

REPORT OF GREEN CAMPUS AUDIT

Submitted to

VELLALAR COLLEGE FOR WOMEN (AUTONOMOUS)

Thindal, Erode – 638 012, Tamil Nadu, India.

Date of Audit: 08.01.2018 (Monday)

Submitted by



NATURE SCIENCE FOUNDATION

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Motto

'Save the Nature to Save the Future' & 'Go Green to Save the Planet'

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1. Introduction

Green campus is an area of the Organisation or the Organisation as a whole itself is contributing to have an infrastructure or development that is structured and planned to incur less energy, less water, less or pollution free, less or no CO₂ emission (Aparajita, 1995). Green Campus Audit is a tool of environment management system which is used methodologically for protection and conservation of environment and sustenance of ecosystem. Green campus constitutes the environmental friendly practices and education combined to promote sustainable and eco-friendly practices along with user-friendly technology in the campus. It creates environmental culture, develops sustainable solutions to environmental problems and provides solutions to various social and economic needs (APHA, 1981). It provides the concept of green building and oxygenated building which in turn provides a healthy atmosphere to the stakeholders.

Green Campus Audit ensures the Organization's campus should be greenish with large diversity of trees, herbs, shrubs, climbers and lawns to reduce the environmental pollution and soil erosion, also useful for biodiversity conservation, landscape management, proper water irrigation, natural topography and vegetation (Gowri and Harikrishnan, 2014). The maintenance of eco-friendly campus ensures neat and clean environment. For the benefit of stakeholders, solid state management, recycling of water, disposal of sewage and waste materials including electronic and biomedical wastes, plastic use, and etc. should be followed consistently in the organization campus.

Green Campus Audit procedures includes the definition of green audit, methodology on how to conduct green audit at Educational Institutions and Industrial sectors as per the checklist of Environment Management Systems and International Standards on ISO 14001:2015, Indian Green Building Council, Swachh Bharath Scheme under Clean India Mission to understand the principles and importance of various audits in the context of the organization and risk assessment at 360° views (Gnanamangai *et al.*, 2021). It analyses to help the educational institutions and industries to maintain eco-friendly environment and personal hygiene to various stakeholders and supports the nation as a whole for the noble cause of environmental protection and nature conservation which in turn to enhance the quality of life to all living beings (Arora, 2017).

2. Aims and Objectives of Green Campus Audit

- To recognise the initiatives taken towards the environment by the Organization.
- To identify and provide baseline information to assess threat and risk to the ecosystem.
- To recognise and resolve different environmental threats of the Organization.
- To ensure proper utilization of resources available in the surrounding areas towards future welfare of the community.
- To set a procedure for disposal of all kinds of wastes and use green cover as a carbon sink for pollution free air.

- To assess the greenish nature of an Organization campus in terms of trees, herbs, shrubs, climbers, twins, lianas, lawns and reflected in reducing the environmental pollution soil erosion, biodiversity conservation, landscape management, natural topography and vegetation.

3. Procedures followed in Green Campus Audit

Green campus audit is a structured process of documenting the credentials in terms of number of trees, herbs, shrubs, lawns, climbers and lianas reflected in reducing the environmental pollution and soil erosion and useful for biodiversity conservation, landscape management, natural topography and vegetation. Green audit projects the best environmental practices and initiatives taken in the organisation at the prescribed site of audit that brings added value to the organisation in maintaining the ecofriendly campus to the stakeholders. The first step of the audit is ensuring that the organisation has a central role in building the green campus, in order to validate the same (Adeniji, 2008).

Green campus is not intended for the self-sustainability of the building alone, it also involves in propagation of the green campus initiatives so as to adopt by any individuals and organization at a minimum cost. Green campus audit has been conducted as per the checklist of Nature Science Foundation, Coimbatore, Tamil Nadu, India (www.nsfonline.org.in) through the authenticated Professionals for people qualified to investigate and evaluate the campus for validating the best environmental practices. Professional team of ISO Environment Management Audit (EMS 14001:2015), Indian Green Building Council Accredited Professionals, Experts of Green campus Lead Auditors and Botanists / Zoologists / Biotechnologists were selected to conduct green campus audit process.

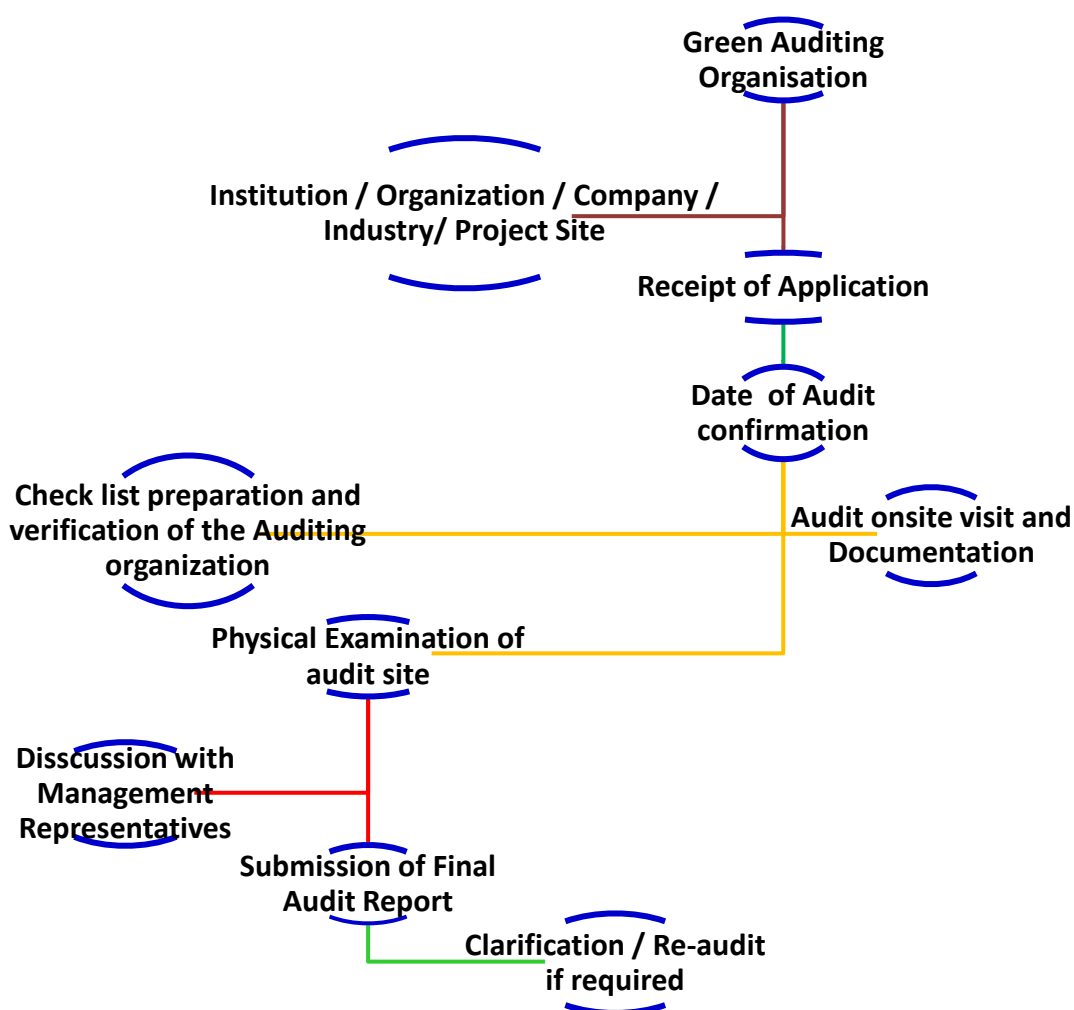
During the audit, the nature of plants and animals / birds species present in the campus were recorded. Establishment of lawns, trees, herbs, shrubs and climbers and establishment of terrace / kitchen / herbal / zodiac / ornamental / medicinal garden / aquarium and aquatic (hydrophytes) plants in the campus were recorded. Labelling of common name and Botanical name of plants were observed. The operation of water irrigation system, trip and sprinkler irrigation methods and use of recycled water for irrigation purpose or any other purpose in the campus area were noted. The number of water well, bore well and water reservoir facility in the campus were also noted as per the Audit Manual of Gnanamangai *et al.* (2021).

Attempts made for water scarcity during summer season towards the maintenance of plants and frequency of watering for plantations in the campus were noted. Biodiversity conservation education, projects, awareness programmes, etc., through Indian Biodiversity Act and Ministry of Environment, Forests and Climate Change, Government of India and the conduct of outreach programmes for dissemination of green campus motto were recorded (Venkataraman, 2009). Conduct of outreach programmes for dissemination of Green campus motto to the students and staff members including public domain and signing of MoU with Government and Non-Governmental Organizations to ensure green campus activities for future generation were noted. Technology driven solutions initiated by the green campus

organization can also be disseminated and documented successively for propagating the attitude of the green campus in wider masses.

Projects, Dissertations and Thesis are the academic effort credentials that always fosters the innovative ideas on thinking and implementation of new innovative approaches towards the green campus. These should be disseminated through presentations and publications in social media, books, magazines and journals so as to spread the innovative ideas and methods to the broad public. These efforts taken by the students and staffs were deliberated while conducting the green campus audit.

Green audit process are taking place as per the following flow-chart starting from the receipt of application forms from the auditee (organization) and ending upon the submission of final report to the concerned organization within 15 days. During the audit process, the best environmental / greenery practices followed and new initiatives undertaken in the organisation to reduce the environmental pollution and steps taken for nature conservation that brings added value to the organisation in maintaining the ecofriendly campus to the stakeholders.



Flow-chart of Green Campus Audit Procedures

4. About the College

Vellalar College for Women (VCW), Thindal, Erode, Tamil Nadu, India was established in 1970 which is one of the premier Institutes in Tamil Nadu. The college is situated in a sprawling of 11.19 acre in the Yellow city of Erode which is honoured for the cultivation as export of turmeric plants across the world. VCW is an Autonomous Institution affiliated to the Bharathiar University, Coimbatore, Tamil Nadu, Tamil Nadu approved by University Grant Commission (UGC), New Delhi for its autonomous status. The college is recognized for offering various Arts, Sciences and Management courses at undergraduate (B.A./B.Sc./B.B.A) and postgraduate (M.A./M.Sc./M.C.A/M.B.A) levels. The college is also offering Ph.D. degree programmes in various subject domains and degree certificates are given by Bharathiar University, Coimbatore. VCW has been accredited by National Assessment and Accreditation Council (NAAC) with Grade 'A' in 2015. A total of 6189 girl students are being studied in this academic year (2020-2021) at present in the college. Around 286 teaching and 178 non-teaching staff members are working as on date to enhance the teaching and learning processes.

5. Audit Details

Date/Day of Audit	: 08.01.2018 (Monday)
Venue of Audit	: Vellalar College for Women, Thindal, Erode, Tamil Nadu, India.
Audited by	: Nature Science Foundation, Coimbatore, Tamil Nadu, India.
Audit type	: Green Campus Audit
Name of ISO EMS Auditor	: Mrs. S. Rajalakshmi, Chairman & ISO EMS Auditor, NSF.
Name of Lead Auditor	: Dr. R. Mary Josephine, Board of Directors & Botanist, NSF.
Name of Subject Expert	: Dr. D. Vinothkumar, Joint Director & Subject Expert, NSF.
Name of IGBC AP Auditor	: Dr. B. Mythili Gnanamanagi, IGBC AP, Indian Green Building Council.

6. Onsite Green Campus Audit activities

1. The opening meeting is the first step between the audit team and auditee. In this meeting, the purpose of audit, the procedure is to be followed for the conduct of audit, document verification and the time schedules were discussed in brief along the Management Representatives.
2. Site inspection is the second step for onsite activity. In this step, the Audit team members were visited different sites in the college and sufficient photographs were taken then and there for preparing the audit report.
3. During the onsite phase of visit, how the College Management is created various facilities to the stakeholders without disturbing the landscape, natural topography and vegetation to ensure the green campus.
4. It is observed that how the environment is protected in the campus and by what means ecofriendly atmosphere is being given to the stakeholders. It is assessed the strengths and weaknesses of the Auditee's Management

controls and risks associated with their failure in green campus facilities were recorded.

5. Gathering audit evidence *ie*, collecting data and information from the auditee as per the audit protocol were carried out.
6. An exit meeting was conducted to explain the audit findings with Management Representatives and staff members along with audit team.

7. Green Campus Audit Observations

7.1. Flora and Fauna in the Campus

Ensuring the rich biodiversity in the green campus is an important parameter which reflected the real-time ecosystem. Plants are indicators for assessing the varying levels of environmental quality. In general, plants improve the outdoor air quality with increased oxygen levels and reduced temperature and carbon-di-oxide. The green and varying colour of the flowering plants improve the ambience of the environment. The record on maintenance of the plant biomass and its management are important with respect to green campus initiatives. The existence of such plants and birds in the green campus may be recorded for the rich flora and fauna which are being considered as a value addition to the campus.

The observations indicated that the VCW campus has more than 75% of wild as well as native plant species and the rest 25% plants species are ornamental in nature. The native plant traits promote the indigenous fauna at the site area. Hence, the accountancy of 75% of the wild traits are leveraged for the native animals and birds. A total of 70 types of tree species are

available. The commonly available native as well as wild plant tree species in the college campus are Maramalli (*Millingtonia hortensis*), Magizhamboo (*Mimusops elengi*), Murungai (*Moringa oleifera*), Iyal vagai (*Peltophorum ferrugineum*), Nettiingam (*Polyalthia longifolia*), Sorgamaram (*Simarouba glauca*), Manja arali (*Stenolobium stans*), Naval (*Syzigium jambolanum*), Vasantha rani (*Tabebuia rosea*), Tekku (*Tectona grandis*), Marudhu (*Terminalia arjuna*) and Puvarasu (*Thespesia populnea*).



The predominant families of various monocot and dicot plants found in the VCW campus are Acanthaceae, Amaranthaceae, Anonaceae, Apocynaceae, Arecaceae, Asparagaceae, Bignoniaceae, Boraginaceae, Caesalpiniaceae, Caricaceae, Combretaceae, Commelinaceae, Cucurbitaceae, Cycadaceae, Euphorbiaceae, Fabaceae, Lythraceae, Malvaceae, Meliaceae, Menispermaceae, Mimosaceae, Moraceae, Moringaceae, Musaceae, Myrtaceae, Nyctaginaceae, Phyllanthaceae, Poaceae, Polygalaceae, Rutaceae, Rubiaceae, Sapotaceae, Simaroubaceae, Turneraceae, Verbenaceae, Violaceae and Vitaceae.

The visiting and living birds in the campus are Crow (*Corvus splendens*), Pigeon (*Columba livia domestica*), Woodpecker (*Dendrocopos pubescens*), Owl (*Tyto alba*), Hen (*Gallus domesticus*), Sparrows (*Passer domesticus*), Myna (*Acridotheres tristis*), Vulture (*Gyps indicus*), Hawk (*Buteo albigula*), Eagle (*Clanga clanga*), Parrot (*Haliaeetus albicilla*), Finch (*Haemorhous cassinii*), Swan (*Cygnus olor*), Pelican (*Pelecanus onocrotalus*), Common babbler (*Argya caudate*), Jungle Babbler (*Turdoides striata*), Garden lizard (*Calotes versicolor*), Crane (*Grus virgo*), Butterfly (*Euploea core*), Squirrel (*Sciurus sp.*) and Carpenter ants (*Camponotus sp.*).

7.2. An Account of more Oxygen producing and CO₂ absorbing plants in the Campus

There are some plants which are being considered highly efficient in oxygen production and carbon-di-oxide absorption which in turn reflected the quality of the green campus. If more oxygen is made available in the campus naturally, the stakeholders may be free from various cardiovascular and pulmonary problems and breathing troubles. The snake plant (*Sansevieria zeylanica*) otherwise known as the mother-in-law's tongue and Gerbera Daisy (*Gerbera jamesonii*) plant are unique for its night time oxygen production, and ability to purify air through the removal of various toxic gases in the atmosphere. Although there are options available for increasing oxygen by reducing CO₂ through means such as oxygenators and air purifiers, there are a variety of natural alternatives for increasing air quality that are beneficial for both body and mind. The VCW campus is having a maximum number of more oxygen producing and CO₂ absorbing plants such as are Areca Palm, Money plant, Neem tree, Tamarind tree, Ficus, Bamboo, Arjun tree, Pongam, Aloe vera, Tulsi and Peepal Tree.



7.3. Establishment of lawns, trees, herbs, shrubs climbers and lianas in the Campus

Lawns are gazing features of unutilized land made to cover the soil with green grass for the ambience of the place to have a greenish look. Lawn provides a hollow space among the building structures. The shaded trees in between the grass lawn, pathways and garden benches are meaningful lineaments to the green campus. The advantage of lawn is that it prevents the unintended weeds growth in the unutilized landscape areas. Trees that are native to land with medicinal value, ethnicity and environmental value adds up advantage to green building. Purpose of trees is to provide shade, atmospheric CO₂ sequestration and supply of oxygen that serves the purpose of green campus. Herbs are small plants with medicinal values and shrubs are small plants with thick stems and can hold soil to some extent than the herbs and serve the purpose of soil erosion. Climbers can grow with the support of wall structures and the climbers can enhance the wall value with greeneries.

The VCW campus has sufficient number of trees, herbal plants, shrubs and lawns. It is further observed that all the plants are growing profusely and showing healthier free from pests and diseases attack. A total of 14 type of shrub species are available in the VCW campus. The commonly available native as well as wild shrub species in the college campus are Kakithapoo (*Bougainvillea spectabilis*), Madhanakamaboo (*Cycas revolute*), Pigeon-berry (*Duranta plumieri*), Nilamulli (*Eranthemum roseum*), Sembaruthi (*Hibiscus rosa-sinensis*), Vetchi (*Ixora coccinea*), Malli (*Jasminum sambac*) and Arali (*Nerium odorum*).



Similar to that of shrubs, there are 37 kinds of herbs available in the VCW campus. The predominant species of herbs available in the college campus are Kunukkuth thukki (*Micrococca mercurialis*), Melaanelli (*Phyllanthus maderaspatensis*), Keelanelli (*Phyllanthus niruri*), Otr mullu (*Priva leptostachya*), Adai-otti (*Pupalia lappacea*), Kirantinayan (*Ruellia prostrata*), Pattasukai (*Ruellia tuberosa*), Marul (*Sansevieria roxburghiana*), Palambasi (*Sida acuta*), Kallutaitumapi (*Trichodesma indicum*), Vettu kayathalai (*Tridax procumbens*) and Kattu paruthi (*Turnera ulmifolia*).



The existence of climber, twiners and lianas species available in the VCW campus are Kayathalai (*Allamanda cathartica*), Kovai (*Coccinia indica*), Kattu-kodsi (*Cocculus hirsutus*), Amirtaval (*Tinospora cordifolia*) and Sinthal (*Monstera deliciosa*). The major grasses are Periapullu (*Aristida pinnata*), Chevvarakupul (*Chloris barbata*), Arugam Pillu (*Cynodon dactylon*), Korai Pollu (*Cyperus rotundus*), Crowfoot grass (*Dactyloctenium aegyptium*) and Narival (*Perotis indica*).



7.4. Establishment of different types of Gardens in the Campus

Growing many types of herbal plants having medicinal importance in the campus becomes more attractive and useful if concept gardens are maintained. Medicinal plant gardens can contain the locally available medicinal plants, RET (Rare Endangered Threatened) listed plants and those plants are most useful in terms of economic importance. The tree garden / arborea can be planted based on the zodiac signs which would attract the public and students, faculties, staff members, employees and educate the based on their uses. In the tree gardens, trees as linings all over the campus can act as oxygen corridors. Native trees along with trees like *Azadirachta*, *Pongamia* and *Ficus* species can be cultivated at the maximum as these plants used to remove the dust particles and carbon lead from the air and purifies the air considerably. Similarly, the ornamental plants with beautiful flowers can be

maintained in the frontage gardens of campus for attraction and good ambience. This will give an overall aesthetic look and also provide fresh air for healthy respiration to the stakeholders.



7.5. Natural Topography and Vegetation

Natural topography means the original geographical features of the campus, around 15- 20% of the organization should have the natural features like rocks, water resources, slopes, landscape, pathways, etc. and the altered topography can be accounted if it is facilitated. The vegetation in the land alone is considered as they are part of the natural topography. The vegetation in the artificially created structures are also accounted for audit when it is reported more than 25% of the claimed green campus audit site. Vegetation is the cultivation of a bunch of plants irrespective of the plant *taxa* for the covering of the area or ground topography. Natural topography is well appreciated with wild vegetation than the artificially created topography like pathways and parking areas. The observation at the VCW campus indicated that more than 75% natural topography and vegetation have been maintained.

7.6. Rainwater Harvesting system

Rainwater harvesting system is a traditional old practice not only in drought prone areas and also in areas having seasonal rainfall. The Indian traditional rainwater harvesting is being practiced in various parts of the country to improve the ground water status. Now the threatening features of the lower ground level of water has created a revamp of newly featured rainwater harvesting systems. Indian traditional rainwater harvesting systems are constructed based on three modes either direct pumped, indirect pumped or by gravity alone in the campus. In addition, lakes, bonds, water channels and any other water reservoir methods are considered as the rain water harvesting system. The green campus should have adopted any of the above said modes of rainwater harvesting for conserving the water resource as well



7.7. Landscape design and Soil erosion control

Landscape management is the care of land to make sure that landscapes can fulfil the needs and aspirations in an effective and sustainable manner for current and future stakeholders. It is an action that forms a perspective of sustainable development, to ensure the preservation of a panorama, in order to help and harmonize changes which are added through social, monetary and environmental methods. Landscape design is an important feature for any disasters to control especially with respect to the soil erosion. In general, soil erosion occurs if the design of the land is not altered so as to prevent the slope features by strong vegetation and use of plant buffer zone as safe for escape of nutrients or fertilizers entering the streams. When the slope features are altered, adequate vegetation can alone be enough to prevent soil erosion. The observation revealed that the VCW campus has very good landscape design without disturbing the natural vegetation.



7.8. Operation of Water Irrigation system, Drip and Sprinkler irrigation methods

Maintaining the green campus and water conservation mechanisms should be applied efficiently in the campus. Well planned water irrigation systems like sprinklers and drip should be implemented in the entire green area of the campus for an effective water management system. This can be implemented only when the plantations are well planned. The tree growing areas can be connected with drip irrigation and medicinal plants growing areas and flower gardens can be connected with sprinkler irrigation. The VCW has taken sufficient efforts to maintain the plants greenish and frequency of watering to the plants. A register should be maintained to note down the timing of watering the plants and quantity of water poured every time. Internal auditing of time of plantation, number of times the plants are watered and growth parameters of the plants in the campus should be carried out.



7.9. Importance of Biodiversity Conservation

The campus should be a mini biodiversity conservation area, wherein, more greenery due to native plant species, medicinal plant garden, concept gardens, flowering plants that attracts bees, birds, beetles and other animals like squirrels should be monitored as ecosystem. Shade giving trees in the paths, flowering trees in the avenues and fruit trees at the back yards also would attract birds, bees, butterflies and squirrels. Maintaining small ponds/open water sources and reservoirs will attract these small harmless animals to the campus. The VCW campus is free of exotic plants

that cause threat to the natural vegetation. It is like mini bio-reserve rich in native species and endemic plants. A complete data on the soil type, water holding capacity and soil nutrition in the campus may be thoroughly studied internally or with the Government agriculture departments. It may be useful for cultivation of various native and wild plant species and also help in choosing the proper irrigation system.

7.10. Role of Eco club, Nature club, Associations, Cells, Forums, NCC and NSS bodies in Green Campus initiatives

Professional implementation of all the Eco plans in the campus should be done through the Eco clubs, Nature clubs, Associations, Forums, SSL, NCC (National Cadet Corps) and NSS (National Service Scheme). All the students, members of staff and employers should be mandatorily members of the club and should do tree planting and maintenance of greenery in the campus periodically. Conducting frequent seminars, conferences, workshops, awareness rallies, etc. on topics relevant to the environment is necessary to educate and create awareness among the students and staff members. In addition, student's association, cells, clubs and forums should be the first hand receivers of all the new plans proposed by the Government such as Swachh Bharath Abhiyan and Jal Shakti Abhiyan under Clean India Mission and implement the same in the campus. The VCW has well developed NCC, NSS, Swachh Bharath Abhiyan under Clean India Mission. These bodies are actively involved in tree planting programmes and cleaning the surrounding areas of rural and urban people across Erode city. They are doing a large number of activities in both the college campus and rural villages in Erode District of Tamil Nadu.



7.11. Use of Biofertilizers, Organic and Green manures

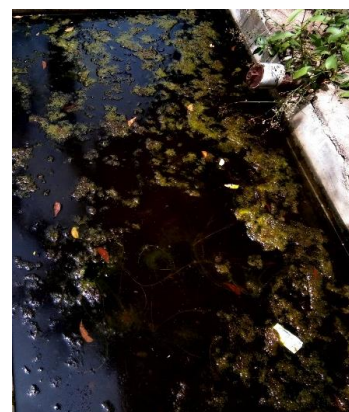
Natural or ecofriendly methods should be used to grow plants vigorously in the campus which could reduce the environmental pollution. Use of biofertilizers, organic manures (cow dung, vermicompost and plant wastes and litters) and green manures to grow healthy plants in the medicinal plant garden, kitchen garden and terrace garden should be ensured to keep the campus organic. The plant waste such as fallen leaves,

stems, fruits, nuts, seeds and other plant parts should be used to make green manures. A concrete or ground level green manure production unit and vermicomposting units will help to convert all the plant and animal based wastes into green/organic manures. This will be a healthy way of solid litter waste management in the campus. Minimal use of chemical fertilizers as part of integrated nutrient management system is acceptable but nil use of chemical fertilizers is highly appreciable and also helps to keep the campus more of organic ecosystem. The soil, air, water and sunlight are the four major natural resources any campus gets. Proper use and conservation of these resources are mandatory in green campus audit sites. The available resources and their utilization should be accounted from time to time. Management of the right way of utilization of these resources with the vision of sustainability should be carried out by framing a committee led by the Head of the Institution concerned.



7.12. Establishment of Aquarium and Aquatic plants

Growing fishes in the small ponds will keep the environment pleasant. In the closed environment like corridors and the front offices, auditoriums and gallery classes placing the fish aquarium as well as plant aquarium will improve the scenic value of the place bringing peace to the people. The fish water waste also can be used as manure for growing potted indoor plants. Growing *Lotus*, *Lilly*, *Hydrilla* and other water plants will give a pleasant and calm environment and growing fishes like *Guppies* can keep the water clean and neat. The fountains and small ponds can be built in the frontages to give an aesthetic look and also growing water plants in these ponds will help to maintain the aesthetic sense of the environment in greenish. The VCW campus is having a good aquatic site in which aquatic plants and birds are living.



7.14. Conduct of Outreach programmes for dissemination of Green Campus motto and Green pledge initiatives

Awareness programme on the green campus initiatives needs to be accounted in a sustainable manner. Its benefits and self-sustainability can be projected for wider centric on earth and ecology conservation. Innovative practices that add up credentials in implementing the green campus which needs to be promoted in the awareness programme to the students and staff members including public domain. Technology driven solutions initiated by the green campus organization can also be disseminated

and documented successively for propagating the attitude of the green campus in wider masses. The VCW Management has taken sufficient attempts to disseminate the green campus motto and green pledge such as 'don't cut trees', 'don't use plastic bags', 'don't waste waters', 'Plastic free zones' and 'Preserve the natural resources' and etc. among the students and staff members in the campus.



7.15. Academic credentials: Projects, Dissertations and Thesis work

Project, Dissertation and Thesis works are academic effort credentials that always fosters the innovative ideas on thinking and implementation of new innovative approaches. Applied research work of the faculties, staff and student members should be implemented within the campus owing to the credential of the research. Those works indicating the significance of empowering the green campus can be implemented or adopted in other organizations. If the innovation is capable of developing into entrepreneurship, then it is highly appreciable. The Report of projects and dissertations which are productive in methodologies should be disseminated through presentation and publication in social media, books, magazines and journals so as to spread the innovative ideas and methods to the broad public. The VCW faculties and students from various subject topic domains like Botany, Zoology, Biotechnology, Microbiology, Biochemistry, Foods and Nutrition are doing extensive project work related to nature conservation, environmental pollution, soil edaphic parameter analysis, plant biomass, plant tissue culture, Phytomedicine, water purification and quality parameters.

8. Best practices followed on Green Campus initiatives in the Organization

1. It is observed that VCW Management is maintaining more than 25% of the green cover area after building construction to provide healthy environment to the stakeholders.
2. VCW Management has established rain water harvesting systems to recharge wells by collection rain waters from the building roofs, open areas and play grounds including unexplored areas which are channelized to flow of rain waters into the RWH structure.
3. A beautiful herbal garden has been created by the VCW Management in which more than 100 medicinal plant species covering both native and wild types are being maintained.
4. The VCW campus is having a maximum number of more oxygen producing and CO₂ absorbing plants such as are Areca Palm, Money plant, Neem tree, Tamarind tree, Ficus, Bamboo, Arjun tree, Pongam, Aloe vera, Tulsi and Peepal Tree.

5. The name board for each plant species in which the common name along with binomial name have mentioned clearly.
6. Vellalar Birds Sanctuary is beautifully maintained in the college campus in which the number of resident and migrant bird species covering water birds species and terrestrial bird species under diurnal and nocturnal pattern have been clearly documented.

9. Recommendations for Greening

- A large number native trees may be planted in unutilized areas in the campus by following Miyawaki method so as to accommodate more trees in a small place. The trees that produce more oxygen and absorb more CO₂ could be planted to maintain a healthy environment to the stakeholders.
- Vegetables, fruits and greens could be cultivated in the college campus through terrace garden, kitchen garden and indoor garden concepts to fulfil the canteen as well as the hostel requirements.
- Vermicompost production may be increased substantially using tree leaf litters, kitchen wastes and bio-degradable waste materials available in the campus. The vermicompost manure can be used for plants cultivation and the excess amount of vermicompost may be sold in the local market as consultation work.
- The matured trees may be subjected to do white wash upto 3 feet height with limestone and neem oil mix to prevent the pests and diseases attack.
- Honeybee hives may be kept in the campus which is free from student's mobilization. Honeybees are natural pollinators helps to increase the yield potential (flowers, fruits and vegetables) upto 33%.
- A complete data on the soil parameters such as pH, electrical conductivity, water holding capacity, organic carbon, nitrogen, potassium, phosphorus in the campus may be studied which may be useful for the cultivation of various native and wild plant species.

10. Conclusion

Considering the fact that Vellalar College for Women (VCW), Thindal, Erode, Tamil Nadu is a well-established Institute in India in terms of academic activities and providing ecofriendly atmosphere to the women students, parents and staff members. There are some significant environmental researches carried out by the students and members of faculty in a sustainable manner which reflected the importance of environment and stakeholders. The VCW has their own green campus policy with respect to nature conservation and environmental protection. The VCW Management has taken a substantial amount of environmental awareness initiatives to provide the green campus to the stakeholders. The installation of rain water harvesting system to conserve rain water are noteworthy in the campus. More than 25% of the green cover area after building construction is being maintained by the VCW Management to provide healthy environment to the stakeholders is appreciable one. New innovative ideas like Medicinal Garden and Vellalar Birds Sanctuary, supported a rich biodiversity with 350 species of flora and fauna are also appreciable one. A maximum number of oxygen producing and CO₂ absorbing plants are

cultivated to provide an ecofriendly atmosphere in the VCW campus to provide pure air to the student customers. Few recommendations are added by following the ecofriendly and scientific techniques in coming days as a plan of action. This may lead to the prosperous future in context of significant green campus and sustainable environment.



Practice of Green campus audit and its benefit to the Stakeholders

11. Acknowledgement

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12. References

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