S. K. PORWAL COLLEGE OF ARTS AND SCIENCE AND COMMERCE, KAMPTEE

GREEN AUDIT REPORT

2019-2020

Prepared by

Green Audit Committee

SKPC, Kamptee

INTRODUCTION:

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of institute. It aims to analyze environmental practices within and outside of the concerned place, which will have an impact on the eco-friendly atmosphere. Green audit is a valuable means for a college to determine how and where they are using the most energy or water or other resources; the college can then consider how to implement changes and make savings. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact on campus. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is a natural and necessary outgrowth of a quality educational institution. Thus it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent. The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time reduce a sizable amount of atmospheric CO_2 from the environment. The National Assessment and Accreditation Council, Bangalore (NAAC) has made it mandatory that all Higher Educational Institutions should submit an annual Green Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through carbon footprint reduction measures.

Green Audit, a Tool for Environmental Protection and Conservation: The modernization and industrialization are the two important outputs of twentieth century which have made human life more luxurious and comfortable. Simultaneously, they are responsible for large amount use of natural resources, exploitation of forests and wildlife, producing massive solid waste, polluting the scarce and sacred water resources and finally making our mother Earth ugly and inhospitable. Today, people are getting more familiar to the global issues like global warming, greenhouse effect, ozone depletion and climate change etc. Now, it is considered as a final call by mother Earth to walk on the path of sustainable development. The time has come to wake up, unite and combat together for sustainable environment. Considering the present environmental problems of pollution and excess use of natural resources, government has declared the Mission of ‘Swachch Bharat Abhiyan’. Also, University Grants Commission has mentioned “Green Campus, Clean Campus” mission mandatory for all higher educational institutes. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent. Green Audit is the most efficient ecological tool to solve such environmental problems. It is a process of regular identification, quantification, documenting, reporting and monitoring of environmentally important components in a specified area. Through this process the regular environmental activities are monitored within and outside of the concerned sites which have direct and indirect impact on surroundings. Green audit can be one of the initiative for such institutes to account their energy, water resource use as well as wastewater, solid waste, E-waste, hazardous waste generation. Green Audit process can play an important role in promotion of environmental awareness and sensitization about resource use. It can create consciousness towards ecological values and ethics.

OBJECTIVES:

In recent time, the Green Audit of an institution has been becoming a paramount important for self-assessment of the institution which reflects the role of the institution in mitigating the present environmental problems. The college has been putting efforts to keep our environment clean since its inception. Therefore, the purpose of the present green audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards.

METHODOLOGY:

The purpose of the green audit of SKPC, Kamptee is to ensure that the practices followed in the campus are in accordance with the Green Policy of the country. The methodology includes: collection of data, physical inspection of the campus, observation and review of the documentation and data analysis.

ABOUT THE COLLEGE:

Seth Kesarimal Porwal College of Arts and Science and Commerce, Kamptee is recognized by Government of Maharashtra and affiliated to RTM Nagpur University, Nagpur reaccredited with A grade by NAAC, Bangalore also granted Hindi Linguistics Minority status by Government of Maharashtra.

COLLEGE MISSION:

- Upliftment of Rural Students through basic and technical education.
- Respond to local societal needs by developing selected 'targeted research projects'.
- Quality training programs in need based modern technology.
- To maintain state-of-the-art infrastructure in laboratories.
- To promote culture of self-employment.
- To impart non-formal education to unemployed youth.
- To inculcate moral, ethical, spiritual values in education at all levels.

GREEN AUDITING:

The college has adopted the 'Green Campus' system for environmental conservation and sustainability. There are main three pillars i.e. zero environmental foot print, positive impact on occupant health and performance and 100% graduates demonstrating environmental literacy. The goal is to reduce CO_2 emission, energy and water use, while creating atmosphere where students can learn and be healthy.

Green auditing is the process of identifying and determining whether institutions practices are eco-friendly and sustainable. Traditionally, we are good and efficient users of natural resources. But over the period of time excess use of resources like energy, water, chemicals are become habitual for everyone especially, in common areas. Now, it is necessary to check whether our processes are consuming more than required resources? Whether we are handling waste carefully? Green audit regulates all such practices and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion it is necessary to verify the processes and convert it in to green and clean one. Green audit provides an approach for it. It also increases overall consciousness among the people working in institution towards an environment.

POLICY GOALS

- Identification and documentation of the strengths and areas of improvement within sustainable operations of administrative, academic and research laboratories.
- Increase environmental awareness throughout campus and motivate all stakeholders for optimized sustainable use of available resources.
- The importance of the program is to collect baseline data of environmental parameters and resolve the environmental issue before they become a problem.

OBSERVATION

- The vegetation areas are found to be reducing over the years.
- Occurrence of dense weed growth is a common feature after the rains and so the area is being cleaned every year in order to give an aesthetic look of the campus.
- Roadside avenue trees lack attention.
- Future plans of construction and activities should be based on the Landscape. Botanical Garden and Forest Park, Wetland (Lake area), Orchards and Jungle Area needs to be conserved as carbon sink. The trees planted needs to be managed regularly.
- Fascinating characteristic of the Porwal College Campus is its lush green environment with rich floral and faunal diversity.
- The trees existing are not managed properly.
- Growth of weeds and other invasive species is a cause of concern after the rains.

FINDINGS:

SKPC, Kamptee which was established in the year 1965, has an eco-friendly environment. It has a long legacy of healthy environmental practices including periodic plantation, their preservation and maintenance. Its land use is such that about 75% of the total area is occupied by open land and plantation that generates a better and sustainable campus environment. It encompasses an area of about 14 acres. The area is immensely diverse with a variety of tree species performing a variety of functions. Most of these tree species are planted in different periods of time through various plantation programmes organized by the authority and have become an integral part of the college. The trees of the college have increased the quality of life, not only the college fraternity but also the people around of the college in terms of contributing to our environment by providing oxygen, improving air quality, climate restoration, conservation of water, preserving soil, and supporting fauna, controlling climate by moderating the effects of the sun, rain and wind. Leaves absorb and filter the sun's radiant energy, keeping things cool in summer. Many spices of birds are dependent on these trees mainly for food and shelter. Nectar of flowers and plants is a favorite of birds and many insects. Leaf – covered branches keep many animals, such as birds and squirrels, out of reach of predators. Different species display a seemingly endless variety of shapes, forms, texture and vibrant colors. Even individual trees vary their appearance throughout the course of the year as the seasons change. The strength, long lifespan and regal stature of trees give them a monument – like quality. They also remind us the glorious history of our institution in particular. We often make an emotional connection with these trees and sometime become personally attached to the ones that we see every day. A thick belt of large shady trees in the periphery of the college have found to be bringing down noise and cut down dust and storms. Thus, the college has been playing a significant role in maintaining the environment of the town and its surrounding areas.

The following are the tree and shrub species with whom we are being attached,

Sr.No.	Botanical name	Common name	Family
1	*Acacia nilotica L*	Babul	Mimosaceae
2	*Aegle marmelos*	Bel	Rutaceae
3	*Allamanda cathartica*	Golden trumpet	Apocynaceae
4	*Aloe barbadensis*		
5	*Alstonia schoraris*	Sat patti	Apocynaceae
6	*Annona squamosa*	Sitaphal	Annonaceae
7	*Araucaria heterophylla*	Christmas tree	Araucariaceae
8	*Asclepias curassavica*		Asclepiadaceae
9	*Azadiracta indica*	Neem	Meliaceae
10	*Bauhinia variegata*	Kachnar	Caesalpiniaceae
11	*Bougainvillea spectabilis*	Bogan vel	Nyctagenaceae
12	*Bryophyllum pinnatum*	Panphuti	Crassulaceae
13	*Butea monosperma*	Palash	Caesalpiniaceae
14	*Calatropis procera*	Akra	Asclepiadaceae
15	*Capparis bispinosa*	Chapha	
16	*Carica papaya*	Papita	
17	*Cassia fistula*	Amaltas	Caesalpiniaceae
18	*Casuarina equisetifolia*	Suru	Casurinaceae
19	*Catharanthus roseus*	Sadabahar	Apocynaceae
20	*Cistrum nocturnum*	Ratrani	Solanaceae
21	*Citrus lemon*	Nimbu	Rutaceae
22	*Coccinia grandis*		Cucurbitaceae
23	*Cryptostegia grandiflora*	Vakhandi	Asclepiadacee
24	*Cucurbita maxima*	Kaddu	Cucurbitaceae
25	*Cuscuta reflexa*	Amarbel	Convolvulaceae
26	Cycas revolute	Cycus	Cycaceae
27	*Datura spp.*	Datura	Solanaceae
28	*Delonix regia*	Royal poinciana Gulmohar	
29	*Eucalyptus citriodora*	Safeda	Myrtaceae
30	*Euphorbia spp.*		Euphorbiaceae
31	*Ficus benghalensis*	Banyan	Moraceae
32	*Ficus religiosa*	Peepal	Moraceae
33	*Hibiscus Rosa-sinensis*	China rose	Malvaceae
34	*Impomea batata*		Convolvulaceae
35	*Ixora coccinea*	Jungal flame	Rubiaceae
36	*Jatropha curcas*	Ratanjot	Euphorbiaceae
37	*Lantana camera*	Kuri	Verbinaceae
38	*Lawsomia*	Mehandi	
39	*Madhuca longifolia*	Mahua	
40	*Magnolia spp*	Champaka	Magnoliaceae
41	*Mangifera indica*	Amba	Anacardiaceae
42	*Melia azadiract*	Bakain	Meliaceae
43	*Moringa oleifera*	Drumstick	Moringaceae
44	*Morus alba*	Shahtoot	Moraceae
45	*Murraya exotica*	Kamini	Rutaceae
46	*Murraya koenigii*	Curry leaves	Rutaceae
47	*Nerium indicum*	Kaner	Apocynaceae
48	*Oleander Dogbanes*	Kaner	Apocynaceae
49	*Phyllanthus emblica*	Amla	Phyllanthaceae
50	*Pithocellobium*	Chichbhilai	Mimosaceae

51	*Psidium guajava*	Guava	Myrtaceae
52	*Ricinus cummunis*	Arandi	Euphorbiaceae
53	*Rosa indica*	Jangli gulab	Rosaceae
54	*Saraca ashoka*	Ashok	Caesalpiniaceae
55	*Tabernaemontana divaricata*	Chandani	Apocynaceae
56	Tamarindus indica	Chinch	
57	*Tectona grandis*	Sagwan	Verbenaceae
58	Terminalia arjuna	Arjun	
59	*Terminalia bellirica*	Bahera	Combretaceae
60	Terminalia catappa	Badam	
61	*Thevetia spp.*	Pili Kaner	Apocynaceae
62	*Ziziphus jujuba*	Bor	Rhamnaceae

Some of the Annual herbs also recorded which are,

Delphinium spp., *Clematis* spp., *Argimone Mexicana, Brassica campestris, Cleome viscosa, Dianthus* spp.,*Abutilon indicum, Malva* spp, *Malvastrum* spp., *Cassia tora, Mimosa pudica, Centelia asiatica, Mussaenda* spp.,*Ageratum conyzoides, Convolvulus* spp., *Solanum xanthocarpum, Pitunia* spp., *Withania* spp., *Adhatoda vasica, Ruellia* spp., *Justicea* spp., *Duranta repens, Lantana Spp., Ocimum* spp., *Salvia officinalis, Mirabilis* spp , *Achyranthus aspera, Amaranthus spinosus, Chenopodium album, Polygonum* spp., *Euphorbia hirta, Croton sparciflorus, Phyllanthus reticulate, Vanda roxburghii, Canna indica, Alocasia* spp., *Pistia* spp., *Vitex negundo* etc.

Seth Kesarimal Porwal College of Arts and science and Commerce, Kamptee

GREEN AUDIT COMMITTEE

Ground Floor

Dr.(Mrs) S.J.Chahande

Dr. S.V. Kombe

Allotted area- Office (Principal chamber and adjoin office area + Management room +Room no. 7+ Vice Principal Cabin), Department of Biochemistry, Microbiology, Chemistry, IQAC room, Home Economics (Plant count in Department), Physical education department and whole corridor of ground floor of main building and wash rooms.

First Floor

Dr.(Mrs.)R.A. Jachak

Dr. (Mrs.) A.V. Ramteke

Allotted area-Department of Botany, Zoology, All Staff rooms (Departments) and all class rooms of the first floor and whole corridor of first floor. Vegetation count-Biodiversity count (shrubs, trees) in the whole premises - up to playing ground and whole boundary wall except Home Economics department and wash rooms.

Second Floor

Dr. R.A.Mungmode

Dr. K.M.Dhole

Allotted area- Classrooms on second floor, Department of Physics, Electronics, Computer Science, Classrooms, NCC and NSS rooms, Library and Library Hall and whole corridor of second floor. Vehicle count (Bicycles, 2-wheelers as well 4-wheelers parked in premises) and wash rooms.

SUMMARY OF DATA COLLECTED FOR GREEN AUDIT REPORT

TUBELIGHTS	WORKING	NON-WORKING		
	212	17		
CFL/LED	58	05		
FANS	181	15		
TAPS	90	7 (need to change)		
DUSTBINS	43 mostly without lid Out of 43, 24 are unhygienic and in temporary form (Cartons)			
COMPUTERS	84	8		
OHP'S	04	-		
LAPTOPS	08	-		
PROJECTORS	07	1		
PRINTERS	28	4		
REFRIDERATOR	15	3		
COOLERS	16	3		
A/C's	02	-		
Xerox machine	01	-		
GAS CONNECTIONS	Department of Home Economics, Chemistry, Microbiology and Biochemistry has a gas connation. One cylinder and cook top at Office. (Requirement of fire extinguisher) as well in Computer Science department.			
WATER TANKS AT TERRACE	05 without lid(Open) ,it should be closed.(REGULAR CLEANING NEEDED)01 on roof of ladies toilet			

WATER COOLERS	02(REGULAR CLEANING NEEDED)
WENDING MACHINE AND DISPOSABLE MACHINE 01+01	
VEHICLES	AT AN AVERAGE- 23(4 wheelers), 279(2 wheelers) and 156 Bicycles.
TREE COUNT	366 LARGE TREES AND SHRUBS, 125 ARE SMALL AND IN POTS.

Green Audit is one of the important tool to check the balance of natural resources and its judicial use. Green auditing is the process of identifying and determining whether institutional practices are eco-friendly and sustainable. It is a process of regular identification, quantification, documenting, reporting and monitoring of environmentally important components in a specified area.

SUGGESTIONS AND RECOMMENDATIONS:

- Students and staff should be encouraged to use bicycle.
- The vehicular account should be maintained for the campus of students and staff members.
- Noise attenuation has to be done by planting vegetation around buildings and along roadsides.
- Govt. authorities are requested to monitor the use of loudspeaker and noise producing sources within the 100m radius outside the college campus in compliance with prescribed rules.
- The ecosystem of the campus should be managed properly for a better environment.
- The fishery pond which forms the wetland of the campus should be conserved and maintained.
- Proper landscape and long-term plan of the vegetation distribution/area is required for sustainable management of the trees and other vegetation in college campus.
- Systematic identification of flora and fauna diversity should be recorded.

Green audit committee recommendation

1) To adopt (or draft) an environmental policy for the college.
2) Drip irrigation for gardens can be initiated specially for summer holidays.
3) Can established rain water harvesting system.
4) Solid waste management or treatment system to be established.
5) Water consumption monitoring system in the college campus to be introduced.
6) Green chemistry lab can be introduced.
7) Waste water from labs, canteen can be treated.
8) All trees in the campus should be named scientifically.
9) Established solar panels as other renewable energy source.
10) In campus small scale reuse and recycle of water system is necessary.
11) Minimize wastage of water and use of electricity during water filtration process, if used, such as RO filtration process and ensure that the equipment's used for such usage are regularly serviced.
12) Installation of LED lamps instead of CFL and replacing the old tube lights with the new LED tubes.

13) Cleaning of tube-lights/bulbs to be done periodically, to remove dust over it.
14) Reduce the absolute amount of waste that is produced from college staff offices.
15) To make full use of all recycling facilities provided by City Municipality and private suppliers, including glass, cans, white, coloured and brown paper, plastic bottles, batteries, print cartridges, cardboard and furniture.
16) Provide sufficient, accessible and well-publicized collection points for recyclable waste, with responsibility for recycling clearly allocated.
17) Vermicomposting plant should be adopted on.
18) Recycle or safely dispose of white goods, computers and electrical appliances.
19) Always purchase recycled resources where these are both suitable and available.
20) Green library should be established.
21) To create- green cover, eco-friendly atmosphere, pure oxygen at the college campus, plantation program is organized every year with involving all students, and all departments faculty members.
22) Improve the greenery up to 50% by plantation like trees and medicinal plants in the campus.
23) Development of medicinal garden by planting scientifically.
24) Dumping of the plant leaves and other garbage to produce manure.
25) Promote and encourage students to use more no of bicycles in place of fuel vehicles.
26) To make proper availability for disposing laboratory waste in departments where chemicals, organisms and body fluids are dealt with.

CONCLUSION:

Forests and woody trees are the biggest carbon pool on Earth, act as a major sources and sinks of carbon in nature. The 14 acres campus of Porwal College possesses 366 woody tree populations. This woody vegetation is sequestrating CO2 with the liberation of oxygen. Thus, the campus is working as a good carbon sink and a productive oxygen park. Non-teaching staff or peons in the concerned section should take responsibility of monitoring the overflow of water tanks. Large amount of water is wasted during the practical process in Science laboratories. Designs of small water recycle system helps to reuse of water. Producing distilled water in the laboratories required large amount of water to distillate. To produce 1 liter of distilled water required more than 33 liters of water. To avoid more wastage university should design common distillation plant for Science Department. Reduce chemical waste formation in Chemistry laboratory; adopt the principles of green chemistry to reduce chemical waste. Pipes, overhead tanks and plumbing system should be maintained properly to reduce leakages and wastages of water.

SUMMARY

Green auditing is the process of identifying and determining whether the practices of the Institution are eco-friendly and sustainable for which S. K. Porwal College, Kamptee conducted the first "Green Audit" for the year 2019-2020 with a primary objective to prepare a statement on the green practices followed by the college and to conduct a well-formulated audit report. Green auditing began with the assessment of the status of vegetative cover, waste management practices, water use and efficiency and energy conservation strategies etc. The audit team monitored different facilities at the campus, determined different types of appliances and utilities (Water cooler, taps, toilets, lights, fan, ACs etc.) as well as measuring the usage per item (Watts indicated on the appliance or measuring water from a tap) and identifying the relevant consumption patterns (such as how often an appliance is being used) and their impacts. The staff and learners were enquired to get details of usage, frequency, of general

characteristics of different appliances. Data collection was done by onsite visit and by direct accounting in different sectors such as water, energy, waste, biodiversity status. The environmental monitoring in the University campus to ascertain the status of the ambient quality of the campus was done through standard protocols. The data were collected and analyzed to prepare this audit report.

Members of Green Audit Committee

1) Dr. R. A. Jachak
2) Dr. R. A. Mungmode
3) Dr. S. J. Chahande
4) Dr. K. M. Dhole
5) Dr. A.V. Ramteke
6) Prof. S. V. Kombe

Dr. Jayshree Thaware
Convener
Green Audit Committee

Date: 24th January 2020

Principal
S. K. Porwal College, Kamptee