

UTTAR PURVA GUJARAT UCHCH KELAVANI MANDAL'S  
SHRI U.P.ARTS, SMT. M.G. PANCHAL SCIENCE  
&  
SHRI V.L.SHAH COMMERCE COLLEGE  
PILVAI

# Green Audit

2017-2018



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## **1. INTRODUCTION**

The institution was established in 1960, run by Uttar Purva Gujarat Uchch Kelavani Mandal, Pilvai, and affiliated to Hemchandracharya North Gujarat University, Patan is only trifaculty college in the rural area of North Gujarat. This institution has been situated at Pilvai. Pilvai is a small village of Vijapur Taluka, Dist. Mehsana and is having population of approx 8000 people only. Due to the guidance of sighted Management members, scholar principals and teachers, this college has earned esteemed reputation not only in Mehsana District but also in all over Gujarat. Initially this college started with two faculties but according to requirement of students, commerce faculty was also established in 1980.

It is not exaggeration to say that Pilvai is a renowned place of learning not only in Mehsana district but also in the whole region of North Gujarat. College was started by Uttar-Purva Gujarat Uchcha Kelvani Mandal, Pilvai in 1960 by donors truly devoted to the cause of education with a view to imparting higher education to brilliant but economically poor students belonging to rural area. Ever since its establishment, the institution is benefited with sighted Managing Authorities and enthusiastic Principals.

Institution has initially remained eager and active regarding all-round development of the students. To fortify the same, student oriented activities are geared up through the 'Pilvai College Vartul', Career Guidance Centre, Science Society, CSC, Poor Boys' Library, N.C.C and N.S.S. Students' complaints or demands are also justified impartially. Students are encouraged to participate in various activities/competitions held by College/University. The institution has always been at the forefront in consultancy and extension activities. The institute stirs a number of activities in co-ordination with other academic/social organizations.

The institution has spent 50 years of its esteemed existence. This institution is fulfilling its mission and vision and has fortified a number of youths with higher education. Three generations of people of this area have acquired higher education through this institution. In this smooth and successful completion of 50 years, a great contribution of local society has remained notable. And in order to show the gratitude for the same, the college decided to celebrate "Swarnim Mahotsav" (Golden Jubilee Celebration). Moreover, the aim of such a grand celebration was also to cherish relations.

## **UTTAR PURVA GUJARAT UCHCH KELAVANI MANDAL'S**

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With a campus spread across 49 acres encompasses large area of gardens, “Anandi Van” which covers 03 Hecter land area, parking area, gymnastic area and departmental area of college covers 6793.05 sq.m areas in a campus with a fine infrastructure and adequate state-of –the-art which include administrative building, arts building, science building, commerce building, library building and sports complex. The college has 36 classrooms, 1 seminar hall, canteen, herbal and botanical gardens, staff rooms and meeting room facilities. In addition, there is a physical laboratory, mathematic laboratory, computer laboratory, a virtual classroom and 7 smart classrooms. The College also provides hostel facility to girl and boys students. The buildings and other infrastructural facilities are well-maintained and are put to optimum use which shown in below layout of the campus.

### **VISION AND MISSION**

- To educate and enable youth to enhance the dignity and progress of the society as well as the nation.
- To make the rural youth aware and obedient of constitutional values like democracy, secularism and freedom of opinion and to make them execute the duties of a true citizen sincerely.
- To enable a village to be economically and socially potential centre of development.
- To make the youth live in honour by undertaking inherited and traditional business by employing appropriate technology.
- To disseminate science and technology, and to eliminate sical evila in socirty by developing the scientific approach.

### **OBJECTIVES**

The college endeavors to prepare its students for fulfilling careers by enabling them to realize their full potential and by inculcating in them the spirit of intellectual enquiry, independent thinking, self- reliance, leadership, cooperation, expression of cultural talents and social service.

### TOTAL CAMPUS AREA & COLLEGE BUILDING SPREAD AREA

Campus area	49 acres
Built area	6793.05 sq.m

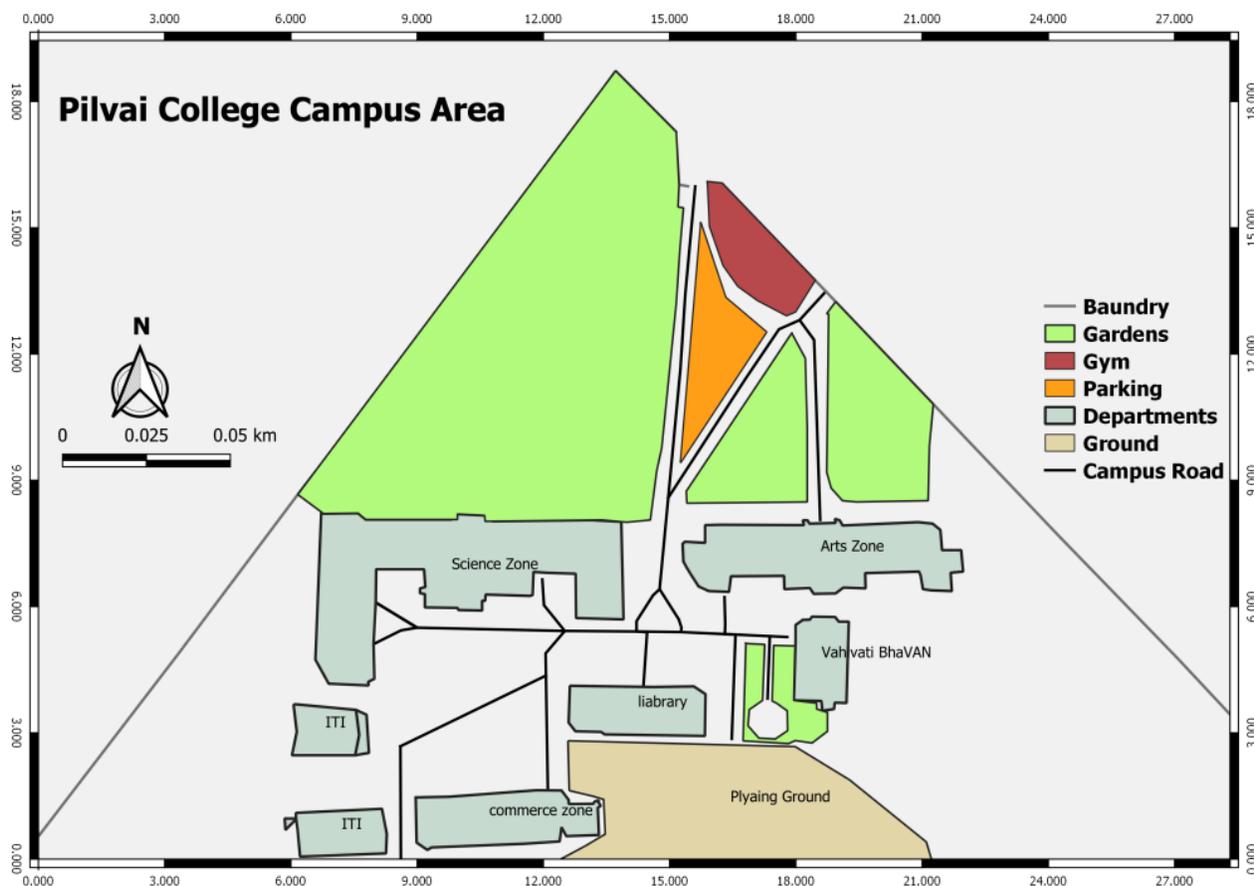
### ASSESSMENT BY NAAC GRADING

- NAAC accreditation: B Grade, 72.7 % in 2007
- Colleges with Potential for Excellence (CPE) Phase I awarded by the UGC in 2010
- NAAC accreditation: A Grade, CGPA 3.01 in 2014
- College accredited with A-Grade, CGPA 3.04 by KCG, Government of Gujarat
- Colleges with Potential for Excellence (CPE) Phase II awarded by the UGC in 2014

### CAMPUS INFRASTRUCTURE AND LAYOUT



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### **AUDITORIUM**

The college boasts of a multi-facility fully air-conditioned auditorium with a seating capacity of 200 and ample parking space makes it a converging point of academic and cultural activities.

### **SEMINAR HALL**

The college has a seminar hall, equipped with audio-visual facilities for the smooth conduct of seminars, conferences and other activities.

### **CONFERENCE ROOM**

There is a conference room aimed at providing space for the policy making bodies of the college.

### **MULTI-PURPOSE ROOM**

The multi-purpose administrative room, which has the offices of the Assistant Director, Vice Principal, the Coordinators of IQAC, Academics and space for executive meetings and presentations.

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### **LIBRARY**

The college library is fully computerized and digitalized with Machine Readable Catalogue facility and has a collection of over 40,000 books and a subscription of about 100 periodicals and journals. Internet browsing is also available. The library also has a fully equipped A/V Room.

### **LANGUAGE LAB**

There is a language lab in the college which facilitates the students to fine tune their communication skills. It also doubles up as the venue for Add-On Courses like Graphic Designing and Animation as well as for training programs in SPSS.

### **COMPUTER LABS**

There are two well-equipped computer labs associated with the Departments of Management, Computer Application, Physics and Chemistry.

### **CANTEEN**

The college canteen caters to the nutritional needs of the staff and students at subsidized rates. The canteen functions from 10.30 am to 4.30 pm.

### **HOSTEL**

Girls and boys students are provided neat and safe residential accommodation at well equipped convent hostels in the vicinity of the college.

### **SPORTS AND GAMES FACILITIES**

The College has a 400 meters Track & Field, Basket Ball Court, Volley Ball Court, Shuttle Badminton Court, Football Field, Fitness Centre, Table Tennis, Cricket Pitch etc.

### **BOTANICAL GARDEN**

The forest department on the celebration of "District Van Mahotsav" selected the college for the development of Anandi van. For that institute allotted 3 hector land area. With the help of forest department the college has planted 10 rare species, 11 endangered species and

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one endemic species. For the irrigation purpose the institute has established one tube well and for the protection the college has built fencing wall. In addition, botanical garden encompasses one small pond to store rain water which used for irrigation and ground water recharge. Garden also comprises some fruit yielding plants, medical plants and timber plants. For the maintenance of the garden, the college has recruited one gardener. *Management has employed gardener in terms that gardener earn by selling fresh fruits to the people of Pilvai village. This will facilitate the Gardener to develop good entrepreneurship and on the other hand people can also get good quality fruits at reasonable rates.*

## **2. PRE AUDIT STAGE**

### **SCOPE AND GOALS OF GREEN AUDIT**

A clean and healthy environment aids in effective learning and provides a conducive learning environment. There are various efforts around the world to address environmental education issues. Green Audit is the most efficient and ecological way to manage environmental problems. It is a kind of professional care which is the responsibility of each individual who is the part of economical, 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. Thus Green audit becomes necessary at the college level.

A very simple indigenized system has been devised to monitor the environmental performance of Shri U.P.Arts, Smt. M.G. Panchal Science & Shri V.L.Shah Commerce College, Pilvai. 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.

### **BENEFITS OF GREEN AUDIT**

- More efficient resource management
- To provide basis for improved sustainability
- To create a green campus
- To enable waste management through reduction of waste generation, solid- waste and water recycling
- To create plastic free campus and evolve health consciousness
- Recognize the cost saving methods through waste minimizing and managing
- Point out the prevailing and forthcoming complications
- Authenticate conformity with the implemented laws
- Empower the organizations to frame a better environmental performance
- 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

## **TARGET AREAS OF GREEN AUDIT**

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 change over 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) AUDIT OF WATER MANAGEMENT**

Water is a natural resource; all living matters depend upon 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 to 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 auditor investigates the relevant method that can be adopted and implemented to balance the demand and supply of water. It is therefore essential that any environmentally responsible institution examine its water use practices.

## **B) AUDIT OF 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) AUDIT 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 greenhouse 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) AUDIT OF 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, including human beings. 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 ( $4.535 \times 10^{-3}$  tones) of carbon dioxide from the atmosphere, and release it as oxygen. The amount of oxygen that a single tree 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 a huge deal is considering many students are under some amount of stress.

## **E) AUDIT OF 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 greenhouse 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**

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:

### **1. DATA COLLECTION**

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, centers, 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.

### **2. 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 is given in survey forms. The formats of these are given below.

## **SURVEY FORM**

### **A) AUDIT OF WATER MANAGEMENT**

1. List uses of water in your college.
2. What are the sources of water in your college?
3. How does your college store water?
4. If there is water wastage, specify why.
5. How can the wastage be prevented / stopped?
6. What are the uses of waste water in your college?
7. What happens to the water used in your labs? Whether it gets mixed with ground water?
8. Number of water coolers?
9. Number of water taps?
10. Number of bath rooms in staff rooms, common, hostels?
11. Number of toilet, urinals?
12. Does your college harvest rain water?
13. Is there any water management plan in the college?
14. Are there any water saving techniques followed in your college? What are they?
15. Please share Some IDEA for how your college could save more water.

### **B) AUDIT OF ENERGY MANAGEMENT**

1. List the usage of energy in your college. (Electricity, electric stove, kettle, microwave, LPG, firewood, Petrol, diesel and others).
2. Electricity bill
3. Is there generator facility in the college?
4. How many CFL bulbs has your college installed?
5. How many tube lights, fans are installed in your college?
6. How many air conditioners are installed in your college?
7. How many electrical equipments including weighing balance are installed your college?  
Mention the use (Hours used/day for how many days in a month)
8. How many TV, CCTV and computers are there in your college?

**C) AUDIT OF WASTE MANAGEMENT**

1. Which of the following are found near your college?  
Municipal dump yard, Garbage heap, Public convenience, Sewer line, Stagnant water, Open drainage, Industry – (Mention the type), Bus / Railway station, Market / Shopping complex / Public halls
2. Does your college generate any waste? (E-waste, Hazardous waste (toxic), Solid waste, Dry leaves, Canteen waste, Liquid waste, Glass, Unused equipment, Medical waste if any, Napkins, Others (Specify))
3. Is there any waste treatment system in the college?
4. How is the waste generated in the college managed, by composting or recycling or reusing or by other methods?
5. Do you use recycled paper in College?

**D) AUDIT OF GREEN CAMPUS MANAGEMENT**

1. Is there a garden in your college?
2. Do students spend time in the garden?
3. List the numbers of each plants species in the garden.
4. List the species planted by the students, with numbers.
5. Whether you have displayed scientific names of the trees in the campus?
6. Is there any plantation in your campus? If yes specify area and type of plantation.
7. Is there any medicinal garden in your college? If yes how much area?
8. Who is in charge of gardens in your college?
9. Are you using any type of recycled water in your garden?
10. Do you have any composting pit in your college?
11. What do you doing with the vegetables harvested?
12. Is there any botanical garden in your campus? If yes give details of campus flora.
13. Give the number and names of the medicinal plants in your college campus.
14. Any threatened plant species planted/conserved?
15. Is there a nature club in your college? If yes what are their activities?
16. What is the type of vegetation in the surrounding area of the college?

17. Is there any nature awareness program conducted in the campus?
18. What is the involvement of students in the green cover maintenance?
19. What is the total area of the campus under tree cover? Or under tree canopy?
20. Share your ideas for further improvement of green cover.

#### **E) AUDIT OF CARBON FOOTPRINT**

1. Total Number of vehicles used by the students of the college.
2. Mention the usage of cycles, two wheelers and cars.
3. Number of persons using common transportation
4. Number of parent-teacher meetings in a year?
5. Number of visitors with vehicles per day?
6. Number of generators used per day (hours). Give the amount of fuel used per day.
7. Suggest the methods to reduce the quantity of use of fuel used by the students / teacher-non teaching staff of the college.

### **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) WATER**

- Main water uses in the campus: gardening, recreation, toilet, laboratory, cleaning, canteen, drinking, hostel, washing, office uses.
- Rain water harvesting and bore wale are main sources water in the campus.
- Storage water: ground water storage, wet lands, ponds and tanks.
- Water wastage mainly during urinals and toilets.
- Water wastage can be prevented by: wisely flush, washing vehicles, long showers and in the kitchen.
- Water is used in many different ways such as distilled and deionized water in laboratory
- Number of water coolers: 1
- Number of water taps: 376
- Number of bathrooms in staff rooms, common, hostels: 28
- Number of toilets: 24
- Water management plan: pressure system and bore well

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- Reasons for water wastage: leakages from taps, over use of water and overflow of water from motors
- Drip irrigation system used for watering the plants in garden.

## **B) ENERGY**

- Usage of energy through electricity, microwave, LPG and Petrol.
- Electricity charges Rs. 12960 kwh/ annum
- No generators
- No CFL bulbs
- Total number of tube lights: 238
- Total number of fans: 292
- Total number of computers: 148
- Total number of air conditioners: 137
- Total number of TV: 02
- Total number of CCTV camera: 120
- Total number of rooms: 43
- Total number of virtual class room: 1
- Total number of smart class rooms: 07
- Total number of staff room: 05

## **C) WASTE**

- Following all are far from the college area: Municipal dump yard, Garbage heap, Public convenience, Sewer line, Stagnant water, Open drainage, Industry – (Mention the type), Bus / Railway station, Market / Shopping complex / Public halls
- College generates e-waste, Solid waste, dry leaves, canteen waste, liquid waste, glass and unused equipment.
- There is a composting system to reduce canteen waste and electronic waste such as computers, electrical parts reduced by selling of it.
- Plastic waste dispose by selling
- Solid waste as food waste, damage furniture, paper waste send to municipal waste collection

centre.

- No treatment for laboratory wastes
- Waste water treatment plant is under the pipeline condition to treat the lab and other waste water.
- Glassware waste as broken glass wares from the laboratory send to municipal waste collection centers

#### **D) GREEN CAMPUS**

- Garden area inside the college – 27 acres
- Total number of plant species identified – 205
- Tree cover of the campus – 25 acres
- Free space in the campus – 3 acres
- Anandi van- 03 hector
- Total campus area – 49 Acres
- Scientific names of the trees are displayed in Anandi Van of campus.
- Management has recruited a gardener to maintain the garden and also Anandi Van.
- Treated water from waste water treatment is used in pouring the plants of garden.
- The college has one composting pit inside the campus.
- Management has employed gardener in terms that gardener earn by selling fresh fruits to the people of Pilvai village. This will facilitate the Gardener to develop good entrepreneurship and people can also get good quality fruits at reasonable rates.
- Campus consists of many botanical tree species but there's no separated botanical garden.
- There is a Pilvai Nature Club in the campus. Awareness program, plastic free zone, Ozone Day celebration, World Environment Day and other activities are held in the college.

#### **❖ World Environment Day – June 5**

Awareness seminars are organized on various environmental problems. Distribution of trees, poster exhibition etc. activities are done on that day.

❖ **Ozone Day – September 16**

Conducted poster competition, invited lectures etc.

The Green campus drive is an initiative of the college to protect the environment. The college is trying for a 'No Plastic' zone. The campus protects age old trees in addition to several new trees and plants planted. The campus is lush green with gardens, lawns, flowers and plants wherever there is open space in which we have 12,000 plants named as Anandi Van. Rain water is collected in the well in the college. There is a big pond at the far end of the college ground to harvest water. Bio-degradable waste is collected and made into compost. Non-degradable and electronic waste and toxic materials are regularly disposed of. The Pilvai Nature club of the college has named all the flora of the campus. Important days like World Environment Day, Ozone Day, etc are observed and several programmes including processions, competitions and street plays are conducted by various departments and the Pilvai Nature Club to create awareness in environment protection and conservation.

**LIST OF RARE PLANT SPECIES IN THE CAMPUS**

*Crateva religiosa* G. Forst (Vayvarno)

*Semecarpus anacardium* (Bhilamo)

*Saraca asoca* (Ashoka)

*Adansonia digitata* (Rukhado)

*Commiphora wightii*(Arnott) (Gugad)

*Schleichera oleosa* (Kusum)

*Bixa aureliana* (Sinduri)

**LIST OF ENDANGERED SPECIES IN THE CAMPUS**

*Sterculia urens* (Kadayo)

*Santalum album* L. (Chandan)

*Oroxylum indicum* (Tetu)

*Pterocarpus marsupium* (Biyo)

*Buchanania lenzan* (Charodi)

## LIST OF FRUIT YIELDING PLANT SPECIES IN THE CAMPUS

*Punica granatum*(Guava)

*Manilkara hxandra* (Rayan)

*Manilkara zapota* (Chiku)

*Mangifera indica* (Aambo)

*Emblica officinalis* (Aamla)

*Anacardium oxidentalis* (Kaju)

## LIST OF MEDICINAL PLANT SPECIES IN THE CAMPUS

*Terminalia chebula* (Harde)

*Terminalia belerica* (Baheda)

*Emblica officinalis* (Aamla)

*Terminalia arjuna* (Arjun sadad)

*Adhatoda vasica* (Ardusi)

*Ocimum sanctum* (Tulsi)

*Widhania somnifera* (Ashvagandha)

*Tecomella undulate* (Raghatrohido)

## LIST OF TIMBER PLANT SPECIES IN THE CAMPUS

*Tectona grandis* (Teak)

*Dalbergia sissoo* (Sisum)

*Madhuka indica* (Mahudo)

*Ailanthus excelsa* (Arduso)

*Bombax ceiba* (Cotton tree)

*Swietenia macrophylla* (Mahogini)

## ENDEMIC PLANT SPECIES

*Azima sp.* (Salvadoraceae)

## PLANTATION DONE BY STUDENTS

Name of Tree species	Number of students
<i>Azadirachta indica</i>	50
<i>Mimusops elengi</i>	10
<i>Alstonia scholaris</i>	25
<i>Citrus limon</i>	05
<i>Hibiscus rosa sinensis</i>	15
<i>Caesalpinia pulcherima</i>	9
<i>Rosa indica</i>	7
<i>Tecoma stans</i>	10
<i>Plumeria obtuse</i>	8

**TREES FOUND IN THE CAMPUS**

<b>Sr. No.</b>	<b>Scientific Name</b>	<b>Local Name</b>	<b>Family</b>
1	<i>Abrus precatorius</i> L.	Chanothi	Papilionaceae
2	<i>Abutilon indicum</i> (L.)	Kanski	Malvaceae
3	<i>Acacia chundra</i> (Rotller) Willd.	Kher	Mimosaceae
4	<i>Acacia leucophloea</i> (Roxb.) Willd.	Harmo baval	Mimosaceae
5	<i>Acacia nilotica</i>	Desi baval	Mimosaceae
6	<i>Acacia senegal</i>	Goradiyo baval	Mimosaceae
7	<i>Acacia sinuate</i>	Shikakai	Mimosaceae
8	<i>Adansonia digitata</i>	Rukhado	Bombacaceae
9	<i>Adhatoda vasica</i>	Ardusi	Acanthaceae
10	<i>Adina cordifolia</i>	Haldarvo	Rubiaceae
11	<i>Adina sp</i>	Adina	Rubiaceae
12	<i>Aegle marmelos</i> (L.) Correa	Bili	Rutaceae
13	<i>Agave americana</i>	Ramban	Amerilidaceae
14	<i>Alangium salvifolium</i>	Oklo	Alangiaceae
15	<i>Albizia lebbeck</i> (L.) Benth.	Safed shirish	Mimosaceae
16	<i>Alocasia calidora</i>	Elephant ear	Araceae
17	<i>Aloe vera</i>	Kuvar pathu	Liliaceae
18	<i>Alstonia scholaris</i> (L.) R.Br.	Saptparni	Apocynaceae
19	<i>Anacardium occidentale</i>	Kaju	Anacardiaceae
20	<i>Annogessus latifolia</i>	Dhavdo	Combretaceae
21	<i>Annona reticulate</i>	Ramfal	Annonaceae

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22	<i>Annona squamosa</i>	Sitafal	Annonaceae
23	<i>Anogeissus pendula</i>	Dhav	Combretaceae
24	<i>Anthocephalus cadamba</i>	Kadamb	Rubiaceae
25	<i>Antigonon leptopus</i>	Icecream vel	Polygonaceae
26	<i>Artocarpus heterophyllus</i>	Fanas	Moraceae
27	<i>Asparagus racemosus</i>	Shatavari	Asparagaceae
28	<i>Azadirachta indica A. Juss.</i>	Limdo	Meliaceae
29	<i>Azima tetracantha</i>	Kajad	Salvadoraceae
30	<i>Babusa bambos</i>	Vans	Poaceae
31	<i>Balanites aegyptiaca</i>	Ingoriyo	Balanitaceae
32	<i>Bauhinia purpurea</i>	Kanchnar	Cesalpiniaceae
33	<i>Bauhinia racemosa</i>	Zinzaro	Caesalpiniaceae
34	<i>Bixa aureliana</i>	Sinduri	Bixaceae
35	<i>Boswellia serrata</i>	Gugad	Burseraceae
36	<i>Buchanania lenzan</i>	Charodi	Anacardiaceae
37	<i>Butea monosperma</i>	Khakharo	Papilionaceae
38	<i>Caesalpinia crista</i>	Kaucha	Caesalpiniaceae
39	<i>Caesalpinia pulcherrima</i>	Galtoro	Caesalpiniaceae
40	<i>Callistemon lanceolatus DC</i>	Bottle brush	Myrtaceae
41	<i>Calotropis gigantea</i>	Safed aakado	Asclepiadaceae
42	<i>Calotropis procera</i>	Aakado	Asclepiadaceae
43	<i>Capparis deciduas</i>	Kerado	Capparaceae
44	<i>Capparis spinosa</i>	Kantado Kanther	Capparaceae

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45	<i>Carica papaya</i>	Papaiya	Caricaceae
46	<i>Carissa congesta</i>	Karmda	Apocynaceae
47	<i>Caryota urens L.</i>	Shivjata	Arecaceae (Palmae)
48	<i>Cassia auriculata</i>	Aavad	Caesalpiniaceae
49	<i>Cassia fistula L.</i>	Garmalo	Caesalpiniaceae
50	<i>Cassia italic</i>	Mindhi aavad	Caesalpiniaceae
51	<i>Cassia siamea</i>	Kasid	Caesalpiniaceae
52	<i>Casurina equisetifolia</i>	Sharu	Casurinaceae
53	<i>Cissus quadrangulare</i>	Hadsankad	Vitaceae
54	<i>Citrus limon</i>	Limbu	Rutaceae
55	<i>Clerodendrum inerme</i>	Vad arni	Verbenaceae
56	<i>Clitoria ternatea</i>	Garni bibari	Papilionaceae
57	<i>Cocos nucifera</i>	Nariyed	Arecceae
58	<i>Commiphora wightii</i> (Arnott)	Gugad dhup	Burseraceae
59	<i>Cordia dichotoma</i>	Gundo	Ethretiaceae
60	<i>Cordia gharaf</i>	Gundi	Ethretiaceae
61	<i>Crateva religiosa G. Forst.</i>	Vayvarno	Capparidaceae
62	<i>Crinum asiaticum</i>	Nagdaman	Liliaceae
63	<i>Cycus circinalis</i>	Cycus	Cycadaceae
64	<i>Dalbergia sissoo</i>	Sisum	Papilionaceae
65	<i>Delonix elata</i>	Sandesaro	Caesalpiniaceae
66	<i>Delonix regia (Hook.) Raf.</i>	Gulmohar	Caesalpiniaceae

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67	<i>Derris indica</i>	Karanj	Papilionaceae
68	<i>Diospyros cordifolia</i>	Makarana	Ebenaceae
69	<i>Dracaena sanderiana</i>	Dracaena	Liliaceae
70	<i>Duranta repens</i>	Damyanti	Verbenaceae
71	<i>Ehretia laevis</i>	Vadhvardi	Ehretiaceae
72	<i>Emblica officinalis</i>	Aamla	Euphorbiaceae
73	<i>Enicostema hyssopifolium</i>	Navali	Gentianaceae
74	<i>Erythrina indica</i>	Pangaro	Papilionaceae
75	<i>Eucalyptus globules</i>	Nilgiri	Mirtaceae
76	<i>Euphorbia pulcherima</i>	Lalpati	Euphorbiaceae
77	<i>Ficus benghalensis L.</i>	Vad	Moraceae
78	<i>ficus benjamina</i>	Black ficus	Moraceae
79	<i>Ficus racemosa L.</i>	Umbaro	Moraceae
80	<i>Ficus religiosa L.</i>	Pipalo	Moraceae
81	<i>Ficus virens</i>	Pinpadi	Moraceae
82	<i>Garuga pinnata</i>	Kakad	Burseraceae
83	<i>Gloriosasuperba</i>	Vachhnag	Liliaceae
84	<i>Gmelina arborea</i>	Sevan	Verbenaceae
85	<i>Grevilla robusta</i>	Siver oak	Proteaceae
86	<i>Grewia subinequalis</i>	Phalsa	Tiliaceae
87	<i>Haplophregma odinophyllum</i>	Haplophregma	Bignoniaceae
88	<i>Helicteres isora</i>	Maradasingh	Sterculiaceae
89	<i>Hibiscus rosa sinensis</i>	Jasud	Malvaceae

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90	<i>Holarrhena antidysenterica</i>	Indrajiva	Apocynaceae
91	<i>Holoptelea integrifolia</i>	Kanaji	Urticaceae
92	<i>Ixora arborea</i>	Ixora	Rubiaceae
93	<i>Jacaranda mimosifolia</i>	Jakrand	Bignoniaceae
94	<i>Jatropha gossypifolia</i>	Vilayati aerandi	Euphorbiaceae
95	<i>Jusminum sambac</i>	Mogaro	Oleaceae
96	<i>Kigelia pinnata (Jacq) DC</i>	Cucumber tree	Bignoniaceae
97	<i>Kirganelia reticula</i>	Kamboi	Euphorbiaceae
98	<i>Lagerstroemia indica</i>	Chinai mati	Lythraceae
99	<i>Lannea coromandelica</i>	Mayano	Anacardiaceae
100	<i>Lantana camara</i>	Indra dhup	Verbenaceae
101	<i>Lawsonia inermis</i>	Mahendi	Lythraceae
102	<i>Leptadenia reticulata</i>	Dodi	Asclepiadaceae
103	<i>Limonia acidissima</i>	Kotha	Rutaceae
104	<i>Livistona rotundifolia</i>	Pankhatad	Arecaceae
105	<i>Madhuca indica</i>	Mahudo	Sapotaceae
106	<i>Mangifera indica</i>	Aambo	Anacardiaceae
107	<i>Manilkara hexandra</i>	Rayan	Sapotaceae
108	<i>Manilkara zapota</i>	Chiku	Sapotaceae
109	<i>Maytenus emarginata</i>	Vikaro	Celastraceae
110	<i>Melia azedarach L.s</i>	Bakan limdo	Meliaceae
111	<i>Millingtonia hortensis</i>	Buch	Bignoniaceae
112	<i>Mimusops elengi L.</i>	Borsalli	Sapotaceae

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113	<i>Mitragyna parvifolia</i>	Kalam	Rubiaceae
114	<i>Morianda tomentosa</i>	Aal	Rubiaceae
115	<i>Moringa oleifera</i> Lam.	Saragvo	Moringaceae
116	<i>Morus alba</i> L.	Shetoor	Moraceae
117	<i>Murraya koenigii</i> (L.) Spreng	Mittho Limbdo	Rutaceae
118	<i>Nerium indicum</i>	Lal Karen	Apocynaceae
119	<i>Nyctanthes arbortristis</i> L.	Parijatak	Nyctaginaceae
120	<i>Nymphaea lotus</i>	Lotus	Nymphaeaceae
121	<i>Ocimum basilicum</i>	Damaro	Lamiaceae
122	<i>Ocimum sanctum</i>	Tulsi	Lamiaceae
123	<i>Opuntia littoralis</i>	Phaphda thod	Cactaceae
124	<i>Oroxylum indicum</i>	Tetu	Bignoniaceae
125	<i>Pancratium caribaeum</i>	Pancrantium	Liliaceae
126	<i>Parkinsonia aculeate</i>	Rambavad	Caesalpiniaceae
127	<i>Pedilanthus tithymaloides</i>	Ladies sleeper flower	Euphorbiaceae
128	<i>Peltophorum pterocarpum</i> (DC) Baker ex DC	Tamraparni	Caesalpiniaceae
129	<i>Phoenix sylvestris</i> (L.) Roxb.	Khajuri, Date Palm	Arecaceae (Palmae)
130	<i>Pithecellobium dulce</i> (Roxb.) Bth.	Goras ambali	Mimosaceae
131	<i>Plumeria obtusa</i> L.	Safed champo	Apocynaceae
132	<i>Plumeria rubra</i>	Khadchampo	Apocynaceae
133	<i>Polyalthia longifolia</i> (Sonn.) Thw.	Asopalav	Annonaceae

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134	<i>Pongamia pinnata</i> (L.) Pierre	Kanajo	Papilionaceae
135	<i>Prosopis cineraria</i> (L) Druce	Khijado	Mimosaceae
136	<i>Psidium guajava</i> L	Jamphal	Myrtaceae
137	<i>Pterocarpus marsupium</i>	Biyo	Papilionaceae
138	<i>Punica granatum</i>	Dadam	Punicaceae
139	<i>Putrangiva roxburghi</i>	Putrajivi	Euphorbiaceae
140	<i>Rosa indica</i>	Gulab	Rosaceae
141	<i>Roystonea regia</i> (Kunth) O. F. Cook	Bottle palm	Arecaceae
142	<i>Salvadora oleoides</i>	Sani	Salvadoraceae
143	<i>Salvadora persica</i>	Piludi	Salvadoraceae
144	<i>Samanea saman</i>	Rato sasado	Mimosaceae
145	<i>Sansevieria trifasciata</i>	Sansevieria	Asparagaceae
146	<i>Santalum album</i> L.	Chandan	Santalaceae
147	<i>Sapindus laurifolius</i>	Aritha	Sapindaceae
148	<i>Saraca asoca</i>	Asoka	Caesalpiaceae
149	<i>Schleichera oleosa</i>	Kusum	Sapindaceae
150	<i>Semecarpus anacardium</i>	Bhilamo	Anacardiaceae
151	<i>Simarouba glauca</i>	Paradise tree	Simaroubaceae
152	<i>Soymida febrifuga</i>	Rohan	Maliaceae
153	<i>Spathodea campanulata</i>	Rupethodiya	Bignoniaceae
154	<i>Sterculia foetida</i>	Jangali badam	Sterculiaceae
155	<i>Sterculia urens</i>	Kadayo	Sterculiaceae
156	<i>Swietenia mahogini</i>	Mahogini	Maliaceae

**UTTAR PURVA GUJARAT UCHCH KELAVANI MANDAL'S**  
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157	<i>Syzygium cumini</i> (L.) Skeels	Jambu	Myrtaceae
158	<i>Tabernaemontana divaricata</i> (L.) R.Br. ex Roem. & Schult.	Tagar	Apocynaceae
159	<i>Tamarindia indica</i>	Aamli	Caesalpiniaceae
160	<i>Tecoma stans</i> (L.) Juss. ex Kunth.	Pili limdi	Bignoniaceae
161	<i>Tecomella undulate</i>	Raghatrohido	Bignoniaceae
162	<i>Terminalia arjuna</i> (Roxb.) Wight & Arn.	Arjun sadad	Combretaceae
163	<i>Terminalia belerica</i>	Baheda	Combretaceae
164	<i>Terminalia catappa</i>	Badam	Combretaceae
165	<i>Terminalia chebula</i>	Harde	Combretaceae
166	<i>Thespesia populeana</i>	Paras pipado	Malvaceae
167	<i>Thevetia peruviana</i> (Pers) Merrills	Pili karen	Apocynaceae
168	<i>Thuja orientalis</i>	Morpankh	Araucariaceae
169	<i>Tradescantia discolor</i>	Rohiyo parna	Commelinaceae
170	<i>Vitex negundo</i>	Nagod	Verbenaceae
171	<i>Widhania somnifera</i>	Ashvagandha	Solanaceae
172	<i>Wrightia tinctoria</i>	Kaddu	Apocynaceae
173	<i>Wrightia tomentosa</i>	Dudhalo	Apocynaceae
174	<i>Xeromphis spinosa</i>	Mindhan	Rubiaceae
175	<i>Yucca gloriosa</i>	Yukka	Liliaceae
176	<i>Zamia furfuracea</i>	Zamiya	Zamiaceae

## **CARBON FOOTPRINT**

- Number of persons using cycles -10
- Number of persons using cars – 21
- Number of persons uses two wheelers – 200
- Number of persons using other transportations –110
- Number of visitors per day – 15
- Expenditure for transportation per person per day (approx.)– Rs.20/-
- Parent-teacher meetings done in a year
- There is no generators in the campus
- There is a carbon pooling system in the campus which minimizes the atmospheric carbon emission.

## **CURRENT SAVING METHODS ADOPTED**

- Turn off electrical equipments when not in use
- Maintain appliances and replace old appliances.
- Use computers and electronic equipments in power saving mode.
- Energy saving through the replacement of incandescent bulbs, CFL lamps and tube lights to LED light could be a good option.
- Energy efficient electrical equipments especially fans and pump sets can be replaced against old ones.
- Awareness programs for the students to save energy may also increase sustainability in the utilization of various energy sources.
- The composting facility of the college for the treatment of biodegradable waste generated from the canteen, office, vegetable garden, and from the college campus cleaning operations is not adequate.
- Different methods such as pit composting, vermi-composting, bacterial composting using bacterial consortium may be used to treat the biodegradable waste.
- Bottles, plastics, cans, broken glass wares, tins etc., may be recycled or sold out.
- A model solid waste treatment system can be established in the college as a part of awareness program to the students.
- The college has ample land surface for greening initiatives as total 176 plant species

identified.

- The campus has different 29 tree species. A model arboretum will be ideal for the college. At least 50 different types of trees can be planted in the campus every year. Area demarcated for the establishment of a gardens of medicinal plants and vegetable garden, the extent of which may be increased.
- Burning of fossil fuels is the main source and cause of carbon dioxide release to the atmosphere. Carbon dioxide release by the students to reach the college is under the level.
- More trees may be planted in the campus to make a source of sink for the carbon dioxide and for other green house gases.

### **LIST OF ECO FRIENDLY ACTIVITIES**

- Planting and caring of trees in and around the campus.
- Timely disposal of wastes from the campus.
- Celebration of important days like World Environment Day, Ozone Day, with great importance.
- Management has decided to adopt green protocol
- Distribution of medicinal plant saplings among students
- Preparation and distribution of sapling during the monsoon season among the 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**

- The environmental awareness initiatives are substantial.

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**SHRI U.P.ARTS, SMT. M.G. PANCHAL SCIENCE & SHRI V.L.SHAH COMMERCE COLLEGE, PILVAI**

- Installation of solar panels is adequate.
- The training in vegetable cultivation and composting are adequate.
- Gardens inside the college premises are found well maintained.
- Anandi van is also found well maintained.
- Use of notice boards and signs are adequate to reduce over exploitation of natural resources.
- Programs on green initiatives have to be increased. Campus should have stringent actions for plastic free zone.
- Rain water harvesting systems, solar power generation, environmental education programs have to be strengthened.

### **WATER AUDIT**

- There is enough water consumption monitoring system in the college campus.
- The college has waste water treatment plant should maintain and function well.
- The waste water from canteen and kitchens are used for gardening.
- The college has to take actions to strengthen rain water harvesting. Measurement of quantity of water from the rain water harvesting should be done.
- Automatic switching system should install for pump sets used for overhead tank filling.
- Per day use of water should not be done in over wastage of water.
- Display boards against the misuse of water use are lacking.

### **ENERGY AUDIT**

- The communication process for awareness in relation to energy conservation is found inadequate.
- Assessment of electrical load calculation is yet to be done by the college.
- Objectives for reducing energy, water and fuel consumption should be done.
- The older generation and non energy efficient equipments should be replace with new energy efficient equipments.

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

## **WASTE AUDIT**

- Solid waste management systems should be maintained.
- The college has proper communication with the local body for regular collection of solid waste from the campus.
- Implementation of sustainable projects to attain set environmental goals should to be place.
- Waste bins in the class rooms, veranda, canteen and campus are inadequate.
- Biogas plant should be established.
- Proper composting systems should be established.
- Green chemistry labs should be introduced.

## **GREEN CAMPUS AUDIT**

- Regular planting of trees in the campus should be done.
- Display boards to identified plants.
- There are fruit trees in the college to attract birds.
- Registry for flora and fauna on the campus is lacking.
- Total 205 trees and 29 tree species are found in the garden area of campus and approx 12,000 trees are available in the Anandi Van.
- Girth and height of each individual garden tree species were measured using measuring tape and lazer range finder respectively. Based on this measurement, we have calculated that carbon storage of individual garden tree species of campus is 751 tons.

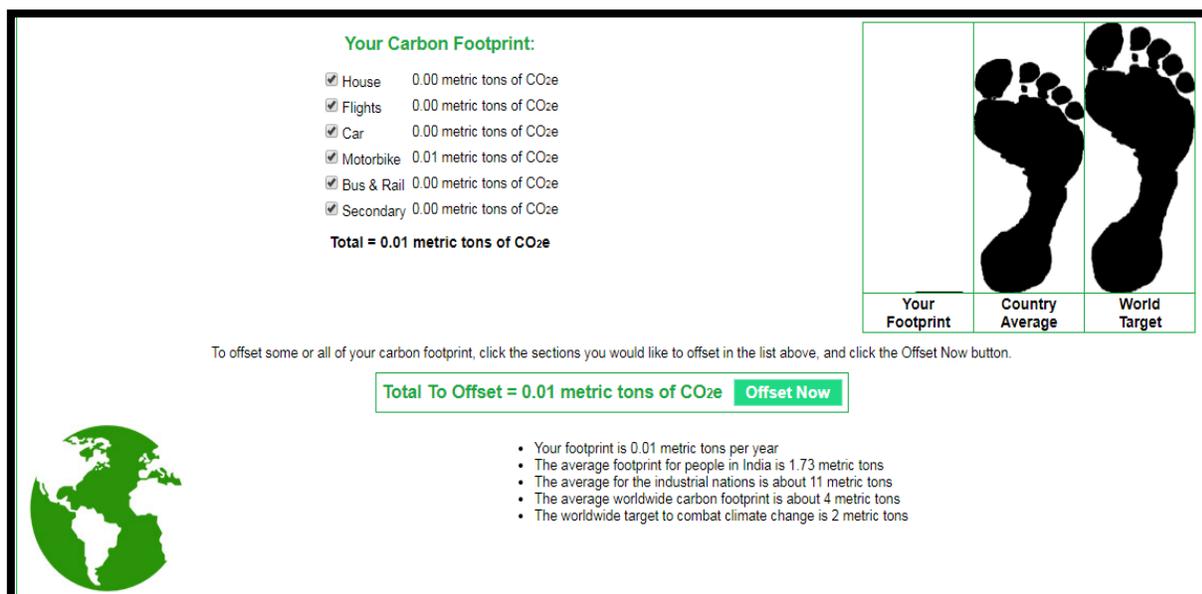
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**DIFFERENT TREE SPECIES FOUND IN THE CAMPUS**

<b>Sr. No.</b>	<b>Scientific Name</b>	<b>Local Name</b>	<b>Family</b>	<b># of trees found</b>
1	<i>Acacia senegal</i>	Goradiyo baval	Mimosaceae	1
2	<i>Terminalia arjuna</i>	Arjun sadad	Combretaceae	6
3	<i>Polyalthia longifolia</i>	Asopalav	Annonaceae	14
4	<i>Aegle marmelos</i>	Bili	Rutaceae	1
5	<i>Mimusops elengi</i>	Borsalli	Sapotaceae	3
6	<i>Magnolia champaca</i>	Champa	Magnoliacea	1
7	<i>Manilkara zapota</i>	Chiku	Sapotaceae	9
8	<i>Derris indica</i>	Karanj	Papilionaceae	3
9	<i>Emblica officinalis</i>	Aamla	Euphorbiaceae	1
10	<i>Cassia fistula</i>	Garmalo	Caesalpiniaceae	4
11	<i>Delonix regia</i>	Gulmohar	Caesalpiniaceae	1
12	<i>Syzygium cumini</i>	Jambu	Myrtaceae	3
13	<i>Azadirachta indica</i>	Limdo	Meliaceae	65
14	<i>Mangifera indica</i>	Aambo	Anacardiaceae	1
15	<i>Jusminum sambac</i>	Mogaro	Oleaceae	4
16	<i>Roystonea regia</i>	Bottle palm	Arecaceae	51
17	<i>Peltophorum pterocarpum</i>	Tamraparni	Caesalpiniaceae	7
18	<i>Putranjiva roxburghii</i>	Putranjiva	Putranjivaceae	1
19	<i>Sapindus laurifolius</i>	Aritha	Sapindaceae	1
20	<i>Alstonia scholaris</i>	Saptarni	Apocynaceae	9
21	<i>Casurina equisetifolia</i>	Sharu	Casurinaceae	1
22	<i>Gmelina arborea</i>	Sevan	Verbenaceae	1
23	<i>Caryota urens</i>	Shivjata	Arecaceae	1
24	<i>Simarouba glauca</i>	Paradise tree	Simaroubaceae	2
25	<i>Bombax ceiba</i>	Shimalo	Bombacaceae	4
26	<i>Annona squamosa</i>	Sitafal	Annonaceae	1
27	<i>Terminalia belerica</i>	Baheda	Combretaceae	3
28	<i>Ficus benghalensis</i>	Vad	Moraceae	2
29	<i>Ficus religiosa</i>	Pipalo	Moraceae	4
<b>TOTAL NUMBER OF TREES FOUND IN GARDEN OF COLLEGE</b>				<b>205</b>

## AUDIT OF CARBON FOOT PRINT

- College has initiative for carbon accounting.
- Adequate transportation facilities in the college.
- Encourage students and faculties to use cycles.
- It is found that assessment of carbon foot print of Shri U.P.Arts, Smt. M.G. Panchal Science & Shri V.L.Shah Commerce College, Pilvai is **0.01 metric tons per year**.
- Below calculation image shows comparative analysis of carbon footprint among college with national and global level.



## **4. CONCLUSION AND RECOMMENDATION**

### **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 (the college's policy for purchasing materials).

### **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 the 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, the audit becomes an isolated event which soon becomes forgotten in the pressures of management priorities and the passing of time.

### **ENVIRONMENTAL EDUCATION**

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

- Training programs in solid waste management, liquid waste management, setting up of medicinal plant nursery, water management, vegetable cultivation, tree planting, energy management, landscape management, pollution monitoring methods, and rain water harvesting methods.
- 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 rainwater harvesting system, rainwater pits, vegetable garden, medicinal plant garden, paddy fields etc. for providing proper training to the students.
- Conduct exhibition of recyclable waste products.
- Implement chemical treatment system for waste water from the laboratories.
- Awareness on carbon consumption.
- Students and Staff members may be made totally aware of pollution caused by use of vehicles.
- 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.

## **RECOMMENDATIONS**

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. A few recommendations are added to curb the menace of waste management using eco-friendly and scientific techniques. This may lead to the prosperous future in context of green campus and thus sustainable environment and community development. 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 and procedures are coping with natural changes and modifications that occur.

## **COMMON RECOMMENDATIONS**

- Adopt an environmental policy for the college.
- Establish a purchase policy for environmental friendly materials.
- Introduce UGC Environmental Science course to all students.
- 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.
- Establish water, waste and energy management systems.

## **CRITERIA WISE RECOMMENDATIONS**

### **WATER**

- Remove damaged taps and install sensitive taps is possible.
- Establish rain water harvesting systems for each building.
- Maintain the water treatment systems.
- Awareness programs on water conservation to be conducted.
- Install display boards to control over exploitation of water.

### **ENERGY**

- Employment of more solar panels and other renewable energy sources.
- Conduct more save energy awareness programs for students and staff.
- Replace computers and TVs with LED monitors.
- More energy efficient fans should be replaced.
- Observe a power saving day every year.
- Automatic power switch off systems may be introduced.

### **WASTE**

- Establish a functional bio gas plant.
- A model solid waste treatment system to be established.

**UTTAR PURVA GUJARAT UCHCH KELAVANI MANDAL'S**  
**SHRI U.P.ARTS, SMT. M.G. PANCHAL SCIENCE & SHRI V.L.SHAH COMMERCE COLLEGE, PILVAI**

- Practice of waste segregation to be initiated.
- A model vermi-composting plant to be set up in the college campus.
- Establish a plastic free campus.
- Avoid paper plates and cups for all functions in the college.

**GREEN CAMPUS**

- All trees in the campus should be named scientifically.
- Create more space for planting and plant trees as Miyawaki method.
- Grow potted plants at both verandah and class rooms.
- Create automatic drip irrigation system during summer holidays.
- Not just celebrating environment day but making it a daily habit.
- Beautify the college building with indoor plants.
- Providing funds to the Pilvai Nature Club for making campus greener.
- Encouraging students not just through words, but through action for making the campus greener.
- Conducting competitions among departments for making students, teaching-staffs more interested in making the campus greener.

**CARBON FOOTPRINT**

- Increase a system of car pooling among the staff to reduce the number of four wheelers coming to the college.
- Introduce college bus services to the students and staff members.
- Encourage students and staff member to use cycles.
- Establish a more efficient cooking system to save gas.
- Discourage the students using two wheelers for their commutation.