"Dissemination of Education for Knowledge, Science and Culture"

- Shikshan Maharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha Kolhapur's

Dattajirao Kadam Arts, Science and Commerce College, Ichalkaranji

GREEN AUDIT REPORT

2017-18 to 2021-22

Prepared By

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August, 2023

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Accredited by NAAC with B++ Grade (4th Cycle)

Dr. R. A. SHINDE
Secretary & Managing Trustee

Ref No. CNCVCW/2023-24/

Date: 10/08/23

Certificate

This is to certify that Environment Audit Report for the acedamic year 2017-18 to 2021-22 of the **"Dattajirao Kadam Arts, Science and Commerce College, Ichalkaranji"** has prepared by us based on the documents submitted by the collge and visit conducted by the Auditor.

Report Prepared and Certified by

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Lead Auditor
EMS (ISO 14001: 2015)
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GREEN INITIATIVE REPORT

1.0: PREAMBLE:

The survival of human race depends upon the surrounding environment. Various environmental factors play critical role in well-being of all living organisms on earth. But in this era of industrialization, we are mainly focusing upon development and economic prosperity and very less attention is provided towards environment. We are continuously over-exploiting the natural resources to raise our standard of living, which in turn leads to environmental degradation. Human activities have led to various kinds of pollution such as air pollution, water pollution, soil pollution etc. This polluted environment leads to the adverse impacts on health of animals, plants and human beings. Along with different kinds of pollution which are faced at local or regional level, we are also facing global issues such as ozone layer depletion and global warming. Now all these things have resulted into increasing world-wide concern about environmental issues.

India is a developing country, which is facing the problem of population explosion. So, there is a burden on available natural resources. This population explosion has resulted in conversion of forest lands for agricultural or residential purpose. It has helped in improving the lifestyle but on the other side it is exploiting the environment. Deforestation has lead to destruction of natural habitats of animals. It has caused extinction of many plants as well as animals.

Along with this, we are also facing the issue of solid waste management. It has lead to soil pollution and groundwater pollution. Areas near cities are often used as solid waste dumping site. People living nearby these areas are facing various health problems and the waste dumping sites can also catch fire sometimes. Industries, commercial areas and residential areas are contributing to the noise pollution as well.

All these anthropogenic activities have caused profound impact on rural areas, urban areas, oceans and forest lands. This indiscriminate development is against principle of sustainable development. After 1970, impacts of these activities were taken into consideration and various conferences were held at international level and many conventions were signed. But still, the problem of environmental degradation is continuously increasing. Therefore, now there is a need of focusing on environment friendly technology. At the same time, we have to reduce the waste generation and switch to reuse and recycling. We should try for sustainable development which will foster the socio-economic prosperity and will secure the life of future generations. For this, efforts should be taken at individual, institutional, national and international level.

GENRAL INTRODUCTION:

The green initiative was first conducted in the United State of America in 1970s.

By 1992, approximately half of the local authorities of UK undertook the green audit completely or partially. The United Nations Conference on Environment and Development (UNCED), which was held at Rio de Janeiro, motivated all the countries to act cautiously to save the earth with sustainable approach. Most of the countries have accepted their national strategy for sustainable development which includes the policy and programmes aimed to promote geo-biodiversity and protect environment. This Rio spirit shows significant progress in most of the countries and they have changed and upgraded the environmental situation to the possible extent. Some of the Asian countries were also motivated from the summit and played same role within their limits. India is the first country in the world to make environmental audit compulsory. According to gazette notification, all Industries were communicated to submit the reports of the environmental audit to their concerned State Pollution Board, giving details of water, raw materials and energy resources used and products and waste generated by them in their operations from 1992.

Green initiative is a tool to protect the environment by adopting concept of conservation of natural resources.

Sustainable use can be ensured by auditing the use of ecological components. The initiative is known as regular and systematic review and appraisal of the factors and forces that contributes to realization of objectives.

University has conducted a green audit with specific goals as:

1. Identification and documentation of green practices followed by university.
2. Identify strength and weakness in green practices.
3. Analyse and suggest solution for problems identified.
4. Assess facility of different types of waste management.
5. Increase environmental awareness throughout campus
6. Identify and assess environmental risk.
7. Motivates staff for optimized sustainable use of available resources.
8. The long-term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental issue before they become problem.

OBJECTIVES:

1. To examine the current practices, which can impact on environment such as of resource utilization, waste management etc.
2. To identify and analyse significant environmental issues.
3. Setup goal, vision, and mission for green practices in campus.
4. Establish and implement Environment Management in various departments.
5. Continuous assessment for betterment in performance in green.
6.To see that proper steps have been taken for maintaining health and welfare of the students and staff of the DKASC College, Ichalkarnji.

BENEFITS OF GREEN INITIATIVETO EDUCATIONAL INSTITUTIONS

There are many advantages of green audit to an Educational Institute:

1. It would help to protect the environment in and around the campus.
2. Recognize the cost saving methods through waste minimization and energy conservation.
3. Empower the organization to frame a better environmental performance.
4. It portrays good image of institution through its clean and green campus.

OBJECTIVE AND SCOPE

The broad aims/benefits of the eco-auditing system would be:

- Environmental education through systematic environmental management approach
- Improving environmental standards
- Benchmarking for environmental protection initiatives
- Sustainable use of natural resource in the campus.
- Financial savings through a reduction in resource use
- Development of ownership, personal and social responsibility for the College campus and its environment
- Enhancement of College profile
- Developing an environmental ethic and value systems in young people

2.0 ENVIRONMENTAL POLICY OF COLLEGE:

“Together we can make our campus clean and green”

ENVIRONMENTAL MISSION:

DKASC College is aimed at balancing environmental protection and the conservation of natural resources with other policy goals, such as affordable energy, drinking water quality monitoring, rainwater harvesting. Green Campus Committee of the college has established clean and green campus with awareness and protection and in fulfilling environmental goals and sustainable development goals set forth to implement environmental policies given by government from time to time. Students are frontiers and staff members are supporting the implementation of the environmental policy.

For effective implementation of the Environmental Policy, the College has constituted Environmental forum. The structure of the forum is given in below:

1. IQAC Coordinator – Dr. V.V. Ganbavale
2. Faculty Member- Dr. **N**. H.Shaikh (Chairman Green Audit, Department Of Zoology)
3. Faculty Member-
    a) Dr. S. T. Ingale(Chairman Garden Committee)
    b) Mr. S.R. More(Green Audit Committee member, Department of Chemistry)
    c) Dr. R. A. Sanadi (Department of environment Science.)
    d) Dr. A. N. Patil (Department of environment Science.)
4. Student Representative – Miss. Saniya Jamadar
5. Student Representative- Mr.Aniket Sanjay Done

Implementation of the Environmental Policy:

1. Implement term "**Go Green**" – Making the campus green in every possible way and foster environmental literacy

2. To identify and implement opportunities to save energy.

3. Encourage everybody to avoid pollution and to see that proper steps are being taken to control or to prevent pollution.

4. To reduce solid and liquid waste and adopt green methods to dispose waste and monitor the processes.

5. Health and safety practices.

6. Minimize human exposure to risks from environmental health and safety problems

Encourage adopting green culture and to contribute in resource conservation In order to achieve above missions following action plan is prepared and activities are continuously monitored.

2.1 COLLEGE PROFILE:

About College:

Dattajirao Kadam Arts, Science and Commerce College, Ichalkaranji was established in 1962 by Shri Swami Vivekanand Shikshan Sanstha Kolhapur, founded by Shikshan Maharshi Dr.Bapuji Salunkhe with a motto "Dissemination of Education for Knowledge Science & Culture". The college celebrated its Golden Jubilee year in 2012-13. The College is located in industrial city of Ichalkaranji well known as Manchester of Maharashtra. Presently the Strength of Senior College is 3055 having approximately equal percentage of male and female students. The total number of teaching and Non-teaching staff is 129 (25 permanent, 104 temporary) and 42 respectively and student teacher ratio is 23:1

The college is reaccredited with '**A**' grade by NAAC. During the last five years the college has tried its level best to comply with suggestions made by NAAC peer team during second cycle of accreditation. The college is recognized as one of the old and best colleges in university, not only in academics but also in the fields of sports, cultural and extension activities.

Vision:

The motto of our management is

"ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षणप्रसार."

"Dissemination of Education for Knowledge, Science and Culture"

- Shikshan Maharshi Dr.BapujiSalunkhe

Goals and Mission of the college:

Dattajirao Kadam Arts, Science and Commerce College, Ichalkaranji will provide excellent educational opportunities that are responsive to the need of the community and help students meet economic, social, and environmental challenges to become active participants in shaping the world of the future.

With this motto in mind, we have the following goals and mission of the college:

- Meeting community and students needs by creating an educational environment and culture so students can attain a variety of goals.
- To maintain a high standard of integrity and performance leading to the achievement of academic and professional goals.

- Imparting quality education for achieving overall personality development of youth.
- Education to inculcate scientific temperament.
- Education to inculcate cultural values into students and to make them better citizens.
- To ensure values like truth, honesty, character, sacrifice, curbing social exploitation through education.
- To aim at overall personality development through extracurricular activities.
- To provide opportunities to students to enhance their skills, potential, social responsibilities, sportsman spirit through NCC, NSS, sports, cultural activities, career-oriented courses.
- Enabling students to face challenges of ever-changing modern world and to contribute to it in meaningful way.
- To help the students for on-the-job training and placements.

NAME AND ADDRESS OF COLLEGE:

Name of college:	DATTAJIRAO KADAM ARTS, SCIENCE AND COMMERCE COLLEGE, ICHALKARANJI
Address	Survey No.17/436, Shivajinagar, Near Shahu Putala, Kolhapur Road, Ichalkaranji,Tal-Hatkanangale,Dist-Kolhapur
Pin:	416115
Website:	http://www.dkasc.ac.in
Status of the institution:	Affiliated
Type of institution:	Co-education
a. By gender	Male and female
b. By shift	Morning and evening
Sources of funding:	Grant -In-aid
a. Date of establishment of the college:	June 1962
b. University to which the college is affiliated:	Shivaji University, Kolhapur, Maharashtra.
Details of UGC recognition:	Recognised
Under section	
a. 2 (f)	YES
b. 12 (B)	YES

COURSE OFFERED BY COLLEGE:

Sr. No.	Programme level	Name of programme
1.	Undergraduate	Arts
2.	Undergraduate	Commerce
3.	Undergraduate	Science
4.	Undergraduate	B.C.A.
5.	Post graduate	M.A
6.	Post graduate	M.Sc.

Name of Add on /Certificate /Value added programs:

Sr. No.	Name of Add on /Certificate /Value added programs offered and online MOOC programs like SWAYAM, NPTEL etc. programs offered	Organizing Department
1.	Arduino Programming	Electronics
2.	Bonsai Technique	Botany
3.	Medicinal Plants	Botany
4.	Nursery Technique	Botany
5.	Preparation of Household Chemicals	Chemistry
6.	Event Management	Commerece
7.	Web Designing Technologies using HTML5, CSS2 & CSS4	Computer Science
8.	Digital Marketing	Economics
9.	GST Training and Practical	Economics
10.	Micro Finance	Economics
11.	Sales and Marketing training	Economics
12.	Spoken English	English
13.	Diploma in Travel and Tourism	Geography
14.	Gramin Patrakarita	Hindi
15.	Historical Travel and Tourism	History
16.	Mudrit Shodhan Pramanpatra Abhyaskram	Marathi
17.	Programming with C++ and Scilab	Mathematics
18.	Yoga Physical and Management Skill	NCC

19.	Maintenance and Repairs of Domestic Home Appliances	Physics
20.	Political Campaigns & Development of Political Leadership	Political Science
21.	Right to Information	Political Science
22.	Statistic using MS Excel	Statistics
23.	Soil And Water Analysis	Zoology
24.	Vermicomposting	Zoology

Table No. 1: Number of students enrolled during 2017-18 to 2021-22

Year	Male	Female	Total admissions
2017-18	1621	1274	2895
2018-19	1700	1352	3052
2019-20	1531	1310	2841
2020-21	1549	1299	2848
2021-2022	1794	1261	3055
Total average	8195	6496	14691

Table No. 2: Total strength of students and staff on campus during the last five years

Year	Students	Teaching staff	Non – Teaching Staff	Total
2017-18	2895	92 + 32	42	3061
2018-19	3052	99 +49	38	3238
2019-20	2841	96 + 32	38	3007
2020-21	2848	72+ 33	36	2989
2021-22	3055	97+ 32	42	3226

- **COLLEGE ORGANOGRAM:**

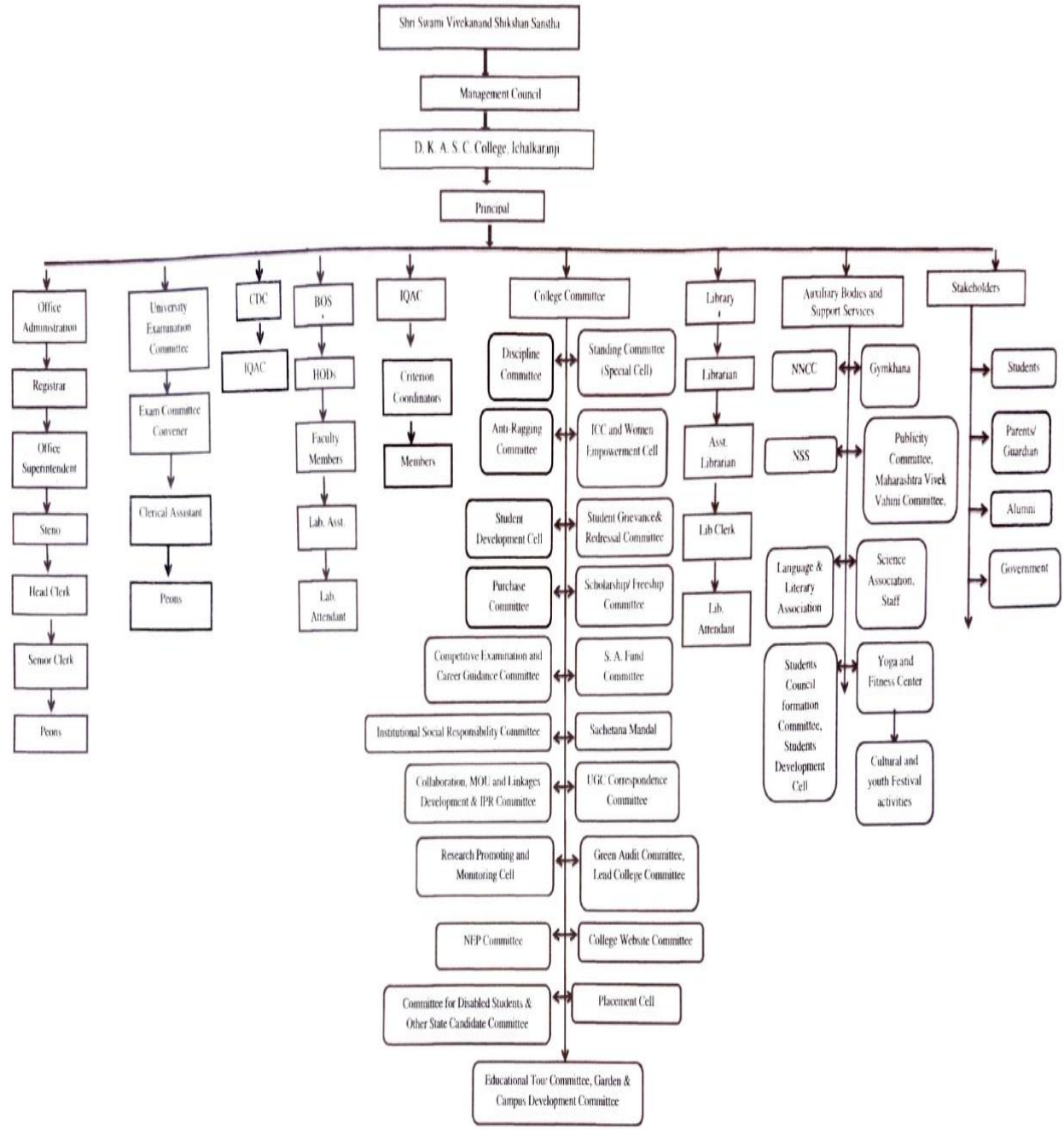


Fig No.1: Organogram of the college

3.0 THE SCOPE OF THE GREEN INITIATIVE IS DEFINED IN TERMS OF:

3.1. Geographical Location of the College Campus

3.2. Its Environmental Aspects.

3.1. GEOGRAPHICAL LOCATION OF THE COLLEGE CAMPUS

3.1.2. DETAILS OF AREA:

Table no. 3: Location of the campus and area in sq. mts.is given below:

Location	Urban
Campus area in square	3.7515acres 15175.71 sq.mts

3.1.3 LAND USE PATTERN OF COLLEGE:

Table No.4: Land use pattern of college

Land use pattern	**Area (m^2)**
Total area	3.7515acres 15175.71 sq.mtrs
Area occupied by buildings	8000sq. meters + 18576 sq mtr(New)
Ground	5400 sq. meters (own)+5000 sq. Meters from Ichalkaranji Municipal Corporation
Botanical garden	111.48 Square meter
Check dam	25000 litter under ground
Green house	26.75 Square meter
Open space	4650sq. feet / 431.99 square. meter

Geographical details of the college area including, boundary pillar with Global Positioning System Coordinates with elevation of the area is given in table no. 5.

Table No. 5: Geographical details of the college area

Latitude	Longitude	Elevation (m) MSL
16°41'30.17"N	74°27'3.93"E	559

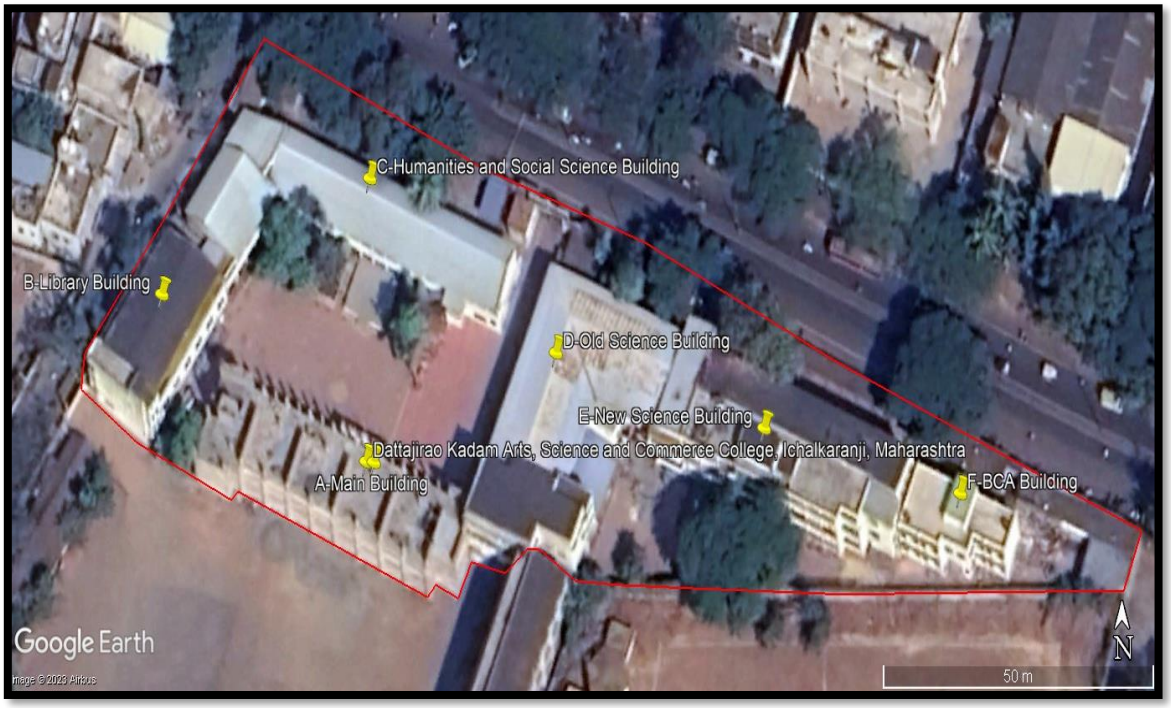


Fig No.2: Location of the college area is shown on Google Earth map

3.2 SCOPE OF GREEN INITIATIVE IN TERMS OF ENVIRONMENTAL ASPECTS:

3.2.1. Energy Conservation: Energy conservation is the effort made to reduce the consumption of energy by using less of an energy service. This can be achieved either by using energy more efficiently (using less energy for a constant service) or by reducing the amount of service used

3.2.2. Use of Renewable Energy: Renewable energy is useful energy that is collected from renewable resources, which are naturally replenished on a human timescale, including carbon neutral sources like sunlight, wind, rain, tides, waves, and geothermal heat.

3.2.3 Efforts for Carbon Neutrality: carbon-neutral (or carbon neutrality) is the balance between emitting carbon and absorbing carbon emissions from carbon sinks.

3.2.4 Plantation: It is usually large group of plants and especially trees under cultivation

3.2.5 Water Management: Water management is the control and movement of water resources to minimize damage to life and property and to maximize efficient beneficial use.

3.2.6 Hazardous Waste management: Hazardous waste management involves reducing the number of hazardous substances produced, treating hazardous wastes to reduce their toxicity, and applying sound engineering controls to reduce or eliminate exposures to these wastes.

3.2.7 E-Waste Management: E-waste or Waste Electrical and Electronic Equipment are loosely discarded, surplus, obsolete, broken, electrical or electronic devices

3.2.8 Quality of water, air and noise: Water quality describes the condition of the water, including chemical, physical, and biological characteristics, usually with respect to its suitability for a particular purpose such as drinking or swimming.

3.2.1. ENERGY CONSUMPTION:

Electricity is used for illuminating the rooms, fans, computers, Laboratory equipment, and pumps and for cooling rooms (AC).

Number of rooms under use in college: 102

Details of various sources of energy consumption units are given in table No.6.

Table No.6: Sources of Energy Consumption

Sr. No.	Energy sources	Electricity/generator/solar lamps
a.	No. of Computers	183
b.	No. of Laptop	07
c.	No. of tube lights	249
d.	Number of LED bulbs/Tube	44
e.	No. of CFC bulbs	2
f.	No. of UPS	05
g.	No. of fans	164
h.	No. of fridge	04
i.	No. of generators	01
j.	Electric pumps of 5 HP	5 Hp (1) Submersible 3 HP (1motor) used for bore Submersible 1 HP Motor used for check dam ½HP motor (2) used for drinking water
k.	No. of smart T.V.	02
l.	No. of printers and Xerox machine	27
m.	No. of CCTV	14
n.	Mixer	2
o.	Oven	3
p.	Bell	2
q.	Bio-metric Machine	1
r.	LCD Projector	09
s.	AC	02

3.2.2 ENERGY REQUIREMENT: sanctioned load (6.30 KW)

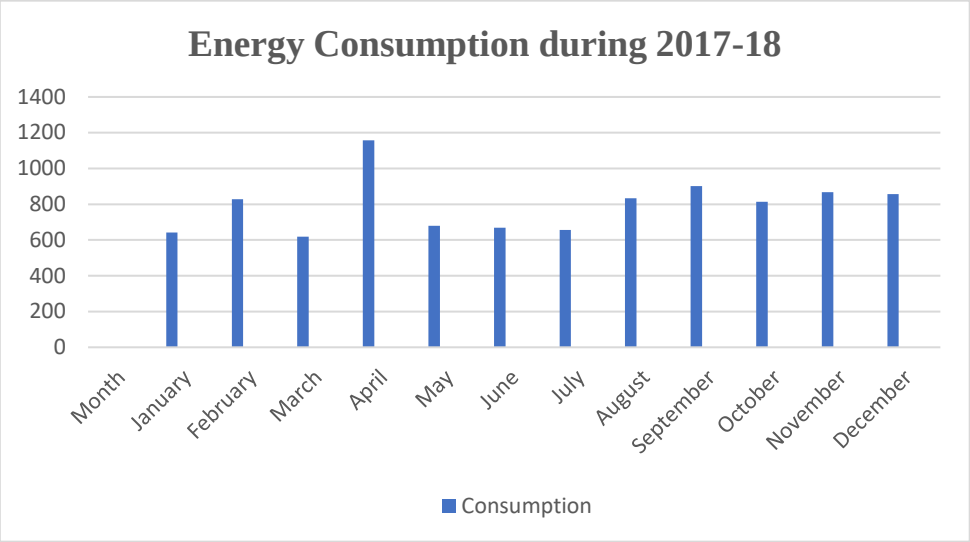
Electricity supplied from the Maharashtra State Electricity Board is the main source energy for the activities on the campus. In addition to the regular supply, energy consumed (KW) during the last four year is shown in tabular as well as graphical form. In addition to the regular supply, college has one generator (2.5 KVA) and 5UPS of 45 KVA capacity.

Table No. 7: Energy consumption during the Year 2017-18 to 21-22

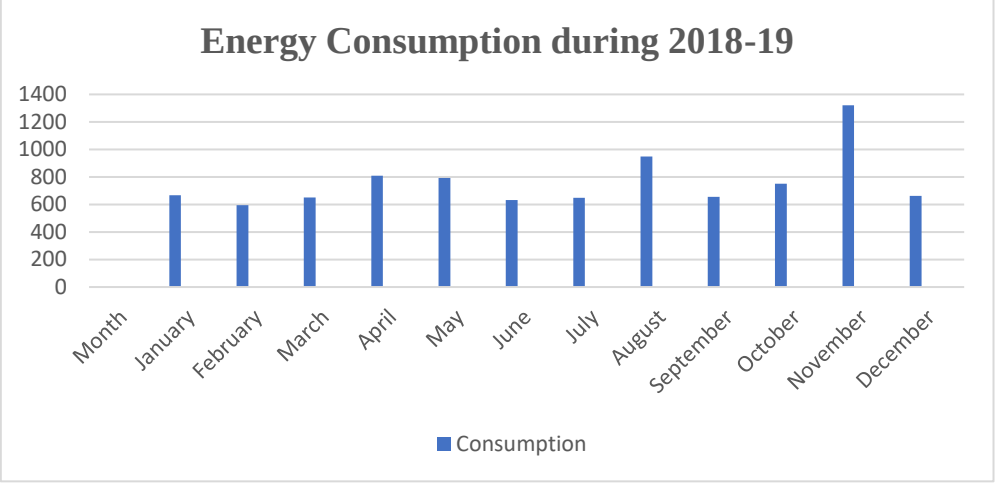
Consumer No-251100031780

Month	Consumption (In units)2017-18	Consumption (In units)2018-19	Consumption (In units) 2019-20	Consumption (In units) 2020-21	Consumption (In units) 2021-22
January	641	666	650	579	477
February	828	595	673	549	502
March	619	652	676	531	548
April	1157	809	605	676	642
May	680	793	793	676	818
June	668	633	637	676	618
July	657	648	606	1700	1176
August	834	949	627	339	435
September	901	656	741	414	452
October	813	751	649	546	481
November	868	1322	484	511	517
December	856	663	705	544	557

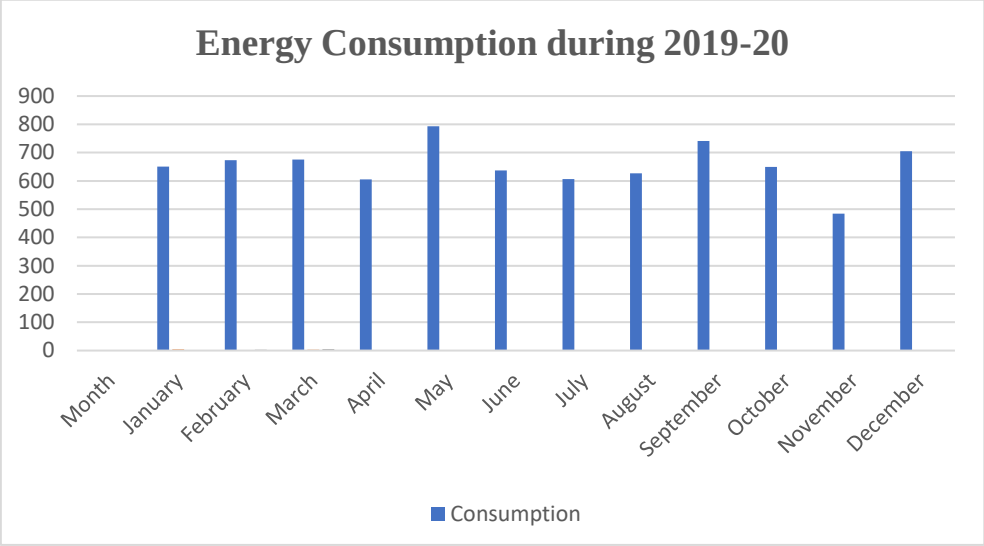
Figure 4: Year wise Graphical representation of Energy Consumption during 2017-2022



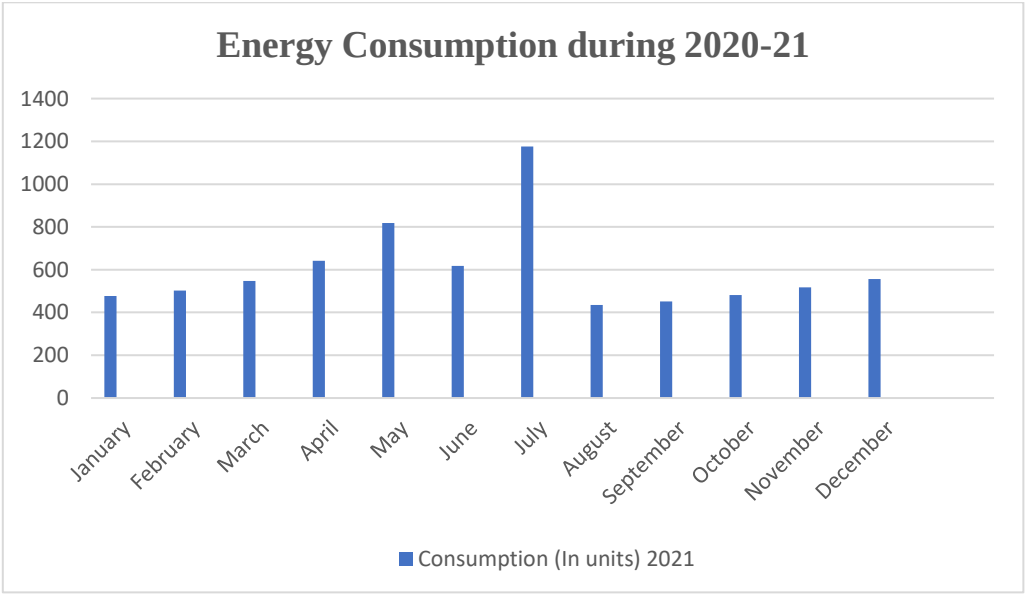
From the energy consumption pattern during 2017-18, it is found that there was increase of energy consumption in month of April and September as compared other months i.e., 1157, 901. Thereafter, energy consumption is gradually decreasing in March i.e., 619. In energy consumption during the last two years is mainly switching over the use of LED bulbs in place high energy consuming 40-Watt tube lights.



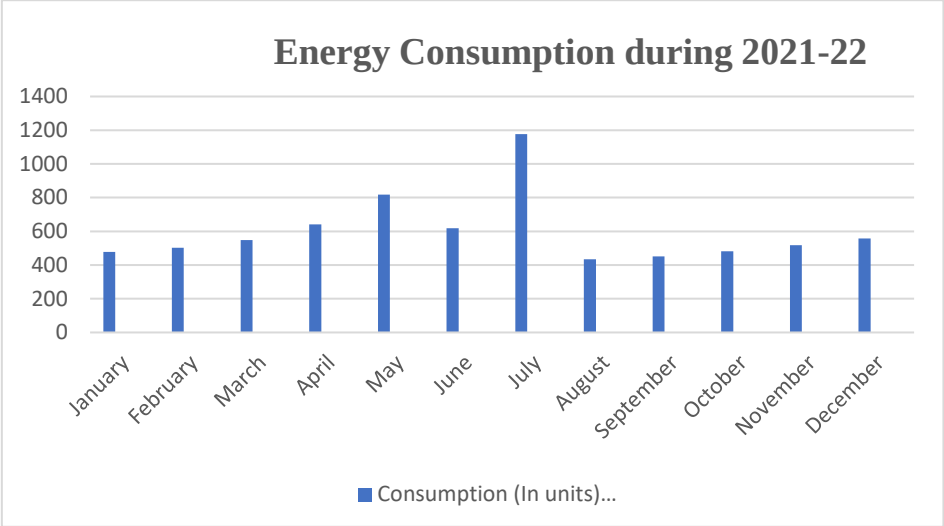
From the energy consumption pattern during 2018-19, it is found that there was increase of energy consumption in month of November and August as compared other months i.e., 1322 and 949. Thereafter, energy consumption is gradually decreasing in February i.e., 595. In energy consumption during the last two years is mainly switching over the use of LED bulbs in place high energy consuming 40-Watt tube lights.



From the energy consumption pattern during 2019-20, it is found that there was increase of energy consumption in month of September as compared other months i.e., 741. Thereafter, energy consumption is gradually decreasing in November i.e., 484. In energy consumption during the last two years is mainly switching over the use of LED bulbs in place high energy consuming 40-Watt tube lights.



From the energy consumption pattern during 2020-21, it is found that there was increase of energy consumption in month of July as compared other months i.e.,1700. Thereafter, energy consumption is gradually decreasing in August i.e., 339. In energy consumption during the last two years is mainly switching over the use of LED bulbs in place high energy consuming 40-Watt tube lights.



From the energy consumption pattern during 2021-22, it is found that there was increase of energy consumption in month of July as compared other months i.e.,1176. Thereafter, energy consumption is gradually decreasing in August i.e., 435. In energy consumption during the last two years is mainly switching over the use of LED bulbs in place high energy consuming 40-Watt tube lights.

Energy conservation measures taken up by the College:

The requirement is met from the Maharashtra Electricity Board. College is aware of environmental impacts of consumption of conventional energy supplied by MSEB. Hence, college has adopted following measures to minimize the energy consumption.

1. Switching over to the use of LED bulbs as a replacement to conventional high energy consumption bulbs
2. College has encouraged use of e-mail instead of sending notices and faxing documents.
3. Most of the fans carry three stars rating of electrical appliances.
4. Increased use of flat-screen LCD monitors rather than CRT monitors
5. Awareness amongst students was carried out and accordingly sign boards are displayed at strategic locations for conservation of energy and students positively responding.

3.2.3 USE OF RENEWABLE ENERGY:

1. **Use of Solar Lamps:** In order to reduce the dependency on non-renewable sources of energy to certain extent, the college has installed solar lamps on streets.
2. **Use of Solar Photovoltaic Panels:** College has installed solar Photovoltaic panel for harnessing solar energy. Electricity Generated by solar panels is used in college premises.

3. **Efforts for carbon neutrality:**

- The college is situated away from city and the nearby road is connected to villages bearing less traffic. Proper measures have been taken to reduce carbon emissions to keep campus pollution free and uncontaminated.
- The two wheelers and four wheelers of the college staff are monitored by PUC.
- Carpooling and share auto system is used by staff for transport and conveyance.
- Carbon emission is minimized by the greenery planted in the spacious area on the campus. Along with that, botanical garden and nursery are established in college campus. The trees planted in campus and the garden in college helps for reducing concentration of carbon dioxide in college campus and helps for carbon neutrality.

Whenever we think about carbon neutrality, carbon footprints should be taken into consideration. Carbon footprint is the amount of greenhouse gases like carbon dioxide, methane, nitrous oxide emissions emitted by a building, organization etc. It relates to the amount of greenhouse gases we are producing in our day-to-day lives through burning fossil fuels for electricity, heating, transportation etc. By reducing our carbon footprints, each one of us can contribute to making the earth a safer, better place to live. Estimates suggest that almost half of our carbon footprint is due to electricity and 17% is due to lighting alone.

Hybrid Solar and wind power plant:

Electricity utilized for operating various laboratory equipment's, computers, lighting, cooling systems such as refrigerator in few rooms, fans and exhausts and copying machines at office and examination room etc. Wherever possible energy efficient devices are used by the institute. Classrooms are provided with broad windows for natural lighting and ventilation thereby reducing power consumption. In order to save electricity, reduce power consumption and become energy compliance and follow green approach a hybrid wind and solar panel system are installed on the roof top of science building and nearby.

TYPE: Solon Blue 270/12

Max.Voltage-1000V

Power rating- 305Wp

Power Rating Tolerance: 0 to + 4.99 Wp

Voltage (Vmpp)-37.30 v

Current (1mpp) -8.18 A

Open circuit Voltage (Voc)- 45.20 v and Short Circuit Current (1cc)-8.53 A

Plate No.1 Renewable Energy Source

3.2.4: EFFORTS FOR CARBON NEUTRALITY:

Thinking about carbon footprints is a simple way of thinking about ways to reduce environmental pollution. By reducing our carbon footprints, each one of us can contribute to making the earth a safer, better place to live. Estimates suggest that almost half of our carbon footprint is due to electricity and 17% is due to lighting alone.

Carbon footprint is the amount of Green House Gases like carbon dioxide, methane, nitrous oxide emissions emitted by a building, organization etc. It relates to the amount of greenhouse gases we are producing in our day-to-day lives through burning fossil fuels for electricity, heating, transportation etc. At DKASC College, carbon footprint for indoor lighting in office building is considered. The performance of the building by using LED lights reduces the building carbon foot print. The carbon foot print is for –

1. Incandescent Light
2. CFL
3. LED Lights

Electricity:

By and large, half of our carbon footprint is due to electricity and 17% is due to lighting alone. Electricity in turn can be produced by coal, natural gas, petroleum, and other. Electricity is produced from different sources and how much GHG released is shown is shown in table no. 8.

Table No. 8: Electricity produced from different sources

Source	**Million metric tons of CO2 emission for 1 year**	**Electricity generation (Billion kWh) for 1 year**
Coal	1788	1882
Petroleum	106	119
Natural gas	337	562
Other	14	22
Non fossil fuels	None	1106
Total	**2245**	**3621**

Since close to 2245 million metric tons of CO2 emitted by total electricity generation per year. A single kilowatt-hour of electricity will generate 619 grams of CO2 emissions.

1. Incandescent Light

Incandescent lamp is a source of light which produce light when the filament is being heated. It can release 80% electrical energy converted into heat energy. We can calculate how much CO2 will be emitted by 40-watt incandescent bulb.

Power Consumption- 40 watts

- Operation per day- 10 hours
- Power Consumption per annum-146000 watt
- Electricity per hour (kwh) - 0.04 (1 kWh=619g CO2 can be released)
- Lighting Carbon Emission per year/lamp (146*619g) -90.3 kg.

A single 40 watts incandescent bulb will generate 90.3 kilograms of CO2 for every year. The reduction of carbon footprint is none for this lamp.

2. Compact Fluorescent Light

CFL produce less heat and more visible light compare than incandescent lamp. We can calculate how much CO2 will be emitted by 14-watt incandescent bulb.

Power Consumption- 14 watts

- Operation per day- 10 hours
- Power Consumption per annum-51100 watt
- Electricity per hour (kwh) – 0.014 (1 kWh=619 g CO2 can be released)
- Lighting Carbon Emission per year/lamp- (51.1*619g) - 31.6 kg.

A single 14 watts CFL lamp will generate 31.6 kilograms of CO2 for every year. The reduction of carbon footprint is none for this lamp. CFL contains harmful mercury which creates mercury emission. Estimated suggestion led lights only will reduce our carbon foot print over than other lights.

3. LED Lights

LED lights consumes low power and energy efficient over than other lights. Not even a single point we can't compare led lights with other lighting. We can calculate how much CO2 will be emitted by 8-watt LED lamp -

- Power Consumption- 8 watts
- Operation per day- 10 hours
- Power Consumption per annum-29200 watt
- Electricity per hour (kwh) – 0.008 (1 kWh=619 g CO2 can be released)
- Lighting Carbon Emission per year/lamp (29.2 *619g) - 18 kg.

A building's carbon footprint from led lighting can be reduced by 68%.

- Reduction in Carbon Footprint (tons)-0.122(12.28 kg)

The 8-watt LED equivalent will only be responsible 18 kilograms of CO2 over the same time span.

Table No. 9: Carbon foot prints

	CFL	Incandescent bulb	LED light
Power Consumption(watt)	14	40	8
Electricity(kwh)	0.014	0.04	8.008
Hours of Operation Per Day	10	10	10
Carbon Emissions (tons) per year/lamp	0.316	0.903	0.18
Reduction in Carbon Footprint (tons) / lamp	--		0.12

- LED light can reduce our carbon footprint by 0.12 tons per year.
- Led light does not contain mercury; it is a big benefit for this lamp.
- Incandescent, it is 5.8 mg from power plant.

The 8-watt LED equivalent will only be responsible 18 kilograms of CO2 over the same time span.

Based on above comparisons, LED emerges as the BEST option to reduce carbon footprint. At DKASC College, all together there are 102 rooms (including, class rooms, offices, labs etc.) 293 (led bulb/tube light 44+249 light tube) LED lamps.

Details of CO2emitted from these lights is given in table 10.

Table No. 10: Details of CO2 emitted due to bulbs

Light	**No. of bulbs**	**CO2 emitted per lamp / year**	**Total CO2 emitted per year**
Incandescent	-	90.3 kg	-
CFC	2	31.6 kg	63.2 kg
LED (Tubes)	44	18.0 kg	792 kg
		Total	**855.2 kg**

CO2 emitted from utilizing all types of bulbs per year is 855.2 kg/yr. Presently, College has taken initiative to replace Incandescent bulbs and CFL bulbs by LED. During the last year energy consumption

of LED bulbs against the total energy requirement has been decreased. This has shown substantial reduction in the CO2 emission per year. It is suggested to replace all bulbs by LED bulbs in a phase manner. Further, all the fans should be replaced in phased manner energy efficient five-star rating fans.

3.2.5: PLANTATION:

- The college campus area is 3.7515acres
- Total number of plants as on 2021-22 is about 77. Details of plantation with respect to Botanical name, local name and quantity is given table no. 11.
- In order to create awareness among students, plantation is carried out from time to time. The Botany department of college is taking continuous efforts to increase the green cover in college campus.
- Botanical garden also consists of various medicinal plants, flowering plants, fruit-developing plants, gymnosperm, angiosperm, palms etc.
- Plantation consists of different types of shady and flowering trees.
- Ornamental plants are planted in college campus.
- Proper care of all these plants is taken by gardener.

DETAILS OF PLANTATION IN COLLEGE:

Table no. 11: List of Plants in campus area

Sr. No.	Name of species	Family	Common name
1.	*Acacia auriculiformis* A. Cunn. ex Benth.	Leguminosae	Australian Babhul
2.	*Acalypha wilkesiana* Müll. Arg.	Euphorbiaceae	Acalypha
3.	*Agave americana* L.	Asparagaceae	Ghaypat
4.	*Albizia lebbeck* (L.) Benth.	Fabaceae	Rain tree
5.	*Allamanda blanchetii* A. DC.	Apocynaceae	Allamanda
6.	*Annona reticulata* L.	Annonaceae	Ramphal
7.	*Annona squamosa* L.	Annonaceae	Sitaphal
8.	*Araucaria columnaris* (G. Forst.) Hook.	Araucariaceae	Christmas tree

9.	*Areca catechu* L.	Arecaceae	Supari, Areca nut
10.	*Artocarpus heterophyllus* Lam.	Moraceae	Phanas
11.	*Bauhinia variegata* L.	Fabaceae	Mothaaapata
12.	*Beaucarnea recurvata* (K. Koch & Fintelm.) Lem.	Asparagaceae	Ponytail palm
13.	*Bougainvillea spectabilis* Willd.	Nyctaginaceae	Bougainvillea
14.	*Brahea calcarea* Liebm.	Arecaceae	Fan palm
15.	*Caesalpinia pulcherrima* (L.) Sw.	Fabaceae	Shankasur
16.	*Canna indica* L.	Cannaceae	Kardal
17.	*Carica papaya* L.	Caricaceae	Papai
18.	*Cascabela thevetia* (L.) Lippold	Apocynaceae	Bitti
19.	*Chlorophytum comosum* (Thunb.) Jacques	Asparagaceae	Chlorophytum
20.	*Citrus medica* L.	Rutaceae	Limbu, Lemon
21.	*Clematis flammula* L.	Ranunculaceae	Ranjai
22.	*Cocos nucifera* L.	Arecaceae	Naral, Coconut
23.	*Codiaeum variegatum* (L.) Rumph. ex A. Juss.	Euphorbiaceae	Croton
24.	*Coleus barbatus* (Andrews) Benth. ex G. Don	Lamiaceae	Ova
25.	*Cordyline fruticosa* (L.) A. Chev.	Asparagaceae	-
26.	*Crossandra infundibuliformis* (L.) Nees	Acanthaceae	Aboli
27.	*Dalbergia sissoo* Roxb. ex DC.	Fabaceae	Shisam
28.	*Delonix regia* (Bojer ex Hook.) Raf.	Fabaceae	Gulmohar
29.	*Dieffenbachia seguine* (Jacq.) Schott	Araceae	Dieffenbachia
30.	*Dracaena reflexa* Lam.	Asparagaceae	Dracaena
31.	*Dracaena trifasciata* (Prain) Mabb.	Asparagaceae	Dracaena
32.	*Duranta erecta* L.	Verbenaceae	Duranta
33.	*Dypsis lutescens* (H. Wendl.) Beentje & J. Dransf.	Arecaceae	Bunching Palm

34.	*Ficus benghalensis* L.	Moraceae	Vad, Banyan tree
35.	*Ficus benjamina* L.	Moraceae	Pimpari
36.	*Ficus deltoidea* Jack	Moraceae	-
37.	*Grevillea robusta* A. Cunn. ex R. Br.	Proteaceae	Grewillia
38.	*Heptapleurum actinophyllum* (Endl.) Lowry & G. M. Plunkett	Araliaceae	-
39.	*Heptapleurum arboricola* Hayata	Araliaceae	Schefflera
40.	*Hibiscus rosa-sinensis* L.	Malvaceae	Jaswand
41.	*Hyophorbela genicaulis* (L. H. Bailey) H. E. Moore	Arecaceae	Bottle palm
42.	*Impatiens walleriana* Hook. f.	Balsaminaceae	Gauri
43.	*Ixora chinensis* Lam.	Rubiaceae	Ixora
44.	*Jatropha integerrima* Jacq.	Euphorbiaceae	Red Jatropha
45.	*Jatropha podagrica* Hook.	Euphorbiaceae	-
46.	*Leucaena leucocephala* (Lam.) de Wit	Fabaceae	Subabhul
47.	*Magnolia champaca* (L.) Baill. ex Pierre	Magnoliaceae	Sonchapha
48.	*Monoon longifolium* (Sonn.) B. Xue & R. M. K. Saunders	Annonaceae	Ashok
49.	*Morus alba* L.	Moraceae	Tutu
50.	*Mussaenda pubescens* Dryand.	Rubiaceae	Mussaenda
51.	*Nerium oleander* L.	Apocynaceae	Kaner
52.	*Pandanus baptistii* Misonne	Pandanaceae	Varigated Pandanus
53.	*Petrea volubilis* L.	Verbenaceae	Helicopter flower
54.	*Phoenix sylvestris* (L.) Roxb.	Arecaceae	Date palm
55.	*Platycladus orientalis* (L.) Franco	Cupressaceae	
56.	*Plumbago zeylanica* L.	Plumbaginaceae	Chitrak
57.	*Porana volubilis* Burm.f.	Convolvulaceae	-

58.	*Pseuderanthemum laxiflorum* (A. Gray) F. T. Hubb.	Acanthaceae	-
59.	*Psidium guajava* L.	Myrtaceae	Peru
60.	*Pyrostegia venusta* (Ker Gawl.) Miers	Bignoniaceae	-
61.	*Rauvolfia tetraphylla* L.	Apocynaceae	-
62.	*Roystonea regia* (Kunth) O. F. Cook	Arecaceae	Bottle palm
63.	*Saccharum officinarum* L.	Poaceae	Sugarcane
64.	*Scadoxus multiflorus* (Martyn) Raf.	Amaryllidaceae	Mays Flowers
65.	*Senna siamea* (Lam.) H. S. Irwin & Barneby	Fabaceae	Kashid
66.	*Syzygium cumini* (L.) Skeels	Myrtaceae	Jambhul
67.	*Terminalia catappa* L.	Combretaceae	Badam
68.	*Thaumatophyllum xanadu* (Croat, Mayo & J. Boos) Sakur., Calazans & Mayo	Araceae	-
69.	*Thespesia populnea* (L.) Sol. ex Corrêa	Malvaceae	Gulbhendi
70.	*Tradescantia pallida* (Rose) D. R. Hunt	Commelinaceae	Erect Rheo
71.	*Tradescantia spathacea* Sw.	Commelinaceae	Rheo
72.	*Vanda* species	Orchidaceae	Orchid
73.	*Wodyetia bifurcata* A. K. Irvine	Arecaceae	Fox tail palm
74.	*Yucca gloriosa* L.	Asparagaceae	-
75.	*Samanea saman* (Jacq.) Merr	Fabaceae	Shirish
76.	*Cycas revoluta* Thunb.	Cycadaceae	Cycas
77.	*Mangifera indica* L.	Annacardiaceae	Mango

Plate No. 2 Plant Species in college campus

Green house in college campus

Considering the rich plant diversity of the Ichalkranji area with lots of medicinal plants, college has planted some medicinal plants in campus which is widely available in the area. Some of the medicinal plants are given in table no.12.

List of Medicinal Plants growing in campus of Dattajirao Kadam Arts Science and Commerce College, Ichalkaranji

Table no. 12: List of Planted Medicinal Plants

Sr. No.	Botanical Name	Family	Common name	Plant part used	Medicinal Uses
1.	*Aegle marmelos* (L.) Corrêa	Rutaceae	Bel	Fruits	Dysentery And Diabetes, Coolant, Gut health
2.	*Aloe vera* (L.) Burm.f.	Asphodelaceae	Korphad	Leaves	Used in Indigestion, Heart health, Respiratory Diseases
3.	*Areca catechu* L.	Arecaceae	Supari	Fruits	Obesity, Hyperlipidaemia, Diabetes, Irregular Menstruation
4.	*Asparagus racemosus* Willd.	Asparagaceae	Shatavari	Tubers	Infertility, Loss Of Libido, Uterine health, Improves Lactation
5.	*Barleria prionitis*L.	Acanthaceae	Katekoranti	Leaves, Stem and Roots	Strengthens Teeth, Useful in Fever, Catarrh
6.	*Curcuma longa* L.	Zingiberaceae	Halad	Rhizome and leaves	Used skin complaints, gastric and duodenal ulcers, to relieve cough and tuberculosis
7.	*Eclipta prostrate* (L.) L.	Asteraceae	Maka	Leaves and Roots	Diarrhea, As a purgative in conditions of liver, spleen, and dropsy.
8.	*Hellenia speciosa* (J.	Costaceae	Insulin Plant	Rhizome and leaves	in the treatment of conditions with a burning sensation, constipation,

	Koenig) S. R. Dutta				leprosy, worm infection, skin diseases, fever, asthma, bronchitis
9.	*Hibiscus rosa-sinensis* L.	Malvaceae	Jaswand	Flowers	In treatment of excessive and painful menstruation, cystitis, venereal diseases, feverish illnesses, bronchial catarrh, coughs and to promote hair growth
10.	*Justicia adhatoda* L.	Acanthaceae	Adusa/Vasaka	Leaevs	Cough, Asthma, Bronchitis
11.	*Kalanchoe pinnata* (Lam.) Pers.	Crassulaceae	Paanphuti	Leaves	treat gastric ulcers, respiratory infections, boils, wounds, and rheumatoid arthritis
12.	*Mimusops elengi*L.	Sapotaceae	Bakul	Leaves and fruits	Used for dental ailments such as bleeding gums, pyorrhea, dental caries, and loose teeth.
13.	*Morus alba* L.	Moraceae	Tuti	Fruits and leaves	in the treatment of colds, influenza, eye infections and nosebleeds
14.	*Pimenta dioica* (L.) Merr	Myrtaceae	All spice	Leaves and bark	treatment of high blood pressure, obesity and digestion problem
15.	*Piper betle* L.	Piperaceae	Pan	Leaves	Cough, indigestion, in calcium deficiency
16.	*Plumbago zeylanica* L.	Plumbaginaceae	Chitrak	Roots	Arthritis, Skin Diseases, Menstrual Disorders, Obesity
17.	*Ricinus communis* L.	Euphorbiaceae	Arand	Leaves, Root,	abdominal disorders, arthritis, backache, muscle

				Bark and Seed	aches, period pain, menstrual cramps
18.	*Tinospora cordifolia* (Willd.) Hook.f. & Thomson	Menispermaceae	Gulvel	Root, Stems and Leaves	In high fever, diabetes, high cholesterol, upset stomach
19.	*Withania somnifera* (L.) Dunal	Solanaceae	Ashwagandha	Stem and Fruits	Stress Tolerance, Immunity, Joint Pains, Skin health
20.	*Zingiber officinale* Roscoe	Zingiberaceae	Adarak, Alle	Rhizome	Cold and Cough

3.2.6: WATER AUDIT:

Water plays a key role in every environmental system. Water is an amazing material with unique properties that affect life on earth. The earth holds the same water in the same quantity as it did when it was formed. The earth's water continuously circulates from the ocean to the atmosphere, then to the land and back. The atmospheric water cycle helps us to get a regular supply of fresh water every year. Thus, fortunately the worlds freshwater supply is continually collected, purified, recycled and distributed in the earth's hydrological cycle.

Water is so integral to life that we frequently take it for granted. Freshwater is an irreplaceable resource that we are managing poorly. Despite its importance, water is one of our most poorly managed resources. Even if the DKASC Institute gets assured good amount of rainfall, the water is not retained in the ground due to the limitations like topographical features and seasonal rains. Hence regulation of water cycle by nature is proper in the area covered by build structures and roads, the rainwater does not percolate into the ground. Hence water conservation measures should be adopted.

3.2.6.1 WATER MANAGEMENT:

WATER DEMAND:

Demand Analysis of water requirement: Residential based population on the campus and off the campus is given table No.13.

Table No. 13: Population strength on campus

Year	Students	Teaching staff	Non – Teaching Staff	Total
2017-18	2895	92 + 32	42	3061
2018-19	3052	99 +49	38	3238
2019-20	2841	96 + 32	38	3007
2020-21	2848	72+ 33	36	2989
2021-22	3055	97+ 32	42	3226

During the past years maximum strength of population on degree college campus was in the 15,521.

College is by and large non-residential based. Water requirement for drinking and other purposes (Wash room, Plantation etc.) is calculated at the rate of 10 lit per person per day. Based on this assumption water demand analysis is given in table No. 14.

Table No. 14: Water demand Analysis

Year	Total Number of People	Requirement of water	Total Requirement of water
2017-18	3061	@ 10 lit / day	30610 lit / day
2018-19	3238		32380 lit / day
2019-20	3007		30070 lit / day
2020-21	2989		29890 lit / day
2021-22	3226		32260 lit / day

On an average requirement of water per day is about 31,042 lit / day during last five years. This demand is met through supply of water from a bore well, which can yield water throughout the year. However, three RO water purifiers are placed in college campus, for the students and staff.

WATER QUALITY:

In Institute water is used for domestic and drinking purpose. The students which utilize water for drinking purpose must be monitored frequently to avoid the spread of waterborne diseases like

Dysentery, Typhoid, Gastro etc. In the college the water is supplied by corporation is treated in water filters for drinking purpose. Water quality of drinking water and mixed water is periodically monitored by staffs and routine water analysis is done from laboratory for necessary parameter

3.2.6.2 QUALITY OF WATER:

College is committed to provide good quality of water by installing water RO system. Water supplied by the bore well is tested for various physic-chemical and microbiological parameters from the RO system. Water supplied by the to the students after filter/ RO system is moderately hard (Hardness is 120 mg/l) whereas, the highest desirable limit is 100 mg/l. Most Probable Number (MPN) is 0 / 100 ml. as against the recommended W.H.O standard of 0 / 100ml. Hence, filtered water is suitable for drinking. Copy of the analysis report is displayed on the filter as information to the students.

The water quality report of the drinking water has been attached here with:

Plate No. 3Water Quality Report

Archana Analytical Services

(Consultants for Environment, Health and Safety)
Udhyog Adhar Reg. No. MH15D0001832

Date: 06.06.2023

Report of Water Analysis

- Name : The Principal of DKASC college of Ichalkaranji
- Sample name :water Sample
- Required analysis : Drinking water analysis
- Quantity of sample : 1 litre
- Date of sample received : 04.06.2023

Results of Analysis

Sr. No.	Parameters	Well water	As per the standard limits
1	**Physical nature**	Clean, clear and odourless	Clean, clear and odourless
2	**PH**	7.59	7-8.5
3	**EC**	0.15	-
4	**Total hardness**	160.0	300 mg/l
5	**Calcium Hardness**	50	75 mg/l
6	**Magnesium Hardness**	25	30 mg/l
7	**Alkalinity**	40.0	200 mg/l
8	**Total dissolved solid (TDS)**	60.0	500 mg/l
9	**Chloride**	25.45	200 mg/l
10	**MPN in 100 ml**	absent	10

***COCLUSIONS: The given water sample is good for drinking purpose, due to all parameters are within the limit.**

MPN: Most Probable Number of coliform bacteria

Archana Analytical Services Kolhapur

'Sahejanand Appartement' 486/A/2, Jadgadale Colony, Prathibha Nagar, Kolhapur 416008
Contact: 940555340, Email:archana.ehs@gmail.com

1

Plate No. 4 Drinking Water Facility

Borewell recharge pit

Measures taken by college for conservation of water:

- Encourage everybody to avoid pollution and to see that proper steps are being taken to control or to prevent pollution.
- Display boards to aware stakeholders to avoid wastage of water and energy
- Use of recycled waste water for gardens and trees
- Rain water harvesting system
- Leakages are fixed to reduce water waste.

3.2.6.3 RAIN WATER HARVESTING:

Type of System: -Roof top water harvesting

Type of roof : Flat roof

Rain water harvesting system is installed in chemistry and science building and collected in storage tanks and utilized in emergency purpose. Institute has well working RWH system by which 6000 sq. mts of roof area is covered. Utilization of RW is for gardening, toilets and washing purpose. Two Three storage tank of capacity 2000 Liters each are used for RWH. Institute has initiated ground water percolation/recharge practice in which two bore wells.

Water harvesting Potential of Institute's RWH system = Rainfall (mm) x Area of Catchment x Runoff Coefficient

450 mm*6000 sq. mts* 0.7= 1,89000 L per year.

Thus RWH system of the Institute contributes almost 1,89000 L of harvesting of water per year which is used during rainy days rest of which percolates.

Table No.15 Rain Water Harvesting

Sr. No.	Details	Type	Area
			Sq. m
1	College Building	Roof top water harvesting	6000 Sq. m

Considering the average annual rainfall of about 400mm, it is quite possible to harvest about 4,000 lit of water per day during the effective rainfall days of the rainy season.

Plate No. 5 Rain Water Harvesting

Rain water harvesting system provided with centralized storage tank in campus

4.0 WASTE WATER MANAGEMENT:

Waste water disposal method:

Total water demand for domestic consumption on college campus is 30,932 lit / day. By and large, it is assumed that 30 % waste water is generated during college hours i.e., 30,932 lit / day ÷ 0.3= 10,3106 litre/day. Out of 10,3106 liters waste water generated, part of this domestic waste water is disposed off to septic tank.

Table No. 16 No of Toilets Campus

Sr. No	No of WCs + Urinals		Total
	Male	**Female**	
1	23 Urinals +4 Toilets	14Urinals+11 Toilet + 1 Bathroom	43

During the last year average strength of student and staff on campus 3093. Ratio of number of people and WCs and urinals is 1: 72.93

Male: 1604.5 Female students: 1324.75

Ratio of WCs+ Urinals for Male: 1: 59

Ratio of WCs + urinals for Female – 1: 53

As per the WHO guidelines they should be 1: 30 for male and 1: 20 for female. However, for all practical purpose, minimum requirement should be at least 1: 30 for female and 1: 40 for male.

Therefore, it is suggested to construct another 9 for male and 10 for female. Altogether, it expected to have 35 WCs + urinals for male and 30 for female.

Waste water is disposed of through septic tanks.

4.1SOLID WASTE MANAGEMENT:

As a policy matter College has banned usage plastic bags on the campus. College has taken precautions to collect solid waste through dust bins. The dustbins are helpful to maintain clean atmosphere sanitate ion of college campus. Dustbins are placed on various places. Three dustbins are on the college entrance

i.e., liquid, Paper and Solid Waste dustbins. Each classroom carries one dustbin. The main aim of using dustbins is to clean the campus, to collect waste material and to create awareness of cleanliness among the students.

Solid waste collected is segregated into degradable and non-degradable

BIODEGRADABLE WASTE:

The main source of biodegradable waste in educational institute is generally from student's tiffin and eatables. Garden waste generated from pruning of trees, fallen leaves, etc. is also important source of biodegradable waste in DKASC Institute Campus. The Institute has taken good care of biodegradable waste by creating vermicomposting pit for garden waste. The garden waste is collected and kept for vermicomposting at a designed site. The prepared waste is then utilized for gardening purpose.

Vermicomposting reduces waste sent to our dump sites, reduces environmental pollution. When organic wastes decompose at dump sites in the absence of oxygen, a hazardous liquid known as leachate (the liquid that runs from a dump) and odour are produced.

Vermicompost helps to improve soil structure, texture, porosity, water holding capacity, drainage, and aeration and reduce erosion in addition to plant nutrient supply. It improves plant growth by enabling the growth of new shoots and leaves, thereby increasing productivity. It helps to buffer the pH of the soil. In DKASC the vermicompost formed at plant is applied to the college garden plants.

PAPER WASTE:

Major part of the solid waste generated at the college campus is a paper. Though paper is biodegradable material, it is having good potential of recycling thus will help in conserving the resources and trees indirectly. Institute Kolhapur follows the green practice like use of one-sided paper, paperless activities like e-mailing all notices instead of printing it of paper, putting the information on what's app groups are also practiced in the college to reduce the use of paper. Thus, Reduce, Reuse and Recycle, 3 R principles of solid waste management are followed in the Institute for waste management.

Plate No. 6 Dust Bins

4.2 HAZARDOUS WASTE MANAGEMENT:

Hazardous waste is a waste that make it potentially dangerous or harmful human health or environment. The universe of hazardous waste is large and diverse. Hazardous waste can be liquid, solids or contained gases. There is no such hazardous waste on the campus except LPG cylinders, fumes due to digestion process in the laboratories. Some of the action taken for cleaning campus is given below:

Hazardous waste management:

1. Management of laboratory waste:
    - Hazardous waste management involves reducing the number of hazardous substances produced, treating hazardous waste to reduce their toxicity and applying sound engineering controls to reduce or eliminate exposure to these wastes.
2. Management of electronic waste management:
    - Disposal of solid and E waste through transfer to authorized agencies for recycling through write off
3. Measures for waste reduction along with photographs
    - To reduce solid and liquid waste and adopt green methods to dispose waste and monitor the processes.
    - Biodegradable waste is utilized in bio-composting and the compost obtained from vermin-culture pit is used for garden

Following measures have been taken by college to treat different kind of waste:

- **Laboratory waste:**
    a) Chemical waste is diluted with water and drained in closed pipes.
    b) Acids are stored in glass bottles and it is kept in sand.
    c) The stoppers of the bottles containing chemicals releasing fumes are regularly monitored and always kept closed to avoid any kind of leakage.
    d) Exhaust fans are provided in laboratories to expel gaseous waste.

- **Electronic waste management:**
    a) Minor repairs are done manually by staff and laboratory assistants.
    b) In case, if major repair is required then professional technicians visit to the college for repair.
    c) Many electronic goods are used again after repairing takes place.
    d) College collects the e-waste from all sections and it is handed over to recyclers.

- **Other measures for waste reduction:**
    a) Liquid waste is dumped in systematic manner in soak pit.
    b) “Plastic free zone campaign” is also carried out in college to reduce the use of plastic goods.
    c) The campus has been declared as plastic free zone.
    d) College tries to avoid use of non-biodegradable products like plastic plates, cups and glasses in the canteen.
    e) Students are instructed to avoid use of plastic materials.
    f) Dustbins are placed everywhere in college campus to ensure proper disposal of solid waste.
    g) Biodegradable and non-biodegradable wastes are segregated properly.
    h) Reusable glasses and plates are used in college canteen.

4.3 E-WASTE MANAGEMENT:

Computers and their peripherals are the only source of electronic waste on the campus. As on date there are about 183 computers, seven laptops, 27 printers and Xerox machines. Piling up of e- waste is discouraged on the campus. College disposes off the old computer / peripherals under the buyback scheme with local venders.

Plate No. 7 e-waste Certificate

eRecyclebin

637

Membership for E waste disposal

Member No. MERPL/ E Waste/ 22-23/Pun/010 **Date : 07/11/2022**

Ref No. Your email dated

Member Details :
Company Name : **Dattajirao Kadam, Arts, Science and Commerce College, Inchalkarani**
Address : Survey No. 17, 436, Kolhapur Road, Shivajinagar, Ichalkarani, Maharashtra
Pin Code : 416115
Contact Nos. : 0230-2420412
GST No. :
MPCB Consent No.:
Contact Person : Mr./Ms. Principal, DKASC College, Ichalkaranji
Membership fees : Rs. 5,900 Received by, Cheque No.: 002993 Bank of Baroda, Ichalkaranji Branch, dated 28/10/2022
Requested Quantity for e-waste disposal : 1 M.T./ per annum.

This is a Memorandum of mutual understanding between Mahalaxmi e Recyclers Pvt. Ltd. Kolhapur, Dattajirao Kadam, Arts, Science and Commerce College, Inchalkarani hereafter termed as e-waste dismantler and hereafter termed as client, made with an intention of environment friendly disposal of e waste collected by the client and to be disposed by the dismantler with following terms:

1.The client will inform the dismantler through mail or phone about such collection of e waste at their office and the dismantler will collect it from the said location after properly testing the same.
2. Once disposed to the dismantler, the client will not have right on any of the material disposed.
4. The dismantler will issue FORM 6 of such disposal to the client for every delivery made by the client, in prescribed f ormat and enter the same in the passbook issued by M.P.C.B.
5. This membership is valid for 5 year
6. All the legal issues will be dealt in the legal jurisdiction of Pune District.

Manoj Mehta.
Chairman & Managing Director,

Mahalaxmi *e*-Recyclers Pvt. Ltd.
Plot No. 77&78, Subplot No 3A, Ramtekadi Industrial Area, Hadapsar, Pune-411013
Mobile: +91-72764 11826 Email : manoj@erecyclebin.com , mpmehta_2000@yahoo.com
MPCB REGN. NO. : MPCB REGN. NO. : MPCB/RO(HQ)/HSMD/20/EW-08/Date-11thNov. 2020, Valid till 31st Oct. 2025
GST NO. 27AAICM7585M1ZL **PAN No. AAICM7585M**

Bank Details : Bank of Baroda, Shahupuri Branch, Kolhapur,
Current Account No. 04350200000869 ISFC CODE: BARB0SHAHUP (It's zero not O)

5.1: GREEN INITIATIVES PROGRAMME:

College has initiated large number of Environmental awareness programme through college and NSS. Activities are given due publicity through local newspapers. Some of the high lights are given below**:**

Table No. 17: List of some activities during the last five years

Sr.No.	Department	Title of Activity	Date	Number of participants	
				Students	Teacher
2017-18					
1		Seed ball	04-07-2017	20	10
2		Green corner activity	04-07-2017	20	10
3		Tree plantation	06-07-2017	25	15
4		Eco-friendly colour for Holi from Plant Natural Resources	04-08-2017	42	11
5		Eco- Friendly plantable Seed Pens	04-08-2017	42	11
6		Gift Articles /Best from waste	27-01-2018	18	13
7	**Botany**	Plant Clinic	03-02-2018	20	10
8	**Economics**	Social- Ganesh Festival Past, Present & Future	03-08-2017	43	4
9	**Commerce**	Guest lecture and practical training on recycling of waste material	12-08-2017	65	5
10		Clean College Program	20-01-2018	41	5
11			10-02-2018	45	
12	**History**	College Cleaning Campus with Department	09-12-2017	21	2
12	**Economics**	World Population Day	11/07/2017	35	2

13	**Geography**	Seminar on 'Environment Protection'	29-12-2017	20	2
2019-2020					
14		Organized one day workshop on "Hazardous impact of pesticides used in agriculture and its solution"	21-01-2020	98	18
15	**Chemistry**	Taking oath on Sadbhavana Din	27-08-2019	20	2
2020-21					
16	**BCA-CS**	Covid-19 Awareness Quiz	19-04-2020 onwards	5357	18
17	**Chemistry**	Organized one day workshop on "Hazardous impact of pesticides used in agriculture and its solution"	21-01-2020	98	
2021-22					
18	**Chemistry**	One day Lead College Workshop on "Water and Waste Water Management Importance and Technologies"	11-01-2022	157	25
19	**Political Science**	Dept.of Political Science New Cabin- one LED tube Light	----------	1	
20	**Zoology**	Bird Watching and Counting in and around of Ichalkaranji	05-01-2022	13	**7**

Plate No. 8 Activities During 2017-18 to 2021-22

DEPARTMENT OF BOTANY

1. Seed ball preparation and plantation programme

Date: 04/07/2017

2. Green Corner activity

Date: 04/07/2017

3. Tree Plantation programme at Mangoan

Date: 06/07/2017

4. Eco-friendly colours for Holi

Date- 04/08/2017

5. Gift articles from plant resources and best from waste

Date: 27/01/2018

6. Plant clinic visit

Date: 03/02/2018

8.Tree Plantation at Village Chandur

Date: 08/07/2019

9. Plantation through Beej Mataka at Panhala fort

Date: 14/09/2019

8. World Wetland Day

Date: 02/02/2021

9. Botanical Garden Redevelopment

Date: 12/07/2021

DEPARTMENT OF ZOOLOGY

1. **Bird Watching and Counting Near Vardavinayak Temple Behind Panchaganga River**

Date:16/09/2017

2. Birdwatching at Varad Vinayak Temple Panchaganga River, Ichalkaranji

Date:

BIRD WATCHING

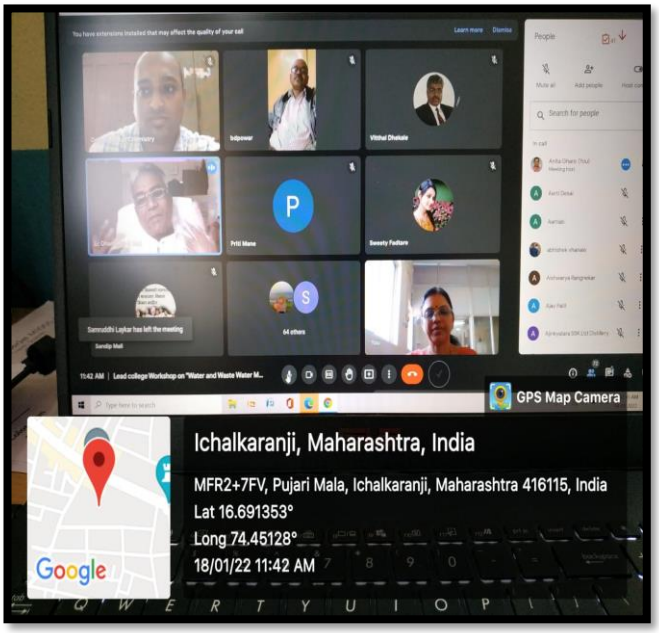
DEPARTMENT OF CHEMISTRY

1. One day workshop on Hazardous impact of pesticides used in agriculture and its solution

Date: 21/01/2020

2. One day Lead college workshop on Water and waste water management importance and technologies

Date: 11/01/2022



DEPARTMENT OF HISTORY

cleanliness Drive at Campus Date: 09/12/2017

DEPARTMENT OF NSS

1. College campus cleaning

Date: 11/07/2017

2. Tree plantation programme

Date: 11/07/2017

3. Tree plantation programme

Date: 25/02/2019

DEPARTMENT OF ECONOMICS

1.Social Ganesh Festival- Past, Present and Future

Date: 03/08/2017

2. World Population Day

Date: 11/07/2017

DEPARTMENT OF COMMERCE

1. Guest lecture and practical training on recycling of waste material

Date: 12/08/2017

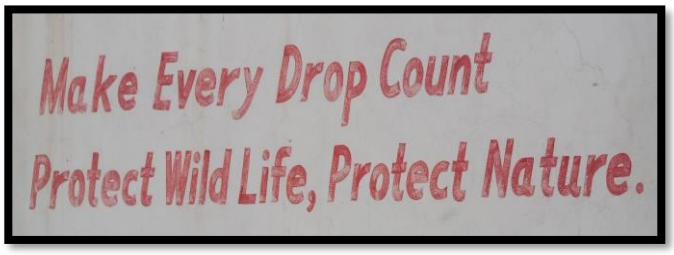
Celebration of No Vehicle Day

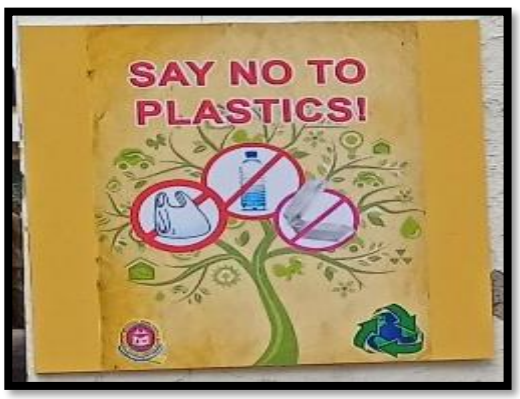
5.2 ENVIRONMENT AWARENESS TAGS:

Environmetal awareness is having an understanding of the environment, the impact of human behaviour on it and the importance of its protection. Hence,college has taken some Environmental awareness measures. College has prepared following tags related to environment:

1. Keep Calm and Save the Environment
2. Use of Plastic Bags Strictly Prohibited
3. Save the Trees
4. Do Not Waste the Water
5. No Smoking

Plate No. 9 Environment Awareness Tags





6.0 SUGGESTIONS FOR IMPROVEMENT:

College has taken good number of green initiatives for the protection of environment. However, for getting better results following suggestions may be considered by the college in phased manner.

1. Presently total 249 tube lights, 44 LED and 2 CFL bulbs. All the tube lights should be replaced by LED bulbs in a phase manner during next 2 yrs. Further, all the fans should be replaced in phased manner energy efficient five-star rating fans.
2. Considering the present strength of the college, it is suggested to construct additional WCs + Urinals, another 9 for male and 10 for female. Altogether, it expected to have 35 WCs + urinals for male and 30 for female.
3. As there is sufficient place for storage water and roof top area more efforts be made harvest rainwater so that bore well water consumption can be reduced to save electrical energy.
4. It is recommended to construct underground storage tank for storing harvested water
5. Setting up of proper Vermi-Composting pit to convert vegetable matter and any left-out canteen waste into compost.
6. It is also suggested to use solar energy as an alternate of energy for street light
7. Efforts be made to treat waste water through STP (Sewage Treatment Plant) and treated water can be recycled to use in gardens.

Overall, the performance of DKASC is good in green initiative front and can take some more green initiatives for sustainable future.