Environment Audit Report

ST. MIRA'S COLLEGE FOR GIRLS, PUNE.

2022

EcoShastra

KINDLE THE LIGHT

St. Mira's College for Girls, Pune

Autonomous - Affiliated to Savitribai Phule Pune University

Environment Audit Report

Submitted by

EcoShastra

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St. Mira's College for Girls, Pune

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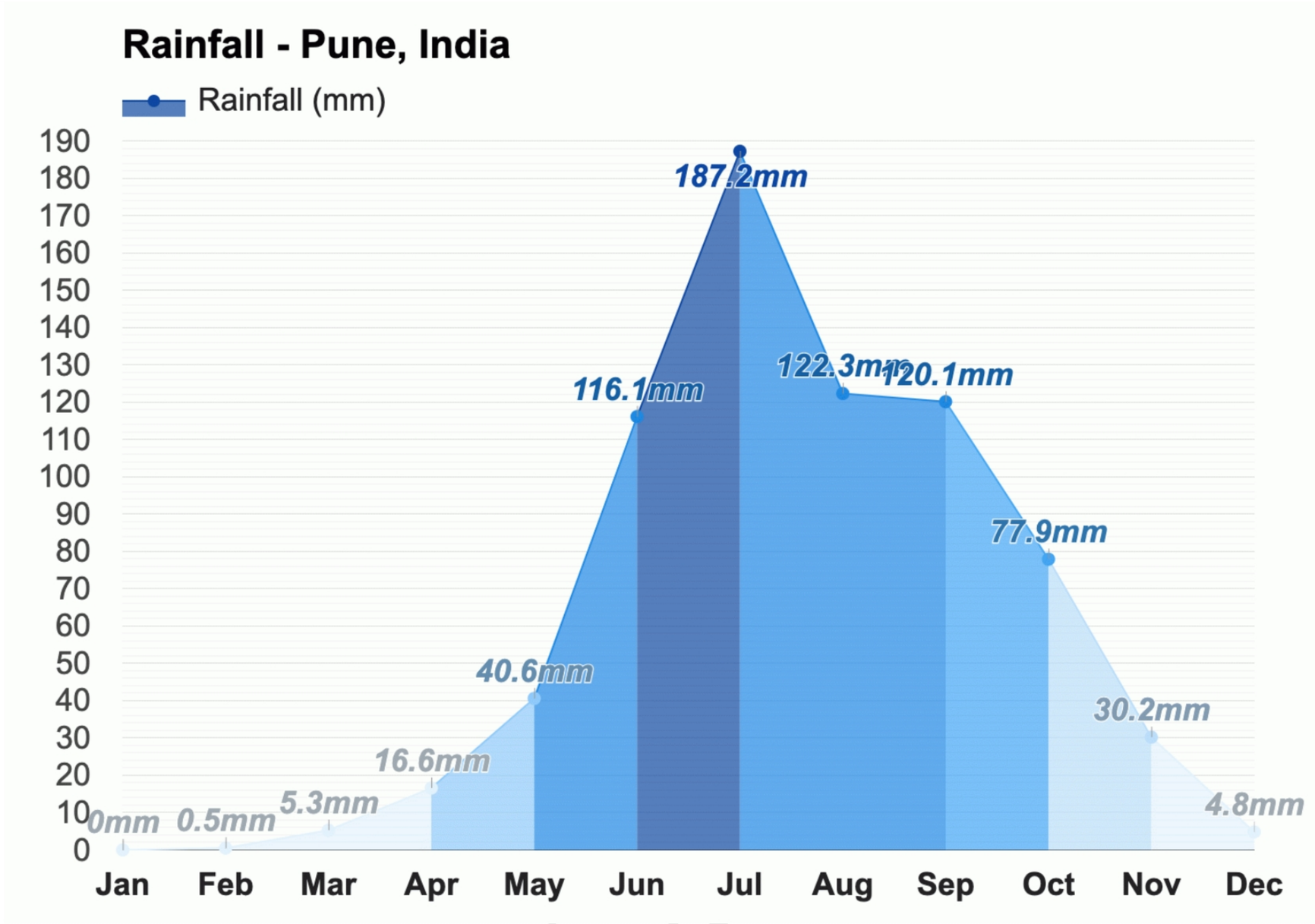
St. Mira's College was founded in 1962 by the saint Sadhu T. L. Vaswani as the first college set up exclusively for women in Pune. The motto of the college– 'Kindle the Light', indicates our commitment to impart to students the spirit of simplicity and service, purity and prayer. The Mission Statement of the college– To empower and equip women students through an integrated education of the Head, Hand, and Heart, to successfully meet the challenges of competitive work life and inculcate in them the Art of True Living. Eminent citizens, well versed in academics, with strong leanings toward social issues and student welfare, grace the managing committee of the college.

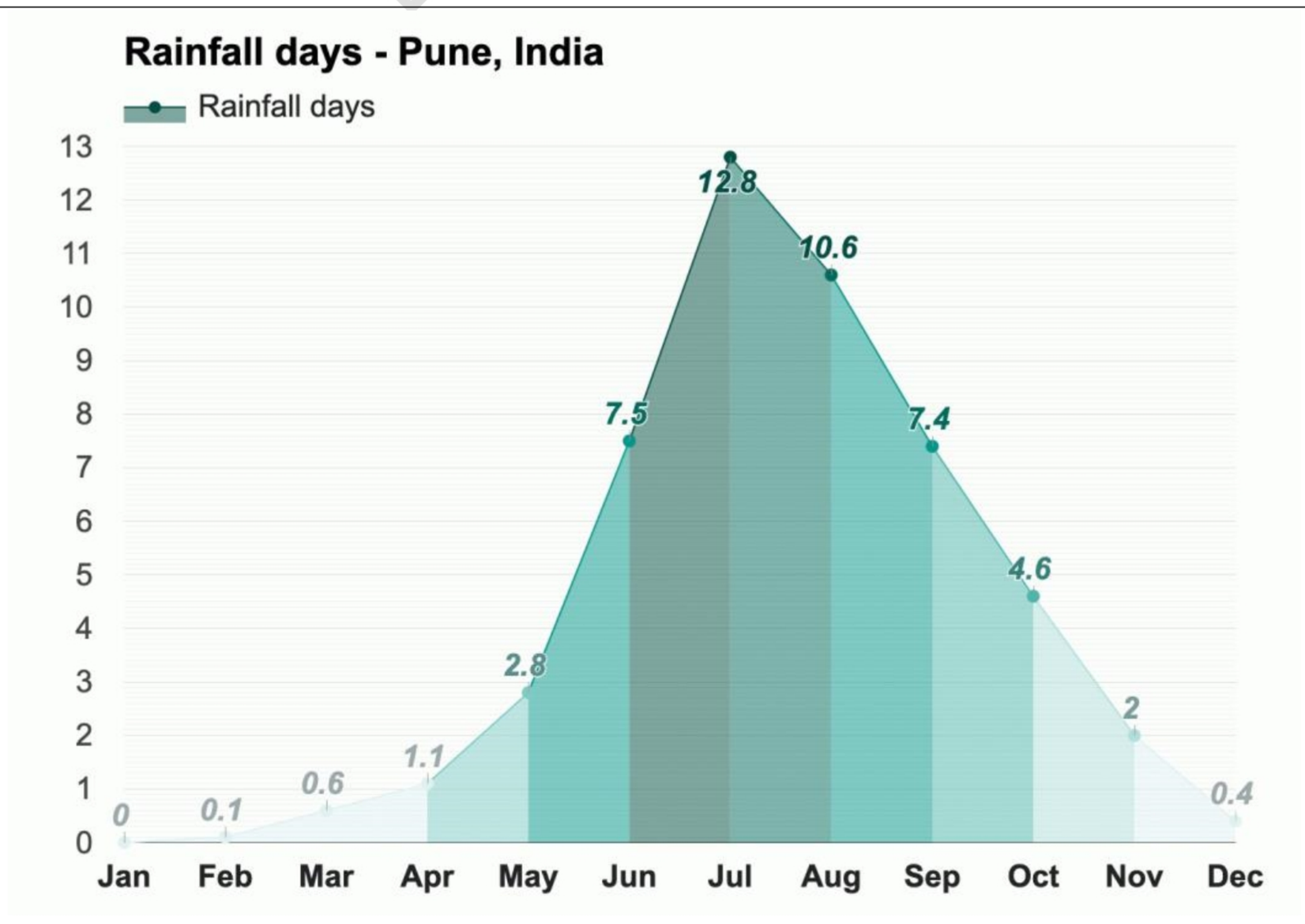
In 60 years of academic service, the college has steadily grown from a small college to a robust institution that has found a place in the academic map of the country with many firsts to its credit- this is the first college under the University of Pune to volunteer for NAAC; the first college in Pune to be awarded a 5-star rating; the first college to be declared the Best College in Pune by the affiliating University; the First Arts / Commerce College in Maharashtra to take the fast track to academic autonomy and to go on to become one of the few colleges in the country to be honored with the CPE Status twice.

In the recent NAAC Reaccreditation process in March 2017, the college earned an 'A' grade once more with a commendable score of 3.41 on a scale of 4.

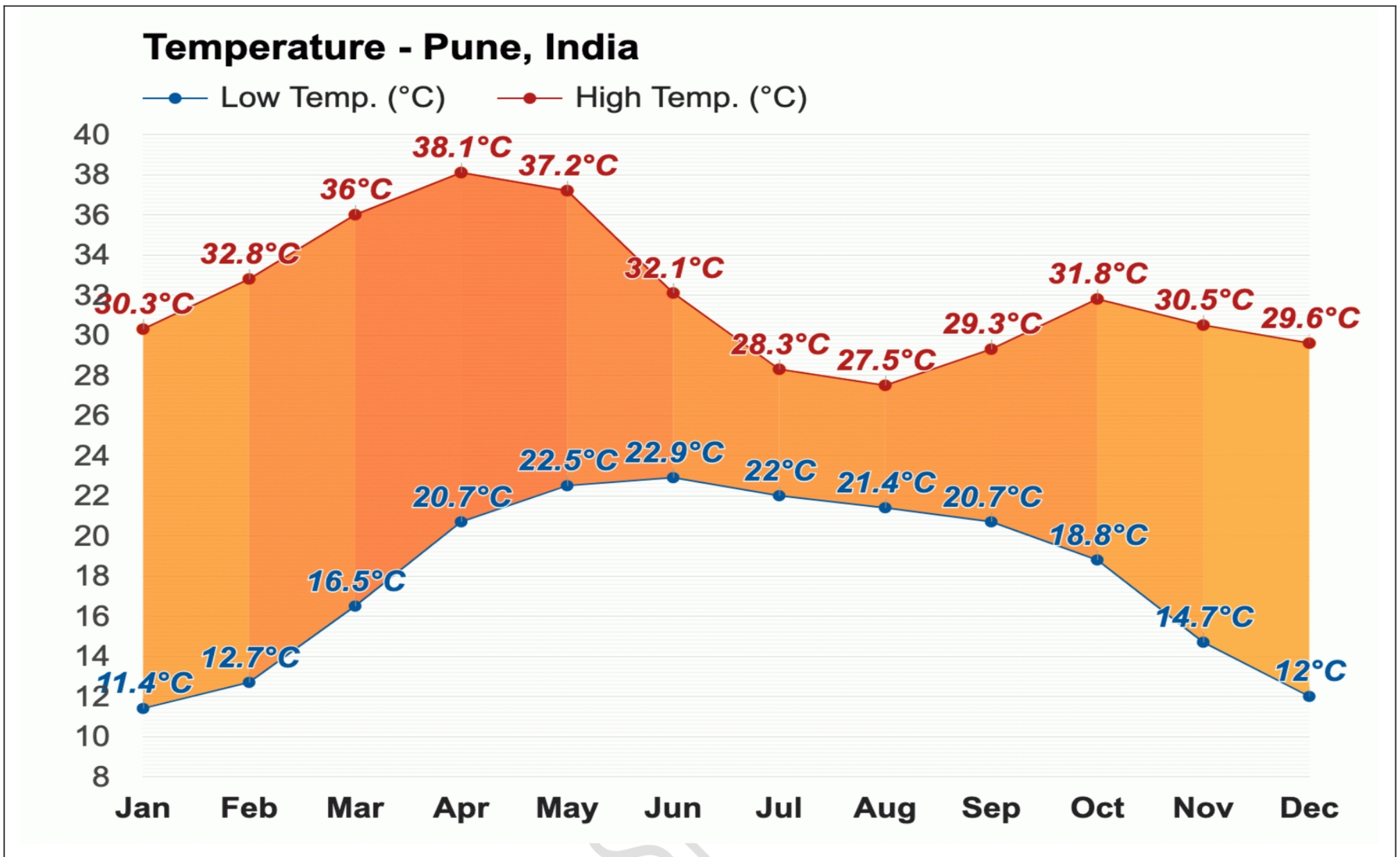
Average Rainfall (in mm) in Pune (Last 50 Years)



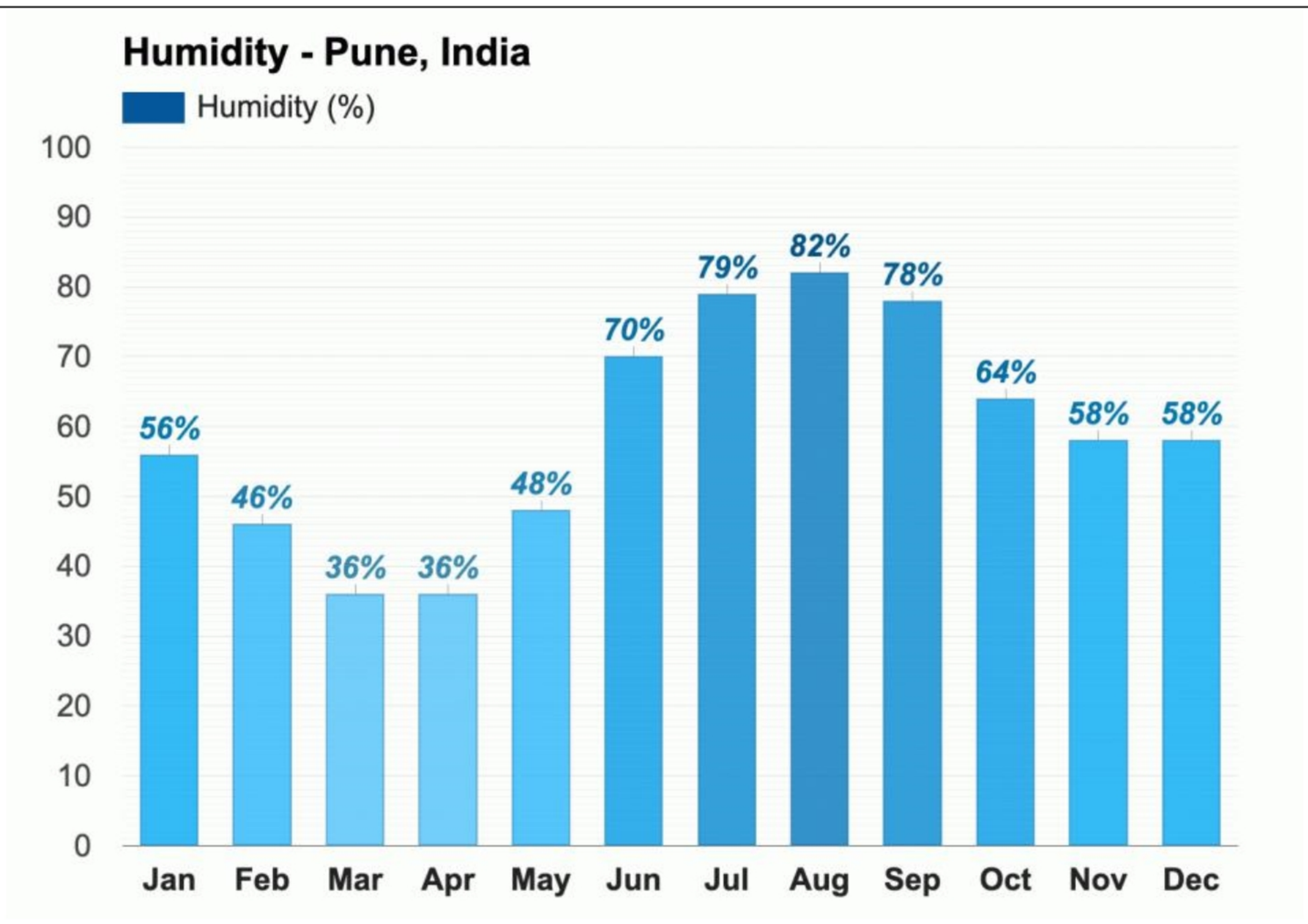
Rainfall in Pune- Average Rainfall Days per month (Last 50 Years)



The average temperature in Pune



The average Humidity in Pune



Environment Audit Committee

Sr. No.	Name	Designation
1.	Mrs. Shalini Iyer	Advisor
2.	Ms. Rajni Singh	Coordinator
3.	Mr. Shubham Thombare	Auditor
4.	Mrs. Jyoti Chintan	Member
5.	Ms. Deepanjali Mazumdar	Member
6.	Ms. Komal Tujare	Member
7.	Ms. Deepali Agarwal	Member

Solid Waste Audit

1. Solid Waste Audit

Introduction:

St. Mira's College for Girls, Pune is a well-known educational institute that progresses with an environment-friendly approach, and for any Environment-friendly institute, a Solid Waste Audit is considered a crucial part. In the educational institute, 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, these products directly or indirectly control the environmental cycles and their inappropriate management can raise environmental issues like if, 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 generation in the campus and strategies for its management. 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 the present-day Waste-Management Strategy of the institute
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, and 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:

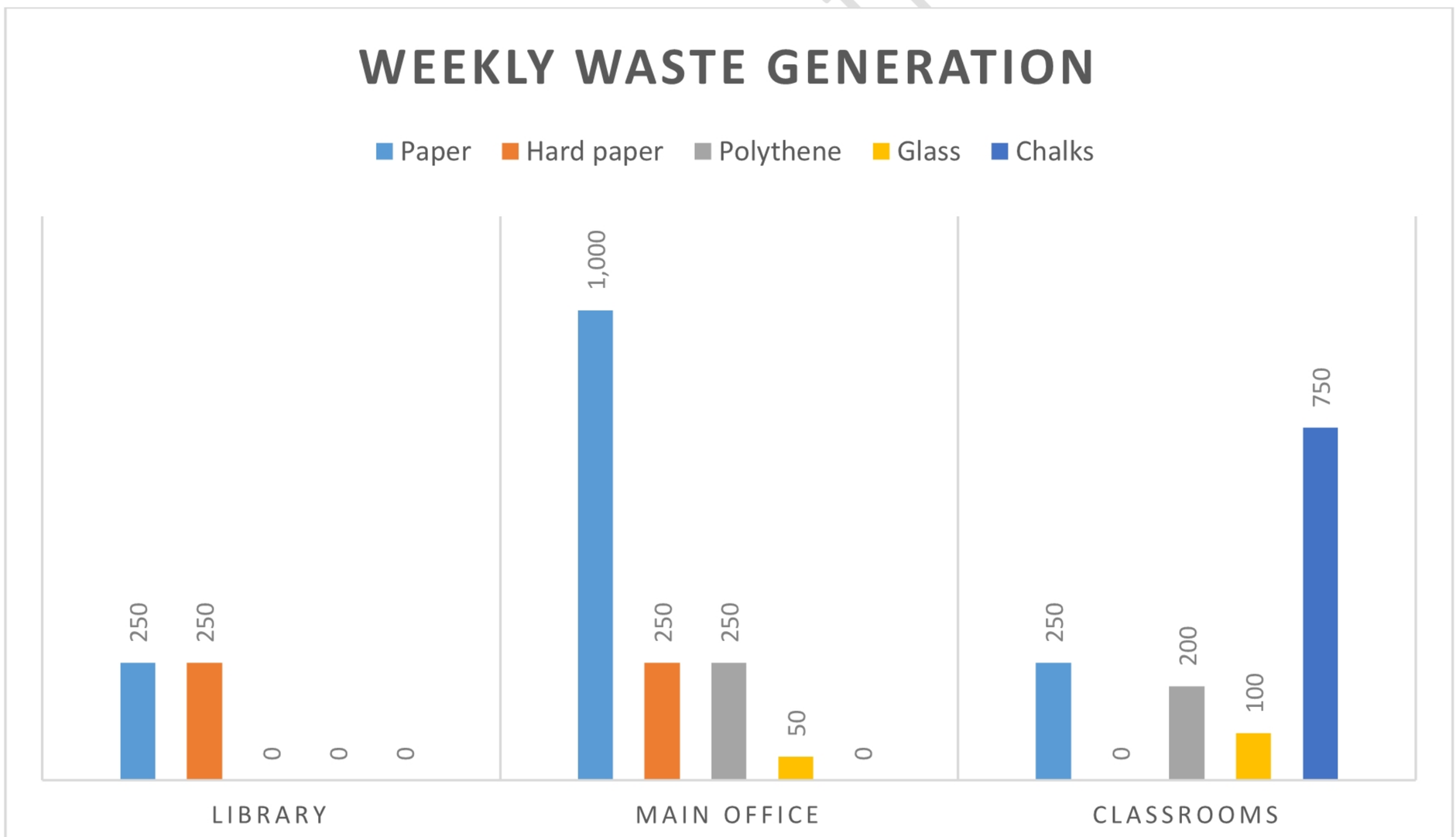
The comments have been made considering the number of stakeholders, the amount of total waste generation, the present-day waste disposal method, and research has been done to recommend more efficient methods of solid waste management.

Observations:

Solid Waste Accounting by Weight

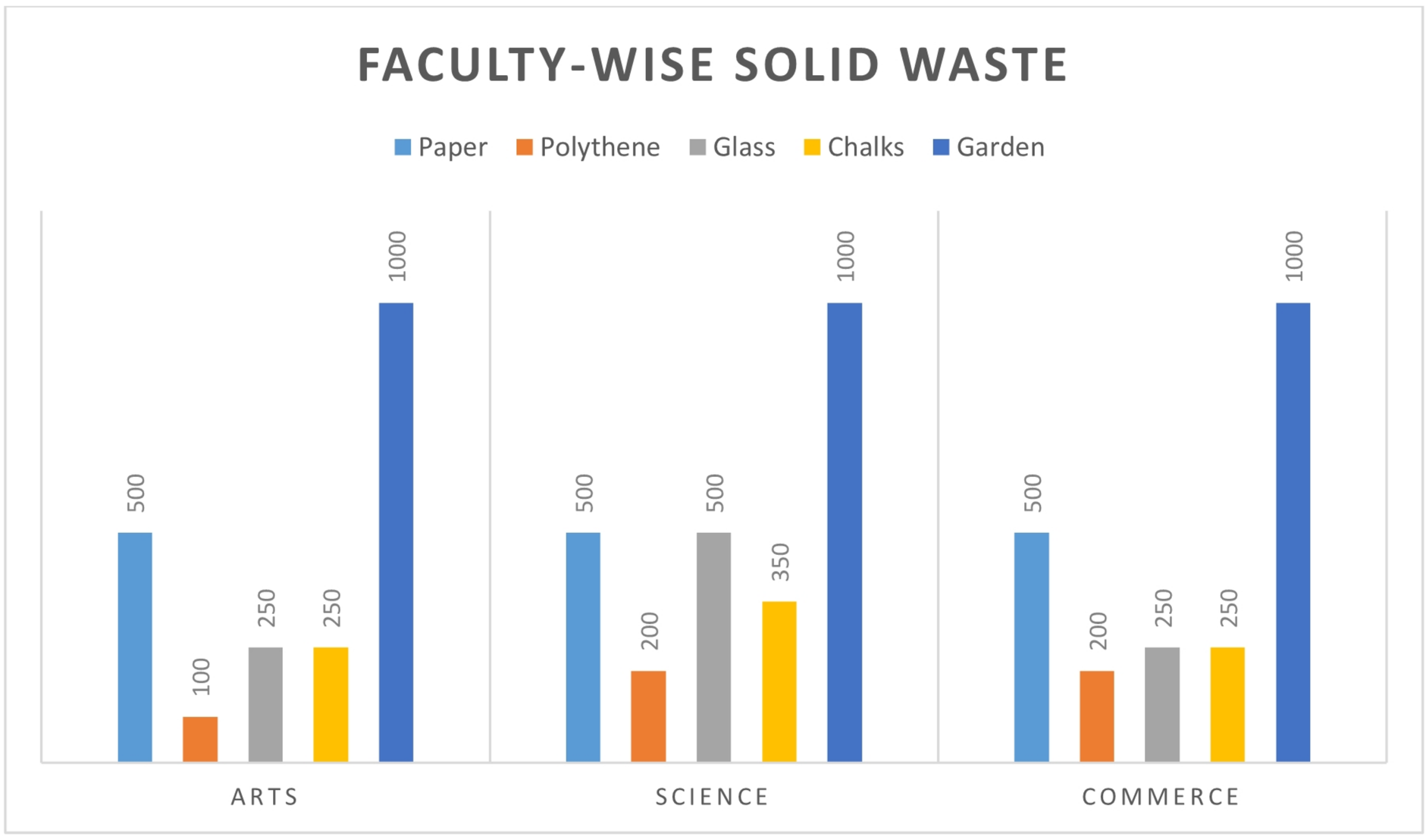
Place	Paper	Hard paper	Polythene	Glass
Library	250	250	00	-
Main office	1,000	250	250	500
Classrooms	250	-	200	500
Total	**1,500**	**250**	**500**	**1,000**

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



Departments	Paper	Polythene	Glass	Chalks	Garden
Arts	500	100	250	250	1000
Science	500	200	500	350	1000
Commerce	500	200	250	250	1000
Total	**1500**	**500**	**1000**	**850**	**3000**

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



Place	Food	Kitchen
College Canteen	1,000	1,500

TABLE 3 Canteen – Weekly Solid Waste Generation in Grams (Apx.)

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 negligible polythene generation.

Discussion:

St. Mira's College for Girls is the first women's college in Pune city and is a well-known institute in Pune. The institute is famous for conducting curriculum-based activities and delivering social, moral, and ethical values to its stakeholders. As an environment concerned institute, the college knows Solid waste, the most common type of waste, should be managed properly. So, the college is working on various projects to inform students about solid waste management, including cleanliness drives, guest sessions, and some field projects.

Best Practices for Solid Waste Management:

i. **Newspaper Bags Making Activity:** This session was conducted to orient the students about newspaper bag making and their use for hygienic and responsible disposal of sanitary napkins. Students managed to craft several hundred newspaper bags/envelopes. Each

of these bags was emblazoned with the Red Dot. These paper bags are placed in all the washrooms so that students and staff- members can use them for sanitary napkin disposal.

ii. **Campus Cleanliness Drive**: It is coordinated every year by the NSS, the Green Club & the Student Council.

iii. **Best out of Waste**: The workshop on cloth bag making, candles, jewelry, greeting cards, Godhadi and Rakhi has been organized over the period of 5 years.

iv. **Green Trek**: Students realized the impact of improper waste disposal on their environment and helped create viable solutions to these issues. The group, along with teachers on reaching Parvati start an extensive clean-up campaign. Adar Poonawala Clean City kindly sponsored gloves for students' safety and hygiene, as well as helped the students in safe disposal of waste collected.

v. **'Swacchata Pakhwada' College Clean-up:** Armed with brooms and gloves, the students swept the floors, corridors and the garden, cleaned up litter from the campus and weeded the grounds.

vi. **Guest Lectures:** Apart from these the Green Club also ensures Guest Lectures on various topics relevant to environment protection-

a. Guest Lecture on "Positive Thinking and Cleanliness in Pune City" organized on 1st Sept. 2017 and was delivered by Mr. Minocher Patel.

vii. Bhim-Thadi Jatra Field Trip:

a. The students of FY Business Entrepreneurship along with Green Club members, visited the Bhimthadi Jatra on 23rd December 2018. At the Jatra, 'Bhimthadi Select' - an ideology relating to the theme: 'recycle, reuse and sustain' was presented and advocated.

viii. **A Poster Making Competition on the Theme:**

a. **'Swachh Bharat'-** 20th January, 2020

ix. **Go Green for Sustainable Living-** The session was conducted online and judged by Dr. Arwah Madan.

x. **Video Screenings for Environmental Awareness:** A documentary screening titled 'Screening Green' was organized for the students of F.Y.B.Com to sensitize students towards environmental concerns. An episode titled 'Frozen Worlds' from the Netflix documentary series Our Planet was screened and was followed by a discussion.

xi. #RebootingMother Earth - Green Club at St. Mira's College for Girls, Pune had organised a Webinar on #RebootingMother Earth on Saturday, 27th June 2020. Prof. Rajni Singh coordinated the webinar. The first session was presented by Mr. Siddharth Naik, who is a consultant on solid waste management. He presented various everyday solutions that one can adopt for waste management like three-way segregation of waste, waste management in a residential society, and lifestyle changes.

xii. The resource person for the second session was Mr. Niranjan Upasani, who is a sustainable Lifestyle Coach. Mr. Upasani spoke extensively about rebooting earth after the pandemic and reiterated the valid arguments marshaled by Mr. Naik. Mr. Upasani urged all to move from consuming to conserving in order to protect and preserve mother earth.

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.

ii. The surveys and tests should be conducted on virtual platforms like Google forms.

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. But the institute like St. Mira's College for Girls, Pune which is having around 2500 stakeholders and no Chemistry or life science departments, chemical wastewater production is not the problem. But the necessity is to build appropriate water storage systems, check on the water demand, ensure efficient use of water and develop appropriate wastewater management systems. The campus of St. Mira's College for Girls 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 the 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 out among all the stakeholders and staff digitally (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 through visits to the places in 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, the water storage system, wastewater generation, and the wastewater management system.

Observations:

Water storage details:

Sr. No.	Non-Potable Water Storage System	Capacity (in Lit)
Campus (including toilet)		
1.	Overhead Tanks	10,000
2.	Underground Tanks	20,000
3.	Storage Sintex Tank	5,000
Canteen		
1.	Syntex Overhead Tank (1 Large)	5,000
2.	Syntex Overhead Tank (1 Small)	2,000
Total		**42,000**

Garden Supply		
1.	Borewell	Running Water
2.	Rain Water Harvesting	1,00,614

Sr. No.	Potable Water Storage System	Capacity in Litres
Campus		
1.	Underground tank	20,000

The total number of stakeholders: 2343

The total number of taps:

Toilets, washrooms, garden, departments (Science lab)

Sr. No.	Place	Number of taps
1.	Toilets (Female)	77
2.	Gents Toilets	2
3.	Garden	6
4.	Science Departments	9
Total		**94**

Calculations:

1. **Non-Potable Water Demand:**

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

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

Number of Users = 2370 (including faculty)

Total **Non-Potable Water Demand** = 9,480 Lit/day

Total **Non-Potable Water** storage system capacity= **4**2,000 lit

Discussion: The total storage capacity of the non-potable water against the total per-day demand is 1:4 which is absolutely good.

Recommendation: The tanks should be filled thrice a fortnight.

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 = 2370 (including faculty)

Total **Potable Water Demand** = 7,110 L

Total **Potable Water** storage system capacity = **20,000 L**

Discussion: The capacity of the potable water storage system against the daily demand of the campus shows the perfect ratio of approximately 1:3 which is admirable. The water system is constructed thoughtfully.

Recommendations: The potable water storage system should be recharged twice a week.

The key water sources on the campus are-

1. **Rainwater harvesting unit:** The college has constructed a rainwater harvesting unit with an average capacity of 1,50,000 L (The actual rainwater harvested depends on the rainfall in the area).
2. **Borewell and other sources:** usage is as per the need

Best Practices for water use and management

1. **Guest Lecture** on Water Conservation on 28-01-2020 by Mr. Niranjan Upasani, this lecture stressed the need for effective and proper water conservation and suggested practical ways to conserve our scarce water resources.

2. **Slogan writing Competition** on "Water Conservation" in Marathi on 22nd January 2020. 21 students participated and were judged on the criteria of the relevance of presentation, message, and creativity.
3. **Skill Development session:**

   i. Effective Waste-Management Practices in the Environment:

The SPPU Research Foundation and the Australian Institute of Water Sciences jointly organized a Webinar on 18th January 2021. The Webinar was conducted between 03:00 pm to 4:00 pm. The Opening address was made by Dr. Nitin Karmalkar, V.C. SPPU, himself an expert in Environmental Science. This was followed by observations made by Dr. Shaligram, former COE and CEO of SPPU Research Park Foundation. Finally, Prof. Phil Bell of the Australian Institute of Water Sciences spoke about skill development and environmental opportunities in the field of wastewater treatment, solid waste management, e-waste management, bio-medical waste management, and air pollution management.

Noise Audit

3. Noise Audit

Introduction:

St. Mira's College for Girls believes in students' utmost development by providing quality education. The institute takes all moral, ethical, and 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. A 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.

Observations:

Sr. No.	Location	No. of Readings	Time slot	Average Units (dB)
1.	Library & Prayer Hall	10	07:40 am to 04:30 pm	51.3
2.	Offices	10	07:40 am to 04:30 pm	52.6
3.	Classroom	10	07:40 am to 04:30 pm	53.9
4.	Teacher Staffroom	10	07:40 am to 04:30 pm	52.3
5.	Exam Cell	10	07:40 am to 04:30 pm	51.7
6.	Main Entrance Gate	10	07:40 am to 04:30 pm	62.4

Conclusion:

The key places for noise generation are Main Gate which shows the highest (Average for the location) i.e. 59.4 dB and Library & Prayer Hall, Offices, Classroom, Teacher Staffroom, and Exam Cell have the lowest (Average for the location) noise generation i.e. approximately near to 51-53 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 a silent zone as it meets the standards set by CPCB. The highest level of noise in the campus is at the entrance gate (62.4 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 (52 dB ±2 dB), which is due to the architectural planning of the infrastructure and dense vegetation in the campus.

Recommendations:

The following recommendations are made to monitor the long-term noise level in campus:

1. The institute should organize at-least one session during the student's induction program for awareness regarding noise pollution including the preventive measures, causes, and solutions to noise pollution.