SHRI SHIVAJI EDUCATION SOCIETY, AMRAVATI'S

SHRI SHIVAJI COLLEGE OF ARTS, COMMERCE AND SCIENCE, AKOLA (MS)

Affiliated with Sant Gadge Baba Amravati University, Amravati (MS)

UGC Status- College with Potential for Excellence (Phase II Completed)

DST- FIST (Level "00") Support;

Lead College Status by S. G. B. Amravati University, Amravati (MS)

Website: www.shivajiakola.ac.in

7.1.6

Quality audits on environment and energy are regularly undertaken by the institution

Shri Shivaji Education Society, Amravati's

SHRI SHIVAJI COLLEGE OF ARTS, COMMERCE AND SCIENCE, AKOLA

NAAC Re-Accredited with A++ grade with CGPA 3.58
UGC Status 'College with Potential for Excellence', DST-FIST level- 0 Support
Lead College status by S.G.B.A.U. Amravati
Near Shivaji Park, Akola - 444 001 (Maharashtra)
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Late Dr. Panjabrao alias Bhausaheb Deshmukh — Founder President
Shri. Harshvardhan P. Deshmukh — President
Dr. Ambadas L. Kulat — Principal

No. SSC/AKL/

Date 08.02.2023

Declaration

This is to declare that the information, reports, true copies and numerical data etc. furnished in this file as supporting documents is verified by IQAC and found correct.

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Co-ordinator, IQAC

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Shri Shivaji College of Arts, Commerce & Science AKOLA
A++ Grade CGPA.3.58 by NAAC

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2021

Green Audit Report

EcoShastra

Shri Shivaji Education Society Amaravati's

Shri Shivaji College of Arts, Commerce and Science, Akola (MS)

Green Audit Report

Submitted by

EcoShastra
Consultancy & Services

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Shri Shivaji Education Society, Amravati's

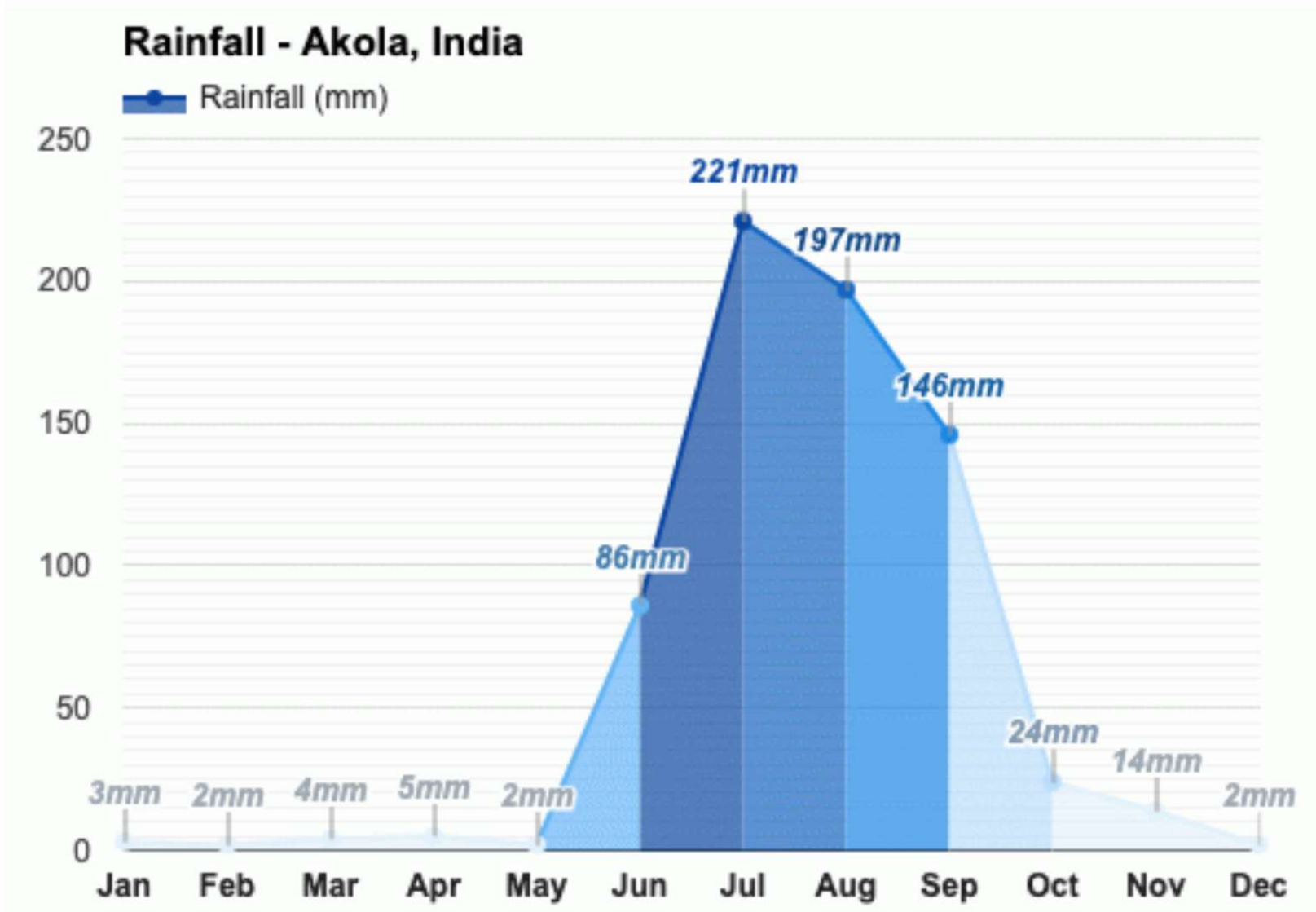
Shri Shivaji College of Arts, Commerce & Science, Akola.

Shri Shivaji Education Society, Amravati's Shri Shivaji College of Arts, Commerce and Science, Akola is situated in the western Vidarbha region of Maharashtra and is affiliated to Sant Gadge Baba Amravati University, Amravati. The institution always strives for quality sustenance and enhancement in higher education. Shri Shivaji Education Society, Amravati, was founded in 1932, by Late DR. Punjabrao Deshmukh, the first agriculture minister of independent India, and a member of the "Constitution Draft Committee" for the Government of India. It is one of the premier institutions of higher education in the Vidarbha region. It is worth mentioning that, under its canopy, there are in all 277 institutions including Medical, Agriculture, Engineering, Science, Law, Education as well as Higher Secondary Schools, High Schools, Middle Schools, and Primary Schools. The society has bagged many prestigious awards from the state government in recognition of its dedication to the field of education.

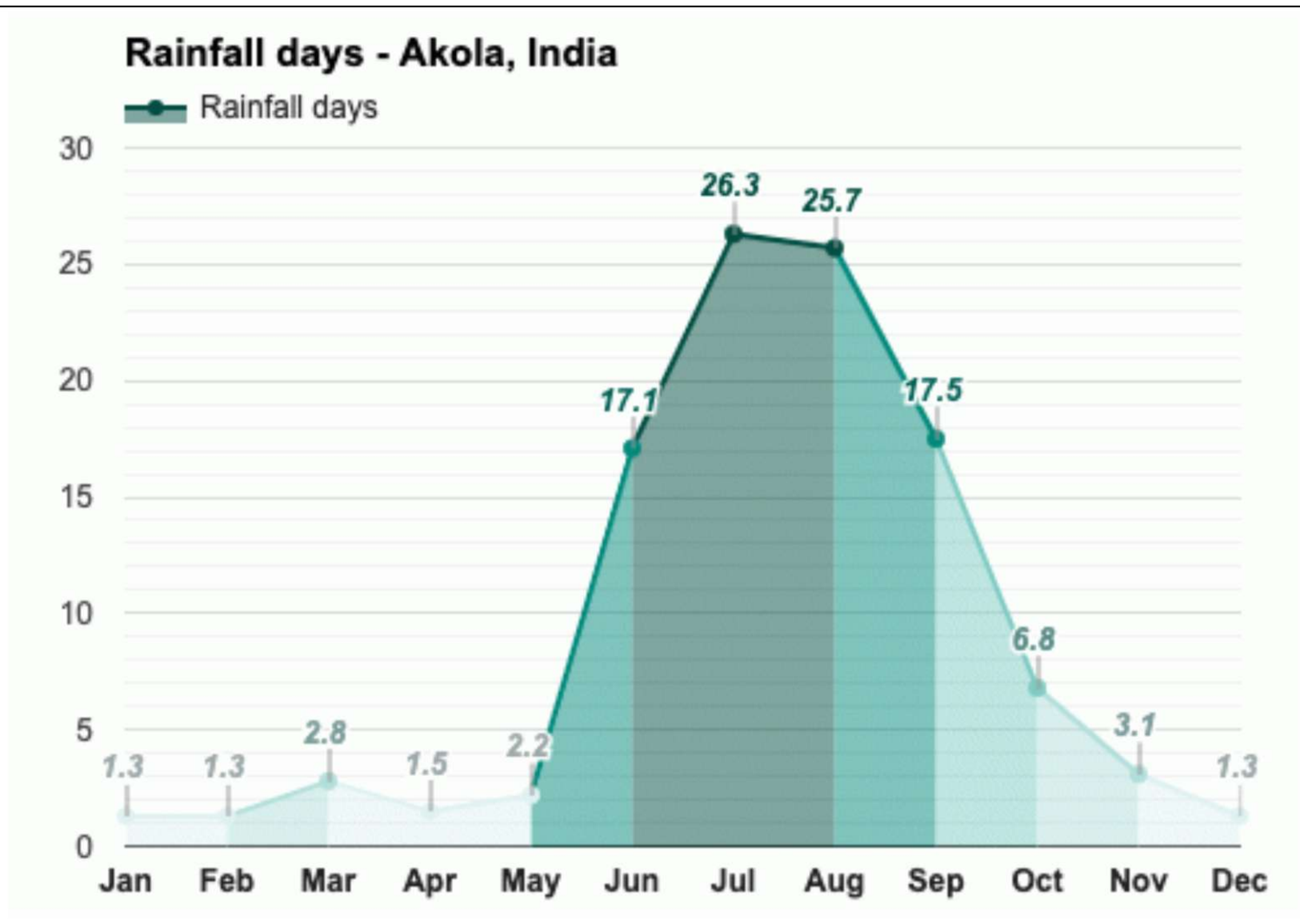
Shri Shivaji College of Arts, Commerce and Science, Akola was established in 1963 and has already completed fifty glorious years of its existence in 2013. We can proudly say that it has indeed grown from a seedling into a tree that has not only sheltered thousands of youngsters but also has molded them into great personalities, now scattered across the globe. Since a large number of our students come from economically weaker sections of the society, we try to imbibe in them good values so that they become responsible citizens of this great country. The College aims at catering to the academic excellence of the students and providing them with facilities to develop their inherent talents. In its continuous efforts to impart quality education, Shri Shivaji College was reaccredited with an "A" grade with CGPA 3.11 in January 2010.

The college has also earned a special reputation for being conferred with the status of a “College with Potential for Excellence” by the U.G.C. in the first phase and now for the second phase up to 2019 Since the institution has completed the second cycle, now it has intended to go for the third cycle in accreditation. Efforts have been made to fulfill the recommendations made by the peer committee for the overall development of the Institution. Due consideration has been given to the post-accreditation activities and it continues to plan for academic excellence by imparting quality education.

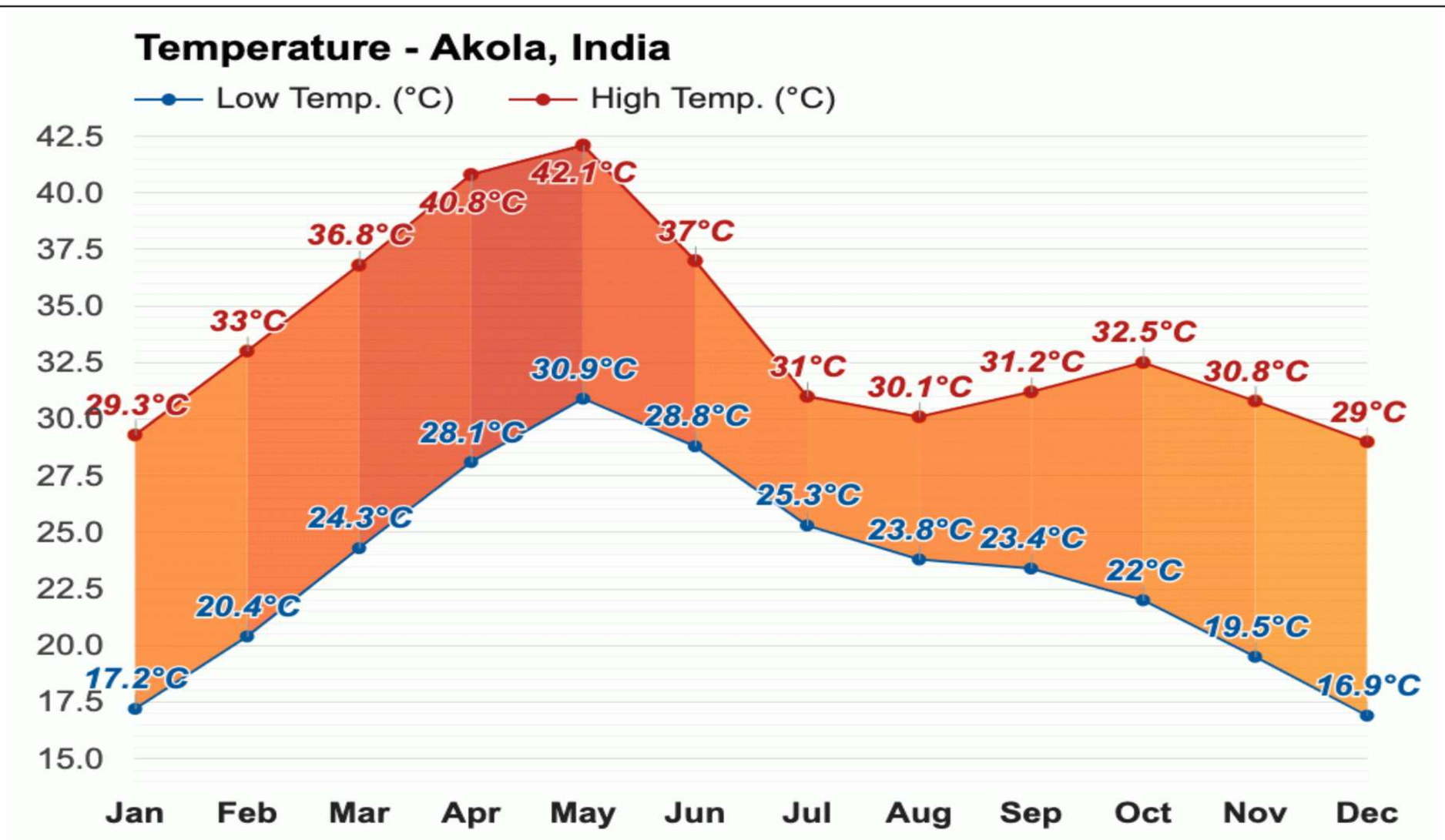
Average Rainfall (in mm) in Akola (Last 50 Years)



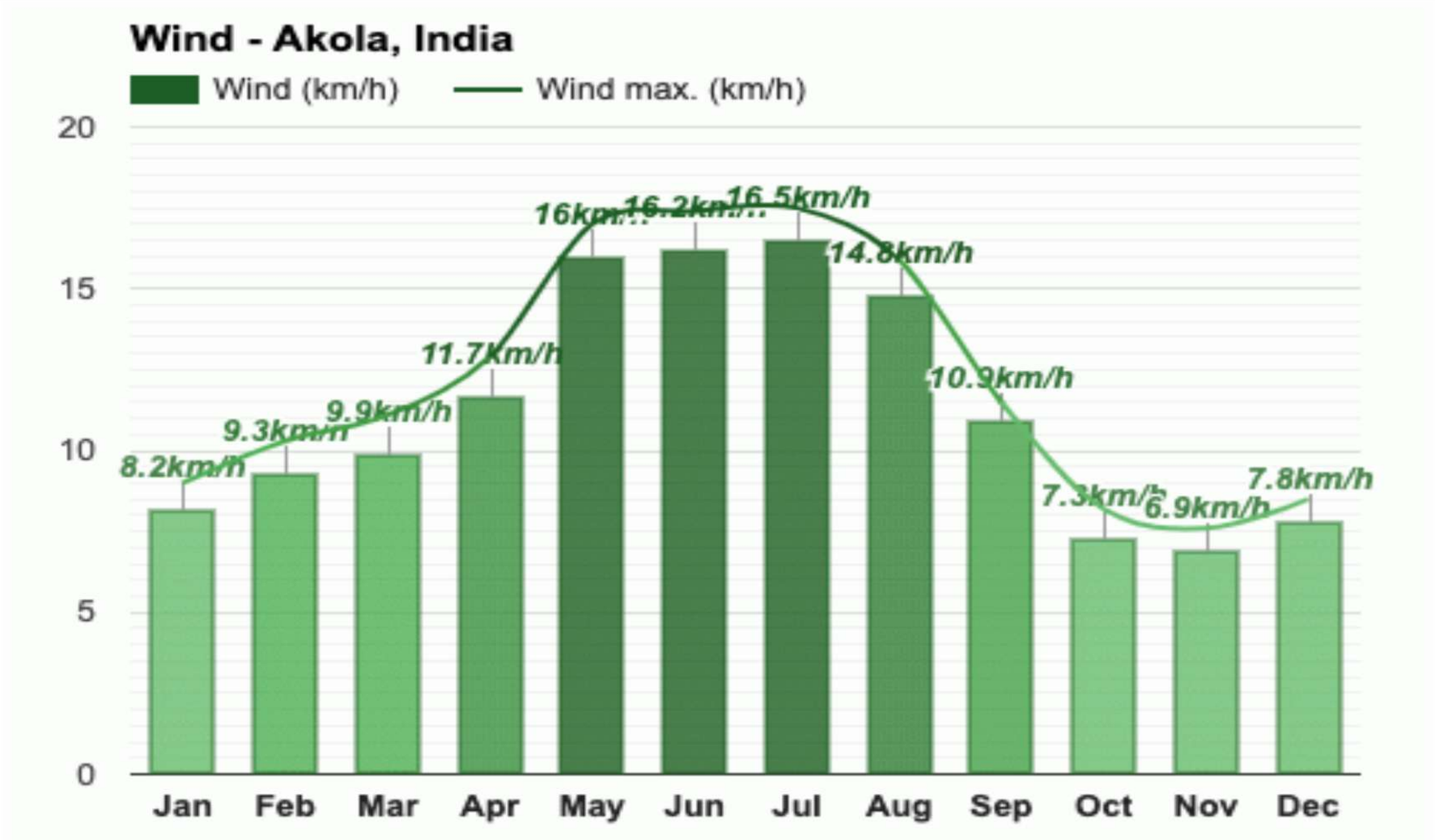
Rainfall in Akola- Average Rainfall Days per month (Last 50 Years)



The average temperature in Akola



Average Wind Speed in Akola



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Green Audit Committee

Sr. No.	Name	Designation
1.	Dr. Rameshwar M. Bhise	Chairman (Principal)
2.	Dr. H. S. Patil	Lead Auditor
3.	Dr. Ashish S. Raut	Coordinator
4.	Dr. Pratiksha P. Umale	Internal Green Auditor
5.	Mr. Shubham P. Thombare	External Green Auditor
6.	Dr. S. S. Kadu	Green Audit Expert
7.	Dr. Anand V. Oke	Green Audit Expert
8.	Mr. S. A. Rathod	Green Audit Expert

Solid Waste Audit

1. Solid Waste Audit

Introduction:

Shri Shivaji College of Arts, Commerce and Science, Akola is an environment-friendly educational institute, and for any Environment-friendly institute, Solid Waste Audit is considered as a crucial part. In educational institutes like Shri Shivaji College, Paper, chalk, Polythene, Glass, and Biomass are the major constituents for solid waste production. Although Paper, Chalk, and Biomass wastes are considered Bio-degradable wastes, their production is directly or indirectly depends on the environment and their inappropriate management can raise environmental issues e.g. this waste can alter the water quality of a stream if it goes into the local water stream. Solid waste auditing gives an actual idea about solid waste generations in the campus and management strategies followed by the college. In this report, studies were carried out to analyze the solid waste profile of the college and corresponding waste management techniques.

Aims and objectives:

i. To calculate total solid waste generation on the campus.
ii. To classify solid waste according to categories and places.
iii. To analyze the obtained data and find key solid waste generation places.
iv. To discuss present-day Waste-Management Strategy of the campus
v. To issue appropriate recommendations considering different parameters like solid waste generation, management strategies, etc.

Methodology:

1. Data collection:

While collecting data, solid wastes like papers, polythene, glass, chalks, etc. are stored separately in a dustbin for a week for each mentioned place and weighed on a balance at end of the week. Solid waste like kitchen and food waste are weighed each day and disposed of, the data of all seven days are added and represented separately.

2. Data analysis:

The obtained data is represented in tables and analyzed in excel by pie diagrams and bar diagrams.

3. Comment on Recommendations:

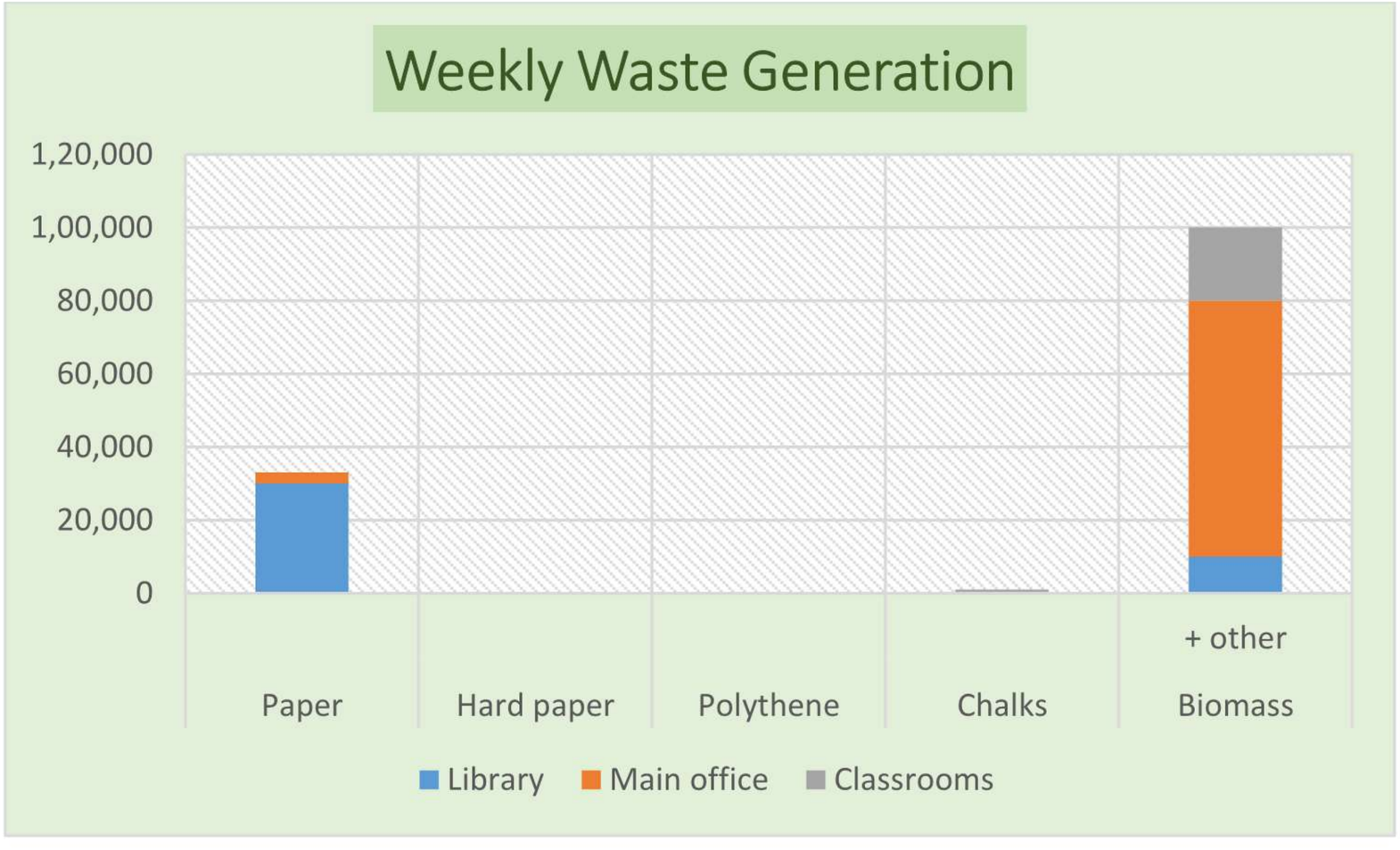
The comments have been made considering the number of stakeholders, the amount of total waste generation, the present-day waste disposal method, and research has been done to recommend more efficient methods of solid waste management.

Observations:

Solid Waste Accounting by Weight

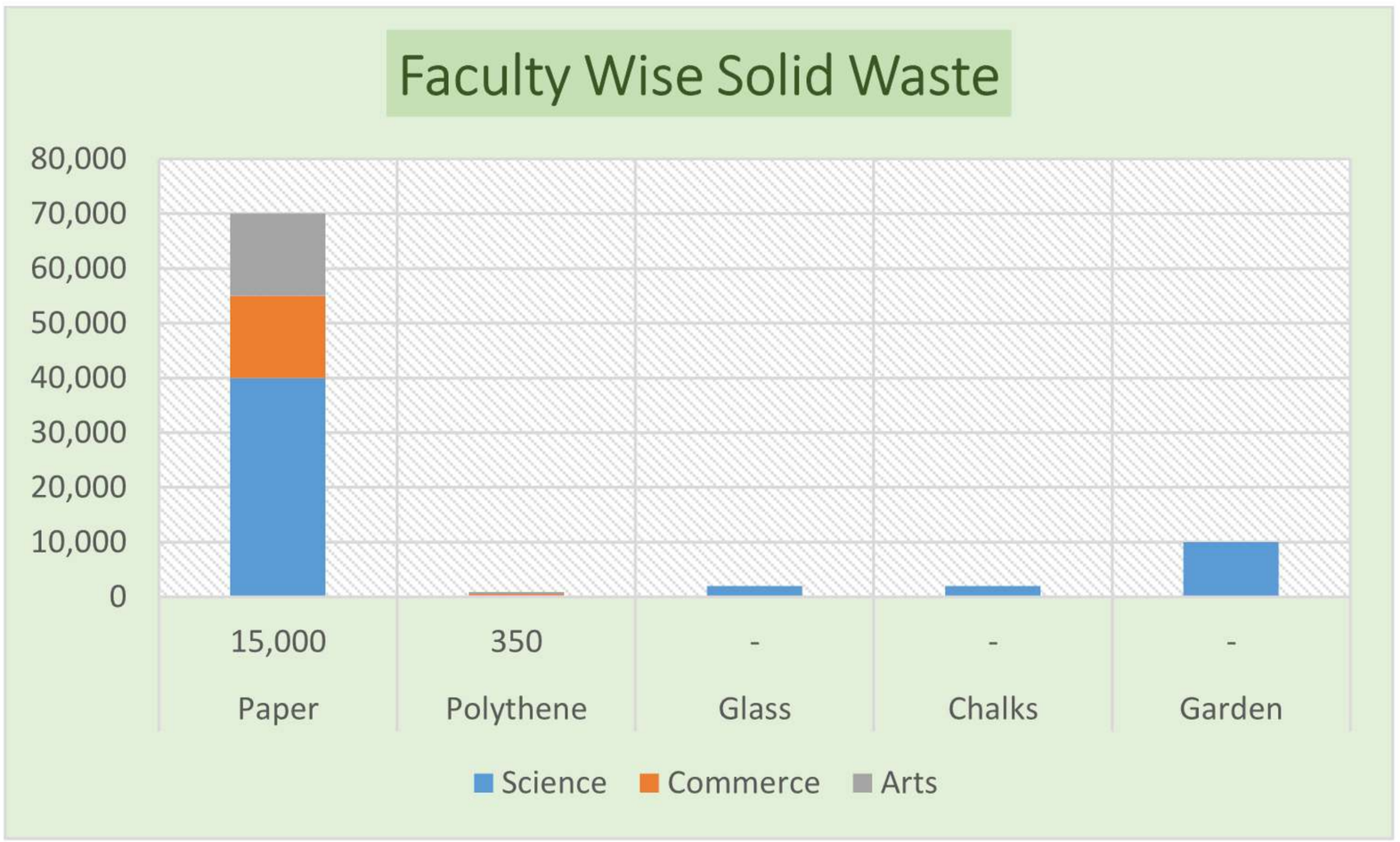
Place	Paper	Hard paper	Polythene	Chalks	Biomass + other
Library	30,000	-	100	-	10,000
Main office	3,000	100	150	-	70,000
Classrooms	-	-	100	1,000	20,000
Total	**33,000**	**100**	**350**	**1,000**	**1,00,000**

TABLE 1 Weekly Waste of Offices, Classrooms & Library in Grams. (Apx.)



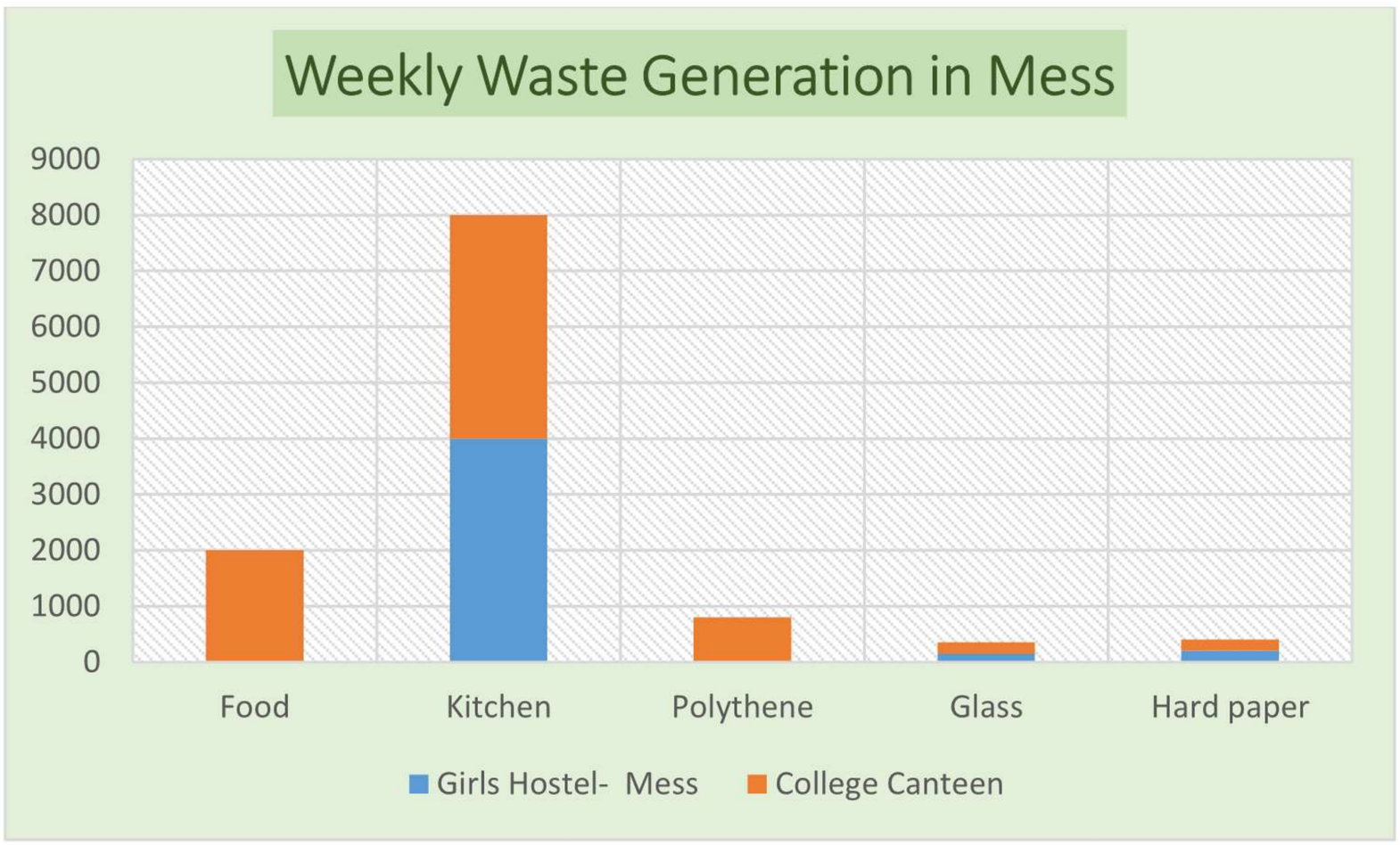
Departments	Paper	Polythene	Glass	Chalks	Garden
Arts	15,000	350	-	-	-
Science	40,000	300	2,000	2,000	10,000
Commerce	15,000	200	-	-	-
Total	**70,000**	**850**	**2,000**	**2,000**	**10,000**

TABLE 2 Weekly Faculty Wise Solid Waste Generation of College in Grams (Apx.)

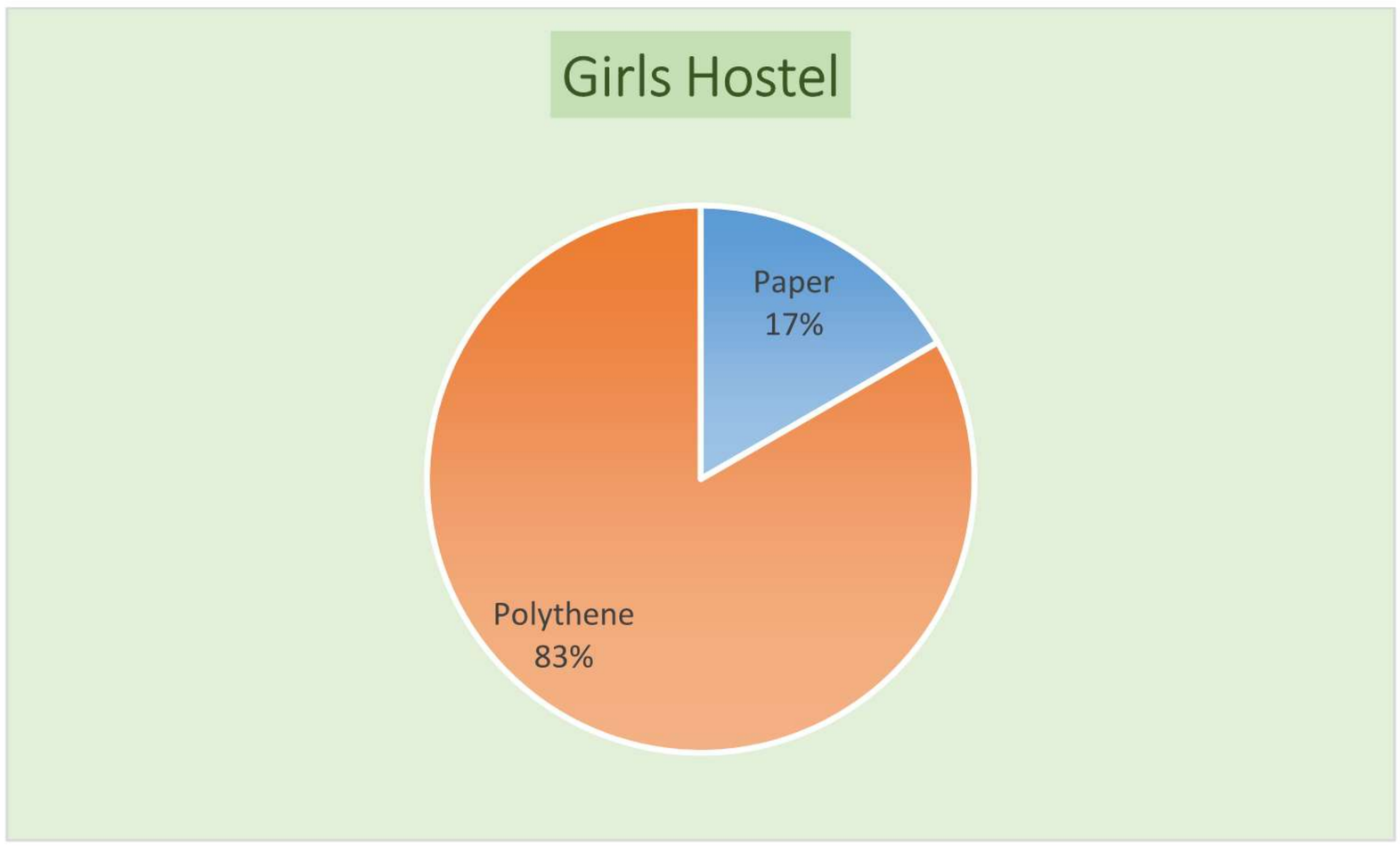


Place	Food	Kitchen	Polythene	Glass	Hard paper
Girls Hostel- Mess	-	4,000	-	150	200
College Canteen	2,000	4,000	800	200	200
Total	2,000	4,000	800	350	400

TABLE 3 Hostels and Staff Quarters – Weekly Solid Waste Generation in Grams (Apx.)



Place	Paper	Polythene
Girls Hostel	100	500
Total	100	500



Conclusion:

Paper, Kitchen waste, and Garden waste (biomass) are the major constituents of solid waste generation on the campus. Hard Paper, Hard Plastic, and Chalk waste are the minor components of solid waste generation. After detailed studies, we can conclude that the campus has a negligible amount of polythene generation.

Discussion:

Shri Shivaji College of Arts, Commerce and Science, Akola a well-known institute in Akola. The institute is famous for conducting curriculum-based activities and delivering social, moral, and ethical values to its stakeholders. As an environment concerned institute, college knows Solid waste, the most common type of waste in an educational institute, should be managed properly. So college has built the Biogas Plant and Compost Manure Plant. The organic waste including food waste and kitchen waste generated in Girls hostel and College canteen are collected, segregated, and transferred to a biogas plant, where it is further processed and decomposed. As garden waste is the major component of solid waste generation, the proper management of the garden waste is done in Compost Manure Plant.

The less polythene generation in the campus is a result of timely awareness programs conducted on the campus.

Paper waste ranks second in the total solid waste generation index of the campus. Key sources for paper waste generation are the library, office, and science departments.

Recommendations:

1. Paperless Campus:

i. The steps like preference should be given to cloud storage against hardcopy prints for storing office-related documents and paper.

Water Audit

2. Water Audit

Introduction:

Water is the prime important constituent of life. The quality of water and availability of water are the factors that define the health of the system. In education institutes having science faculty, PG departments, and research center, the amount of chemical mixed wastewater generation is considerable. The institute like Shri Shivaji College of Arts, Commerce, and Science, Akola which is having around 7000 stakeholders, PG departments, chemistry labs, and research centers, it is necessary to build appropriate water storage systems, check on the water demand, ensure efficient use of water and develop appropriate wastewater management system. The campus of Shri Shivaji College of Arts, Commerce, and Science, Akola, holds several trees, a canteen, and a toilet which are key sink areas for non-potable water. Whereas water purifiers in the campus, as well as in the canteen, are major potable water storage systems. All the detailed study regarding water system of the campus is reported in this report.

Aims and objectives:

- To describe the water storage system of the campus in great detail.
- To estimate the total potable and non-potable water demand of the campus.
- To compare data regarding water storage systems and estimated water demand.
- To recommend specific techniques to use water efficiently.

Methodology:

1. Data Collection

i. Water storage system:

The water storage system of the college is documented by organizing broad interviews with the college staff and spot inspection by audit experts.

ii. Potable and non-potable water demand:

For estimating the water demand of the campus, surveys are carried among all the stakeholders and staff by the digital way (Google forms), the collected data is then analyzed and represented in Microsoft Excel.

iii. Wastewater management system:

The data on the wastewater management system is collected by visiting the places on the campus by audit experts.

2. Data Analysis

The collected data from digital surveys, interviews, and spot visits is then analyzed by MS-Excel and represented in suitable diagrams.

3. Comments and Recommendations

The comments and recommendations have been made considering the number of stakeholders, the total water demand, water storage system, wastewater generation, and wastewater management system.

Observations:

Water storage details:

Sr. No.	Non-Potable Water Storage System	Capacity (in Lit)
Campus (including toilet)		
1.	Underground water storage in front of Chemistry Department	25000 lit
2.	Chemistry Department terrace	5000 lit
3.	Chemistry Department Rainwater storage	6000 lit
4.	Library Terrace	5 x 2000 lit
5.	Botany Department terrace	2000 lit
6.	Morna Building Terrace	2000 lit
7.	MCVC Department	1000 lit
Hostel		
1.	PG Hostel	3000 lit
2.	UG Hostel	4 x 2000 lit
Total		62000 lit

Sr. No.	Potable Water Storage System	Capacity in Litres
Campus		
1.	Library Terrace	11000 lit
2.	Rest House	3000 lit
3.	Morna Building	1000 lit
Hostel		

1.	PG Hostel	2000 lit
2.	UG Hostel	6000 lit
Total		23000 lit

WATER USAGE

Water users	Number
Students	7000
Teaching staff	98
Non-teaching staff	75
Total	**7173**

The total number of taps:

Toilets, washrooms, garden, departments (Science lab)

Sr. No.	Place	Number of taps
1.	Gents Toilet No. 1	03
2.	Gents Toilet No. 2	01
3.	Gents Toilet No. 3	05
4.	Ladies Washroom No. 1	01
5.	Ladies Washroom No. 2	03
6.	Principal Office Toilet	04
7.	Chemistry Department Washroom	04
8.	Chemistry Department Lab 1	03
9.	Chemistry Department Lab 2	20
10.	Chemistry Department Lab 3	24
11.	Chemistry Department Lab 4	26

Sr. No.	Place	Number of taps
12.	Chemistry Department Lab 5	26
13.	Chemistry Department Research Lab	16
14.	Zoology Department Lab 1	04
15.	Zoology Department Lab 2	02
16.	Zoology Department Lab 3	02 + 1
17.	Botany Department Lab 1	01
18.	Botany Department Lab 2	02
19.	Botany Department Lab 3	03
20.	Botany Department Lab 4	03
21.	Microbiology Department UG Lab	03
22.	Microbiology Department PG Lab	04
23.	Microbiology Department Research Lab	04
24.	Microbiology Department Washroom and Garden area	04
25.	Forensic Science Department Lab	01
26.	Biotechnology Department Lab	02
27.	Physics Department Lab	03
28.	Home Science Department Lab	04
29.	Biochemistry Department UG Lab	05
30.	Biochemistry Department PG Lab	05
31.	Biochemistry Department PG Lab	05
Total		**194**

Calculations:

1. **Non-Potable Water Demand:** (excluding laboratory use)

Per Head Non-Potable Water Demand Calculated by analyzing data of personal individual water use collected by Google Forms.

Net **Non-Potable Water Demand** is: 04 Lit/head/day

Number of Users = 7173

Total **Non-Potable Water Demand** = 28,692 Lit/day

Total **Non-Potable Water** storage system capacity= 52,000 lit

Discussion: After considering water flow to the laboratory and garden including leakage and wastage, the water storage system is properly built considering water demand.

Recommendation: Water tanks should be fully refilled after every two days.

2. **Per Head Potable Water Demand:**

Per Head Potable Water Demand Calculated by analyzing data of personal individual water use collected by Google Forms.

Net **Potable Water Demand** is: 03 Lit/head/day

Number of Stakeholders = 7173

Total **Potable Water Demand** = 21519 Lit /day

Total **Potable Water** storage system capacity = 23,000 lit

Recommendations: By calculations, it is recommended to refill the Potable water storage system tanks five times per week i.e. days.

Discussion:

The key water sources on the campus are-

1. **Rainwater harvesting unit**:

   The college has taken the initiative to refill the underwater table with the help of rainwater harvesting. The soak peats are about 28x10 ft.

   Hostel receives water supply from three bore wells present in the campus which are refilled with rainwater harvesting plant.

   Department of Chemistry collects rainwater and utilizes it for regular practical purposes.

2. **Borewell and other sources**:

   There are 5 Borewells in working and one two-inch municipal water connection which gives daily two to three hours water supply.

Recommendations:

1. **Wastewater disposal:**

   The healthy practice should be adopted for wastewater disposal at Chemistry laboratories, which includes- keeping three separate containers for the chlorinated chemicals, non-chlorinated chemicals, and water-miscible chemicals. The generated waste chemicals are then suggested to be hand-over to the water treatment laboratories.

Noise Audit

3. Noise Audit

Introduction:

Shri Shivaji College of Arts, Commerce, and Science, Akola, believes in student's utmost development by providing quality education. The institute takes all moral, ethical, social responsibilities that will enhance students' focus in all aspects of the course curriculum. For the same, the institute has taken in its policy that, the institute will have silent but happening premises which will lead to better growth of students. This report includes the data, calculations, analysis, and discussion about the noise index of the campus and corresponding standards set by government agencies.

Aims and Objectives:

1. To analyze noise level in campus considering road traffic parameters, different noise indices, and altitudinal response.
2. Recommend healthy practices to minimize or maintain noise levels.

Methodology:

1. **Review of literature and Government standards:** This audit procedure included a review of government policies related to noise standards in educational institutes.

2. **Data Collection:** The data regarding noise is collected from different locations and times. Noise Meter is used for the collection of data in decibels.

3. **Result and Conclusion:** The result and conclusion are drawn after the detailed analysis of the literature reviewed and the data collected.

Map of Shri Shivaji College

Observations:

Sr. No.	Location	No. of Readings	Time slot	Average Units (dB)
1.	Main Gate Premises	10	10:00 am to 05:00 pm	69.5
2.	Library	10	12:30 pm to 04:30 pm	54.5
3.	Office	10	10:00 am to 02:00 pm	61.5
4.	Central	10	10:00 am to 04:00 pm	53
5.	Botanical Garden	10	12:10 pm to 03:00 pm	51
6.	Class Room 1, 2, 3, 4 (1st floor, Morna Building)	06	10:00 am to 04:00 pm	51.66
7.	Class Room 5, 6, 7, 8 (2nd floor, Morna Building)	06	10:00 am to 04:00 pm	51.33
8.	Classroom 18,19,20 (Near Physics Dept.)	06	10:00 am to 04:00 pm	54.33
9.	Classroom 24, 25, 26 (Near Microbiology Dept.)	06	10:00 am to 04:00 pm	54

Conclusion:

The key places for noise generation are Main Gate and office premises, which shows the highest (Average for the location) i.e. 69.5 dB and 61.5 dB and Classrooms, Main Building, Library, and Botanical Garden have lowest (Average for the location) noise generation i.e. approximately near to 50 dB.

Discussion:

The standards set by CPCB (Central Pollution Control Board) for silent zones include noise levels of 55dB in the daytime and 45 dB in the nighttime. The core study areas of the college premises are meeting the standards set by CPCB for the educational institute and so the college can be considered as a silent zone as it meets the standards set by CPCB. The highest level of noise in the campus is at the entrance gate (69.5 dB), which is due to the vehicular noise on the street next to the entrance gate. The lowest noise level in the campus is near the classroom, library, and botanical garden (51 dB ±2 dB), which is due to the architectural planning of the infrastructure and dense vegetation in the campus.

Recommendations:

Following recommendations are made to monitor the noise level in campus:

1. It is recommended to plant more trees near the boundary of the college campus, which will reset the noise level caused by vehicular traffic on the road.

Biodiversity Audit

4. Biodiversity Audit:

Introduction:

The biodiversity of any institute defines the perspective of the institute towards the environment. More the diversity more the concern college has paid towards the environment. Keeping this in mind biodiversity audit is carried at Shri Shivaji College of Arts, Commerce, and Science campus. This report includes the aims and objectives set for the audit, observation, conclusion, and recommendations.

Aims and Objectives:

1. Enlisting of species biodiversity of the campus.
2. Analyzing spatial features of the area.

Methodology:

1. **Field surveys:** Extensive field surveys are carried to enumerate floristic diversity and enlisting of faunal diversity.

2. **Collection and analysis of data:** The collected data from field surveys are tabulated and analyzed for deciding the biodiversity status of the campus.

3. **Discussion:** The aspects regarding the biodiversity audit and environment-centric approach of an institute are discussed in great detail.

4. **Recommendations:** The recommendations are issued after a detailed study of the data.

Observations and inventory

Sr. No.	Name of the plant	Number of individuals
1.	***Canna indica***	10
2.	***Tradescantia species***	4
3.	***Duranta erecta***	2
4.	***Rosa species***	5
5.	***Ixora chinensis***	1
6.	***Thuja species***	21
7.	***Bougainvillea species***	5
8.	***Wedellia chinensis***	3
9.	***Ficus benjamina***	8
10.	***Plumeria species***	2
11.	***Nerium species***	1
12.	***Polyalthia longifolia***	19
13.	***Hibiscus species***	5
14.	***Plumeria pudica***	1
15.	***Oxalis corniculata***	1
16.	***Acalypha wilkisiana***	2
17.	***Dracena species***	5
18.	***Euphorbia milli***	3
19.	***Murraya paniculata***	1
20.	***Juniperus species***	1
21.	***Alstonia scholaris***	2

Sr. No.	Name of the plant	Number of individuals
22.	***Adenium obessum***	5
23.	***Azadirachta indica***	3
24.	***Vinca rosea***	10
25.	***Taebernimontana divaricata***	1
26.	***Morus alba***	1
27.	***Bauhinia species***	1
28.	***Ficus benghalensis***	1
29.	***Ficus religiosa***	10
30.	***Melia azadirach***	2
31.	***Hyophorb lagenicaulis***	10
32.	***Terminalia catappa***	14
33.	***Bamboo species***	2
34.	***Ocimum americanum***	1
35.	***Pyrostegia venusta***	1
36.	***Caryota urence***	2
37.	***Colocasia species***	1
38.	***Dracena species***	2
39.	***Quisqualis indica***	1
40.	***Ruellia species***	1
41.	***Agave species***	2
42.	***Russelia equisetiformis***	2
43.	***Ravenella madagascarensis***	1
44.	***Beaucarnea recurvata***	2

Sr. No.	Name of the plant	Number of individuals
45.	***Cycus species***	2
46.	***Caryota mitis***	3
47.	***Dracena trifacicata***	9
48.	***Pentas lanceolata***	1
49.	***Chrysanthemum species***	1
50.	***Aloe barbadensis***	1
51.	***Jatropha integerrima***	1
52.	***Bixa orellana***	1
53.	***Nyctanthis arbor-tristis***	1
54.	***Caleandra hematocephala***	1
55.	***Acalypha hispida***	1
56.	***Ricinus communis***	1
57.	***Ficus spp***	1
58.	***Mangifera indica***	1
59.	***Pisidium guajava***	1
60.	***Clitoria ternatea***	1
61.	***Alamenda catheretica***	1
62.	***Jatropha gossypifolia***	1
63.	***Holoptelea integrifolia***	1
64.	***Eucalyptus globulus***	1
65.	***Semecarpus anacardium***	1
66.	***Lawsonia inermis***	1
67.	***Citrus limon***	1

Sr. No.	Name of the plant	Number of individuals
68.	***Ceiba pentandra***	2
69.	***Vitex nigundo***	1
70.	***Argeria nervosa***	1
71.	***Adhatoda vesica***	1
72.	***Simarouba glauca***	1
73.	***Erythrina suberosa***	1
74.	***Carissa carandas***	1
75.	***Plumbago xylenica***	2
76.	***Cocculus hirsutus***	1
77.	***Securingea virosa***	1
78.	***Murraya coeningii***	1
79.	***Pongamea pinnata***	1
80.	***Tinospora cordifolia***	1
81.	***Mimosa pudica***	1
82.	***Ocimum basilicum***	1
83.	***Commiphora vightii***	1
84.	***Bamboo sp.(Golden)***	1
85.	***Cassia siamea***	1
86.	***Cessus quadrangularis***	1
87.	***Caesalpinia pulcherrima***	1
88.	***Sizyzium cumini***	1
89.	***Asparagus racemosus***	1
90.	***Costus speciosus***	1

Sr. No.	Name of the plant	Number of individuals
91.	***Jatropha podagarica***	1
92.	***Mirabilis jalapa***	1
93.	***Peltophorum pterocarpum***	5
94.	***Delonix regia***	3
95.	***Tecoma stans***	1
96.	***Moringa oleifera***	1
97.	***Ailanthus excelsa***	1
98.	***Thespesia populnea***	1
99.	***Jasminun multiforum***	1
100.	***Asclepias crassavica***	1
101.	***Hamelia patens***	1
102.	***Araucaria spp***	1
103.	***Euphorbia tithimalodes***	1
104.	***Coccus nucifera***	1
105.	***Cordia dichotoma***	1
106.	***Terminalia arjuna***	2
107.	***Roystonea regia***	2
108.	***Anthocephalus cadamba***	1
109.	***Teminalia bellirica***	1
110.	***Casuarina equisitifolia***	1
111.	***Grevillea robusta***	1
112.	***Euphorbia tirucalii***	1
113.	***Albezzia lebbeck***	1

Sr. No.	Name of the plant	Number of individuals
114.	***Leucaena leucocephala***	1
115.	***Wodyetia bifurcata***	1
116.	***Duranta repens***	1
117.	***Areca catechu***	2
118.	***Hymenocallis sp.***	2

Faunal Diversity:

Sr. No.	Name of the organism
A)	**Birds**
1.	Green Bee-eater
2.	House Swift
3.	Indian Robin
4.	Red-vented bulbul
5.	Indian grey hornbill
6.	Asian koel
7.	Rose-ringed parakeet
8.	Common Hoopoe
9.	Indian Roller
10.	Greater coucal
11.	Spotted Dove
12.	Rock Pigeon
13.	White Breasted King Fisher
14.	Little Brown Dove

Sr. No.	Name of the organism
15.	Black Kite
16.	Ashy wren
17.	White-Breasted Water lam
18.	Cattle Egret
19.	Jungle Babbler
20.	Little Egret
21.	Black Drongo
22.	Purple Sunbird
23.	Brahminy Starling
24.	Indian Pond Heron
25.	House Sparrow
26.	Red-wattled lapwing
27.	Common Myna
28.	House Crow
29.	Black Shoulder kite
30.	Barn owl
B)	**Insects**
31.	Dragonfly
32.	Grasshopper
33.	Lepisma
34.	Mosquito
35.	Housefly
36.	Crickets

Sr. No.	Name of the organism
37.	Ring mantis
38.	Common Rosy
39.	Tiger beetle
C)	**Spiders**
40.	*Neiscona thesi*
41.	*Neiscona mukergi*
42.	*Neiscona cursifera*
43.	*Araneus mitificus*
44.	*Tenona sp.*
45.	*Uloborous sp.*
46.	*Cyrtophora sp.*
47.	ground spider
48.	*Stigodipouse sp.*
49.	*Plexipus paykuli*
D)	**Mammals**
50.	Squirrel
51.	Bat
52.	Mangoes
53.	Monkey
54.	Rat
55.	Cat
56.	Dog

Discussion:

The 275 individuals from 118 plant species and 56 notable faunal species among many other species show the richness of the campus. The Grey Hornbill and Black Kite are the key species indicating the healthiness of the campus. The institute is trying its best to maintain the biodiversity on the campus as well as off-campus. Knowing the need for percolation of scientific knowledge in the society, the Botany department has carried various projects to collect taxonomic information about the plants belonging to nearby areas, and as a part of social responsibility around 500 plants of different species are planted by the college in the surrounding village; images and news cuttings of the same are attached in the annexure.

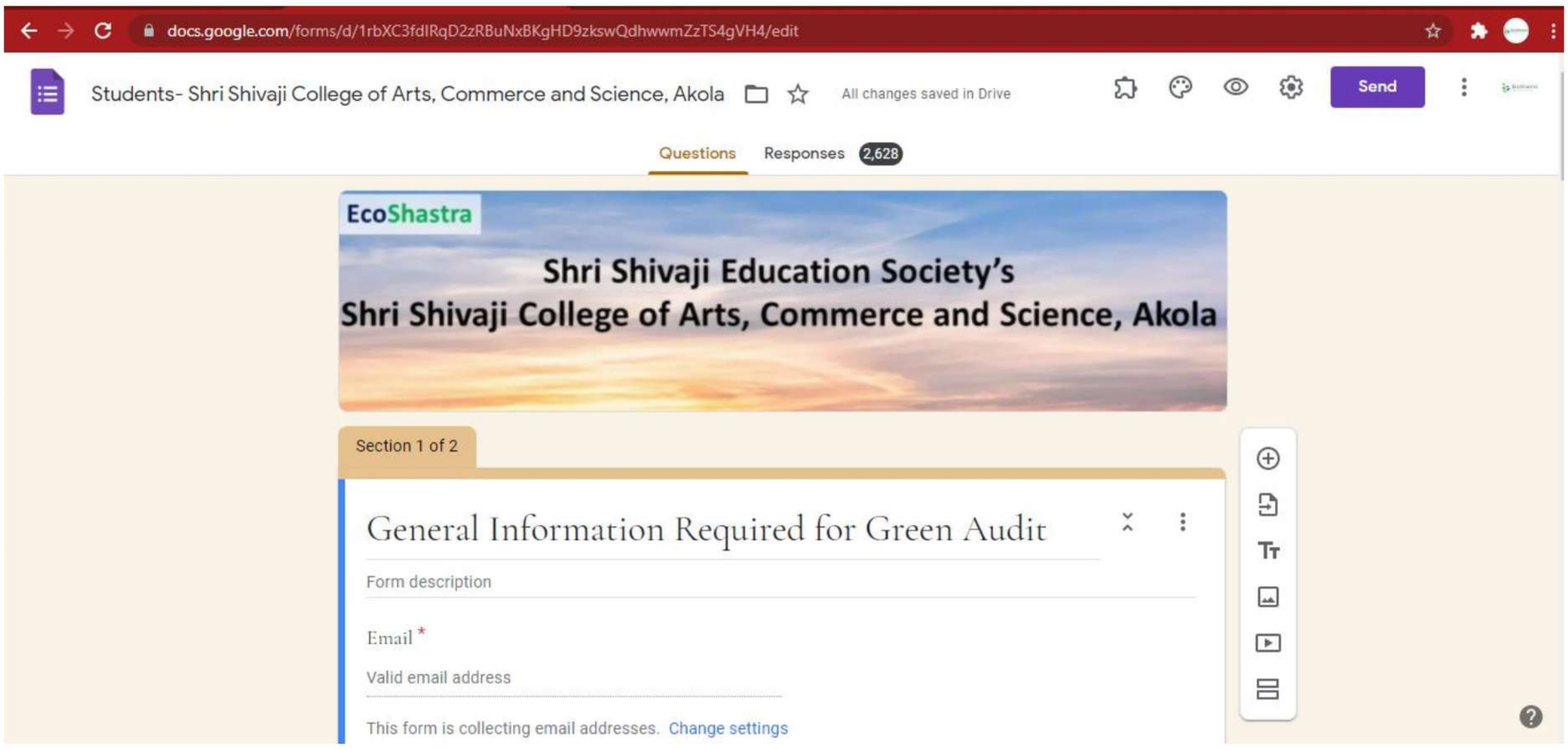
Recommendations:

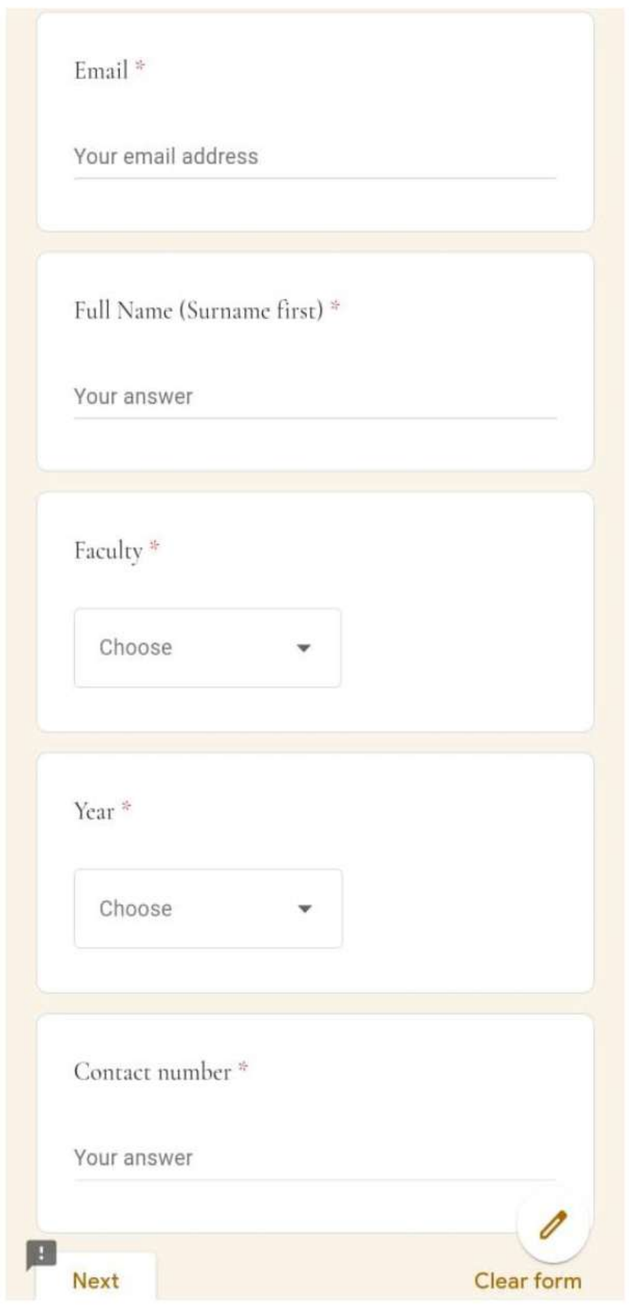
Following recommendations are issued after studying the collected data:

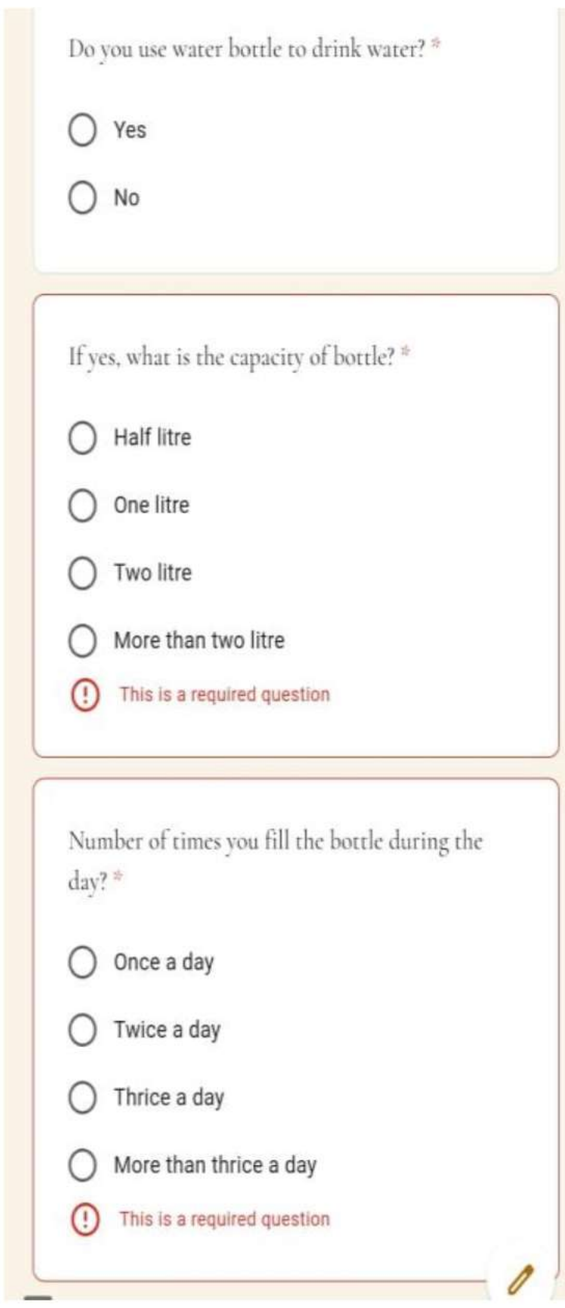
1. The plants from native flora should be preferred for further cultivational activities on the campus.

ANNEXURE

1. Survey regarding water audit is carried out on Google form







2. Noise Audit readings

3. Tree Plantation Activities through colleges

३) दि ५ जुलै २०१७ वृक्षारोपन : ग्राम येवता येथील जि प शाळेच्या खुल्या जागेत २३५ वृक्षांची लागवड करण्यात आली. रासेयो स्वयंसेवकांनी यासाठीचे खडडे तयार करून वृक्षारोपन केले व गावातील घरोघरी जाउन वृक्ष लावण्यासाठी रोपांचे वाटप केले.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७ दि ९ ऑगष्ट २०१८ ऑगष्ट कांती दिना निमित्य महाविद्यालय परिसरात वृक्षरोपन करण्यात आले यावेळी प्रसिध्द साहित्यीक व कवी डॉ विठठल वाघ व श्री शिवाजी शिक्षण संस्थेचे कार्यकारिणी सदस्य मा केशवराव मेतकरए प्राचार्य डॉ रामेश्वर भिसे उपस्थित होते.

4. News articles

मुख्याध्यापक यांना कळे. सामता अकला याना कळावल आह.

श्री शिवाजी महाविद्यालयात रासेयोचा वृक्षसंवर्धन पंधरवडा

प्रतिनिधी/७ जुलै

अकोला : स्थानिक श्री शिवाजी महाविद्यालयाच्या राष्ट्रीय सेवा योजनेच्यावतीने १ जुलै ते १५ जुलै दरम्यान महाविद्यालय परिसरात वृक्षसंवर्धन पंधरवडा साजरा करण्यात येत आहे. १ जुलै रोजी महाविद्यालय परिसरात आवळा, फापळा व इतर जातीचे ५० वृक्षाचे मान्यवरांच्याहस्ते रोपण करण्यात आले यावेळी प्राचार्य सुभाष भडांगे, उपप्राचार्य डॉ. एस. पी. रोठे, डॉ. एम.आर. इंगळे, डॉ. एस.पी. देशमुख,

रासेयो जिल्हा समन्वयक प्रा. विवेक हिवरे, रासेयो कार्यक्रम अधिकारी डॉ. संजय तिडके, महिला कार्यक्रम अधिकारी प्रा. कपिला म्हैसणे, सहकार्यक्रम अधिकारी प्रा. मिनाक्षी सरोदे यांच्यासह महाविद्यालयातील शिक्षक व शिक्षकेत्तर कर्मचारी मोठ्या संख्येने उपस्थित होते. परिसरात लावलेले वृक्षांचे संगोपन व संवर्धन करण्यासाठी त्यांना संरक्षक लावणे, पाणी देणे व झाडांची सर्वतोपरी निगा राखून वृक्ष जगविण्यासाठी या वृक्षसंवर्धन पंधरवड्य कार्य करण्यात येत आहे. कार्यक्र अधिकारी डॉ. संजय तिडके य मार्गदर्शनात रासेयो गटप्रमुख अंकुश इंग रोहन बुंदेले, जितेश इंगळे, श्रद्धा का कोमल गायकवाड, शिवशंकर मिरगे, हर्ष इंगळे, धनश्री मुईभार, मीरा डिक्कर, अ उगवेकर, जयश्री मुईभार, पूजा आ आदींनी परिश्रम घेतले आहे.

जाहीर सुचन

शिवाजी महाविद्यालयामध्ये वृक्षारोपण

महाविद्यालय, डॉ. बाबासाहेब आंबेडकर अभ्यास केंद्र आणि रासेयोचा संयुक्त उपक्रम

प्रतिनिधी । अकोला

दैनिक 'दिव्य मराठी'ने सुरू केलेल्या "एक वृक्ष एक जीवन' या अभियानात शहरातील श्री शिवाजी महाविद्यालयाने सहभाग नोंदवून गुरुवारी महाविद्यालयाच्या परिसरात वृक्षारोपण केले. महाविद्यालय, डॉ. बाबासाहेब आंबेडकर अभ्यास केंद्र आणि राष्ट्रीय सेवा योजना यांच्या वतीने संयुक्तरित्या हा उपक्रम राबवण्यात आला.

महाविद्यालयाच्या परिसरात विद्यार्थी आणि प्राध्यापकांनी विविध प्रकारची झाडे लावली. प्राचार्य डॉ. सुभाष भडांगे यांच्या मार्गदर्शनात हा उपक्रम राबवण्यात आला. या अभियानांतर्गत आवळा, आंबा, कडूनिंब, पिंपळ अशी २० झाडे लावण्यात आली. यापूर्वी देखील काही झाडे लावण्यात आली. या वेळी महाविद्यालयाचे उपप्राचार्य डॉ. एम. आर. इंगळे, राष्ट्रीय सेवा योजनेचे कार्यक्रम अधिकारी डॉ. संजय तिडके, प्रा. राहुल माहुरे, प्रा. आकाश हराळ, प्रा. सुनील मावस्कर, राहुल कुरे, अमित लोंढे, विशाल इंगळे, आकाश हिवराळे, शुभम गोडे, कुणाल मेश्राम, अजिंक्य घेवडे, विशाल नंदागवळी, हेमंत तायडे यांच्यासह राष्ट्रीय सेवा योजना आणि अभ्यास केंद्रातील विद्यार्थी उपस्थित होते.

शिवाजी महाविद्यालयाच्या परिसरात वृक्षारोपण करण्यात आले.

वृक्ष हेच जीवनाचे सोबती

वृक्ष प्राणवायूसह इतरही गोष्टी देतात. वृक्ष हेच आपल्या जीवनाचे खरे सोबती आहेत.''

डॉ. एम. आर. इंगळे, उपप्राचार्य

नियोजन आवश्यक

इतर बाबींप्रमाणेच वृक्षारोपण आणि संवर्धन याचेही नियोजन होणे आवश्यक आहे.''

डॉ. संजय तिडके, कार्यक्रम अधिकारी, राष्ट्रीय सेवा योजना

वृक्षसंवर्धन चळवळ व्हावी

झाडे लावणे आणि झाडे जगवणे हे उपक्रमापुरते मर्यादित न राहता वृक्षसंवर्धनाची चळवळ झाली पाहिजे. सण किंवा इतर वेळी वस्तूऐवजी झाडेच भेट दिली पाहिजेत.''

प्रा. राहुल माहुरे

सीड बँक स्थापन करावी

शाळा-महाविद्यालयांत विद्यार्थ्यांनी मिळून सीड बँक स्थापन करावी. आपण कुठेही बाहेर जाताना यातील सीड्स रस्त्याच्या कडेने लावता येतात.''

विशाल नंदागवळी, विद्यार्थी

वृक्षारोपणाच्या उपक्रमात नियमितता असावी. झाडे लावून संगोपन होणे आवश्यक आहे.''

हेमंत तायडे, विद्यार्थी

5. Field surveys done by college

The college has conducted the survey of various plant species around the Akola city. The outcome of the project is as follows:

Floristic Survey on Angiospermic Plants of Campus of Shri Shivaji College, Akola (2018-19)

Sr.No.	Family	Botanical name	Common name
1	Rannuculaceae	***Clematis heynei* L.**	Morvel
2	Annonaceae	***Annona squamosa* L.**	Sitaphal
		***Polyalthia longifolia* (Sonner.)Thw**	False ashoka
3	Menispermaceae	***Cocculus hirsutus* L. Diels.**	Vasan vel
		***Tinospora cordifolia* Willd. Miers**	Gulvel
4	Nelumbonaceae	***Nelumbo nucifera* L.**	Lotus
5	Brassicaceae	***Brassica compestris* L.Var Sarson.**	Sarsu, Sarsav
		***Brassica juncea* L.Czern.Consp.**	Mustard
6	Cleomaceae	***Cleome viscosa* L.**	Asian spider flower
7	Caryophylaceae	***Dianthus chinesis* L.**	Rainbow pink
8	Portulacaceae	***Portulaca grandiflora* Hook**	China rose
9	Malvaceae	***Gossypium hirsutum* L.**	Cotton
		***Hibiscus rosa-sinesis* L.**	Jaswand
		***Malachra capitata* L.**	Ran Bhendi
		***Malvastrum cromandelium*(L.)Grcke**	Clockplant (Chandiri)
		***Sida acuta* Burn.f.**	Kareta
		***Sida cordifolia* L.**	Heart-Leaf sida
10	Elaeocarpaceae	***Muntingia calabura* L.**	Singapur cherry
11	Malphiginaceae	***Galphimia gracilis* Bartl.**	GoldShower
12	Oxalidaceae	***Biophytum sensitivum* L.DC**	Lifeplant (Lajalu)
		***Oxalis corniculata* L.**	Ambushi
13	Rutaceae	***Citrus limon* Burn.**	Limbu
		***Murraya paniculata* Jack.**	Kunti

Sr.No.	Family	Botanical name	Common name
		***Murraya paniculata* Jack.**	Kunti
14	Meliaceae	***Azadiracta indica* A.Juss**	Nim
		***Melia azidiracta* L.**	Nim
15	Vitaceae	***Cissus quadrangularis* L Syn.**	Had sakal
16	Sapindaceae	***Cardiospermum halicacabum* L.**	Kapalpholi
17	Anacardiaceae	***Magnifera indica* L.**	Amba
18	Fabaceae	***Abrus precatorious* L.**	Gunj vel
		***Cajanas cajan*(L.)Mill.Sp.**	Tur
		***Callindra haematosephala* Hassk.**	Red Powder puff
		***Cicer arieticum* L.**	Chana
		***Clitoria ternata* L.**	Blue pea(Gokarna)
		***Erythrina ceberoja* Roxb.**	Panghara
		***Pongamia pinnata*(L.) Pierre**	Karum Tree
19	Cesalpiniaceae	***Bauhinia purpurea* L.**	Dev kanchan
		***Cassia siamia* Lamk.**	Kasid
		***Cassia tora* L.**	Tora (tarota)
		***Ceasalpinia pulchirima*(L.)Sw.**	Sankeshwar
		***Delonix regina* (Boj.)Raf.**	Gulmohar
		***Peltocarpum pterocarpum* (DC) Backer.**	Tamra varni
		***Tamarindus indica* L.**	Chich
20	Mimosaceae	***Mimosa pudica* L.**	Lajalu
21	Combretaceae	***Quisqualis indica* L.**	Madhumalati
		***Terminaria arjuna* (Roxb.)Wt & Arn**	Arjun Tree
		***Terminaria belerika* Roxb.**	Behada
		***Terminaria cattappa* L.**	Indian almond
22	Rosaceae	***Rosa indica* L.**	Rose
		***Rosa multiflora* Thunb.**	Rose

Sr.No.	Family	Botanical name	Common name
23	Myrtaceae	***Eucalyptus grandis* Labill.**	Nilgiri
		***Psidium guajava* L.**	Peru
		***Syzygium cumini* L.**	Jambhul
24	Lythraceae	***Lawsonia alba* Lamk.**	Mehandi
		***Lawsonia innermis* L.**	Mehandi
25	Passifloraceae	***Turnera ulmifolia* L.**	Buttercup flower
26	Cucurbitaceae	***Trichozanthus cucurmerina* L.**	Parval
27	Cactaceae	***Cactus sp.* Juss.**	Nivdung
28	Rubiaceae	***Ixora coccinia* L.**	Rati nevari
		***Pentas lanceolata* Forssk.Deflers**	Star flower
		***Anthocepalous cadamba* A.Rich**	Kadamb
29	Asteraceae	***Conyza bonariensis* (L.)**	Hairy horseweed
		***Crysanthemum morifolium* L.**	Garden mum (Shevanti)
		Cyanthium cenerum	Sahdevi
		***Eclipta alba* (L.) Hassk**	False daisy(Bhringraj)
		***Echinops echinatus* Roxb.**	Utkant
		***Launaea procumbance* (Roxb.)**	Pathari(jagali gobi)
		***Parthenium hysterophorus* L.**	Ganjar gavat
		***Pulicaria dysenterica* (L.) Bernh.**	False Fleabane
		***Sonchus asper* (L.) Hill**	Mhatara
		***Synedrella nodifolia* (L.)**	Pig Grass
		***Tagest erecta* L.**	Zendu
		***Tridax procumbance* L.**	Kambarmodi
		***Wedelia chinesis*(Osbeck)Merr.**	Pilabhangara
		***Zinnia angustifolia* L.**	Creeping Zinnia
30	Plumbaginaceae	***Plumbago zeylanica* L.**	Chitrak
31	Primulaceae	***Embelina ribs* Burm.f.**	Vavding
32	Oleaceae	***Jasmimum multiflorum* (Bur**	Mogara

Sr.No.	Family	Botanical name	Common name
		m.f.) **Andra**	
		***Jasmimum sambac* (L.) Alt.**	Mogara
		***Nyctanthes arbortristis* L.**	Prajakta
33	Apocynaceae	***Adenium obesum*(Forssk.) Roem. & Schult.**	Desert Rose
		***Allamanda cathartica* L.**	Golden Trumpet Vine
		***Alstonia scholaris* (L.)R.Br.**	Saptaparni
		***Carissa carandus* L.**	Karvand
		***Catharanthus roseus* (L.)G.Don**	Sadaphuli
		***Gynnema sylvesrtis* R.Br.**	Gurmar
		***Nerium oleander* Blanco**	Kanher
		***Plumeria alba* L.**	Chafa
		***Plumeria rubra* L.**	Chafa
		***Plumeria pudica* Jacq.**	Chafa
		***Tabernaemontena divaricata* (L.)R.Br.**	Swastik
34	Asclepideaceae	***Calotropis gigantean*(L.)R.Br.**	Giant Milkweed
		***Calotropis procera* (Ait)R.Br.**	Rui
35	Convolvulaceae	***Argyreia nervosa* (Burn.f.) Boj.**	Samudra shosh
		***Ipomoea hedrifolia* L.**	Scarlet morningGlory
		***Ipomoea quamocli* L.**	Ganeshvel
		***Merremia emarginata* (Burm. fil.) Hall. fil.**	Kidney leaf morning glory
36	Solanaceae	***Capsicum annunum* L.**	Mirchi
		***Datura inoxia* Mill.**	Black Dhatura
		***Datura metal* L.**	Dhotara
		***Solanum lycopercicum* L.**	Tomato
		***Solanum melongena* L.**	Brinjal
37	Bignoneaceae	***Tecoma stance* (L.)H.B&K**	Yellow bells
38	Acanthaceae	***Adhatota vasica* Nees.**	Adulsa

Sr.No.	Family	Botanical name	Common name
		***Barleria priontis* L.**	Katekoranti
		***Crosandra infundibuliformis*(L.) nees**	Aboli
		***Odonotonema tubaeforme* (Bertol.) Kuntze**	Firespike
		***Pachystachys lutea* Nees.**	Lolypop
39		***Ruellia tuberose* L.**	Bluebell
	Verbenaceae	***Duranta erecta* L.**	Damyanti
		***Lantana camera* L.**	Indradhanu
		***Vitex neugundo* L.**	Nirgudi
40	Lauraceae	***Cinnamomum tamala* (Buch-Ham.)**	Tej-patta
41	Lamiaceae	***Ocimum americium* L.**	Ran-tulasi
		***Ocimum basilicum*L.**	Ram-tulasi
		***Ocimum gratissium* L.**	Ram-tulasi
		***Ocimum sanctum* L.**	Tulasi
42	Plantiginaceae	***Russelia equisetiformis***	
43	Nyctanginaceae	***Bougainvillea spectabilis* Willd.**	Buganvel
		***Mirabilins jalapa* L.**	4'o'clock
44	Amaranthaceae	***Alternanthera sessalis* (L.)R.Br**	Garudi
		***Amaranthus viridis* L.**	Prince of wales
		***Digera muricata* (L.)Mart**	Kanjro
45	Basellaceae	***Basella alba* L.**	Poipothi
46	Plygonaceae	***Rumex crispus* L.**	
47	Euphorbiaceae	***Acalypha hispida* Burm.f**	Red hot Cat tail
		***Acalypha indica*L.**	Venchhi kanto
		***Acalypha wilkensonia* Mull.Arg**	
		***Croton bonplandiannum* Baill.**	Croton
		***Euphorbia hirta* L.**	Dudheli
		***Euphorbia geniculata* Ort.**	
		***Euphorbia milli* Ch.**	

Sr.No.	Family	Botanical name	Common name
		***Euphorbia thamifolia* L.**	
		***Jatropha gossypifolia* Roxb**	Vilayati Arandi
		***Phylanthus niruri* auct.**	Bhuiavala
		Ricinus communis	Yerandi
48	Moraceae	***Ficus benjamina* L.**	weeping fig
		***Ficus bengalensis* L.**	Banyan tree
		***Ficus recemosa* L.**	Umbar
		***Ficus religiosa* L.**	Peepal tree
		***Morus alba* L.**	white mulberry
49	Hydrocharitaceae	***Hydrila verictillata* Presl.**	Bam
		***Najas indica* (Willd) Cham.**	
50	Zingiberaceae	***Alpinia galangal* (L.) Willd.**	Thai ginger
51	Cannaceae	***Canna indica* L.**	Dev-keli
52	Musaceae	***Musa paradisiacal* L.**	Banana tree
		***Ravenala madagascariensis* Sonn.**	traveller's tree
53	Amyrilidaceae	***Crinum asiaticum* L.**	Sukhadarshan
54	Agavaceae	***Agave sp.*L.**	Kamal cactus
55	Liliaceae	***Allium sativum* L**	Lasun
		***Aloe vera* (L.)Burm.f**	Korfad
		***Asparagus racemosus* Willd.**	Shatavari
56	Commelinaceae	***Commelina benghalensis* L.**	Kena
		***Tradescantia discolor* L.Herit,Sert**	Spiderwort
57	Arecaceae	***Caryota urense* L.**	Shivjata
		***Collocasia esculanta* (L.)Schott.**	Alu
		***Diffenbachia amoena* L.**	Dumb cane
		***Livistonia chinensis* (Jacq.)R.Br. ex Mart.**	Chinese fan palm
		***Phoenix salvestris* (L.)Roxb.**	Khajur
		***Roystonia regina* (Kunth)**	Cuban royal palm

Sr.No.	Family	Botanical name	Common name
		(H.B.K) O.F.cook	
59	Potamogetonaceae	***Potamogeton* L.**	Shinning Pondweed
60	Poaceae	***Bambusa bambos* Voss.**	Bambu
		***Cynadon dyctalon* (L.)Pers.**	Haral
		***Dicanthelium oligosanthes* (Schult.) Gould**	
		***Eleusine indica* (L.) Gaertn.**	Crowfoot grass

Survey on Trees species of Akola City

List of Avenue Trees

Sr.No	Family	Name of Plant	Local Name
1	Capparidaceae	***Crateva religiosa* Auct.**	Temple plant
2	Elaeocarpaceae	***Muntingia calabura* L.**	Singapore cherry
3	Rhamnaceae	***Ziziphus jujuba* Auct.**	Bor
4	Moringaceae	***Moringa concanensis* Nimmo**	Ran Shegat
5	Caesalpiniaceae	***Bauhinia racemosa* Lamk.**	Bidi leaf tree
		***Cassia roxburghii* DC.**	Roxburgh's cassia
		***Cassia siamea* Lamk.**	kassod tree
		***Delonix regia* (Boj. Ex Hook.) Raf.**	Gulmohar
		***Parkinsonia aculeata* L.**	jelly bean tree
		***Peltophorum pterocarpum* (DC.) Baker ex K. Heyne**	Yellowflamboyant
6	Fabaceae	***Gliricidia sepium* (Jacq) Kunth ex Steud.**	Quickstick
		***Pongamia pinnata* (L.) Pierre**	
7	Mimosaceae	***Acacia nilotica* (L) Del.**	Gum arabic tree
		***Albizia lebbeck* (L.) Willd.**	woman's tongue tree.
		***Mimisa hamata* Willd.**	
		***Prosopis juliflora* (Sw.) DC.**	
		***Parkia biglandulosa* Wt. & Arn.**	
8	Combretaceae	***Terminalia catappa* L.**	Indian almond
9	Rubiaceae	***Anthocephalus cadamba* A. Rich.**	Burflower-tree
10	Apocynaceae	***Alstonia scholaris* (L.) R. Br.**	Saptparni
11	Ehretiaceae	***Cordia sebestena* L.**	Kopte
		***Cordia sinensis* Lamk.**	Grey-leaved saucer berry
12	Bignoniaceae	***Millingtoni hortensis* L. f.**	Latak chandani
		***Spathodea companulata* P. Beauv.**	African tulip tree
13	Verbenaceae	***Tectona grandis* L. f.**	Teak tree
14	Euphorbiaceae	***Putranjiva roxburghii* Wall.**	

Sr.No	Family	Name of Plant	Local Name
15	Moraceae	***Ficus benghalensis* L.**	Banyan tree
		***Ficus carica* L.**	Common fig tree
		***Ficus elastic* Roxb.**	Rubber tree
		***Ficus racemosa* L.**	cluster fig tree
		***Ficus religiosa* L.**	Peepal tree
		***Morus alba* L.**	white mulberry
16	Musaceae	***Ravenala madagascariensis* Sonnerat**	Traveller's tree
17	Casuarinaceae	***Casuarina equisetifolia* J. R. & G. Forst.**	Australian pine tree

Lists of Medicinal Plants			
Sr.No	**Family**	**Name of Plant**	**Common Name**
1	Annonaceae	***Annona reticulata* L.**	Ramphal
		***Annona sqamosa* L.**	Sitaphal
2	Rutaceaee	***Aegle marmelos* (L.) Juss**	Bel
		***Citrus lemon* Burm**	Limboo
		***Murraya koinigii* (L.) Spr.**	Kadipatta
3	Simaroubaceae	***Ailanthus excelsa* Roxb.**	Mharukh
4	Balanitaceae	***Balanites aegyptiaca* (L.) Del.**	Hingan Bet
5	Meliaceae	***Azadirachta indica* A. Juss.**	Neem
		***Melia azedirach* L.**	
6	Sapindaceae	***Sapindus mucorosis* Gaertn.**	Ritha
7	Anacardiaceae	***Mangifera indica* L.**	Aam
		***Semicarous anacardium* L. f.**	Bibba
8	Moringaceae	***Moringa oleifera* Lamk.**	Shevga
9	Caesalpiniaceae	***Caesalpinia bonduc* L. emend Dandy & Exell**	Sagargoti
		***Caesalpinia puncherrima* (L.) Swartz**	Sankeshwar
		***Cassia fistula* L.**	Bahava
		***Tamarindus indica* L.**	Imli
10	Fabaceae	***Butea monosperma* (Lam.) Taub.**	Palas
		***Dalbergia sissoo* Roxb. ex DC.**	Shisam
		***Erythrina suberosa* Roxb.**	Coral tree
		***Sesbania grandiflora* (L.) Poir.**	Hummingbird tree
11	Mimosaceae	***Acacia leucophloea* (Roxb.) Ridsd.**	
12	Combretaceae	***Terminalia arjuna* (Roxb.) Wt. & Arn.**	Arjun tree
		***Terminalia bellirica* (Gaertn.) Roxb.**	Behada
13	Myrtaceae	***Eucalyptus globulus* Labill.**	Nilgiri
		***Psidium guayava* L.**	Peru
		***Syzygium cumini* (L.) Skeels**	Jambhul
14	Lythraceae	***Lawsonia inermis L***	Mehndi
		Lagerstromia indica L	crape myrtle

15	Passifloraceae	***Carica papaya L.***	Papaya
16	Rubiaceae	***Morinda citrifolia L.***	Bartondi
17	Sapotaceae	***Madhuca indica* Gmel.**	Moh
		Mimusops elengi L.	Bakul
18	Apocynaceae	***Thevetia peruviana (Pers.) K. Schum.***	yellow oleander
		***Wrightia tinctoria* R.Br. in Mem. Wern.Nat.**	Kala-Kuda
19	Asclepiadaceae	***Calotropis gigantean* (L.) R. Br.**	Runchki
20	Bignoniaceae	***Kigelia africana* Benth.**	Balam Kheera
21	Verbenaceae	***Vitex negundo* L.**	Nirrguli
22	Piperaceae	***Piper nigrum* L.**	Kali mirch
23	Lauraceae	***Cinnamomum tamala* (Buch.-Ham.)**	Tej patta
24	Santalaceae	***Santalum album* L.**	Chandan
25	Euphorbiaceae	***Phyllanthus emblica* Gaertrn.**	Awla
		***Ricinus communis* (L.)**	Castor oil seed
26	Ulmaceae	***Holoptela integrifolia* (Roxb.) Planch**	
27	Moraceae	***Ficus racemosa L.***	Hekala
		***Ficus hispida* L.f.**	Bhui Umbar
28	Musaceae	***Musa paradisica* L.**	Banana

List of Ornamental Trees

Sr.No	Family	Name of Plant	Local Name
1	Annonaceae	***Polialthia longifolia* (Sonner.) Thw.**	Khota Ashoka
2	Bixaceae	***Bixa orellana* L.**	lipstick tree
3	Malvaceae	***Thespesia populnea* (L.) Soland. Ex corr.**	portia tree
4	Caesalpiniaceae	***Bauhinia purpurea* L.**	orchid tree
		***Bauhinia tomentosa* auct.**	yellow bell orchid
5	Mimosaceae	***Albizia julibrissis* Durazz**	pink silk tree
6	Myrtaceae	***Callistemon regidus* R. Br.**	Bottlebrush
7	Sapotaceae	***Manilkara zapota* (L.) P. van Royen**	Chicoo
8	Oleaceae	***Nyctanthes arbor-tristis* L.**	Parijatak
9	Salvadoraceae	***Salvadora persica* L.**	Pilukatar
10	Apocynaceae	***Plumeria alba* L.**	caterpillar tree
		***Plumeria pudica* Jacq.**	
		***Plumeria rubra* L.**	frangipani
11	Bignoniaceae	***Jacaranda mimosifolia* D. Don**	Nilmohar
12	Moraceae	***Ficus benjamina* (L.)**	weeping fig
13	Palmae (Arecaceae)	***Caryota Urens* L.**	solitary fishtail palm
		***Coccus nucifera* L.**	Coconut

Preliminary survey on Climbers of Akola City (2018-19)

Sr.No	Family	Name of Species
2.	Ranunculaceae	***Clematis heynei* L.**
3.	Menispermaceae	***Cocculus hirsutus* L. Diels.**
4.		***Tinospora cardifolia* Willd Miers.**
5.	Vitaceae	***Cissus quadrangularis* L.Syn Vitis Linn**
6.	Sapindaceae	***Cardiospermum halicacabum* L.**
7.	Fabaceae	***Abrus precatorius* L.**
		***Alysicarpus monilifer* L.**
		***Clitoria ternata* L.**
		***Lablab purpureus* (L.) Sweet**
8.	Caesalpiniaceae	***Moulava spicata***
		Bauhinia vahlii
9.	Combretaceae	***Quiscalis indica* L.**
10.	Passifloraceae	***Passiflora caerulea* L.**
		***Passiflora foetida* L.**
11.	Cucurbitaceae	***Trichosanthes cucumerina* L.**
		***Luffa acutangula* L. Roxb.var.**
		***Luffa acutangula* L. Roxb.amara**
		***Momordica charantia* L.**
		***Momordica diocia* Roxb.**
		***Diplocyclos palmatus* (L)jeffrey.**
		***Mukia madaraspatana*(L)Roem.**
		***Solena amplexicaulis* (Lam)Gandhi.**
		Cucumis melo var. agrestis.
12.	Oleaceae	***Jasminum multiflorum*(Burm.f.)Andra.**
		***Jasminum sambac* Ait.**
13.	Apocynaceae	***Nerium oleander* Mill.**
		***Allamanda cathartica* L. Mant.**
14.	Asclepediaceae	***Pargularia daemia*(Forsk)Chiov.**
		***Wattakaka volubilis*(L.f)**
15.	Basellaceae	***Basella alba* L.**

Sr.No	Family	Name of Species
16.	Dioscoraceae	***Dioscorea bulbifera* L.**
17.	Convovulaceae	***Argeria speciosa*(Linn.f.)**
		***Ipomea hederifolia* L.**
		***Ipomea quamoclit* L.**
18.	Bignoniaceae	***Tecomella capensis*(Thunb)**
19.	Nyctaginaceae	***Bougainvillea spectabilis.* Willid.**
		Boungainvillea monco.
20.	Polygonaceae	***Antigonon leptopus* H & Arn.**
21.	Liliaceae	***Asparagus racemosus* Wild. Var. javanica Baker.**

2021

Energy Audit Report

EcoShastra

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Shri Shivaji Education Society Amaravati's

Shri Shivaji College of Arts, Commerce and Science, Akola (MS)

Energy Audit Report

Submitted by

EcoShastra

Consultancy & Services

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Shri Shivaji Education Society, Amravati's

Shri Shivaji College of Arts, Commerce & Science, Akola.

Shri Shivaji Education Society, Amravati's Shri Shivaji College of Arts, Commerce and Science, Akola is situated in the western Vidarbha region of Maharashtra and is affiliated to Sant Gadge Baba Amravati University, Amravati. The institution always strives for quality sustenance and enhancement in higher education. Shri Shivaji Education Society, Amravati, was founded in 1932, by Late DR. Punjabrao Deshmukh, the first agriculture minister of independent India, and a member of the "Constitution Draft Committee" for the Government of India. It is one of the premier institutions of higher education in the Vidarbha region. It is worth mentioning that, under its canopy, there are in all 277 institutions including Medical, Agriculture, Engineering, Science, Law, Education as well as Higher Secondary Schools, High Schools, Middle Schools, and Primary Schools. The society has bagged many prestigious awards from the state government in recognition of its dedication to the field of education. Shri Shivaji College of Arts, Commerce and Science, Akola was established in 1963 and has already completed fifty glorious years of its existence in 2013. We can proudly say that it has indeed grown from a seedling into a tree that has not only sheltered thousands of youngsters but also has molded them into great personalities, now scattered across the globe. Since a large number of our students come from economically weaker sections of the society, we try to imbibe in them good values so that they become responsible citizens of this great country. The College aims at catering to the academic excellence of the students and providing them with facilities to develop their inherent talents. In its continuous efforts to impart quality education, Shri Shivaji College was reaccredited with an "A" grade with CGPA

3.11 in January 2010. The college has also earned a special reputation for being conferred with the status of a “College with Potential for Excellence” by the U.G.C. in the first phase and now for the second phase up to 2019 Since the institution has completed the second cycle, now it has intended to go for the third cycle in accreditation. Efforts have been made to fulfill the recommendations made by the peer committee for the overall development of the Institution. Due consideration has been given to the post-accreditation activities and it continues to plan for academic excellence by imparting quality education.

Energy Audit Committee

Sr. No.	Name	Designation
1.	Dr. R. M. Bhise	Chairman (Principal)
2.	Dr. H. S. Patil	Lead auditor
3.	Dr. A. S. Raut	Coordinator
4.	Dr. S. B. Sawarkar	Internal Energy Auditor
5.	Mr. A. S. Mahadik	External Energy Auditor
6.	Dr. G. S. Wajire	Energy Audit Expert
7.	Dr. A. J. Kaware	Energy Audit Expert

Energy Audit Report

Introduction:

Our nation has potential in intelligence but was on the back foot in terms of quantity and quality of education. Today our nation is marching towards a developed nation in numerous fields. Among these fields, we have to meet energy demand and produce clean sustainable energy. Our world is now in an energy crisis, we as world facing energy shortage, in future it may increase. This causes a lack of energy for institutional work. Thus, we need institutional management in saving electricity, using it smartly, and producing electricity effectively for socio-economical purposes.

For energy, our nation is entirely dependent upon fossil fuels. India has huge potential in producing energy in the renewable sector. In India, 35% of electrical energy is used by the industrial sector, 28% by the domestic sector, 21% agriculture sector, 9% Commercial sector, and the rest of electricity is used by common public applications. Energy conservation is the solution to the energy crisis, meaning a reduction in energy consumption without compromising the quality and quantity of work. Energy Conserved is the start of energy management, it leads to an adequate rating of the equipment, replacing it with efficient (high rating), and improving habits to save more energy. It will vital to being a self-sufficient organization in terms of electricity.

In the present study, an energy audit has been done. For these audit laboratories, instruments, air conditioners, fans, lights, fans, computers and its peripheral devices are considered in the study. The study also includes the total economic budget of college for the electricity. We have calculated the exact number of tubes, computer instruments, etc. We studied all these mentioned things by collecting exact data from the survey.

Experimental and data collection:

In the building, in every room, how many fans, computers, instruments, AC, etc. were measured. According to the survey following data is collected.

Total Power requirement of various types of equipment:

Appliance	Total	Current	Voltage	Total power
Ceiling Fans	759	80	230	303600
Laptop	6	100	230	3000
Wall Fans	158	60	230	47400
Exhaust Fans	61	80	230	24400
1.5 Ton Air Conditioners	15	1200	230	90000
Photo Scanners	7	60	230	2100
LCD Projector	17	300	230	25500
LED Bulbs	173	18	230	15570
CFL Bulbs	35	15	230	2625
Inverters with Batteries	14	12.6	230	882
UPS with Batteries	13	2340	230	152100
Air Coolers	14	250	230	17500
Refrigerators	23	750	230	86250
Water Coolers	11	1000	230	55000
Submersible Pump : 1	5	746	230	18650
Submersible Pump : 3	1	2238	440	11190
Mono Block Pump	1	746	230	3730
Tubes regular	355	40	5	71000
Tubes CFL	95	28	5	13300

Appliance	Total	Current	Voltage	Total power
Tubes LED	610	20	5	61000
TV Screen	10	180	2	3600
Computer Screen	405	35	5	70875
CPU	248	75	5	93000
Printer	106	500	1	53000
PA system	16	75	0.5	600
Xerox machine	2	1500	1	3000
Street lights	34	50	10	17000
Water purifier	16	60	2	1920
Total Consumption in a day(KW)				1247.792
Total Consumption in a month(KW)				37433.760

Consumption by various equipment:

According to given power consumed by different types of equipment:

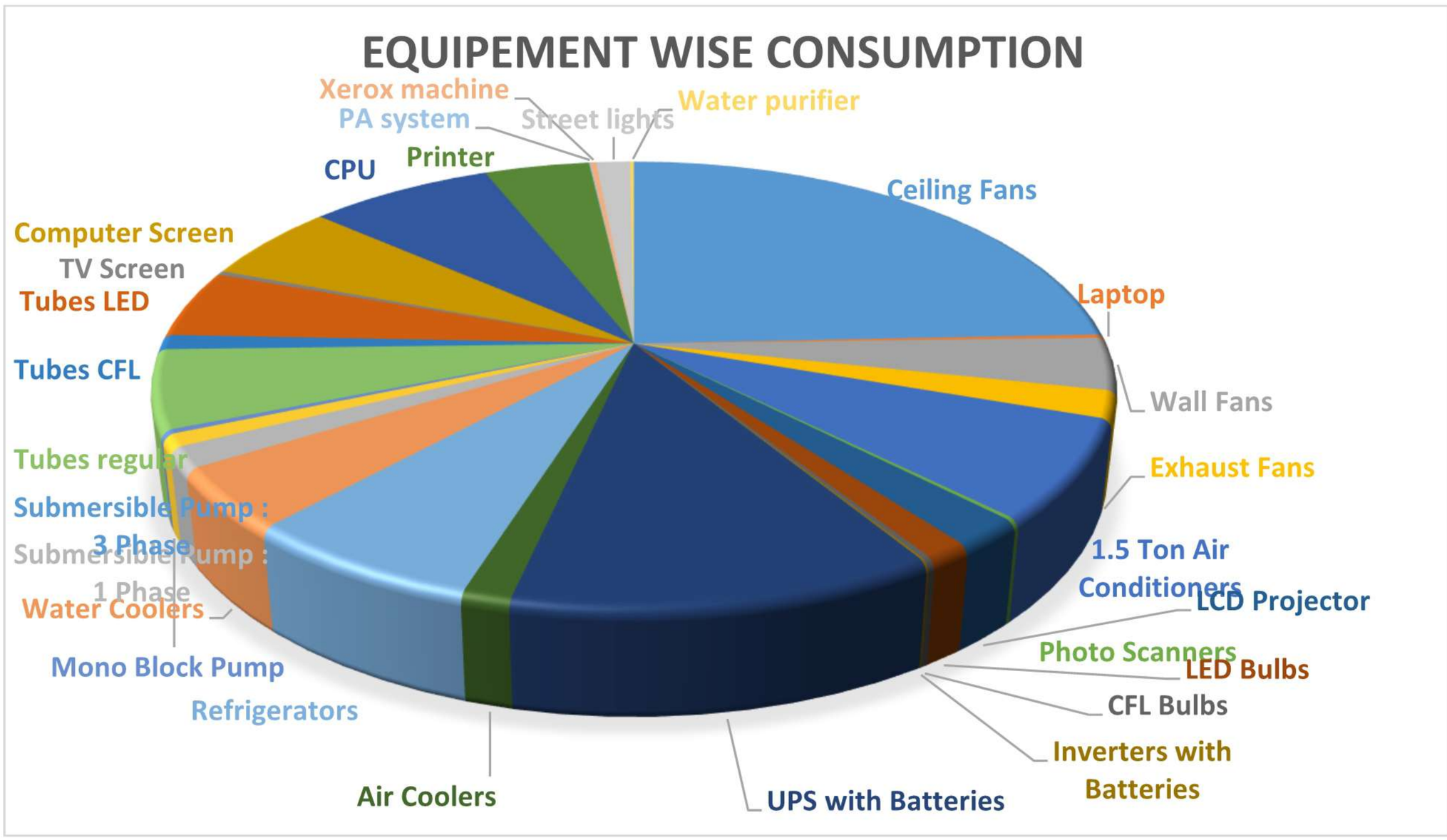

Fig. Power consumption by various equipment

Consumption Unit:

Sr. No.	Month	Consumption Unit (KW)
1.	May 2020	8335
2.	June 2020	10318
3.	July 2020	19338
4.	August 2020	5623
5.	September 2020	9774
6.	October 2020	9217
7.	November 2020	11829
8.	December 2020	7590
9.	January 2021	14400
10.	February 2021	7081
11.	March 2021	6654
12.	April 2021	6685
Total Power Consumption in Yearly (Units)		116844
Average Power Consumption in Monthly (Units)		9737

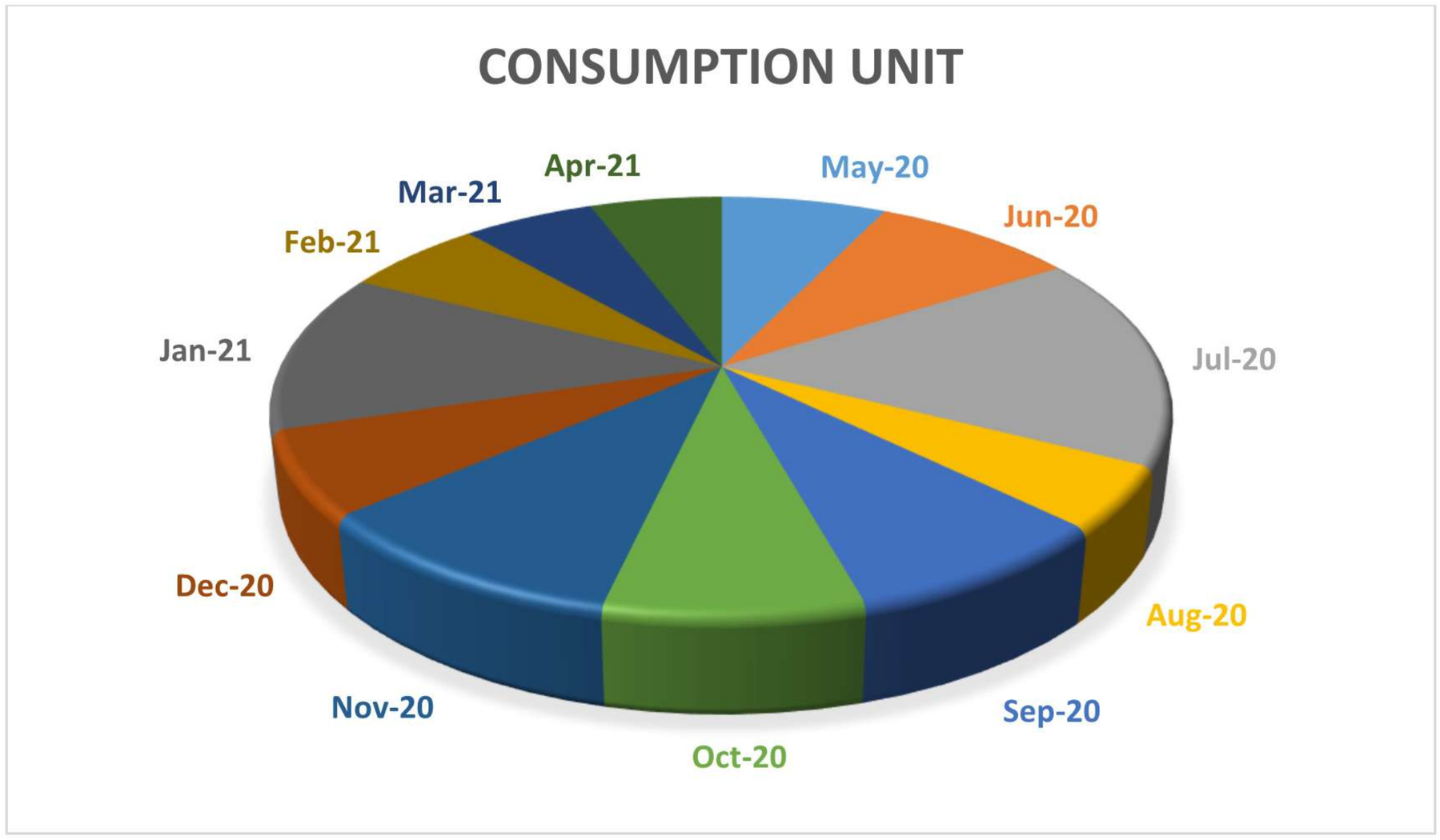

Fig. Graphical representation of the contribution of various Instruments in total energy consumption

Best practices:

i. The college has an air turbine as a ventilation system which reduces the energy consumption required for cooling.

ii. The college has installed 3 solar panel systems each of 5KVA capacity.

It generates electricity using three Solar Panel Systems each of 5 KVA.

Total Power Generated = 5 KVA + 5 KVA +5 KVA = 15 KVA.

It produces total electricity of around 15 KW. (By considering power factor 1)

This produced energy saves 21,600 units per year.

Fig. Rooftop installed 5KVA Solar Panel system

iii. The college uses a solar motor which is having the following details:

02 motors each of 24 V, 2.5A DC are used for the fountain. (Near Bhausaheb Statue)

iv. The College has installed 10 solar lights each of 12 watts (Near Bhausaheb Statue)

Fig. Solar lights installed near Bhausaheb Statue

v. College uses N-computing which reduces unwanted power consumption.

Conclusion:

i. Data generated in an energy audit is useful to understand the energy distribution and utilization of college.
ii. The college needs 116844 KW of electricity. This is on average 9737 KW/month. There are some types of equipment that are not included because they are less or often used.
iii. The college runs during day time so there is very little electricity consumption.
iv. The use of solar energy is appreciable.

Recommendations:

1. Replace all regular tube lights and CFL tube lights with LED bulbs, to save more power.
2. Use stabilizers for AC, Xerox, and other heavy load machines.
3. Use more Renewable energy sources like Solar, Wind for Power Generation.

Results and Discussion:

As per the energy audit, the electricity audit is done in Shri Shivaji College of Arts, Commerce and Science, Akola. We have collected data by considering tube lights, fans, computers, printers, and other instruments. The total energy required is 116844KW.