

Green Audit Report

To

**Gayatri Vidya Parishad College for Degree &
P.G. Courses (A)**

Vishakapatnam



From



Introduction:

The Gayatri Vidya Parishad College for Degree and P.G. Courses(A) ever since its establishment from 1994 has been progressing tremendously and today it is one of the premier institutions in the state of Andhra Pradesh contributing significantly to the human resource base that the economy needs and run with self-generated funds.

The College was accredited by NAAC with B++ Grade and was conferred the Autonomous Status by Andhra University after due approval by the UGC first in April 2007 and in the second cycle in June 2014. NAAC accreditation and the autonomous status have increased the responsibility of the institution enhancing the quality of teaching-learning, research, consultancy, skill development, and community development and for enabling the holistic development of the students.



Green Audit:

Green audit is a potential tool which can be used effectively by an educational institution for resource usage identification and optimization. 'Green auditing is the process of identifying and determining whether institutions practices are eco-friendly and sustainable'. The main objective to carry out green audit is to check green practices followed by the college and to conduct a well formulated audit report to understand where it stand on a scale of environmental soundness.

The main objectives of the audit are:

- ✓ 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
- ✓ Recognize the cost saving methods through waste minimizing and managing
- ✓ Point out the prevailing and forthcoming complications
- ✓ Impart environmental education through systematic environmental management approach and benchmarking for environmental protection
- ✓ Financial savings through a reduction in resource use

Benefits of Green Auditing

- ✓ More efficient resource management
- ✓ To provide basis for improved sustainability

- ✓ To create a green campus
- ✓ To create plastic free campus and evolve health consciousness among the stakeholders
- ✓ 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
- ✓ 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.

Steps to be followed in making of a successful Green Campus

The motivation for a successful Green Campus must begin at the top and originate throughout the rest of the campus. Without a strong message of commitment and involvement from both the management and the administration, well-intentioned initiatives may be too fragmented to allow for campus-wide participation and too easily undermined by nay Sayers and other obstacles. Once the decision to become a Green Campus is made, then the real work begins.

The following features plays a key role in making a campus green:

I. Strategic Planning: Institutions that cultivate a vision of sustainability must adopt sophisticated strategic planning to allow their top management to assess the full arrange of the institution's effect on the environment. The institutions auditing, and forecasting techniques use by these firms help them anticipate a wide range of external influence on the institution, not just ecological influence.

II. The Administration of Management: The administration of management has a very important impact on the business decision decisions they make relating to building design, repair and renovation, building operations and maintenance, procurement practices,waste management, custodial services, energy management, transportation, food service and food service and dining operations and hostel management.

III. Academic Departments: The learning model is very well suited to the institutions environment and is a way to integrate knowledge base with local requirements and applications. This can have an immediate benefit depending on the nature of the service requirement. Further educational opportunities exist with developing courses on sustainable development, informal workshops and training as well as distance learning. The evolution of a learner friendly class room in environmental and long-term issues is a perspective to solve the question of sustainability.

IV. The Institutions Research Activity: The research activity of the institution has a significant role in terms of its short and long-term impacts. The research activity includes publication of papers, magazines, journals, research articles, conducting workshops, seminars, awareness programs on environmental and sustainability issues. Areas for research could also include large scale composting, procurement practices, production methods,

alternative energy sources, and any number of building design, construction, operations, and maintenance practices.

V. The Local Society: The local society can also provide variety of resources to support the sustainability endeavour and which includes alumni, the business community, local public, transportation providers, vendors, utility suppliers, local organizations and associations.

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:

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:

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 - Detailed analysis of data collected include: calculation of energy consumption, analysis of latest electricity bill of the campus. Data related to water usages & waste management were also analysed using appropriate methodology.

3. 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 must be reduced for the sake of community health.

Water Conservation

Water conservation is the practice of using water efficiently to reduce unnecessary water usage. According to reports, water conservation is important because fresh clean water is a limited resource, as well as a costly one. Conservation of this natural resource is critical for the environment.

The goals of water conservation efforts include:

- Ensuring availability of water for future generations where the withdrawal of freshwater from an ecosystem does not exceed its natural replacement rate.
- Energy conservation as water pumping, delivery and wastewater treatment facilities consume a significant amount of energy. According to recent researches 15% of total electricity consumption is devoted to water management.
- Habitat conservation where minimizing human water use helps to preserve freshwater habitats for local wildlife and migrating waterfowl, but also water quality.

Rainwater Harvesting

Water is the most important yet neglected resource. The reason is being very low cost. But over period of years, water is gaining its importance. Entire country is facing a tremendous stress due to water scarcity. Irregular rainfall, depleting ground water table, inefficient usage and leakages etc are all forcing people to adopt water management activities.

Gayatri Vidya Parishad has always paid special care and attention towards water consumption in their buildings. To tackle the issue at source, rain water harvesting systems have implemented across the campus to conserve, capture and aid effective aquifer recharge of water.

DETERMINATION OF RUNOFF VOLUME:

Parameters:

1. The Conveyance, Wetting and Seepage loss for RCC concrete roofing is 5 %. Therefore, the Runoff Coefficient is 0.95 for Conventional roofs.
2. Similarly, the Runoff Coefficient for vegetated is taken as 0.25.
3. Similarly, the Runoff Coefficient for Turf & roadway is taken as 0.25 & 0.95 respectively.
4. Based on green building guidelines, the runoff volume is calculated based on average of the peak monthly rainfall in the 5 years period prior to construction (2014 to 2018).
5. The rainfall data of Vishakhapatnam district for the last 5 years is taken from Indian Meteorological Department. (<http://www.imd.gov.in/>)

YEAR	JAN		FEB		MAR		APR		MAY		JUN		JUL		AUG		SEPT		OCT		NOV		DEC	
	R/F	%DEP	R/F	%DEP	R/F	%DEP	R/F	%DEP	R/F	%DEP	R/F	%DEP	R/F	%DEP	R/F	%DEP	R/F	%DEP	R/F	%DEP	R/F	%DEP	R/F	%DEP
2014	2.0	-77	0.0	-100	15.8	-10	26.8	-40	109.1	13	65.6	-51	136.1	-24	239.7	35	146.8	-21	330.8	62	9.2	-84	10.7	149
2015	1.4	-84	1.5	-86	18.0	2	69.1	54	38.1	-61	313.1	136	129.9	-27	205.0	15	261.1	41	47.8	-77	122.5	107	2.9	-33
2016	0.4	-95	3.7	-66	11.2	-36	10.8	-76	160.0	66	189.3	43	207.8	17	148.0	-17	284.2	53	95.4	-53	7.3	-88	1.1	-76
2017	0.0	-99	0.0	-100	15.6	-11	19.3	-57	42.0	-57	203.6	54	126.5	-29	251.8	41	149.2	-20	127.1	-38	6.1	-90	0.0	-100
2018	0.0	-100	0.0	-100	1.2	-93	110.8	148	108.6	12	162.8	23	179.3	1	194.1	9	145.6	-21	32.9	-84	8.1	-86	82.5	1820

Peak Rainfall month in the last 5 yrs.

Year	Month	Rainfall in mm
2014	Oct	330.8
2015	June	313.1
2016	Sep	284.2
2017	Aug	251.8
2018	Aug	194
Total 5-year peak month rainfall average in mm		274.76
Total 5-year peak month rainfall average in m		0.26
One day rainfall @ 15% of Average Peak Month Rainfall		0.04

RWH Calculations			
Roof Surface Type	Run off Coefficient	Total Area (Sq.m)	Impervious Area (Sq.m)
Roofs Conventional	0.95	9300.00	8835
Roads & Pathways	0.95	4249.00	4036.55
Vegetation (Greenery area)	0.25	15041.00	3760.25
Open areas (Playground, Natural Topography)	0.25	10622.00	2655.5
Total Impervious Area (Sq.m)			19287.3
Total runoff		762.5	cu.m

The campus has the potential to capture 762 cu.m volume of run-off water. To ensure effective capture and aquifer recharge, there are 7 rainwater harvesting pits in the campus. The largest of the rain water harvesting pit has dimensions of 20x20x10 feet and is located at the gate. This pit collects the rain water that flows downstream naturally during the monsoon is connected to the storm water drains as well. Five pits with dimensions of 4x4x6 feet and one pit measuring 3x3x6 feet allow rainwater to reach the ground water table. These pits cater to each of the buildings on-site and the runoff is directed to the pit through pipelines and storm drains.

The water from the rooftop of the engineering sheds is collected via gutters provided and is diverted into a storage tank near the management block. The water collected is used for plantation purposes at a later stage. The pits are regularly maintained by backwashing and replacing the layers of sand and gravel materials. This ensures effective filtration without affecting percolation and recharge.

The management shall also look to implement more Rainwater Storage System such as (RWH tanks & Sumps) so the collected rain water could be later used for domestic purposes.

Domestic Water Consumption:

The Campus' water requirements are met by bore well & through municipal water line. Bore well water consumption of the facility is around 25KL per day. The water consumption is proposed for reduction by introduction of low flow water fixtures. The initiative has a potential to save around 20-35% of the domestic water requirements. The management is also considering low cost yet effective measures such as flush bob adjustments in the flush tanks & installation of flow restrictors/aerators for the taps to further reduce potable water dependency.

On-site wastewater reuse can reduce water use drastically. At present, potable (drinkable) water is used for both gardening & flushing.

Two streams of wastewater are generated in the campus: greywater and blackwater.

Greywater is wastewater from non-toilet plumbing fixtures such as showers, basins and taps.

Blackwater is water that has been mixed with waste from the toilet. Owing to the potential of contamination by pathogens and grease, water from kitchens and dishwashers should be excluded from greywater and considered as blackwater.

Each wastewater stream must be treated differently and can be used for varied purposes. Greywater is ideal for garden watering, with the appropriate precautions, such as using low or no sodium and phosphorus products and applying the water below the surface. Appropriately treated greywater can also be reused indoors for toilet flushing.

Advantages of reuse of wastewater

By using wastewater as a resource rather than a waste product the campus can:

- reduce water bills
- use fewer water resources
- irrigate the garden during drought or water restrictions
- cut down the amount of pollution going into waterways
- decrease demand on infrastructure for sewage transport, treatment and disposal, allowing it to work better and last longer

Energy Efficiency

Energy efficiency simply means using less energy to perform the same task – that is, eliminating energy waste. Energy efficiency brings a variety of benefits:

- ✓ reducing greenhouse gas emissions,
- ✓ reducing demand for energy imports, and
- ✓ lowering costs at campus and economy-wide level.

There are enormous opportunities for efficiency improvements in every sector of the economy, whether it is buildings, transportation, industry, or energy generation.

Energy efficient Lighting systems:

By efficient lighting system we shall reap monetary & environmental benefits such as energy savings, reduced electricity bills, and coal consumption (India’s grid factor is 0.83 where 83% of electricity is produced through coal). Thus, in its pursuit towards an energy efficient campus, all the external lighting fixtures are LED based. The management team has reduced lighting consumption by over 80% when compared to an ASHRAE Base case. The proposed lighting power density of the campus is 0.203 w/m², whereas the ASHRAE base case LPD is 1.5 w/m²

Comparison with Ashrae 90.1.2010 requirements for Exteriors						
Site location / Zone	Road Area (sq.m) approx.	Fixtures	Fixture Model	Fixture Power including Ballast loss	Total Fixtures (nos.)	Total Fixtures Power (Watts)
Illuminated road area	4249	32W(LED)	32W Led	32	35	1120
Proposed case (Watts)						1120
Proposed Case LPD (W/m2)						0.264
Base case LPD (W/ft2)						0.14
Base case LPD (W/m2)						1.507
Percentage Reduction in LPD						82.51%

Excerpt from Ashrae

TABLE 9.4.3A Exterior Lighting Zones

Lighting Zone	Description
0	Undeveloped areas within national parks, state parks, forest land, rural areas, and other undeveloped areas as defined by the <i>authority having jurisdiction</i>
1	Developed areas of national parks, state parks, forest land, and rural areas
2	Areas predominantly consisting of <i>residential</i> zoning, neighborhood business districts, light industrial with limited nighttime use and <i>residential mixed use</i> areas
3	All other areas
4	High activity commercial districts in major metropolitan areas as designated by the local jurisdiction

TABLE 9.4.3B Individual Lighting Power Allowances for Building Exteriors

	Zone 0	Zone 1	Zone 2	Zone 3	Zone 4
Base Site Allowance (base allowance may be used in tradable or non-tradable surfaces)					
	No Base Site in Zone 0	500 W	600 W	750 W	1300 W
Tradable Surfaces (LPDs for uncovered parking areas, building grounds, building entrances and exits, canopies and overhangs, and outdoor sales areas may be traded.)					
Uncovered parking areas					
Parking areas and drives	No allowance	0.04 W/ft ²	0.06 W/ft ²	0.10 W/ft ²	0.13 W/ft ²
Building grounds					
Walkways less than 10 ft wide	No allowance	0.7 W/linear foot	0.7 W/linear foot	0.8 W/linear foot	1.0 W/linear foot
Walkways 10 ft wide or greater Plaza areas Special feature areas	No allowance	0.14 W/ft ²	0.14 W/ft ²	0.16 W/ft ²	0.2 W/ft ²
Stairways	No allowance	0.75 W/ft ²	1.0 W/ft ²	1.0 W/ft ²	1.0 W/ft ²
Pedestrian tunnels	No allowance	0.15 W/ft ²	0.15 W/ft ²	0.2 W/ft ²	0.3 W/ft ²
Landscaping	No allowance	0.04 W/ft ²	0.05 W/ft ²	0.05 W/ft ²	0.05 W/ft ²

The campus team has also taken efforts in the interior lighting as well. Around 25% of the total interior lighting energy consumption is met through highly efficient LED lighting. The total lighting energy consumption of the facility is 92,120 units annually out of which LED lighting consumes around 21,514 units of energy. The campus management is continuously taking measures to phaseout the old fixtures with highly efficient LED fixtures.

The Management should have a proper phase out plan for replacing all the old inefficient lighting fixtures to energy efficient LED lighting systems.

S.No.	Name of the block	No. of LED Bulbs	LED Bulb rating	Total Wattage (W)	KW
1.	MCA Block	32	(Each 9 W)	32*9 = 288	0.288
2.	MBA Block	14	(Each 9 W)	14*9 = 126	1.629
		6	(Each 60 W)	6*60 = 360	
		10	(Each 60 W)	10*60 = 600	
		30	(Each 9 W)	30*9 = 270	
		5	(Each 9 W)	5*9 = 45	
		24	(Each 6 w)	24*6 = 144	
		7	(Each 12 W)	7*12 = 84	
3.	Library Block	69	(Each 9 W)	69*9 = 621	0.621
4.	Auditorium	60	(Each 9 W)	60*9 = 540	1.170
		3	(Each 70 W)	3*70 = 210	
		4	(Each 60 W)	4*60 = 240	
		15	(Each 12 W)	15*12 = 180	
5.	Street Lights	35	(Each 32 W)	35*32 = 1120	1.120
6.	Ladies Hostel	149	(Each 9 W)	149*9 = 1341	1.541
		2	(Each 100 W)	2*100 = 200	
7.	Engineering Block	91	(Each 9 W)	91*9 = 819	0.999
		15	(Each 12 W)	15*12 = 180	
Total		571		7368	7.368

Onsite Renewable Energy:

On-site renewable energy systems reduce dependence on finite fossil fuels and decrease environmental impacts, Renewable energy is considered sustainable because it decreases dependence on fossil fuels and reduces the greenhouse gas emissions from non-renewable energy use.

The institution has taken the proactive approach to voluntarily install renewable energy systems with a potential of 51.1KWP. The systems include roof top solar panel and a hybrid wind power plant. Total Energy Produced per year is approximately 28232.6 kwh. This caters to 0.78% of the total energy consumption. In other words, 100% of the LED lighting consumption (interior and exterior) is met by energy generated on-site via renewable systems.

Energy Production from renewable energy sources in the year 2018:

S.No.	Month	Energy Production through Renewable energy systems (In Kwh)
1	January	1951.4
2	February	2413.7
3	March	2548.9
4	April	3959.2
5	May	2809.4
6	June	2170.8
7	July	2085.8
8	August	1792.1
9	September	2404.6
10	October	2536
11	November	2064.5
12	December	1496.2
Total		28232.6

Air-conditioning Systems:

Air Conditioning (AC) is generally responsible for a significant proportion of total building energy consumption. A typical system accounts for approximately 60% of total building consumption. Globally, stationary AC systems account for nearly 700 million metric tons of direct and indirect CO₂-equivalent emissions annually. Indirect emissions from electricity generation account for approximately 74% of this total, with direct emissions of HFC and hydrochlorofluorocarbon (HCFC) refrigerants accounting for 7% and 19%, respectively. While electricity consumption is the largest driver of GHG emissions from AC (i.e., indirect impacts), emissions of HCFC and HFC refrigerants have a disproportionately large global warming impact relative to their mass. Addressing direct emissions therefore offers an important path to substantially reducing AC GHG emissions. The total air conditioning requirements in the campus building is around 270 tonnes. The management has made sure that around 60% of the AC systems are energy efficient BEE 3 star rated Air conditioning systems.

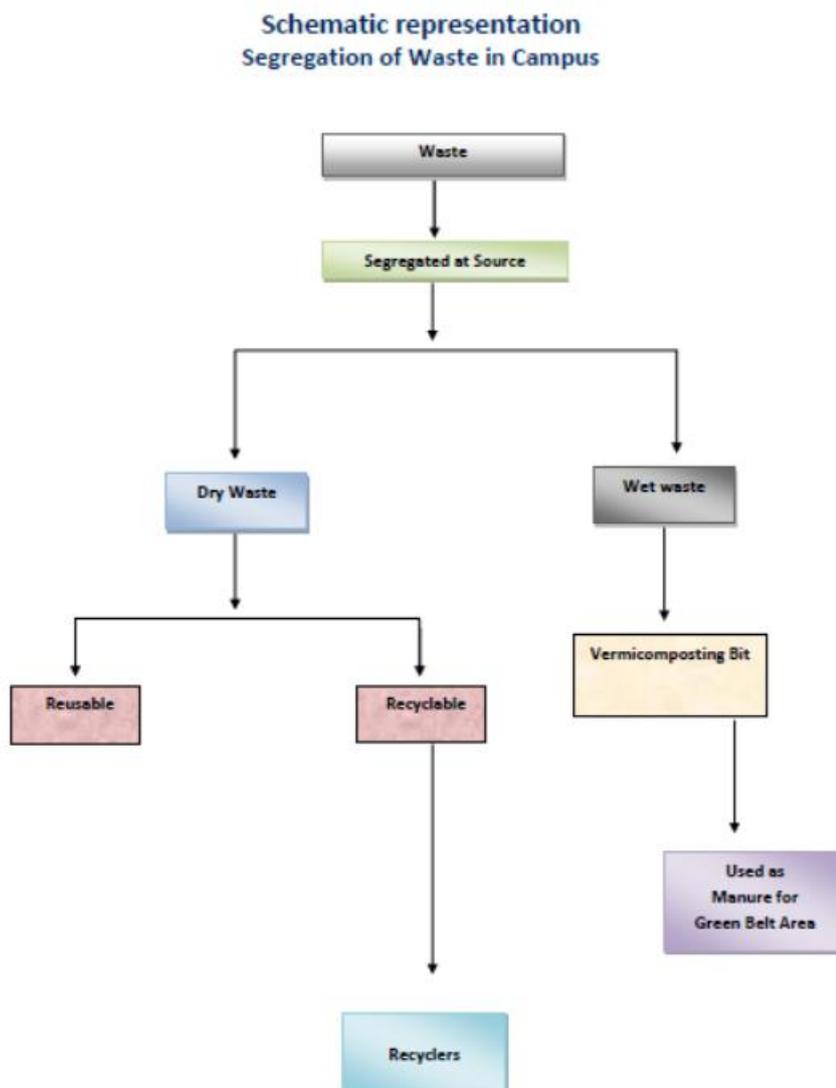
Waste Management

Separating our waste is essential as the amount of waste being generated today causes immense problems. Newspapers, used bottles, magazines, carry bags etc. are collected and sold to junk dealers for recycling.

Certain items are not biodegradable but can be reused or recycled. In fact, a large portion of the waste generated is recycled, the rest, a smaller portion of this is waste that has no use and must be discarded.

Waste is separated daily into different bins based on category of waste such as wet and dry waste and disposed of separately. Wastes such as metals, plastic, batteries, old bulbs etc. are classified as dry wastes and are collected in bins which are marked for dry wastes.

Segregation of waste at the campus is accomplished in a planned manner and the entire cycle of waste management is represented by this schematic diagram



The housekeeping maintenance crew follow defined procedures to collect the various wastes in the campus and segregate them methodically at the source level.

Waste shall be segregated as

1. Dry waste and
2. Wet Waste

Wet waste includes organic waste, (e.g. kitchen waste, vegetables, fruits, flowers, leaves from the garden, and paper.).Organic wastes are collected, segregated & then transferred to vermicompost pits. The output is later used as manure in the garden areas.

Dry waste can be further segregated at the Waste Yard into:

- a) Recyclable waste – plastics, paper, glass, metal, paints, chemicals, bulbs, cans etc.
- b) Inert wastes, debris etc. are used for Land filling.

The quantity of “e-waste” or electronic waste has now become a major problem. Disposal of e-waste is an emerging global environmental and public health issue, as this waste has become the most rapidly growing segment of the formal municipal waste stream in the world. E-waste or Waste Electrical and Electronic Equipment (WEEE) are loosely discarded, surplus, obsolete, broken, electrical or electronic devices.

Electronic equipment’s contain many hazardous metallic contaminants such as lead, cadmium, and beryllium and brominated flame-retardants. The fraction including iron, copper, aluminium, gold, and other metals in e-waste is over 60%, while plastics account for about 30% and the hazardous pollutants comprise only about 2.70%. Of many toxic heavy metals, lead is the most widely used in electronic devices for various purposes, resulting in a variety of health hazards due to environmental contamination. Lead enters biological systems via food, water, air, and soil.

The institution generates e-waste like computers, keyboards, mouse, scanners, fax machines, CD’s, Pen drives, calculators, cables, circuit boards and other digital equipment like cameras etc. The institution follows two methods of disposing E- Waste.

- 1) Collecting e-waste through e-waste bins and storing the e-waste generated at a prescribed room called as e-waste room.
- (2) Handing over the generated e-waste to designated collectors.

The college provides proper awareness to the students and staff by organizing sessions on e-waste hazards and safe disposal practices.

There is a functioning Memorandum of Understanding with an E-Waste management company (E-Waves) who collect the E-waste generated as and when either up gradation is done or End of Life (EOL) is reached of an electronic system or part.

The college also at times organizes campaigns to create awareness in local community on e-waste disposal, collects e-waste from neighbourhood and arranges for safe disposal.

Other Green Measures

Landscaping

The project team has retained natural topography such as shrubs, grass and native species present at ground level and it has grown significantly. Urban heat island effect reduces drastically due to existence of green cover. Workforce is also deployed to maintain the vegetated area over a regular time interval. Organic wastes generated during maintenance are sent to the vermi-compost pit located within the site.

The campus has Green coverage for around 40% of overall site area. To minimize the water consumption on the site, the design team has minimized turf area and promoted native/drought tolerant species for landscaping. Most of the trees planted in the campus facility are native and hence require very less irrigation.

Regular awareness campaigns have encouraged students to form a green student committee to implement green practices in the campus.

The institution has taken significant measures to make the campus a green campus. After the natural calamity “HUDHUD” hit Visakhapatnam, much of green cover was wiped off. The college post the catastrophe has taken special responsibility in bringing back the green cover in the campus. Currently there are approximately 900 trees within the campus. The trees include *Cocos nucifera*, *Azadirachta indica*, *Ficus benghalensis*, *Hevea brasiliensis*, *Saraca asoca*, *Bambusoideae*, *Millettia pinnata* etc. These not only help in promoting biodiversity but also ensure sequestering of carbon offsets.

Areas of development:

Almost any administrative or operational function on campus influences the use of resources and the generation of waste to some degree. There is room for environmental improvement in just about any activity at which the investigative eye dares to aim its sights—regulatory compliance, procurement, transportation, fleet management, physical plant operation, grounds maintenance, food services, waste management, social programs, laboratory practices, materials management, and communication services. Greening the campus calls for a thorough review of all administrative and operational functions from the standpoints of human health and the environment.

The following areas of concern factor into many campus activities:

- 1. Pollution prevention—solid and hazardous waste management/air emissions reduction/consumption minimization/ maintenance regimens for equipment, ventilation, and other infrastructure areas;**
- 2. Hazardous materials management/purchasing/handling/disposal;**
- 3. Water quality/use/conservation;**
- 4. Wastewater/storm water management;**
- 5. Air quality;**
- 6. Energy use/conservation; and**
- 7. Environmental management systems.**

Improvements made in any of these areas serve as important lessons in environmental accountability and responsibility. Some improvements involve solutions that are more obvious and practical, some are required by regulation, others call for out-and-out ingenuity. The challenges are there for the taking.

Green Initiatives need to be considered for Sustainability

a) **Teaching and Learning practices:** In all institutions there is an ample use of paper by students and faculties in making notes, study materials, assignments, projects etc. There should be use of complete abandon of paper in class room teaching. Presentation and slide shows method of teaching should be adopted. Electronic Projectors should be facilitated to carry on this type of teaching learning process.

b) **Designing of syllabus related to greening management:** Institutions should design their syllabus related to green management. Compulsory teaching of Green Management as a core subject will create an awareness among the students. The students will know the importance of greening.

c) **Conducting seminars and workshops:** Conducting seminars and workshops related to "go green" will enhance the knowledge of students, faculties and other workforce those who are working under the management tree.

d) **Bye to plastic materials inside the campus:** No use of plastics in the college premises can be implemented by replacing the plastic cups and plates, poly bags in canteens with disposable paper cups, plates and paper bags. Soft drinks can also be avoided.

e) **Effective use of technology:** It involves effective use of technology like video conferencing, online training, group discussion, virtual interviews and telephonic interviews should be conducted to train the students for placement purposes. Students, faculties and other workforce can plant trees in birthdays and anniversary days to make the campus greener. They also can plant trees in annual function day, teacher's day, children's day, independence and republic day.

f) **No use of Vehicles:** Creating pollution free environment inside the campus through use of battery vehicles, bicycles instead of petrol and diesel vehicles and if possible use of no vehicles policies should be implemented inside the campus can control the internal environment from pollution.

g) **Training to employees:** Training can create a new green culture. A Training Needs Analysis (TNA) can be conducted for evaluating what environmental knowledge and skills staffs need to assess the type and areas of training required in environmental management. Specifically, environmental trainers can be appointed to train the students, faculties and other workforce to create an eco-friendly environment inside the campus.

h) **Integration of different process islands:** Integration of different process islands like admission, student record, attendance, class arrangement, recruitment, placement etc at the institutional level through on-line environment will save time and human energy which is another milestone in green management for management institutions.

While no two campuses are alike, and approaches to launching and maintaining a Green Campus will differ from place to place, there are some basic ingredients that will help ensure success. Following are the steps to be followed in making of a successful green campus.

Set forth a Green Campus Mission and a Statement of Principles. Spell out goals and the basis for strategic planning. Goals should address issues such as pollution prevention, waste minimization, regulatory compliance, energy conservation, social/behavioural change, and the role of your institution as an environmental leader.

Establish a Green Campus organizational structure and team to facilitate and coordinate your initiative and establish a strategic plan. Make sure the team is representative of the student body and every campus department. Include all relevant parties from the very beginning. The participation and input of physical plant and maintenance personnel, as well as chief budget/financial officer is vitally important to securing their cooperation.

Develop a strategic plan. Be sure it includes policy and curriculum reforms that reflect institution stated “green campus” mission.

Create student teams to carry out specific tasks of the strategic plan. The teams should work closely with faculty and administrative staff. If established as course work, these programs should be listed in the course syllabus with an explanation that this is a project-oriented course requiring considerable work outside the classroom. Be sure teams are large enough so that Green Campus work does not overwhelm their other studies and that students and faculty advisors are willing to make the necessary time commitments to support the program. (There are, of course, other options, such as internships or classroom projects, for integrating Green Campus goals into study programs.)

Establish public/private partnerships with personnel from federal, state, and local environmental agencies, utilities, and the business community. These professionals can be invaluable resources to help advance Green Campus efforts, serve as advisors to student teams, and assist students in accessing information and performing environmental audits. Such partnerships may also lead to internships or future job opportunities for students.

Evaluate daily operations in terms of pollution prevention, waste stream management, and energy efficiency—reducing, reusing, recycling, repairing wherever possible.

Implement business practices that are environmentally responsible, efficient, and in harmony with your Green Campus goals.

Address life cycle analyses—buying cheaper may sometimes have serious environmental or financial (e.g., high disposal costs) drawbacks.

Adopt and implement an environmental management system that is like those being adopted by progressive businesses and industries.

Determine and document short-term and long-term economic benefits. Don't forget to include the benefits of environmental compliance and improved health and safety.

Secure a commitment up front from the people in charge that well-founded recommendations will be acted upon once audits are completed.

Make the commitment to a long-term program of system-wide environmental re-education and retooling.

Inputs from the students:

What better place than a college or university to ply the lesson with the practice? Yet, undergraduate and graduate programs are often caught up in theory and removed from the practical aspects of daily life. As a result, students risk losing sight of their connection to the world in which they live.

The Green Campus program is a golden opportunity to develop an exciting new curriculum that encourages students to take the lead in creating positive change and, at the same time, to gain invaluable, marketable skills. Students, particularly those who hope to work in the environmental field, are the key ingredient for a successful program. Students can team up with faculty and experienced personnel from government agencies, utilities, and private industry to conduct environmental evaluations of the campus

Future Outcomes

Greening initiatives are challenging and require determination and a long-term commitment on the part of the entire campus community. These efforts, however, can yield significant paybacks.

Such paybacks include:

Environmental and economic sustainability. A system-wide culture of sustainability helps preserve and enhance what you value as an institution today, as well as for the future.

Reputation as a leader through example. Many colleges and universities fall far short of making their mark as environmental leaders, because they fail to practice on the campus what they preach in the classroom. Although colleges and universities offer courses in environmental management, engineering, laws and regulations, and assessment, many have failed to comply with environmental requirements or to take part in pollution prevention activities. Colleges and universities need to examine their own organizations and implement on their own campuses what they and the public expect industry to do.

Economic benefits. A routine, curriculum-based, environmental audit program that reveals waste and inefficiency associated with campus activities, coupled with the identification of environmentally friendly alternatives, can yield significant cost savings for your institution. Without paying outside contractors, you can discover steps—often simple steps—that your institution can take to correct and improve environmental problems on campus. By acting on the recommendations resulting from these audits, colleges and universities can realize cost savings by reducing energy and water use, minimizing the campus waste stream, improving systems reliability, and increasing the efficiency of air conditioning systems—to name a few. In addition, institution will improve environmental compliance and thereby minimize potential for liability, fines, and clean-up costs.

Improved quality of life on your campus. Finally, a Green Campus is a cleaner, safer, and healthier place to study and work.

Conclusion

Changes don't have to happen all at once. They can be approached through a manageable, step wise process in which changes are built into the institutional planning and budgeting processes, with an eye toward continually improving the campus and implementing responsible recommendations.

Green initiatives will always harvest benefits in the long run. Institutions can save large amount of money by implementing green way of life. When institutions practice green way of life and greening of workforce they can gather knowledge capital and provide students a healthy study atmosphere. In short, proactive environmental management may help institutions not only promote sustainability but also become more competitive in the global educational marketplace by reducing costs, attracting environmentally aware students, innovation and encouraging long range strategic planning that anticipates external change. Green marketing strategy adopted by management institutions which make them globally competitive. By continuing to be environmentally friendly, not only our environment will be benefited but the institutions will also be more reputed with high morale, satisfied students and become globally competitive.