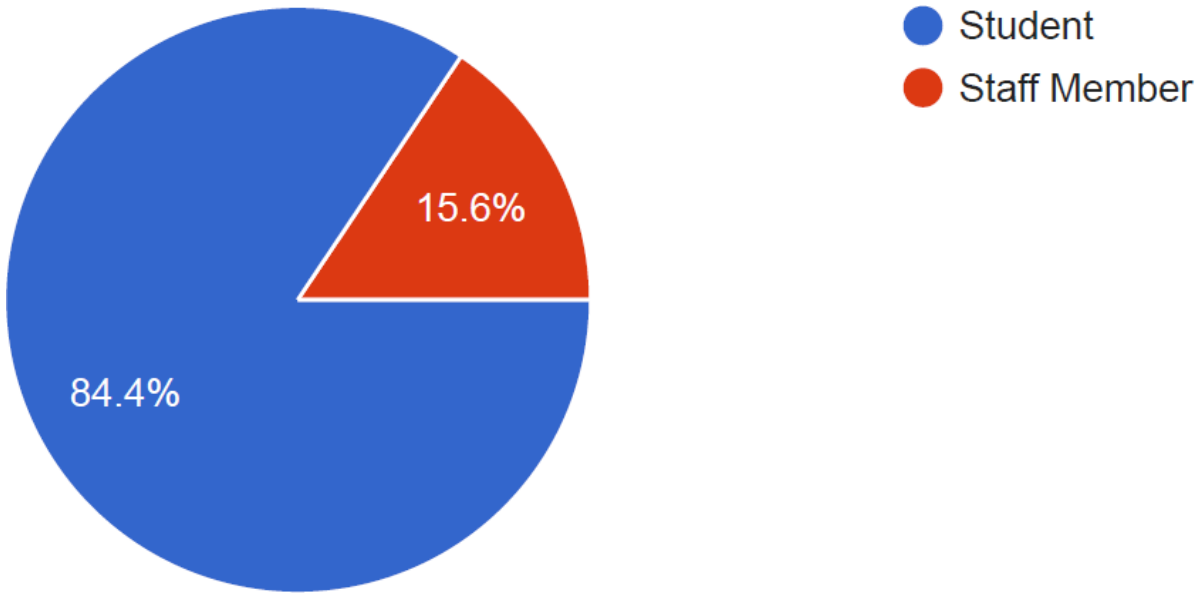


Figure 1: Participation analysis in the survey

A total of **475 responses** were received out of which 84% were students.

5.7.2 What according to you are the positive steps taken by the College towards Green Building/ Good maintenance?

We have listed some of the key responses below.

- **Very appreciable.**
- Water testing, growing more trees, name boards everywhere.
- They maintain it very clearly.
- **They are planting more trees to keep the area green and clean.**
- **Planting of trees inside the Institution.**
- They have appointed maintainers for good maintenance.
- The college surrounding is seems to be very clean and greenery.
- Our institute maintain a very good and healthy environment by planting more trees

- **Tree planting program by NSS.**
- Every year our institution plants many saplings in the Republic and independence day
- **Each wing of the college premises' building covered with green and tall tree. A dedicated cleaning team maintain the campus clean and green. Each wing has the dust bin. Every day it was monitored and cleaned by cleaning staff.**
- Our institute is almost surrounded by trees and greens, which gives a pleasant environment to the teachers and students as well, water facilities is made in all the corridors and all the measures are taken to supervise the cleanliness and water conservation.
- The institution has done a great job in plantation of tress in and around the campus.
- Proper management towards garbage clearance, wise usage of water.
- Planting Trees and Solar Energy sources
- Teaching human values and teaching the hadith based on treating nature
- They planned 100 of trees recently in the college
- **Conducting webinar or plantations or cleanliness or similar programs in college.**

5.8 Positive site features a per our study

a) Cool rooftops

The College has the Terrace roofs painted with white cover it helps reduce the temperature of the spaces.

b) User friendly movability in premises

There are provisions of Kerb Ramp in the Building premises, also low height hand rail for ease of access.

c) Resting places

There are provisions for resting places in premises in outdoor and indoor.

d) Avoid using plastic in premise

There are provisions for ban on the use of plastic bags or products in the Premise.

e) OPAC system

The system is beneficial for the students.

f) Names of the Plants for awareness

The Management and Institution has taken initiatives to include the names of the plants as a signage to spread awareness, this is very beneficial for Students and Staff.

g) Paperless technologies

The college has gone technology friendly and paperless in the functioning of the Premise.

h) No Vehicle day

It is practiced every fourth Saturday of every month. It is followed by every student, faculty, nonteaching to make college premise pollution free.

i) Universal Toilet

There are provisions for toilet for the specially abled people as per guidelines prescribed by National Building Code 2016.

j) Avoid burning of waste

The waste produced in the premises is not burnt as it is dangerous towards health of students and staff.

5.9 Recommendations for a Sustainable Habitat by Greenvio Solutions

Site beautification

a) Low VOC Paints and Adhesives

Whenever the College undergoes repairs or renovations there should be use of materials with low emissions so as to reduce the adverse health impacts on workmen and the students occupying the space thereafter.

b) Additional facilities for birds

There can be provision for drinking water and food facility for birds visiting in the College premise.

Pollution Control

a) Promote the use of Eco-friendly vehicles

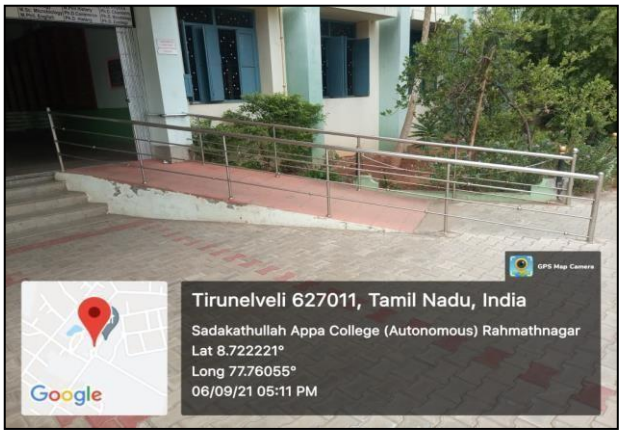
There can be provision for battery operated vehicles/ low emission vehicles such as electrically driven vehicles parking in open space along with battery charge points, this would inspire students to change mode of transportation and adopt sustainable practices.

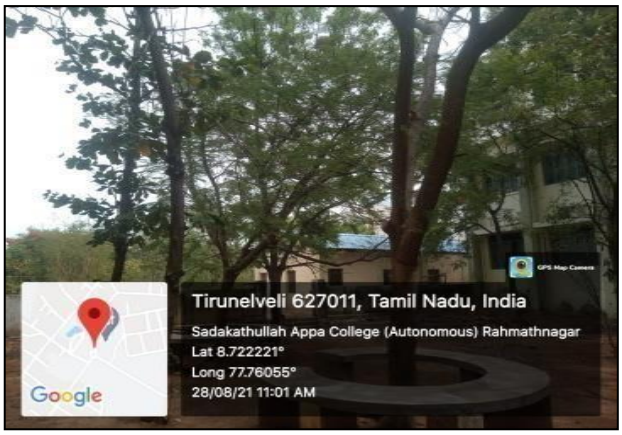
b) Bicycles as a gift

As an appreciation gesture may be the students toppers/ staff best performers can be awarded with a bicycle occasionally.

On-site investigation and physical verification

The ecologically friendly ambience with facilities such as ramps, parking, greenhouse and botanical gardens.





6. Towards a Healthy & Sustainable Institution

6.1 Inputs by Greenvio Solutions

Based on the analysis of the study of premises in addition to the recommendations provided in each section of Ecological, Water, Waste and Energy Audit the College can adopt the following strategies towards a Healthy and Sustainable Institution practices.

a) **Kitchen garden -** There can be provision of kitchen garden practices in a designated area of the open space this would enhance the biodiversity and be useful in training students and staff about the healthy practices and vegetables grown which would be used in Canteen. It helps in capacity building. The smaller steps taken have huge impacts when each student would adopt these practices in their homes or societies and grow kitchen garden, terrace garden there will be a long term benefit for the environment as a whole.

b) **Cutlery in the Canteen –** The regular plastic and steel plates, spoons used in Canteen can be replaced with eco-friendly and organic leaves, paper straw, disposable plates, edible spoons and tables made out of sugarcane waste or bamboo. This will be first of its kind initiative to be adopted and practiced thus also inculcating the healthy practices in students.

c) **Signages –** In addition to the signages being in regular language there can be additional signages in braille language for the specially abled students.

6.2 Survey Results

An online survey was conducted to analyse the student and staff views about what changes according to you can be undertaken for Green audit improvement in College premise and activity, some of the key responses are listed below. Whereas many responses **stated there were no changes requires because the present practices are excellent.**

- Already there are many effective activities done.
- Nothing. It's already good.

Some of the suggestions by the Students and staff are listed below:

- Empty land can be changed to medicinal garden, recycling of waste water.
- Making every individual to plant a tree.
- Usage Plastic bags in canteens can be avoided and separate dustbins for bio and non-bio degradable wastes.
- Need More awareness programs
- Our college is already practically well improved, but I would suggest to increase plantation of the sapling.
- Water scarcity can be avoided by going to water plants and trees such as hand washing water.

However, it should be noted that the College has taken up multiple initiatives and because of Pandemic the students have not practically visited the campus so many of these points are not mandatory at the moment.

7. References

1. Uniform Plumbing Code – India, 2008
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