SHRI V.R. PATEL COLLEGE OF COMMERCE, MEHSANA

📍 **Nagalpur Highway, Mehsana, Gujarat 384002**

CRITERION VII

7.1.3: QUALITY AUDITS ON ENVIRONMENT AND ENERGY

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To
The Principal
Shri V. R. Patel College of Commerce,
Mehsana.

Sub.: Green Audit Report
Ref: Visit of our audit team on Sept. 19, 2023

Sir,

As per our telephonic talk and your request for the Green Audit and Energy Audit of your college campus, our audit team have visited your campus and made the detailed Audit of your campus and studied all the required documents provided by you.

Please find enclosed herewith the detailed Green Audit Report and Energy Audit Report for the year 2022-2023 for your college campus. We sincerely appreciate the cooperation from you and your staff members during the audit programme.

Kindly let us know for any further requirement and services

Thank you
With sincere regards

(**Nishith Dharaiya**)
Hon. Director of Research

Encl: Copy of the Green Audit Report

Copy to.
1. Dr. Jagruti Jagiwala, Principal Scientist WCB Research Foundation

SARDAR VIDYABHAVAN TRUST

SHRI V. R. PATEL COLLEGE OF COMMERCE, MEHSANA

AFFILIATED TO HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

GREEN AUDIT REPORT &
ENERGY AUDIT REPORT

2022-2023

By

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WCB RESEARCH FOUNDATION

EXECUTIVE SUMMARY

A nation's growth starts from its educational institutions, where the ecology is thought as a prime factor of development associated with environment. A clean and healthy environment aids effective learning and provides an effective learning environment. Educational institutions now a days are becoming more sensitive to environmental factors and more concepts are being introduced to make them eco-friendly. To preserve the environment within the campus, various viewpoints are applied by the several educational institutes to solve their environmental problems such as promotion of the energy savings, recycle of waste, water reduction, water harvesting etc. The activities pursued by colleges can also create a variety of adverse environmental impacts. Environmental auditing is a process whereby an organization's environmental performance is tested against its environmental policies and objectives. Green audit is defined as an official examination of the college which has effects on the environment and as a part of such practice, internal Green Audit is conducted to evaluate the actual scenario at the campus.

Green audit can be a useful tool for a college to determine how and where they are using the most energy or water or resources; the college can then consider how to implement changes and make savings. It can also be used to determine the type and volume of waste, which can be used for a recycling project or to improve waste minimization plan. Green auditing and the implementation of mitigation measures is a win-win situation for all the college, the learners and the planet. It provides staff and students better understanding of green impact on campus. Green auditing promotes financial savings through reduction of resource use. It gives an opportunity for the development of ownership, personal and social responsibility for the students and teachers. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self- enquiry is a natural and necessary outgrowth of a quality educational institution. Thus, it is imperative that the

college evaluate its own contributions towards a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

In Shri V. R. Patel College of Commerce, Mehsana campus the audit process involved initial interviews with management to clarify policies, activities, records and the co-operation of staff and students in the implementation of mitigation measures. This was followed by collection of data through the questionnaire, review of records, observation of practices and observable outcomes. In addition, the approach ensured that the management and staff are active participants in the green auditing process in the college.

The baseline data prepared for Shri V. R. Patel College of Commerce, Mehsana will be a useful tool for campus greening, resource management, planning of future projects, and a document for implementation of sustainable development of the college. Existing data will allow the college to compare its programmes with those of peer institutions, identify areas in need of improvement, and prioritize the implementation of future projects. We expect that the management will be committed to implement the green audit recommendations. We are happy to submit this green audit report to Shri V. R. Patel College of Commerce, Mehsana authorities.

Dr. Jagruti Jagiwala
Principal Scientist
WCB Research Foundation

15ᵗʰ October, 2023   **Email: wcbresearch@gmail.com Phone: +91 83205 19905**

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To impart qualitative and value-based commerce education for academic excellence.

MISSION
To educate the commerce students in such a way that they can become knowledgeable, responsible, skilled, cultured, self-reliant, self-disciplined, adventurous, confident and competent human-beings who can render great services to the nation in general and the society in particular.

CORE VALUES
We pursue the following core values for making our students good human-beings and creating good opportunities for their overall development.

➢ Excellence
➢ Social Responsibility
➢ Accountability
➢ Integrity
➢ Diligence
➢ Perseverance
➢ Discipline

CAMPUS & COLLEGE BUILDING AREA

Table 1. Campus & college building area of Shri V. R. Patel College of Commerce, Mehsana.

Campus area	4.33 acres
Built up area	9036 sq.mt

NAAC ACCREDITATION

Table 2. NAAC Accreditation of Shri V. R. Patel College of Commerce, Mehsana.

NAAC accreditation cycle I	B+ Grade with 75.5 CGPA, 2009
NAAC accreditation cycle II	A Grade with 3.02 CGPA, 2014

ABOUT COLLEGE

Shri V. R. Patel College of Commerce was established by a visionary named Shri Balarambhai Kshatriya in the year 1964 as Municipal Arts and Commerce College. College affiliated to Hemchandracharya North Gujarat University, Patan and recognized by the University Grants Commission (UGC) under the UGC act 2(f) and 12(B). The college is located in Mehsana on the National Highway that connects all the major parts of Gujarat and Rajasthan including Delhi and northern states of India.

College offers only two programs UG and PG. Under two programs various courses are offered to enrich the knowledge of students pursuing both the degrees: B. Com. and M. Com. Besides this, some certificate programs also run by the college. In the academic year 2022-2023, there are total students studying in B. Com. (English medium), 606 students in B. Com. (Guajarati medium), 752 students in M. Com. (English medium) and 448 students in M. Com. (Guajarati medium). Reserved category students are graphically presented below of the year of 2022-2023.

GENDER EQUITY AND SENSITIVITY FACILITIES

➢ Institute has taken several measures to enhance safety & security on campuses by providing CCTV monitoring, security guards, suggestion box, Grievance Redressal Committee, Anti-ragging Committee, Discipline committee, Health facilities, Fire safety equipment, cleanliness committee, Gender sensitivity awareness programs, Women Development Cell.

➢ Counseling of students by assigning mentors to the mentees and parent teacher interaction.

➢ Separate common room, well-ventilated girl's common room as room equipped with facilities like sanitary napkin vending machine and incinerator machine, Boy's common room.

➢ College deals with social sizzling problems such as Save Girl Child, Educate Girl Child, Women safety through the cultural activities and poster presentations.

CURRICULAR ASPECTS

Table 3. Curricular activities held during 2022-2023.

SKILL DEVELOPMENT ACTIVITIES	Career counseling & Personal Counseling
	Soft skill development
	Remedial coaching & Preparation for competitive examinations
	Bridge courses
	Yoga and meditation
	Women Development Program
	Placement Cell
	Gymnasium
STUDENT-CENTRIC LEARNING METHODS	Telegram for academic schedule
	Use of video lectures, models, charts as creative medias
	Expert lectures of eminent academicians & industrialists
	College academic calendar
	Performance based best students, best NCC cadets & NSS volunteers
	Students' representative Council
INSTITUTIONAL DISTINCTIVENESS	National Services (NSS and NCC Units)
	Sensitivity Awareness Activities (Anti-tobacco Drive, Save Girl Child, Ek Bharat Shresth Bharat)
	Practical and experiential Learning Methodology
	Finishing School Nodal Centre (For developing Life skill and Employability skills amongst the students)
	SCOPE – DELL Lab (to level up their speaking skills)

INNOVATIONS AND BEST PRACTICES HELD DURING 2022-2023

Artificial bird nest (also called bird platform) and **bird water feeder** available in the college campus for Jivadaya.

As college campus comes under Arid areas of North Gujarat, artificial water points as well as bird platform may enhance biodiversity significantly including avifauna and may increase bird population too.

Institution has installed a specialized elevator facility on the date of 14/10/23 for people with disabilities as barrier free environment to easy access to the classrooms.

College has also provision of ramp and handrails in the ground floor and access to each floor by spacious elevator which makes any Divyangjan person to reach easily any class or other facilities in the college.

As a renewable source of power, **solar arrays** (solar panel) installed in the college with the capacity of 10 KWp PV System on the date of 19/09/23 as solar energy plays an important role to reduce overheads, cut carbon footprint, reducing greenhouse gas emissions and mitigating climate change.

There are **pedestrian friendly pathways** available in the college which gives a pleasant feel to the students and faculty as it is situated among the green trees on either side of the road.

College has a canteen facility on the ground floor and on the first floor **Guest House facility for the honored guests** located at the entrance of the college campus.

College has **SOUL** (SOFTWARE FOR UNIVERSITY LIBRARY) 3.0 software is state-of-the-art **library automation software** with some major functions like acquisition, catalogue, circulation, serial control and administration to performed automatically.

College has initiated **e-content digital studio** facility on the date of 29/09/23 for students by which student can access material on an infinite number of occasions, which is extremely helpful at the time of revision or studying for an exam as it gives structured learning environment to the students.
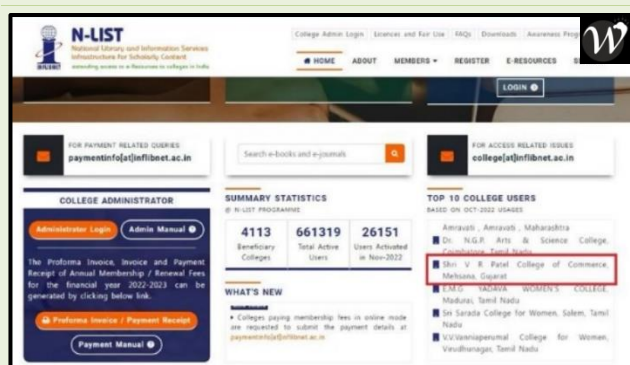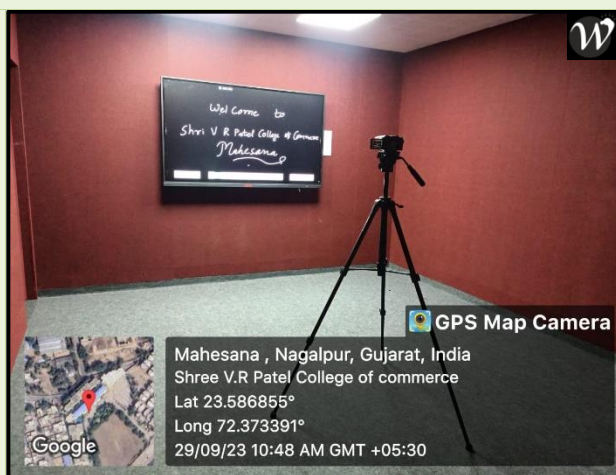
College has reader approachable N-list library as and **college awarded from Gujarat in N-List highest usage in Top 10 Users of India** during the year 2022.

College awarded second time from Gujarat in N-List highest usage in Top 10 Users of India during the year 2023.

College initiated **Telegram App VRPCCM, WhatsApp group VRPCCM, bulk SMS services** (TEMP.91bulksms.com), etc., advertisements related to vacancies or notices displayed on the digital platform.

CAMPUS INFRASTRUCTURE

The entire campus is spread in total 4.33 acres from which 4720 sq.mt areas is used for buildings and infrastructure.

PRINCIPAL ROOM

There is a principal room to maintain of permanent records of students and has internet connections (bandwidth 100 MBPS) with Wi-Fi Facilities.

CLASS ROOM

Well-ventilated spacious 21 classrooms with comfortable seating arrangement, and well equipped with facilities such as OHP, Black boards, Acrylic White Boards and LCD Projectors (in some classes) as well.

CONFERENCE ROOM / AUDITORIUM

Conference hall is used for various cultural activities. Moreover, small group of students organize cultural activities in the classrooms of the college. There is an Auditorium on the third floor of college building having the seating capacity of more than 500 students. It has got all the facilities required to organize cultural programmes, annual function, talent events, induction ceremony, farewell programmes or any other programme of the

college. The hall is sufficiently ventilated and consists of a stage, good audio system, lectern, computer and microphones.

SEMINAR HALL

It is a technology-enabled room for conducting seminars comprising a small group of participants and for a big group we have a conference hall on the second floor.

COMPUTER LAB

A well-equipped laboratory with 143 computers and necessary software as per the requirement of subject such as TALLY.

DIGITAL ENGLISH LANGUAGE LAB (DELL)

Digital Education and Learning Lab (DELL) with 25 computers, one printer, one OHP, 1 LCD, CDs. 10 computers with internet access for conducting SCOPE and job-oriented examinations.

SPORTS ROOM AND BADMINTON COURT

O.N.G.C ground and Vanikar Club are available for all outdoor and indoor games respectively. For swimming competition, college uses the swimming pool of Vanikar Club located near the Central Bus Terminal. The college has also got spacious ground for outdoor games. The college also has various sports equipments for badminton, table tennis, volley ball, hand ball and indoor games like chess, carom etc.

NSS ROOM

Equipment for NSS activities, kitchen utensils and mats are available for around 200 students in NSS room. It is on the second floor. Various activities are conducted under the aegis of NSS.

NCC ROOM

There is also a separate room allotted for NCC. The space is provided in the college campus for occasional parade on holidays. For regular parade the NCC Cadets go to Police Parade Ground on every Sunday.

COMMON ROOM

A common room for teachers where the students can discuss their academic problems with the teachers.

AUDIO-VISUAL ROOM

Room No. 21 is being used as an Audio-Visual Room. Recently, the college has installed one Over Head Projector (OHP) with a big screen hanging on the opposite wall for displaying the computerized writing on it i.e., Power Point Presentation. One big TV has been placed in the AV room for

making BISAG lectures available to the students. Image shows BISAG (Bhaskaracharya National Institute for Space Applications and Geo-informatics) disc available in the terrace of the college.

GIRLS ROOM

Girl's common room facility available in the college. Four different girls' washrooms with well-ventilated as room equipped with facilities like sanitary napkin vending machine and incinerator machine are also available in the college.

GYMNASIUM

This is newly added at college. The Boys and Girls are using equally for fitness purpose.

GARDEN

The college has ample garden area at the entrance of the college which includes around 178 plants with 52 of different varieties of trees. Moreover, college building area comprises garden at the front side and middle side. A botanical garden is available in the college campus which has many diverse of tree species. For the protection the college has built a wall. Garden also comprises some medical and important plants with their red conservation aspect. College garden is day to day maintained by gardener.

LIBRARY

Library is automated using Integrated Library Management System (ILMS). College uses the SOUL software in the library. It is state-of-the-art library automation software designed and developed by the INFLIBNET. It is used for automating any type or size of library in India. Nearly all sorts of automatic works related to library can be performed using SOUL software. SOUL 3.0 library software has different operation modules according to their entity and nature. It has 6 main modules and various sub-modules as per area of operation. Acquisition, Catalogue, Circulation and Serial Control are functions performed automatically with the use of SOUL

➢ Institution has subscription for the e-resources: e-journals, e-ShodhSindhu, Shodhganga Membership, e-books, Databases, Remote access toe-resources

➢ Composition of a committee: 1. Principal 2. Librarian 3. Four faculty members

➢ Internet facilities are available (INFLIBNET) for the students.

➢ BISAG channel is available on television for viewing the lectures delivered by SANDHAN.

➢ Reference books are not issued to anybody. Whosoever wants to refer the books is required to sit in the library itself. The section is accessible to all the faculty members and students.

➢ Reprography: Photocopying facility is available in the library.

➢ ILLL (Inter Library Loan Service): - Library does have Inter Library Loan Service. The books are given to the faculty members of other colleges by taking deposit equated to the cost of the book.

➢ Library has 04 computers with internet facility for the use of the students. They can download the study material in the library itself.

➢ INFLIBNET/IUC facilities available for both – the staff and the students as well.

➢ College has facility of following reader approachable n-list e- library.

Table 4. READER APPROACHABLE N-List E- LIBRARY

Sr. No.	Library Facility	Purpose of the facility
1	Library Blog	College library has its own Blog as students can access every reading Material through College Library Blog. Library Blog: http://vrpcclibrary.blogspot.com/p/downlod.htm
2	Online E-Journal Search	Any students can search available and issued E-Journals from the online catalogue. Along with this, students can review the book cover pages and book indexes from the online catalogue.
3	Book On Demand	The librarian helps the students to borrow the books online thorough document delivery services. Interested students can keep book issue demands online and the librarian will make them available to the respective students.
4	INFLIBNET N-LIST (National Library and Information Services infrastructure for scholarly content)	This is specially provided to all the students for accessing e-resources online from all colleges in India. Achievement: In the year 2022-2023, our college is the only college to be awarded twice by Gujarat Government because it has claimed the status of Top 10 N-List Users of India.

Sr. No.	Library Facility	Purpose of the facility
5	Institutional Digital Repository	The college library provides online source for Previous Internal and External examination papers and study materials as well. The students can easily download the same and utilize for exam preparation.
6	User Friendly Open Access Resources	All Open Access Resources like Course wise learning resources, virtual laboratories, open access e-books, open access E-journals are linked on Online Library Homepage for user friendly approach.
7	New Arrivals Displays	New Arrivals for Books, Magazines and Journals are made by displaying on Online Library Homepage. This helps students to have keen interest for reading.
8	Library Orientation Programme for New Admitted students:	Every year, Librarian organizes a Library Orientation Programme at the beginning of the new Academic year for newly admitted students. The students are acquainted with all kinds of Online and Physical library resources

Table 5. Library timings provides to students during 2022-2023

Days	Time Duration
Working days	7:30 AM to 1:30 PM
Holidays	8:00 AM to 12:00 PM
Before examinations days	7:30 AM to 6:00 PM
During examination days	7:30 AM to 6:00 PM
During vacation	8:00 AM to 12 AM

TOTAL CAMPUS AREA & COLLEGE BUILDING SPREAD AREA

The entire campus is spread in total 4.33 acres from which 9630 sq.mt areas is used for buildings and infrastructure. The following diagram shows the campus layout of Shri V. R. Patel College of Commerce, Mehsana (figure 1).
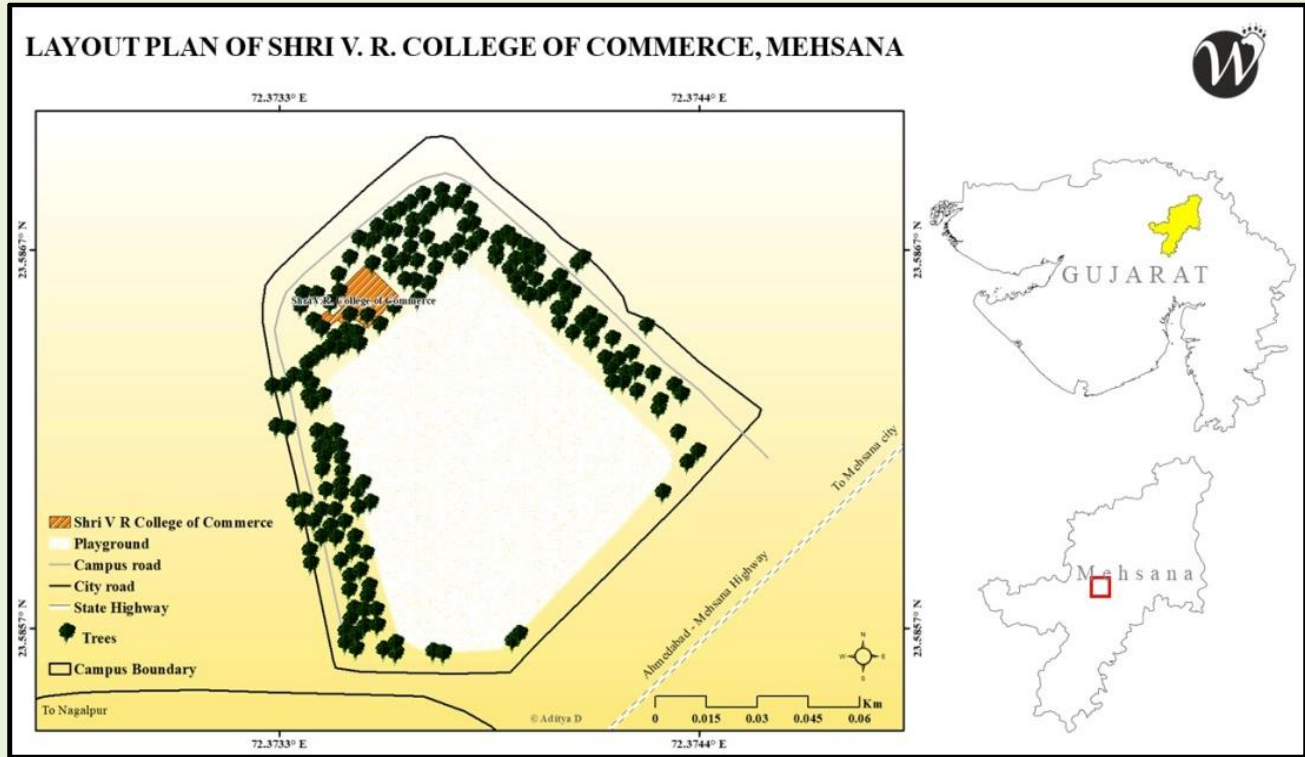
CHAPTER 2
PRE-AUDIT STAGE

SCOPE AND GOALS OF GREEN AUDITING

A clean and healthy environment helps in effective learning and provides conducive learning environment. There are various efforts around the world to address environmental and educational issues. Green Audit is the most efficient and ecological way to manage environmental problems. Green audit means assessing environmental performance. It is a systematic, documented, periodic, and objective review by regulated entities of facility operations and practices related to meeting environmental requirements. It is otherwise the systematic examination of the interactions between any operation and its surroundings. This includes all emissions to air; land and water; legal constraints; the effects on the neighboring community; landscape and ecology; the public's perception of the operating company in the local area. Green audit does not stop all compliance with legislation. Nor it is a 'green washing' public relations exercise. Rather it is a total strategic approach to the organization's activities. It is a kind of professional care which is the responsibility of each individual who is the part of economic, financial, social, environmental factor. It is necessary to conduct green audit in college campus because students become aware of the green audit, its advantages to save the planet and they become good citizen of our country. In accordance with the evaluation plan of Shri V. R. Patel College of Commerce, Mehsana for 2022-23, the Green Audit of the college conducted in September 2023.

A very simple indigenized system has been devised to monitor the environmental performance of Shri V. R. Patel College of Commerce, Mehsana. It comes with a series of questions to be answered on a regular basis. This innovative scheme is user friendly and totally voluntary. The aim of this is to help the institution to set environmental examples for the community, and to educate the young learners. Thus, Green audit becomes necessary at the college level.

BENEFITS OF GREEN AUDITING

➢ More efficient resource management

➢ To provide basis for improved sustainability

➢ To create green campus

➢ To enable waste management through reduction of waste generation, solid and liquid waste and water recycling

➢ To create plastic free campus and evolve health consciousness

➢ Point out the prevailing and forth coming complications

➢ Authenticate conformity with the implemented laws

➢ Enhance the alertness for environmental guidelines and duties

- Impart environmental education through systematic environmental management approach and improving environmental standards

- Benchmarking for environmental protection initiatives

- Financial savings through a reduction in resource use

- Development of ownership, personal and social responsibility for the college and its environment

- Enhancement of college profile

- Developing an environmental ethic and value systems in youngsters

- Green auditing should become a valuable tool in the management and monitoring of environmental and sustainable development programs of the college

- Developing the organization's environmental strategy: Enabling management to develop its environmental strategy for moving towards a greener corporate and performance culture.

TARGET AREAS OF GREEN AUDITING

Green audit forms part of a resource management process. Although they are individual events, the real value of green audits is the fact that they are carried out, at defined intervals, and their results can illustrate improvement or changeover time. Eco-campus concept mainly focuses on the efficient use of energy and water, to minimize waste generation or pollution and also economic efficiency. All these indicators are assessed in process of green auditing of educational institute. Eco-campus focuses on the reduction of contribution to emissions, procures a cost effective and secure supply of energy, encourages and enhances energy use conservation, promotes personal action, reduce the institute's energy and water consumption, reduce wastes to landfill, and integrate environmental considerations into all contracts and services considered to have significant environmental impacts. Target areas included in this green auditing are water, energy, waste, green campus and carbon footprint.

A) AUDITING FOR WATER MANAGEMENT

Water is a natural resource; all living matters depend on water. While freely available in many natural environments, in human settlements potable water is less readily available. We need to use water wisely to ensure that drinkable water is available for all, now and in the future. A small drip from a leaky tap can waste more than 180 liters of water in a day; that is a lot of water to waste - enough to flush the toilet eight times. Aquifer depletion and water contamination are taking place at unprecedented rates. It is therefore essential that any environmentally responsible institution should examine its water use practices. Water auditing is conducted for the evaluation of facilities of raw water intake and determining the facilities for water treatment and reuse. The concerned audit or investigates the relevant method that can be adopted to balance demand and supply of water. It is therefore essential that environmentally responsible institution examine its water use practices.

B) AUDITING FOR ENERGY MANAGEMENT

Energy cannot be seen, but we know it is there because we can see its effects in the forms of heat, light and power. This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliances, and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment. Energy auditing deals with the conservation and methods to reduce its consumption related to environmental degradation. It is therefore essential that any environmentally responsible institution examine its energy use practices.

C) AUDITING FOR WASTE MANAGEMENT

Pollution from waste is aesthetically unpleasing and results in large amounts of litter in our communities which can cause health problems. Plastic bags and discarded ropes and strings can be very dangerous to birds and other animals. This indicator addresses waste production and disposal, plastic waste, paper waste, food waste, and recycling. Solid waste can be divided into two categories: general waste and hazardous waste. General wastes include what is usually thrown away in homes and schools such as garbage, paper, tins and glass bottles. Hazardous waste is waste that is likely to be a threat to health or the environment like cleaning chemicals and petrol. Unscientific landfills may contain harmful contaminants that leach into soil and water supplies, and produce Green House Gases contributing to global climate change. Furthermore, solid waste often includes wasted material resources that could otherwise be channeled into better service through recycling, repair, and reuse. Thus, the minimization of solid waste is essential to a sustainable college. The auditor diagnoses the prevailing waste disposal policies and suggests the best way to combat the problems. It is therefore essential that any environmentally responsible institution examine its waste processing practices.

D) AUDITING FOR GREEN CAMPUS MANAGEMENT

Unfortunately, biodiversity is facing serious threats from habitat loss, pollution, over consumption and invasive species. Species are disappearing at an alarming rate and each loss affects nature's delicate balance and our quality of life. Without this variability in the living world, ecological systems and functions would break down, with detrimental consequences for all forms of life. Newly planted and existing trees decrease the amount of carbon dioxide in the atmosphere. Trees play an important ecological role within the urban environment, as well as support improved public health and provide aesthetic benefits to cities. In one year, a single mature tree will absorb up to 48 pounds ($4.535*10^{-3}$tones) of carbon dioxide from the atmosphere, and release it as oxygen. The amount of oxygen that a singletree produces is enough to provide one day's supply of oxygen for people. So, while you are busy studying and working on earning those good grades, all the trees on campus are also working hard to make the air cleaner for us. Trees can impact one mental health as well; studies have shown that trees greatly reduce stress, which is considering many students are under some amount of stress.

E) AUDITING FOR CARBON FOOTPRINT

Usage of fossil fuel-based vehicles impacts on the environment through the emission of greenhouse gases into the atmosphere. The most common greenhouse gases are carbon dioxide, water vapor, methane, nitrous oxide and ozone. Of all the Green House Gases, carbon dioxide is the most prominent greenhouse gas, comprising 402 ppm of the Earth's atmosphere. The release of carbon dioxide gas into the Earth's atmosphere through human activities is commonly known as carbon emissions. An important aspect of doing an audit is to be able to measure the impact so that one can determine better ways to manage the impact. In addition to the audits of water, waste, energy and biodiversity aids to determine what our carbon footprint is, based on the amount of carbon emissions created. It is necessary to know how much the organization is contributing towards sustainable development. It is therefore essential that any environmentally responsible institution examine its carbon footprint.

METHODOLOGY OF GREEN AUDITING

The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. The criteria, methods and recommendations used in the audit were based on the identified risks. The methodology includes: preparation and filling up of questionnaire, physical inspection of the campus, observation and review of the document, interviewing responsible persons and data analysis, measurements and recommendations. The methodology adopted for this audit was a three-step process comprising of: A) Data collection B) Data analysis and recommendation

A) DATACOLLECTION

In preliminary data collection phase, exhaustive data collection was performed using different tools such as observation, survey communicating with responsible persons and measurements. Following steps were taken for data collection:

➢ The team went to each department, center, library, canteen etc.

➢ Data about the general information was collected by observation and interview.

➢ The power consumption of appliances was recorded by taking an average value in some cases.

B) DATA ANALYSIS AND RECOMMENDATION

On the basis of results of data analysis and observations, some steps for reducing power and water consumption were recommended. Proper treatments for waste were also suggested. Use of fossil fuels has to be reduced for the sake of community health. The above target areas particular to the college was evaluated through questionnaire for data collection. Five categories of questionnaires were distributed which was given in survey forms. The formats of the same are given below.

CHAPTER 3
POST AUDIT STAGE

The base of any green audit is that its findings are supported by documents and verifiable information. The audit process seeks, on a sampled basis, to track past actions, activities, events, and procedures to ensure that they are carried out according to systems requirements and in the correct manner. Green audits form a part of a process. Although they are individual events, the real value of green audits is the fact that they are carried out, at defined intervals, and their results can illustrate improvement or change over time. Although green audits are carried out using policies, procedures, documented systems and objectives as a test, there is always an element of subjectivity in an audit. The essence of any green audit is to find out how well the environmental management and environmental equipment are performing. Each of these components is crucial in ensuring that the campus environmental performance meets the goals set in its green policy. The individual functioning and the success of integration will all play a role in the degree of success or failure of the campus environmental performance.

KEY FINDINGS AND OBSERVATIONS

A) AUDIT FOR WATER MANAGEMENT

Figure 2. Water tank system in college

1. Main water uses in the campus: washroom, gardening, cleaning, drinking, washing and office uses.

2. Separate bore, storage water and water tanks are made for water resource in the campus.

3. College store water through 02 water tanks (figure 2).

4. Water wastage mainly during urinals and toilets.

5. Water wastage can be prevented by wisely flush in toilets.

6. Reduce the usage of water is foremost way to reduce amount of water used in college.

7. College does not have chemical laboratories and hostel premises.

8. College has no agriculture field.

9. College has canteen premises.

10. There is no water meter box in the college.

11. Water management plan campus: bore well (figure: 3)

Figure 3. Bore well system in college campus

12. Number of water coolers: 02 and approximately 50L water used per day.

13. Number of bathrooms: 09

14. Number of toilets and urinals: 09 and approximately 15 L water used per day.

15. 5 water fountains available in botanical garden.

16. College campus has drip irrigation system for watering the plants in the garden.

17. Number of water taps: 58

18. Every even day of the week the gardens are watered and approximately 100L water used for garden purpose.

19. No water treatment system in place.

20. Leaky taps; waterless toilets; water fountain: None

21. There are signs reminding people to turn off the water.

22. Drip irrigation system used for watering the plants in garden (figure 4).

Figure 4. Drip irrigation system in college

23. Rain water harvesting technique is adopted and 2 units of rain water harvestings are placed in college and 2 more units in progress. This technique can save more water in the college. During monsoon, a lot of water gets stored on the terrace of the college. A system has been initially developed by which the water is stored in a huge underground water tank constructed near the Chemistry laboratory of the sister-concerned Science College. The amount of water collected is so sufficient that it can be used by us at the time of water scarcity especially during summer time.

24. Water used adequately and maintained through this method college saves water wastage.

25. Water management plan: Water accumulation in the campus is checked by a system through which excess water is absorbed in the ground in order to raise the level of underground water. This water is pulled out by means of a tube well during the times of water shortage.

26. Approx. 100 L water use per day in the college which is detailed in below table.

Table 6. Overall utilization of water in the college

Sections	Water Use/ Day (L)
Urinals and toilets	15
Garden	30
Water cooler	50
Total	95

B) AUDIT FOR ENERGY MANAGEMENT

1. College uses LED bulb, tube light, AC, RO, computer, xerox facility with duplicator, scanner printer, generator with 40 KV, CCTV camera system with DVR, (Free) wi-fi connection, water cooler, fans, UPS, TV, panel boards, projectors and submersible water pump.

2. College uses LED Bulbs and lights as LEDs are up to 80% more efficient than traditional lighting such as fluorescent and incandescent lights. 95% of the energy in LEDs is converted into light and only 5% is wasted as heat and hence, less energy usage reduces the demand from power plants and decreases greenhouse gas emissions.

3. Energy management: Regular maintenance is done for electric appliances with the help of UGC.

4. Electricity amount of the college for the previous year 2022 was Rs. 9,743/-

5. College believes in paperless office work as college follows:

   ➢ Admission committee comprising 3 members for online admission process.

   ➢ Computer-savvy and techno-savvy administrative staff members.

   ➢ Online fee payment arrangement using Credit/Debit/ATM cards.

   ➢ Computer-based examination and declaration of result.

   ➢ Important notices and reports circulated via e-mails, college website (www.vrpcc.org), college WhatsApp group (VRPCCM), Telegram App of VRPCCM, bulk SMS services (TEMP.91bulksms.com), Google form platform etc.

   ➢ All ads related to vacancies are also exhibited on the digital screen of library.

   ➢ Fully e-governed Single Click Accounting.

   ➢ College uses Tally ERP 9.0 for the transparent functioning of Accounts department.

   ➢ Online MCQ Tests and SCOPE examinations are conducted in the DELL lab.

6. Well-ventilated classrooms are available in the college as it saves electricity since the students do not feel the need of tube lights during daytime. Moreover, it is a standard practice of switching off all the electrical appliances immediately after the teaching work is over. We have inculcated the values of environmental consciousness and so when they leave the class, the students themselves see to it that all electric gadgets are switched off by them.

7. Alternative source of energy like solar energy adopted by the college as energy conservation (figure 5). As solar panel system has following benefits:

   ➢ Cost-efficiency: Cost-efficiency that fall short in terms of durability as solar panel system has at least 25 years warranty and continue to function well beyond that.

- Boosts enrollment: As world is becoming more and more environmentally conscious in such case green energy may attract younger crowd and boost enrollment in the college.
- Unlimited Reliable Energy: The sun gives out consistent energy that is not adequately harnessed right now. But with these extensive grounds and proper maintenance, college could reap the benefits of unlimited, reliable energy.
- Durability: Solar panels provide long-lasting, energy-efficient lighting.

Figure 5. Solar system in college campus

8. Following table shows calculation of energy for major electrical appliances used in college.

Table 7. Calculation of energy for electrical appliances used in college campus

Name of Appliances	No. of appliances	General Power consumption (watt)	Power consumption (KW=W/1000)	Usage/day(hours)	Average kWh /day	Average kWh /month
Fan	307	14	1.87	06	11.3	774
LED bulb	180	11	0.11	05	0.6	297
Tube light	86	25	2.15	06	12.9	387
Computer	46	60	2.76	05	13.8	414
Printer	04	30	0.12	07	0.8	25
Photocopy machine	02	83	0.16	06	1.0	30
CCTV camera	24	02	0.05	24	1.2	35
TV	01	60	0.06	07	0.4	13
Projector	10	50	0.5	04	2.0	60
Speaker	02	200	0.4	03	1.2	36
A.C.	03	1000	03	05	15	450
Total	665	3260	1052.98	78	82132.4	5072886

C) AUDIT FOR WASTE MANAGEMENT

1. GIDC-5, bus stand, public convenience, petrol pump is found near from the college campus area.

2. College generates solid/dry wastes (solid portion of material such as glass bottles, crockeries, plastic containers, metals and radioactive wastes, etc.) collected in blue colored dustbin.

3. Liquid wastes (medical wastes, sanitary napkin wastes, etc.) collected in green colored dustbin.

4. Municipality has made an arrangement for the disposal of this dry and liquid wastes on regular days. Disposal of e-waste done by the college at regular intervals and unnecessary parts of electronic items are sold out to E-waste scrap dealer.

5. Hazardous chemicals and radioactive wastes do not generate as this institution conducting Commerce branch only.

6. College has digital facilities like WhatsApp group VRPCCM, Telegram App VRPCCM, bulk SMS services (TEMP.91bulksms.com) which aims to minimize the manual efforts and improve the communication, create transparent system, and to be cost and time effective. Hence, college follows the 3 Rs: Reduce, Recycle, Reuse to achieve zero waste in the college campus.

7. College has initiated 'Plastic Free Campus Movement' to create awareness by prohibiting the use of polythene in the campus. Even the Campus Canteen makes extensive use of eco-friendly paper plates and cups in occasions. College spreads the message of recycling and waste wealth programmes such as rallies, drawing competition, cleanliness drive and hoardings activities done by NSS and NCC students of the college.

8. With the aim to produce immediate information in Finance and Accounts such as Single Click Accounting, this section of college is fully e-governed. The college uses Tally ERP 9.0 for the transparent functioning of Accounts department. The same software is used to generate various reports like Consolidated Day Book, General Day Book, Daily Cash Collection Report etc.

9. Following facilities are available in the college campus

Table 8. Facilities available in the college campus

Facility	Number of facilities	Facility	Number of facilities
Garden area	04	Canteen	01
Playground area	02	Parking area	03
Kitchen	01	Classrooms	24
Toilets	10	Office room	05
Garbage dump	01	Library	02
Language lab	01	Auditorium	01
Psychology lab	01	Digital Studio	01
Sports	01	Gym Room	01

10. Following table shows total strength in the college during 2022-2023.

Table 9. Total strength in the college during 2022-2023

Students	No. of students	No. of teachers	No. of non-teaching staff
Male	1296	08	Not available
Female	1200	05	Not available
Total	2496	13	Not available

11. Approximate office waste generated per day (in kilograms):
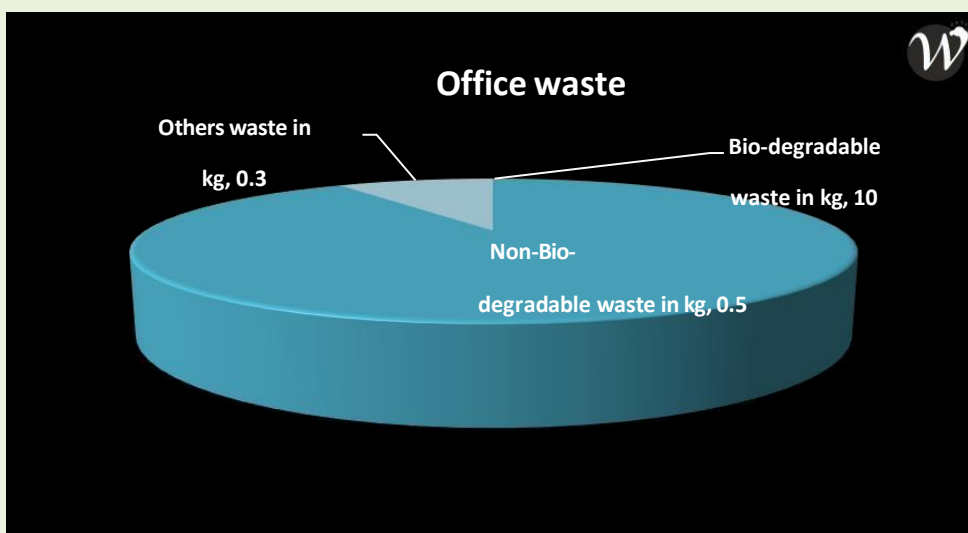
Figure 6. Office waste generated in college

12. Different types of waste generated in the college and their disposal.

Table 10. Different types of wastes and their disposal method

Types of waste	Particulars	Disposal method
E-Wastes	Computers, electrical and electronic parts	Keep separate in store room
Plastic wastes	Plastic wastes as Refill, Plastic water bottles, etc.	Negligible amount generates
Solid wastes	Damaged furniture, paper waste, paper plates, etc.	Fully automatic organic waste composter machine
Domestic wastes	Sanitary napkin wastes	Incinerator Machine
Wastewater	Washing, urinals, bathrooms	Drainage

D) AUDIT FOR GREEN CAMPUS MANAGEMENT

1. Campus is made green by growing a large number of trees in the area surrounding the college building. Every year as a part of N.S.S. regular activities "Tree Plantation Programme" is carried out by the NSS volunteers of the two NSS units of the college.

2. There is total 03 gardens available in the college campus. College campus garden encompassing major part of the college campus with many tall trees whereas, botanical garden comparatively medium in size with comprises different varieties of trees, herbs and shrubs. College garden plants are mainly shrubs and few are trees with small cover area. Proper care is taken by the college to maintain these gardens.

3. Medicinal plants like Ardusi, Tulsi, Amla, Henna etc. have been grown in the botanical garden developed in the campus by the sister-concerned Science College. Along with some ornamental plants the trees such as Asopalav, banyan, Nilgiri, Neem, etc. and fruit bearing plants are also grown in the campus.

4. A Drip Irrigation System has been developed for watering the plants grown in the college campus. This system helps us save water. A fountain has been kept near the garden to enhance the ambience of the college and the water utilized in the fountain is reused to keep the fountain working, thereby avoiding the wastage of water in the process. Plantation activity done by college campus which is enclosed in annexure 6.

5. Campus landscaping with total 218 plants such as *Polyalthia longifolia, Roystonea regia, Syzygium cumini, Mimuspos elengi, Annona squamosa* and many more trees (figure 8).

6. 01 critically endangered, 04 data deficient, 06 least concern, 01 lower risk, 01 near threatened, 07 not evaluated by IUCN red list, 14 not extinct and 01 threatened tree species are identified in the college campus (table 11).

7. Among tall trees, there are 36 tall tree species, 06 timber plants and 19 medicinal tree species (table 11) and other tree species have different importance like, some species have air purifying importance, n-fixing trees, agroforestry, fruit yielding plants and social forestry are identified (figure 9).

8. College has drip irrigation system to nourish the plants of garden.

9. The college has a composter tank. Dry leaves waste from the garden are collected and are placed in the composting unit and generated compost then used as manure in the garden of campus (figure 7).

Figure 7. Composting unit of college campus

10. College actively organized green initiatives which are listed below.

➢ **DEPLOYMENT OF SOLAR ARRAYS (16/10/23)**

As a renewable source of power, solar arrays (solar panel) installed in college with the capacity of 10 KV on the date of 16/10/23 as solar energy has an important role in reducing greenhouse gas emissions and mitigating climate change, which is critical to protecting humans, wildlife, and ecosystems (annexure 1). Solar energy can also improve air quality and reduce water use from energy production.

➢ **SWACHHATA ABHIYAN**

College organized Swachhata Bharat Abhiyan and developed a committee which plays a significant role in the campus premises, to make campus neat, clean and dust free (annexure 2). The programme includes elimination of open defecation, conversion of unsanitary toilets to pour flush toilets, municipal solid waste management and bringing about a behavioral change in people regarding healthy sanitation practices.

➢ **ROAD AWARENESS**

Road safety is of prime importance as road accidents are among the biggest causes of deaths in the country. With the number of vehicles on our roads increasing with every passing hour, it's of vital importance for everyone to have traffic awareness and understand and respect all the road safety rules in India.

➢ **NATIONAL CLEANLINESS DAY (02/10/2021 & 02/10/2022)**

The college celebrated National Cleanliness Day to commemorate the death anniversary of Mahatma Gandhi every year. This responsibility for environmental cleanliness, calls to maintain high standards of cleanliness in our homes, workplace, road/streets and public places.

➢ **INTERNATIONAL YOGA DAY (21/06/2022)**

College celebrated International Yoga Day on 21/06/22 as yoga and health awareness with the purpose to cultivate discernment, awareness, self-regulation and higher consciousness in the individual (annexure 3).

➢ **HEALTH CHECKUP CAMP (23/05/2023)**

College organizes medical camp to provide initial care to students in life-threatening conditions which reflect the unique strengths and goals of medical ethics (annexure 5).

➢ **PLASTICS FREE AND SAVE NATURE (05/06/2022)**

Plastic hatavo activity organized by college to establishes environment-friendly plastic waste disposal solutions. In the process it seeks to ban the use of plastic bags and plastic products, and reduce plastic littering across the campus.

➢ **SAPLING PLANTATION (15/07/2022 & 08/08/2022)**

Under the Tree Adaptation Abhiyan, college organized sapling plantation programme every year (annexure 4). Sapling plantation creates awareness of green earth and eco-friendly culture. Green cover is significant because it is linked to our basic need for good food to eat and clean air to breathe. Aside from these necessities, they preserve biodiversity, conserve water, preserve soil, and control climate, among other things.

➢ **ENVIRONMENTAL CONSCIOUSNESS AND SUSTAINABLE ACTIVITY (17/02/21)**

To motivate the students for environmental consciousness activities and to create awareness towards the nature and environment in which we live, college organizes Environmental Consciousness and Promotion of Sustainable Environment activity. In order to sustain the clean and green environment of the college emblazons balance between utilization and transformation along with disposal of wastes has to be maintained.

TALL TREES FOUND IN SHRI V. R. PATEL COLLEGE OF COMMERCE, MEHSANA.

CARBON STORAGE ESTIMASTION WITH RESPECT TO THEIR TREES AT SHRI V R PATEL COLLEGE OF COMMERCE, MEHSANA

Figure 8. Number of trees found in Shri V. R. Patel College of Commerce, Mehsana.

Above figure shows that college harbors varieties of tall trees such as *Alstonia scholaris*, *Azadirachta indica*, *Peltophorum pterocarpum*, and *Mimuspos elengi* many more.

Among these trees, *Polyalthia longifolia*, *Mimuspos elengi*, *Peltophorum pterocarpum*, *Millettia pinnata*, *Azadirachta indica* were found with maximum number of trees species in the college campus. Least number of tree species includes *Casuarina equisetifolia*, *Ficus benjamina*, *Ficus religiosa*, *Plumeria rubra*.

TOTAL PLANTS FOUND IN THE COLLEGE CAMPUS WITH THEIR USAGES
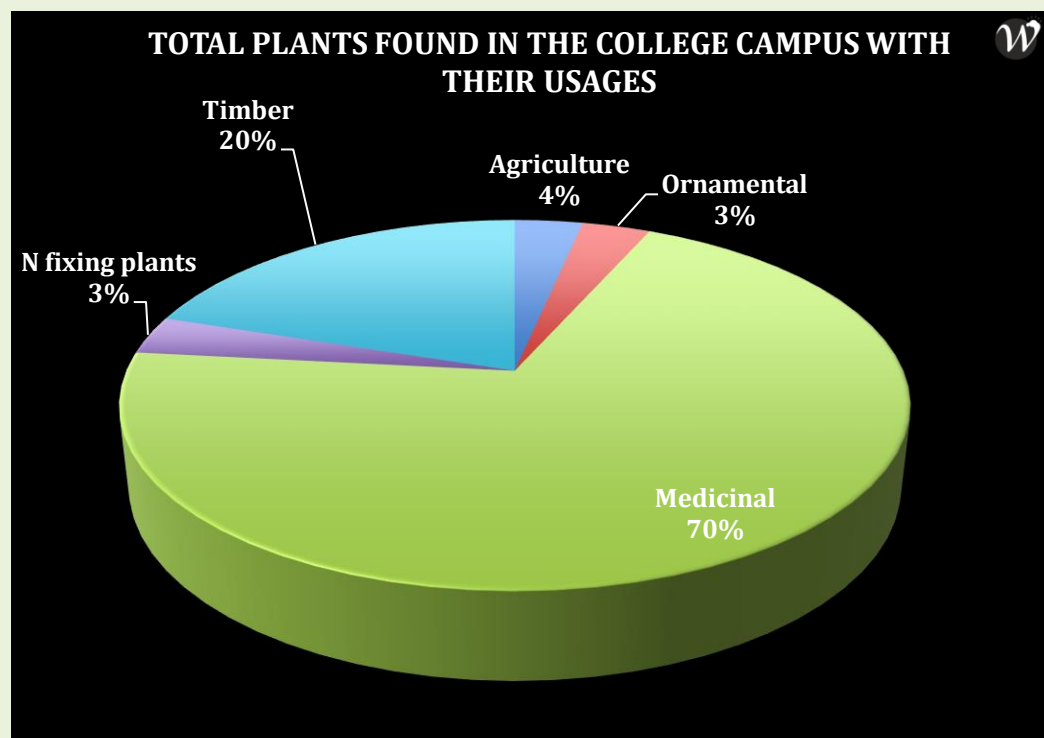
Figure 9. Total plants found in the college campus with their usages

Above figure shows that Campus landscaping with total 218 plants which have different usages such as social forestry, agriculture, medicinal, timber yielding plants, Nitrogen fixing, air purifying and ornamental plants.

CAMPUS WITH THEIR RED CONSERVATION STATUS

Table 11. Important trees found in the college campus with their red conservation status

In this table, Least Concern (LC) tree species means is a species that has been categorized by the International Union for Conservation of Nature (IUCN) as evaluated as not being a focus of species conservation because the specific species is still plentiful in the wild. An endangered (EN) species is a type of organism that is threatened by extinction. Species become endangered for two main reasons: loss of habitat and loss of genetic variation. The conservation status of a group of a species Not Extinct indicates whether the group still exists and how likely the group is to become extinct in the near future. A data deficient (DD) species is one which has been categorized by the IUCN as offering insufficient information for a proper assessment of conservation status to be made.

Sr. No.	Status of trees	Available trees in college campus
1	Critically Endangered	*Roystonea regia*
2	Data deficient	*Cordia sebestena*
3		*Holoptelea integrifolia*
4		*Jasminum sambac*
5		*Mangifera indica*
6	Least Concern	*Alstonia Scholaris*
7		*Bauhinia purpurea*
8		*Caryots urens*
9		*Ficus carica*
10		*Nerium oleander*
11		*Syzygium cumini*
12	Lower Risk	*Colvillea racemose*
13	Near threatened	*Dypsis lutescens*
14	Not evaluated by the IUCN Red list	*Albizia adianthifolia*
15		*Neolamarckia cadamba*
16		*Polyalthia longifolia*
17		*Millettia pinnata*
18		*Morus alba*
19		*Morus rubra*
20		*Ficus benjamina*
21	Not Extinct	*Annona squamosa*
22		*Azadirachta indica*
23		*caryota mitis*
24		*Casia fistula*

Sr. No.	Status of trees	Available trees in college campus
25	Not Extinct	*Casuarina equisetifolia*
26		*Cinchona officinalis*
27		*Ficus benghalensis*
28		*Ficus religiosa*
29		*Mimuspos elengi*
30		*Peltophorum pterocarpum*
31		*Phyllanthus emblica*
32		*Plumeria rubra L.*
33		*Senna siamea*
34		*Tecoma stans*
35	Threatened Species	*Callistemon citrinus*

MEDICINAL PLANTS AVAILABLE IN THE COLLEGE

Table 14. Medicinal plants available in the college
Medicinal plants, also called medicinal herbs, have been discovered and used in traditional medicine practices since prehistoric times. Plants synthesize hundreds of chemical compounds for various functions, including defense and protection against insects, fungi, diseases, and herbivorous mammals.

Sr. No.	Family	Scientific name
1	Caesalpinioideae	*Albizia adianthifolia*
2	Apocynaceae	*Alstonia Scholaris*
3	Meliaceae	*Azadirachta indica*
4	Leguminosae	*Bauhinia purpurea*
5	Myrtaceae	*Callistemon citrinus*
6	Palms	*Caryots urens*

Sr. No.	Family	Scientific name
7	LegumInosae	*Casia fistula*
8	Casuarinaceae	*Casuarina equisetifolia*
9	Rubiaceae	*Cinchona officinalis*
10	Moraceae	*Ficus benghalensis*
11	Mulberry	*Ficus benjamina*
12	Mulberry	*Ficus carica*
13	Mulberry	*Ficus religiosa*
14	Olives	*Jasminum sambac*
15	Moraceae	*Morus alba*
16	Apocynaceae	*Nerium oleander*
17	Phyllanthaceae	*Phyllanthus emblica*
18	Magnolia	*Plumeria rubra L.*
19	Annonaceae	*Polyalthia longifolia*
20	Bignonias	*Tecoma stans*

AUDIT FOR CARBON FOOTPRINT

According to U.S. EIA (Energy Information Administration), greenhouse gases are gases that keep heat in the earth's atmosphere. Although greenhouse gases do occur naturally, majorly human activity contributes a great deal to greenhouse gas emissions. The carbon footprint or the impact on the environment from the Shri V. R. Patel College of Commerce, Mehsana campus measures the greenhouse gases that campus responsible for creating.

CARBON FOOTPRINT ANALYSIS

1. Institution tries to maintain eco- friendly atmosphere.

2. There is restricted entry of automobiles in the college campus.

3. There are pedestrian friendly pathways available in the college.

4. Diameter at breast height and approximate age of the trees were measured to estimate the potentiality of carbon sequestration for the campus trees which can be seen in figure 10.

5. Total carbon sequestered by trees of campus was 115.14 t/year in which highest potentiality of carbon sequestration was observed in *Ficus religiosa* (4.14 t/year) and lowest potentiality of carbon sequestration was observed in *Mangifera indica* (2.46 t/year) during the study sample.

6. There is a carbon pooling system in the campus which minimizes the atmospheric carbon emission.

Figure 10. Diameter and height estimated to measured carbon sequestration from trees available in the college campus

7. Total number of vehicles used by the students of the college:45

8. Average number of vehicles used by the stakeholders of the college: 500

9. Number of cycles used: 50

10. Number of two wheelers used: 420

11. Number of cars used by faculties: 25

12. Number of cars used by visitors: 05

13. Average distance travelled: 10 km

14. Average quantity of fuel used per day: 20Ltr

15. 1500 persons using public transportation and average distance is 15 km.

16. Number of visitors with vehicles per day: 10

17. 2 times parent teachers meeting held in a year.

18. 5 fire extinguisher sets to control fire.

19. College has 1 generator and it is used only when it's required.

20. Number of LPG cylinders used in the canteen: 01 and approximately 12 rupees per day fuel used per day.

21. The college offers a course on Environmental studies at B. Com. Sem. III in the curriculum will help the youth understand how to anticipate, absorb and adapt to such events. The students are assigned activities protecting environment thereby developing environmental awareness.

22. College has initiative for carbon accounting and following figure shows carbon foot print calculation and comparison with country level and world level for the year of 2022-2023 (figure 11).
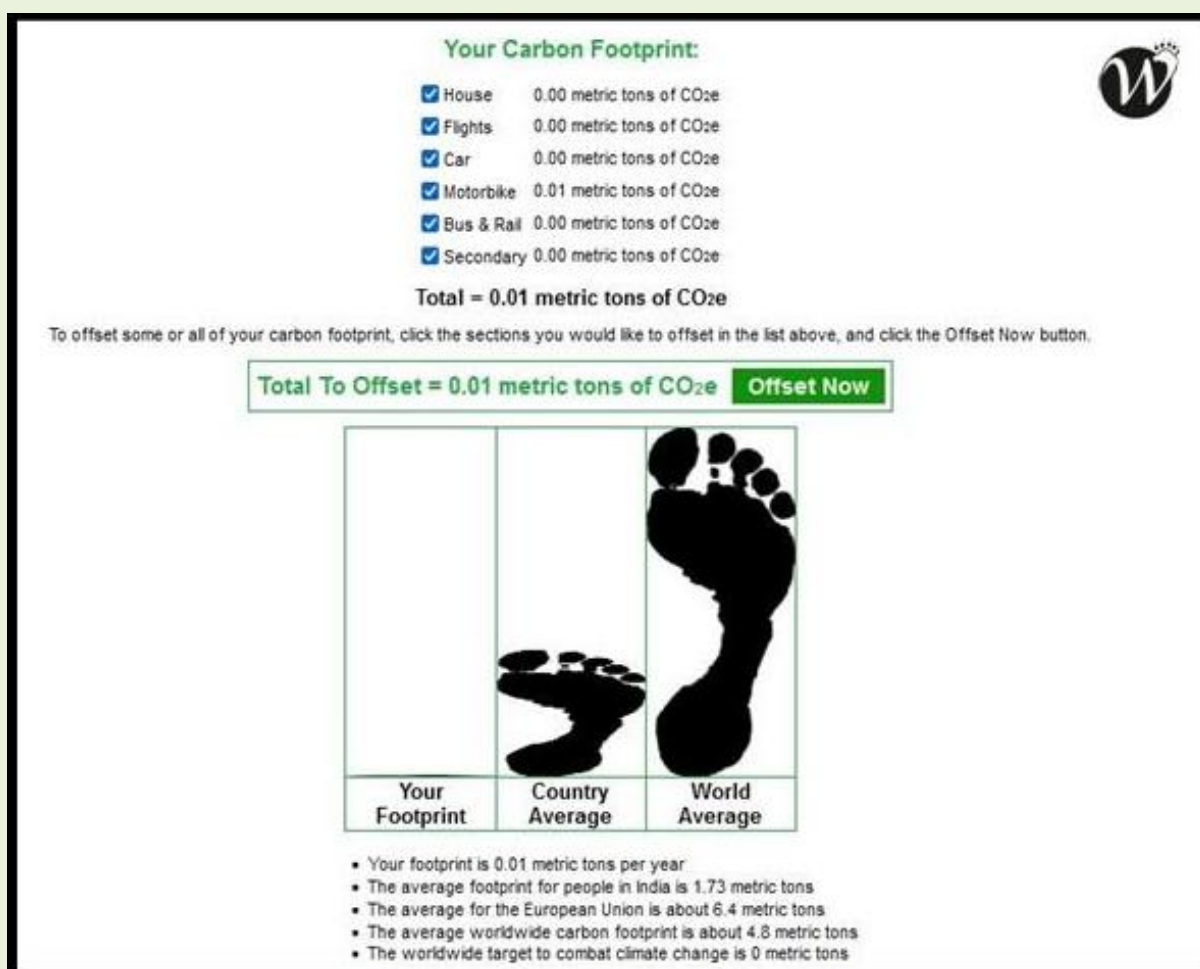
Figure 11. Carbon footprint of Shri V. R. Patel College of Commerce, Mehsana campus to compare country and world level for the 2022-2023

CHAPTER 4

FINDINGS

PREPARATION OF ACTION PLAN

Policies referring to college management and approaches towards the use of resources need to be considered. The college should have a green policy/environmental policy for its sustainable development. The environmental policy formulated by the management of the college should be implemented meticulously. The college should have a policy on awareness training programs and college also should have a procurement policy.

FOLLOW-UP ACTION AND PLANS

Green Audits are exercises which generate considerable quantities of valuable management information. The time, effort and cost involved in this exercise are often considerable and in order to be able to justify this expenditure. It is important to ensure that findings and recommendations of the audit are considered at the correct level within the campus and that action plans and implementation programs result from the findings. Audit follow up is part of the wider process of continuous improvement. Without follow-up, audit becomes an isolated event which soon becomes forgotten in the pressures of management priorities and passing of time.

ENVIRONMENTAL EDUCATION

The following environmental education program may be implemented in the college before the next green audit:

➢ Training programs in solid waste management, liquid waste management, setting up of separate medicinal plant nursery, vegetable cultivation, and tree plantation with maximum carbon sequestration tree species programme and plantation with Miyawaki method should be done in the college.

➢ Increase the number of display boards on environmental awareness such as save water, save electricity, no wastage of food/water, no smoking, switch off light and fan after use, plastic free campus etc.

➢ Activate and raise the environmental clubs.

➢ Set up model for rainwater pits, vegetable garden, paddy fields etc. to give students first- hand experience with nature.

➢ Awareness on carbon sequestration, carbon credit and carbon footprint.

➢ The carbon consumption awareness programs on carbon emission at individual as well as social level will help to avoid air and noise pollution in the campus due to vehicles.

CONCLUSION

The green audit assists in the process of testing performance in the environmental arena and is fast becoming an indispensable aid to decision making in a college. The green audit reports assist in the process of attaining an eco-friendly approach to the sustainable development of the college. Hope that the results presented in the green auditing report will serve as a guide for educating the college community on the existing environment related practices and resource usage at the college as well as spawn new activities and innovative practices. It has been shown frequently that the practical suggestions, alternatives, and observations that have resulted from audits have added positive value to management of the campus. An outside view, perspective and opinion often help staffs who have been too close to problems or methods to see the value of alternative approaches. A green audit report is a very powerful and valuable communications tool to use when working with various students who need to be convinced that things are running smoothly and systems are coping with natural changes and modifications that occur.

CURRENT SAVING METHODS ADAPTED IN THE COLLEGE

➢ Maintain appliances and replace old appliances.
➢ Energy saving through the replacement of incandescent bulbs and CFL bulbs could be a good option.
➢ Awareness programs for the students to save energy, save water may also increase sustainability in the utilization of various energy and water sources.

LIST OF ECO-FRIENDLY ACTIVITIES GOING ON IN THE CAMPUS

➢ Planting and caring of trees in and around the campus.
➢ Timely disposal of wastes from the campus.
➢ Celebration of important days like Plantation of Trees and Ban on Plastics, Celebration of National Cleanliness Day, Yoga and Health Awareness etc. with great importance.
➢ Management has decided to adopt green protocol. As in this protocol, college follows a scientific way of disposal through eliminating waste generation mitigation of waste, grading of waste.
➢ Distribution of medicinal plant saplings among students.

CONSOLIDATION OF AUDIT FINDINGS

We hope that students will have developed a greater appreciation and understanding of the impact of their actions on the environment. They have successfully been able to determine the impacts on the environment through the various auditing exercises. Participating in this green auditing procedure they have gained knowledge about the need of sustainability of the college campus. It will create awareness on the use of the Earth's resources in their home, college, local community and beyond.

MAJOR AUDIT OBSERVATIONS

WATER AUDIT

➢ Two more Rain water harvesting system will be adopted in the college.

➢ Automatic switching system installed to stop overhead tank filling.

ENERGY AUDIT

➢ The older appliances and non-energy efficient equipment are replaced with new energy efficient equipment.

➢ Awareness among the students and staff on energy conservation is created by workshops and seminars.

➢ College follows switching off all the electrical appliances when they are not in use.

➢ Computers should run on standby mode when not in use.

WASTE AUDIT

➢ The staff room, office and college campus are regularly clean by management of the college campus.

➢ College is Zero Waste Campus as college follows sustainable waste management in which college priorities the prevention of waste over final waste management.

➢ College follows seven ways to create zero waste college campus like source separation, composting, recycling, reuse and repair, waste reduction initiatives, economic incentives.

A. SOLID WASTE MANAGEMENT:

➢ Campus is plastic free zone as college organizes campaign for "Ban on Plastic" every year.

➢ Solid waste (garden waste) and liquid waste are managed by blue and green dustbins in the college.

➢ The college has proper communication with the local body for regular collection of waste from the campus.

B. E-WASTE MANAGEMENT:

➢ The non-functional computers, equipment and its peripherals are safely disposed.

➢ The cartridge of laser printer is refilled outside the college campus.

GREEN CAMPUS AUDIT

➢ Gardens inside the college premises are found well maintained.

➢ There are adequate fruit trees in the college to attract birds.

➢ Total 218 plants are available in the garden in which 36 tall tree species and 19 medicinal tree

species, 06 timber plants, 35 IUCN (International Union for Conservation of Nature) red list trees and other tree species have different importance like, some species have air purifying importance, n-fixing trees, agroforestry, fruit yielding plants and social forestry are present in the college campus.

➢ Preparation and distribution of sapling during the monsoon season among the students.

➢ Students are encouraged to participate in activities like tree plantation drives.

➢ College has some major techniques like, tree adaptation activity and wastes segregation available in the campus.

➢ Beautified the college building with indoor plants.

LIST OF COMMON RECOMMENDATIONS

➢ Yearly Comparative and statistical analysis of green audit

➢ Adopt an environmental policy for the college.

➢ Conduct more seminars and group discussions on environmental education.

➢ Students and staff can be permitted to solve local environmental problems.

➢ Renovation of cooking system in the canteen to save gas.

➢ Celebrate environmental protected days like, Environment Day, Ozone Day etc.

➢ To aware and protect the environment deploy sign board in all classrooms as well as in garden of the college.

➢ Every year green auditing should conduct to ensure development along with safeguarding the environment.

CRITERIA WISE RECOMMENDATIONS

WATER MANAGEMENT

➢ There should be water consumption monitoring system in the college campus.

➢ Remove damaged or leaky taps and install sensitive taps.

➢ Awareness programs on water conservation should be increase.

➢ Install display boards to control over exploitation of water.

➢ Water inlet and outlet of washrooms should be regularly managed by the college.

➢ Inclusion of more hoses and standpipes in garden of the college campus.

ENERGY MANAGEMENT

➢ College should display sign boards for saving energy awareness.

➢ Conduct more save energy awareness programs for students and staff.

➢ College should have sensor-based energy conservation facility like sensor-based bulbs turn on lights during night time and turn them off during day time which results in substantial energy conservation.

➢ Regular monitoring of equipment and immediate rectification of any problems should be done as safety precaution in the campus.

WASTE MANAGEMENT

➢ Establish a composter machine (M.O.C. Stainless steel) as it separates waste and increases the quality of compost or manure.

➢ Avoid paper plates and cups for all functions in the college.

➢ Implementation of sustainable projects to attain set environmental goals.

➢ Inclusion of waste bins in the class rooms, veranda, canteen and in the college campus.

GREEN CAMPUS MANAGEMENT

➢ Green campus week should be conducted every year to protect the environment.

➢ All trees in the campus should be labeled with their common and scientific name.

➢ Try to implement Miyawaki plantation on edges and roadsides.

➢ To control air pollution, Miyawaki method of plantation is very effective, as these plantations have about 10 times more capacity to absorb air pollutants. Therefore, to develop green belt in the college campus adopt the Japanese technique.

➢ Encouraging students through words and act for making greener campus.

➢ Involve students and staff for green campus activities.

➢ More artificial bird nests and water feeder may enhance avifaunal population in the college campus.

➢ Girth diameter of trees between 51–70 cm which are require to give more attention during reforestation activities to retrieve the effect of emitted carbon in the campus as well as maintain the natural heritage of the state.

➢ Plantation of native trees with maximum capacity to store atmospheric carbon may serve a one of the good carbon sinks in the college campus.

CARBON FOOT PRINT MANAGEMENT

➢ Increase a system of carpooling among the staff to reduce the number of four wheelers coming to the college.

➢ Encourage students and staff member to use cycles.

➢ Discourage the students using two wheelers for their commutation.

➢ More trees should be planted in the campus to make a source of sink for the carbon dioxide and for other greenhouse gases.

➢ Footprint assessment increases the level of environmental awareness of the population and provides a baseline to measure the impact of future policies and technical measures to reduce consumption and its associated GHG (Green House Gases) emissions.

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CHAPTER 5
ANNEXURE

Annexure 1. Deployment of Solar Arrays

Annexure 2. Celebration of National Cleanliness Day

Annexure 3. Celebration of International Yoga Day and Health Awareness Day

Annexure 4. Sapling Plantation Activity