



2025

# GREEN AUDIT REPORT



**D.A.V. COLLEGE  
CHANDIGARH**

*July 2025*



**SHIVALIK SOLID WASTE  
MANAGEMENT LIMITED**  
SCO 20-21, 1<sup>st</sup> Floor, Near Hotel Dolphin,  
Kalka- Shimla Highway, Baltana,  
Zirakpur, Punjab



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## Green Audit Report of D.A.V College Sector-10, Chandigarh

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## Green Audit Report of D.A.V College Sector-10, Chandigarh

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AUDIT CERTIFICATE



**Shivalik Solid Waste Management Limited**

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Ref. No. SSWML/DIR/EA/2526/2025

Dated 26/9/25

**Certificate of Green Audit Assessment**

Presented to

*D.A.V. College, Sector-10, Chandigarh*

This is to certify that D.A.V. College, Sector-10, Chandigarh has been assessed by Shivalik Solid Waste Management Limited for a comprehensive evaluation of the environmental impact within its institutional framework, in accordance with the requirements of the Green Audit mandated by the National Assessment and Accreditation Council (NAAC).

The audit encompassed a comprehensive evaluation of the college's green practices, including biodiversity enhancement, plantation drives, GHG emissions, awareness campaigns. Based on the documentation and evidence submitted, the institution's performance was found to be **satisfactory** and in alignment with sustainability standards.

The proactive efforts undertaken by the college management and faculty in promoting sustainable green campus are **highly commendable and noteworthy**. Their commitment reflects a forward-thinking approach towards ecological responsibility and institutional excellence.

We extend our appreciation for their dedication and encourage continued progress in fostering a sustainable academic environment.



An ISO-9001:2015, ISO-14001:2015, ISO-45001:2018 Certified Company



Providing Solution for Clean Environment

Website : [www.sswml.net](http://www.sswml.net)





## ACKNOWLEDGEMENT

Shivalik Solid Waste Management Limited (SSWML) would like to thank the management of D.A.V. College sector-10, Chandigarh for assigning this important work of Green Audit. We appreciate the co-operation to the teams for completion of assessment.

We would like to specially thank (*Dr. Mona Narang - Officiating Principal*) D.A.V. for giving us an opportunity to evaluate the performance of the campus from the energy audit guidelines perspective.

We would also like to *thank* Dr. Raghubir Singh *Coordinator IQAC*, for his Continuous Support and guidance, without which the completion of the project would not have been possible. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements. We are also thankful to

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- *Dr. Kriti Kuthiala Kalia*
- *Dr. Raman Kamboj*
- *Dr. Harjeet Singh*
- *Dr. Arun Kumar Sharma*





## *Green Audit Report of D.A.V College Sector-10, Chandigarh*

### **DISCLAIMER**

SSWML Audit Team (Dr. Simranjit Kaur, Ms. Kamini Bhardwaj) have prepared this report for D.A.V College, Chandigarh based on input data submitted by the representatives of college complemented with the best judgment capacity of the expert team.

While all sensible care has been taken in its preparation, details contained in this report have been compiled in good faith based on information gathered.

It is further informed that the conclusions are arrived following best estimates and no representation, warranty or undertaking, express or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

If you wish to distribute copies of this report external to your organization, then all pages must be included.

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SSWML staff have signed individual confidentiality undertakings and will only receive confidential information on a 'need to know' basis.





## **CONTEXT AND CONCEPT**

In India, the process for environmental audit was first mentioned under the Environment Protection Act, 1986 by the Ministry of Environment of forests on 13th March 1992. As per this act, every person owning an industry or performing an operation or process needs a legal consent and must submit an environmental report or statement.

The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory from the academic year 2019-20 onwards that all Higher Educational Institutions should submit an annual Green, Environment and Energy Audit Report. The grade given by NAAC is crucial for state universities/colleges to operate optimally and maintain their reputation. The NAAC accreditation helps a college to apply for and obtain UGC grants, RUSA grants, financial donations, etc.

In view of the NAAC circular regarding environment auditing, the college management decided to conduct an external environment assessment study by a competent external auditor.

The term 'Environmental audit' or 'Green audit' means differently to different people. Terms like 'assessment', 'survey' and 'review' are also used to describe similar activities. Furthermore, some organizations believe that an 'environmental audit' addresses only environmental matters, whereas others use the term to mean an audit of health, safety and environment-related matters. Although there is no universal definition of Green Audit, many leading companies/institutions follow the basic philosophy and approach summarized by the broad definition adopted by the International Chambers of Commerce (ICC) in its publication of Environmental Auditing (1989).

The ICC defines Environmental Auditing as: "A management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of safeguarding the environment and natural resources in its operations/projects."





## **EXECUTIVE SUMMARY**

The rapid environmental degradation at local, regional, and global level is leading us to global “Environmental poverty”. Stabilization of human population, adoption of environmentally sound and sustainable technologies, reforestation and ecological restoration are crucial elements in creating an equitable and sustainable future for all humans in harmony with nature and natural resources.

Thus, academic leaders must initiate and support mobilization of internal and external resources and knowledge so that their institutions respond to environmental challenges. As an Institution of higher learning and research, D.A.V. College is deeply concerned and unconditionally believes that there is an urgent need to address these fundamental problems and reverse the trends of environment degradation.

The rapid urbanization and economic development at local, regional, and global level has led to several environmental and ecological crisis. On this background it becomes essential to adopt the system of the Green Campus for the institute which will lead for sustainable development



# INTRODUCTION

## 1. INTRODUCTION TO GREEN AUDIT

The term “Green” means eco-friendly or not damaging the environment. This can acronymically be called as “Global Readiness in Ensuring Ecological Neutrality” (GREEN). Green accounting can be defined as systematic identification, quantification, recording, reporting & analysis of components of ecological diversity & expressing the same in financial or social terms. “Green Auditing”, an umbrella term, is known by another name “Environmental Auditing”.



The green audit aims to analyse environmental practices within and outside the college campuses, which will have an impact on the eco-friendly atmosphere. It was initiated with the motive of inspecting the effort within the institutions whose exercises can cause threat to the health of inhabitants and the environment. Through the green audit, a direction as how to improve the structure of environment and there are include several factors that have determined the growth of carried out the green audit.

Government of India through its National Environment Policy (2006) has made mandatory for every organization to have green audit / environmental audit in their organization. The process of environmental audit was formalized by Supreme Audit Institution (SAI) according to the guidelines given in Manual of Standard Orders (MSO) issued by Authority of the Controller and Auditor General of India 2002. College Grants Commission has mentioned “Green Campus, Clean Campus” mission mandatory for all higher educational institutes. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

### 1.1. NEED FOR THE GREEN AUDIT

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

As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent. The rapid urbanization and economic development at local, regional, and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time reduce a sizable amount of atmospheric CO<sub>2</sub> from the environment. Some of the strategic approaches for the green campus are as follow-

- **Self-assessment** – It allows the universities and colleges to review the ideal steps and implement them for the campus. The audit assists in self-assessment and the decision-making process.
- **Awareness** – It develops awareness among everyone associated with the campus with conscious and consistent efforts.
- **Improved scopes** – By complying with the norms, universities can ensure higher scopes of getting the best grade from NAAC. It is vital to follow the systematic way and implement the best steps for green audits on the campus under professional guidance.

### 1.2. THE ROLE OF THE REPORT

Based on the audit reports, the college can make the best strategies to make the campus ideal for students, teachers, and anyone associated. It also helps the college acknowledge the wastage volume and consider different recycling projects for developing a sustainable ecosystem for the learners. Simply put, it is a way to minimize wastage and create a more suitable place for learning with improved NAAC grades.



The National Assessment and Accreditation Council (NAAC) was introduced by the college Grants Commission or UGC in September 1994. NAAC was established in Bangalore for reviewing the performance and operational quality of Indian universities.

The NAAC accreditation is compulsory for all learning institutes in the country. The grade given by NAAC is crucial for state universities to operate optimally and maintain their reputation. The NAAC accreditation helps a organization to apply for and obtain UGC grants, RUSA grants, financial donations, etc. However, there is more to the NAAC accreditation that relates it to the green audit.

### **1.3. THE LINK BETWEEN GREEN AUDIT AND NAAC ACCREDITATION**

- The NAAC accreditation regulates and defines the performance and quality of the educational institution. The NAAC grade exhibit the quality of education, learning infrastructure, research facilities, etc. The Green Audit is associated with the 7th criterion of NAAC.
- A green audit is critical for a college in determining the best grades from the National Assessment and Accreditation. The audit reports exhibit the practical ways through which colleges and universities are consuming natural resources and energy. The reports determine whether the educational campus is exploiting the various natural resources.
- Having the best reports with the green audit ensures the environmental sustainability of the campus. It determines the greenery quotient on the campus and covers other influential environmental aspects. It includes the consumption and management of energy resources and environmental components.

It has made mandatory that all Higher Educational Institutions should submit an annual Green Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through carbon footprint reduction measures.





#### **1.4. BENEFITS OF NAAC ACCREDITATION**

- Institution to know its strengths, weaknesses, and opportunities through an informed review process.
- Identification of internal areas of planning and resource allocation
- Collegiality on the campus
- Funding agencies look for objective data for performance funding.
- Institutions to initiate innovative and modern methods of pedagogy.
- New sense of direction and identity for institutions
- The society look for reliable information on quality education offered.
- Employers look for reliable information on the quality of education offered to the prospective recruits.
- Intra and inter-institutional interaction





# **ABOUT COLLEGE**



## 2. ABOUT COLLEGE

D.A.V. College Chandigarh was founded in 1958, when the city of Chandigarh was in its infancy. The college has grown with the city, becoming an integral part of the region's socio-cultural milieu. The Figure -I, Location Map shows the DAV college is part of Chandigarh City.



The college belongs to the family of the famous D.A.V. institutions, founded by Mahatma Hans Raj, and inspired by the great visionary-Swami Dayanand Saraswati-the doyen of the Arya Samaj, who believed that, "True education consists in promoting knowledge, civilized manners, virtuous character, self-control and other moral qualities and in dispelling ignorance". He had always felt that the scientific knowledge of the west needs to be absorbed in the cultural milieu of India.

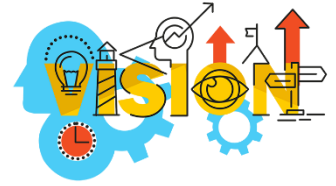
The DAV movement, which started in 1886, gives a practical shape to the ideals of Swami Dayanand's educational philosophy which aims to develop a modern scientific approach among the students, coupled with an understanding of their roots in the ancient Vedic Culture. The D.A.V College, Chandigarh is trying to bring about this synthesis by imparting to the students the best of new world humanistic, scientific and technical knowledge with the sense of history of their rich cultural heritage-the Anglo and Vedic values.

DAV college has successfully launched Postgraduate programs in Commerce, Biotechnology, Chemistry, Mathematics, Physics, Zoology, English, Economics, Psychology, Public Administration, Sociology and P.G. Diplomas in various fields.



## 2.1. VISION

- To promote the foundational values like work culture, spirit of public service, inculcating discipline, dedication & determination in students.
- To impart IT enabled education by providing a conducive atmosphere leading to intellectual, spiritual and academic growth of students with an aim to build professional attitude, communal harmony and nurture lofty ideas of Vedic Culture.
- To empower the young students by providing them holistic education with emphasis on alignment of theory with practice, academia with industry and fostering the sense of enterprise with motivation and professionalism.



## 2.2. MISSION

- To give a practical shape to the ideals of Swami Dayanand's educational philosophy which aims to develop a modern scientific approach among the students, coupled with an understanding of their roots in the ancient Vedic Culture.
- To provide a unique and different learning environment in the stream of Science, Commerce, Management, Humanities & Information Technology by imparting knowledge, skills, hands on practical training and industry exposure along with a strong value system in order to groom the students as competent, dynamic and socially awakened citizens of the country.
- To impart at the best of new world humanistic, scientific and technical knowledge with the sense of history of their rich cultural heritage-the Anglo and Vedic values.



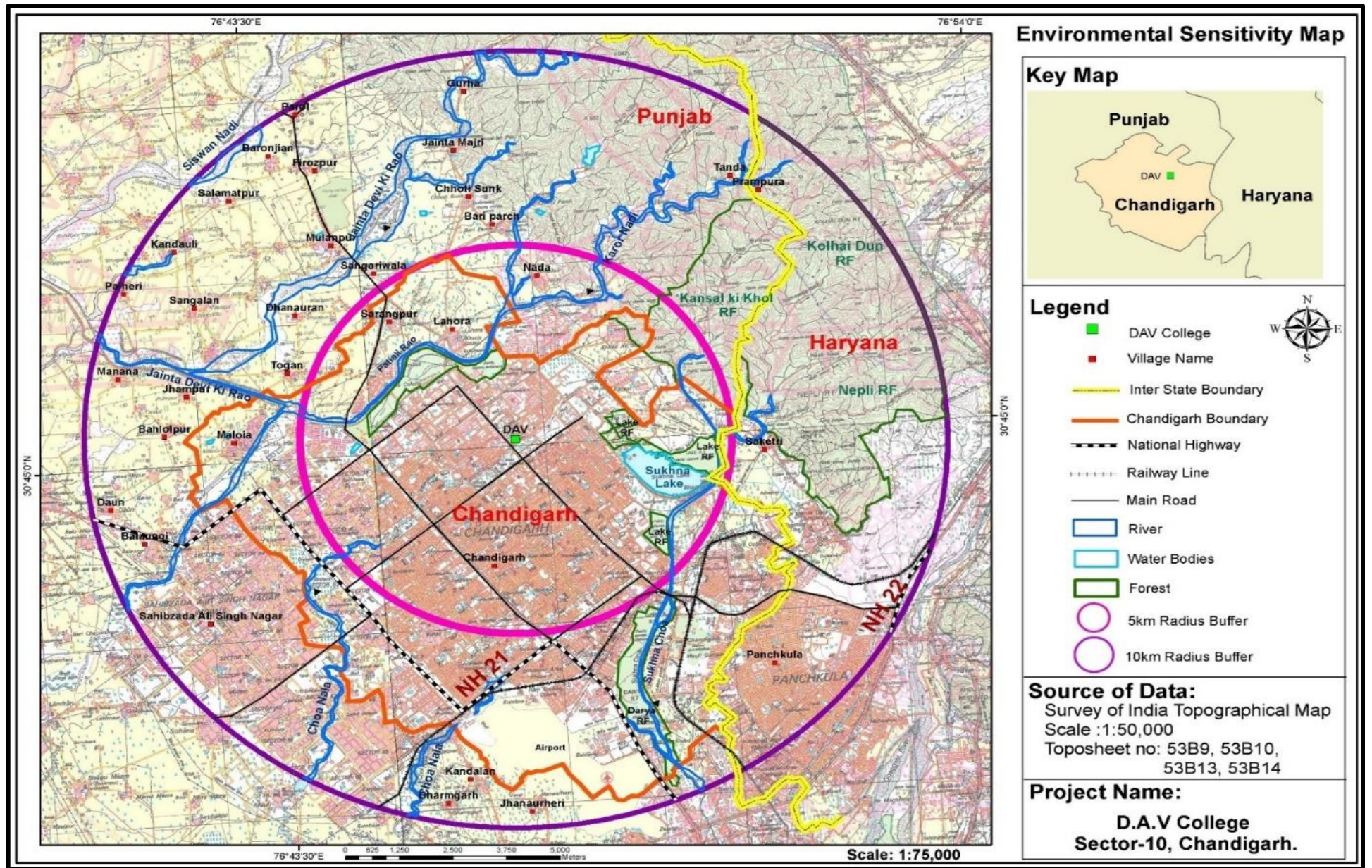


Figure 1: Location Map of D.A.V. College Campus

# **GREEN AUDITING**

### 3. GREEN AUDITING

The green audit aims to analyse environmental practices within and outside the college campus, which will have an impact on the eco-friendly atmosphere. Green audit can be defined as systematic identification, quantification, documenting, reporting and analysis of components of college environment. It was initiated with the motive of inspecting the effort within the institutions whose exercises can cause threat to the health of students & staff and the environment.

#### 3.1. METHODOLOGY OF GREEN AUDITING

The purpose of the green audit of D.A.V. College is to ensure that the practices followed in the campus are in accordance with the Green Policy of the country.

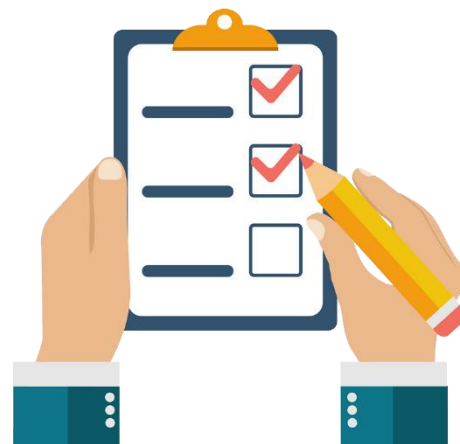
The criteria, methods and recommendations used in the audit were based on the identified areas of concern. During audit, the methodology included preparation and filling up of questionnaire, physical inspection of the campus, observations, and review of the documents, interviewing responsible persons and data analysis, measurements, and recommendations. The methodology adopted for this audit was a three-step process comprising of:

##### I. Pre-Audit

- Plan the audit.
- Select the audit team.
- Acquire the background information.
- Visit the site .

##### II. Audit on Site:

- Understand the scope of audit.
- Analyze the strengths and weaknesses of internal controls.
- Conduct the audit.
- Evaluate the observations of audit program.
- Prepare a report of the observations side by side.



##### III. Report Preparation:

- Produce a draft report of the data collected.
- Produce a final report of the observations and the inference with accuracy.
- Distribute the final report to the management.
- Prepare an action plan to overcome the flaws Keep a watch on the action plan.

In recent time, the Green Audit of an institution has been becoming a paramount important for self-assessment of the institution which reflects the role of the institution in mitigating the present



environmental problems. The college has been putting efforts to keep our environment clean since its inception. Therefore, the purpose of the present green audit is to identify, quantify, describe, and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies, and standards. The steps of carrying out Green Audit are:

1. To map the geographical location of the college
2. To document the floral diversity of the college

### **3.2. GREEN CAMPUS**

Choosing a college to pursue one's higher studies is one of the toughest decisions of one's life, and a high level of stress associated with change and other variables is understandable. The college is bound to be a second home to many of the students for years to come, and thus, along with academic excellence, the presence of a calming and beautiful campus attains a relevance of its own in making the students feel comfortable and cheerful. Not only does a lovely campus encourage a peacefully healthy lifestyle outside the classroom, but the proximity to nature also inculcates in the students the inclination to introspect themselves to become part of something that is greater than merely their materialistic reality.

The college has gorgeous campus generously dotted with large tracts of gardens. The college has a vast area of open ground lined with lush, green trees along with certain areas ear-marked for sports activities. The main grounds of the college serve to be the venues for the various sporting and co-curricular events. The Palm Garden is adorned with multitudes of Palm varieties, from Areca to Bottle to Rhaphis, while the Umbrella Garden outside the college library has comfortable, relaxed and ample seating for students under the cool shade of beach umbrellas – a perfect place for them to spend their moments of leisure between classes. The DAV college is one of the biggest colleges in North-India having 21 teaching departments and faculty strength of 250 mostly doctorates. It has 10-undergraduate programs with honours in 15 subjects, 10-Postgraduate programs and 7-PG Diplomas, 2-UG Diplomas.



**Table 1 - Area description**

Facilities	Existing
<b>Campus area</b>	16 Acres (64749.7 sq. m)
<b>Covered/ built-up Area.</b>	75940.33 sq. m
Classrooms	87
Laboratories	45
Seminar Halls	4
Classrooms with LCD facilities	1
Classrooms with Wi-Fi/ LAN	87
Seminar halls with ICT facilities	2
Video Centre	1
<b>Uncovered Area</b>	45850.65 sq. m. 70%
<b>Green/open area</b>	<b>31124 sq. m ( 48%)</b>
<b>Green cover as per google image</b>	24847.69 sq. m 38.37%

The college has well planned and maintained infrastructure. It has fully Wi-Fi and automated campus with spacious classrooms, seminar rooms with audio visual aids, auditoriums, Central Instrumentation, Cyber Labs, 45 Labs, 5-IT labs. It has separate hostels for the boys and girls having A/c Rooms, A/c messes, modular-kitchens, recreation rooms with TVs, Indoor Games, Gymnasium halls, Beauty Care Centre and Fitness Centre. The College has ramps, wheelchairs facility and toilet facility for differently abled students. The college has vast playgrounds, shooting range and basketball ground of international level. The college has three wings of NCC Viz. Army, Navy and Air Forces well as four NSS Units.

The college has adopted the ‘Green Campus’ system for environmental conservation and sustainability. The main three pillars are zero carbon footprint, positive impact on occupant health and performance of 100% graduates demonstrating environmental literacy. The goal is to reduce CO2 emission, energy and water use, while creating atmosphere where students can learn and be healthy. The DAV college campus spreads over 16 Acres of land comprising of the following (Shown in Figure-2 Google image)



**Figure -2 Google Image of D.A.V. College Campus**

# **BIODIVERSITY**

#### 4. BIODIVERSITY OF THE COLLEGE CAMPUS

The importance of biodiversity planning in urban area is a small step to mitigate the biodiversity loss because of urbanization and deforestation. The sustainable urban communities can be created by designing the landscapes with diverse group of plants ranging from trees, medicinal plants and ornamental plants which not just provide healthy, pollution free environment but also provide with various ecosystem services like medicinal value, food and fruit supply, aesthetic value and educational services. This audit aims at understanding the contribution of plants in providing ecosystem services to the people so that the readers have a sense of appreciation towards the healthy environment created by diverse group of plants growing in the college campus.

##### 4.1. FLORA BIODIVERSITY

DAV College is located within the geo-position between latitude 30°45'8.15" N and longitude 76°47'7.80" E in Chandigarh, India. It encompasses an area of about 16 Acres. The area is



immensely diverse with a variety of tree species performing a variety of functions. Most of these tree species are planted in different periods of time through various plantation programmes organized by the authority and have become an integral part of the college. The trees of the college have increased the quality of life, not only the college fraternity but also the people around of the college in terms of contributing to our environment by providing oxygen, improving air quality, climate amelioration, conservation of water, preserving soil, controlling climate by moderating the effects of the sun, rain, and wind. Leaves absorb and filter the sun's radiant energy, keeping things cool in summer. Many species of birds are dependent on these trees mainly for food and shelter. Nectar of flowers and plants is a favourite of birds and many insects. Different species display a seemingly endless variety of shapes, forms, texture, and vibrant colours. Even individual trees vary their appearance throughout the course of the year as the seasons change. The strength, long lifespan and regal stature of trees give them a monument – like quality. A thick belt of large shady trees exists in the periphery of the college. This barrier reduces noise and cut down dust and storms from outside. There are a approx.394 trees within the campus.

Apart from the above plantations detail, lawns are being maintained in front of many buildings of DAVC with flowerpots and seasonal plants. Both sides of large lawns are planted with rows of trees and college boundary is surrounded by canopy of trees.



**Figure 3: Green Campus**

The campus has a lush green environment. The college lawns are well maintained, and Gardeners are appointed to take good care of the greenery of the campus. Out of total campus area of 64749.7 sq meters, green cover of the campus is about 31124 Sq.m which is about 48%.

The college has developed the following four special green areas:

1. Palm Garden
2. Umbrella Garden

- 3. Botanical Garden
- 4. NSS Amrit Vatika (Amrit Garden)

(i) **PALM GARDEN**

A Palm Garden having more than 50 palm trees consisting of 11 species of Palms such as Areca Palm, Foxtail Palm, Chinese Fan Palm, Fishtail Palm, Lady Palm, Table Palm, Royal Palm, Dwarf Palmetto, Pigmy Palm, *etc.*



Figure 4: Palm Garden

**(ii) UMBRELLA GARDEN**

Umbrella Garden outside the college library has comfortable, relaxed, and ample seating for students under the cool shade of beach umbrellas. The garden has variety of shrubs, seasonal flowers, and widespread lawn.



**Figure 5: Umbrella Garden**

**(iii) BOTANICAL GARDEN**

A major contemporary objective of botanical gardens is to maintain extensive collections of plants, labeled with common and scientific names and regions of origin. Plant collections in such gardens vary in number from a few hundred to several thousand different kinds, depending on the land area available and the financial and scholarly resources of the institution. A separate Botanical Garden has been developed in the DAVC campus with more than 100 varieties of medicinal plants & shrubs as shown in **Figure 6**.



Figure 6: Botanical Garden

(iv) NSS AMRIT VATIKA

"Meri Maati Mera Desh" campaign is envisaged from 9th August 2023 as a culminating event of 'Azadi Ka Amrit Mahotsav'. It is a tribute to the Veers and Veeranganas who have made the supreme sacrifice for the country.



Figure 7: Amrit Vatika

4.2. FAUNA BIODIVERSITY

DAV college campus witnessed a rich faunal diversity. List of **Fauna** diversity of the college campus is attached as **Annexure II**.





# **WASTE MANAGEMENT**



## 5.0 WASTE MANAGEMENT

A waste management system or waste disposal is a streamlined process that organizations use to dispose of, reduce, reuse, and prevent waste. It is also an approach where companies implement comprehensive strategies to efficiently manage wastes from their origin until their final disposal.

### 5.1. SOLID WASTE MANAGEMENT IN DAV COLLEGE CAMPUS

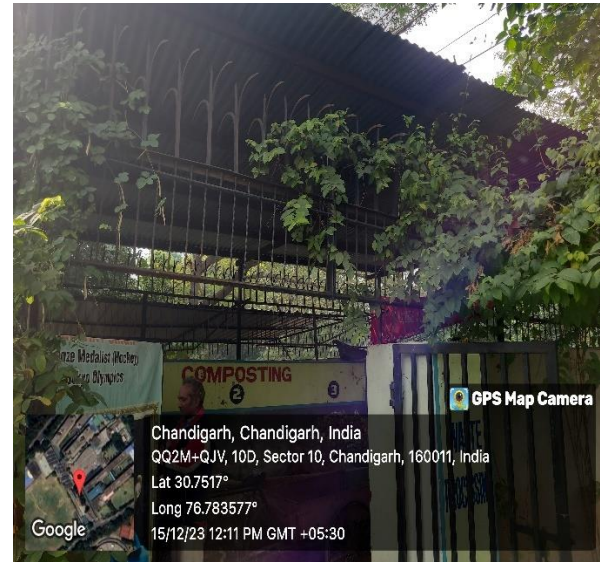
Sustainable development has forced developing countries to have a focused look at their waste management system including educational institutions. The solid waste generated in the College campus of DAV College, Sector-10, Chandigarh has followed the concept of Three “R” i.e.,

Reduce, Recycle and Reuse the solid waste. The major sources from where solid waste is generated are Hostels, Hostel Mess, canteen, coffee house, laboratories, and library. Wastes from all these sources are segregated as dry and wet in dustbins with specific colour codes as per the international guidelines. The materials like paper, plastic



and glass are managed by recycling process. This task has been made easier by placement of dustbins at appropriate places. For example, dustbins are placed at canteens, each corridor of all the buildings, roadsides, etc. Covered dustbins are used to prevent breeding of infectious vectors.

The bio composters are installed in all the hostels to convert leftover food from mess and vegetable peels into compost which is utilized in the college gardens, lawns, and nursery. The grass and leaf litter are also converted into compost. To reduce the waste at institute, students and staff are educated on proper waste management practices through lectures, advertisement on notice boards, displaying slogan boards in the campus.





**Figure 8: Solid Waste Management**

## 5.2. GREEN WASTE MANAGEMENT

Green waste, also known as "biological waste", is any organic waste that can be composted. It is most usually composed of refuse from gardens such as grass clippings or leaves, and domestic or industrial kitchen wastes. Green waste does not include things such as dried leaves, pine straw, or hay. Such materials are rich in carbon and considered "brown wastes," while green wastes contain high concentrations of nitrogen. Green waste can be used to increase the efficiency of many composting operations and can be added to soil to sustain local nutrient cycling. In the College, Plants are grown by purely organic way to avoid the harsh environmental effects of chemical fertilizers. DAV college does microbial degradation of wet / organic waste by layering Coco peat and finally mixing microbes in composters. Once they are filled, then left for a period of 35 days so as to get the compost which is of brown colour, is used for plantation, gardening and development of Green Belt.



Figure 9: Composting Site



# **ENVIRONMENTAL ACTIVITIES**



## 6.0 ENVIRONMENTAL ACTIVITIES ORGANIZED BY THE DAVC DURING 2024-2025:

### (i) SWACHATA HI SEVA

On dated 1<sup>st</sup> October 2024 at Amrit Vatika the NSS UNIT, organized events under the theme of "SWACHHATA HI SEVA". The theme includes Waste Management lecture by **Dr.Kashma Sharma** who emphasized the importance of proper waste disposal using the **three- colours dustbin system**. The session was attended by around 30 volunteers and teachers, who took a pledge to promote cleanliness. Following the session, volunteers embarked on a **cleanliness drive in college Palm garden**, collecting waste and spreading awareness about the importance of **proper waste management**.



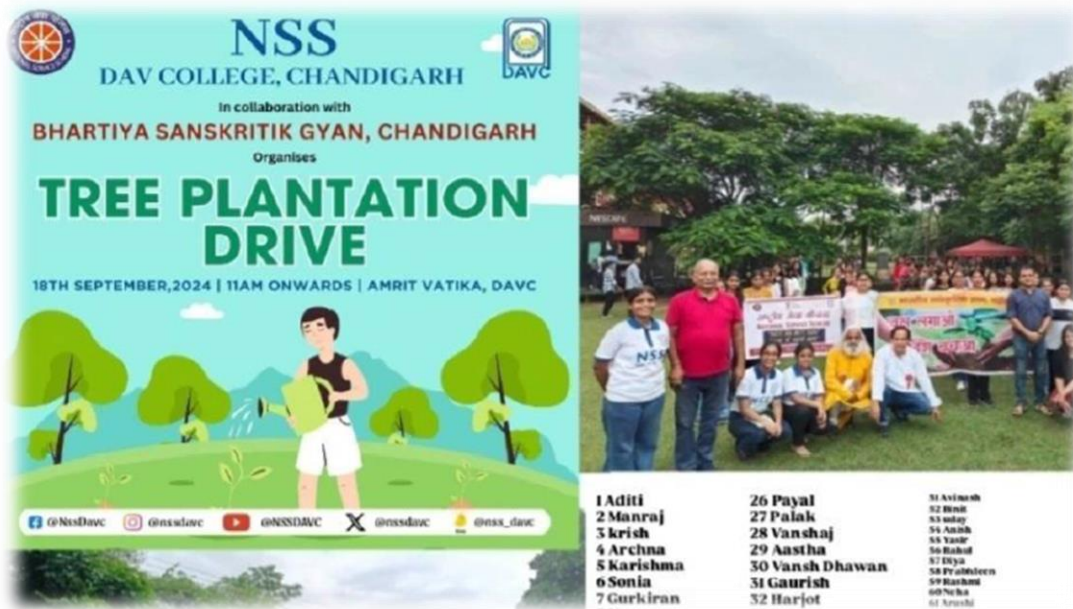
**(ii) NSS DAY & SESSION ON PLASTIC WASTE MANAGEMENT**

The NSS celebrated NSS Day on September 24, 2024, via Google Meet, which featured discussion on NSS achievements and DAV NSS history. Around 50 volunteers attended the virtual event, which featured a discussion on “Plastic Waste Management” on NSS DAY. The session was conducted by our volunteer and Programme Officers and volunteers shared ideas towards minimizing plastic waste as well as shared their ideas on replacing plastic. The event aimed to promote community service and social responsibility among youth.



**(iii) TREE PLANTATION DRIVE**

The NSS unit in collaboration with Bhartiya Sanskritik Gyan, Chandigarh, organized a tree plantation drive at DAV College's Amrit Vatika on 18 September at 11:00 AM. Around 100 volunteers participated in the event. It was an interactive session where our collaborating partners explained the importance of trees and why the youth needs to understand it, as they are our future. Following this, all of us, including students and teachers, planted trees, which was successful thanks to our gardener Uncle. The event was successful due to our Program Officers' guidance, the volunteers' good management, and gardener's help.



#### (IV) “EK PEDH MAA KE NAAM”

The NSS UNIT organized a tree plantation drive on 19th July 2024 , on the theme of “ek pedh maa ke naam” . It includes plantation drive at girl’s hostel backyard of DAV college and saplings were also distributed to the volunteers. It was honor to have the presence of DR.NEMI CHAND GOLIA (state liaison officer ,chd administration),SHMT.HARSH SHARMA (president ,special Olympic Bharat’s parent association ) , SH.ROHIT KUMAR (director, global youth federation ,India ) SH.PRABHUNATH SHAHI (director, jai Madhusudan jai shri krishna foundation), TEJASWANI SHARMA (president awarded & special child ).



**NSS UNIT & ECO CLUB**  
DAV COLLEGE , CHANDIGARH

is observing

**‘ एक पेड़ माँ के नाम ’**

- PLANTATION DRIVE
- TREE AMBULANCE SERVICE
- SAPLING DISTRIBUTION

19th JULY, 2024 ( FRIDAY ) | 10:30 am  
GIRLS HOSTEL BACKYARD, DAV COLLEGE

In the honourable presence of

- DR. NEMI CHAND GOLIA  
( NSS STATE LIAISON OFFICER, CHD ADMINISTRATION )
- SHMT. HARSH SHARMA  
( PRESIDENT, SPEACIAL OLYMPIC BHARAT PARENT ASSOCIATION )
- SH. PRABHUNATH SHAHI  
( DIRECTOR, JAI MADHUSUDAN JAI SHRUKRISHNA FOUNDATION )
- SH. ROHIT KUMAR  
( DIRECTOR, GLOBAL YOUTH FEDCRATION , INDIA )
- TEJASWANI SHARMA  
( PRESIDENT AWARDEE & SPECIAL CHILD )

ECO CLUB DAVC      NSS PROGRAMME OFFICERS DAVC      PRINCIPAL DAVC



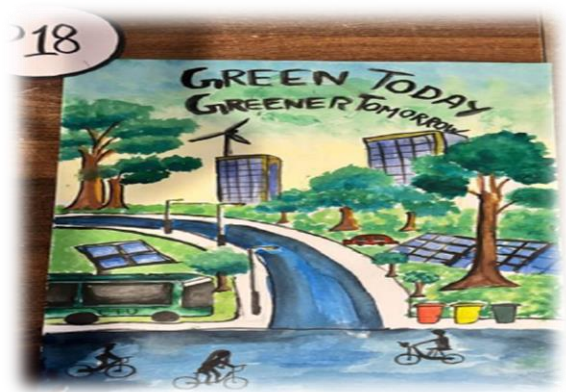
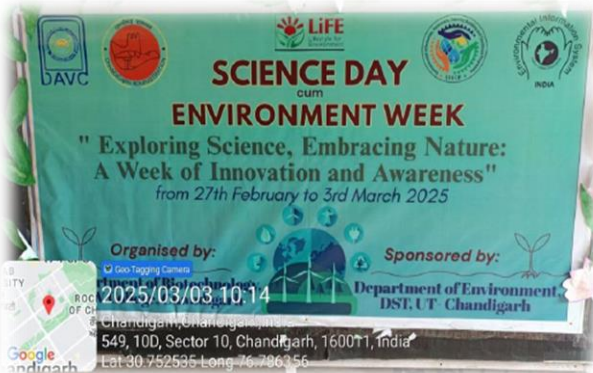
# **ENVIRONMENT AWARENESS CAMPS**



## 7. ENVIRONMENT AWARENESS CAMPS

### 7.1 SCIENCE DAY 2025

To commemorate the National Science day 2025, the Department of Biotechnology, as every year the celebrations started from 27th February to 3rd March, 2025 as Environment week. The complete program is funded by Department of Environment, UT Chandigarh Administration.



## 7.2 TRIP OF DEPARTMENT OF BIOTECHNOLOGY

A one day educational cum fun trip was organized for students of both the UG and PG students on 11.03.2025 to Tikkar Tal Morni hills, Himachal Pradesh and Nature awareness camp Thapli, Haryana. Around 50 students accompanied by four faculty members (Dr. Kakoli Biswas, Dr. Raman soni, Dr. Rupinderjeet Kaur & Ms. Sangeeta Sharma). The trip commenced from DAV College Sector-10, Chandigarh at 8:15 AM and reaching Tikkar Tal Morni hills at 10:30 AM.

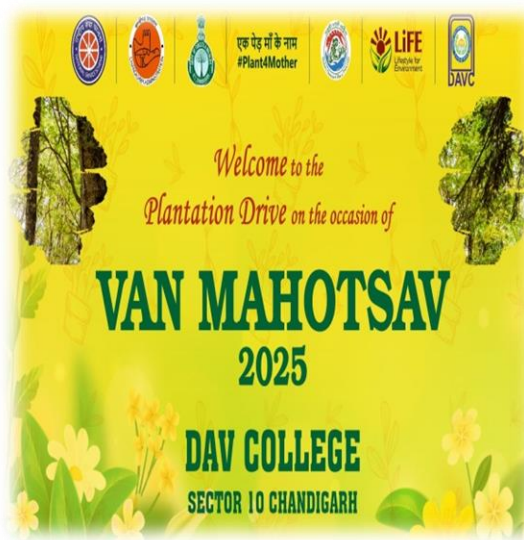


The students got exposed to the nature in its vibrant form. After spending around 2.5 hrs there the students were taken to Nature awareness camp Thapli, Haryana. The students spent a quality time exploring the nature, studying the flora and Fauna of the foot hills of Himalayas. A trekking up the hill was a great moment for all. It was enjoyed thoroughly by the students and teachers equally. The trip completed after returning back to the College at 6:00 PM sharp.

## 7.3 TREE PLANTATION DRIVE TO CELEBRATE VAN MAHOTSAV

A Tree Plantation Drive was organized by the NSS Units on 5<sup>th</sup> July 2025 to celebrate *Van Mahotsav*, the annual tree-planting festival observed across India to raise awareness about the importance of trees and forests. The initiative aimed to instill a sense of environmental responsibility among students and promote sustainable practices through active participation.

As part of the celebration, a total of 70 saplings were planted in the college campus. The saplings included a mix of **flowering**, **medicinal**, and **fruit-bearing** plants, chosen to enhance the ecological diversity and long-term green cover of the area. The plantation activity was carried out in designated zones within the campus to ensure proper care and monitoring. The plantation drive not only contributed to the beautification and ecological enrichment of the campus but also provided a valuable experiential learning opportunity for the students. The event concluded with a commitment from all participants to nurture the saplings and continue supporting green initiatives throughout the year.



#### 7.4 "TREE OF LIFE" CAMPAIGN



VADA Club, in association with the NSS Unit, organized a unique and thought-provoking event titled **"TREE OF LIFE"** as part of their ongoing anti-drug awareness drive under the supervision of Dr Kashma Sharma & Dr Jyotsna Rikhie. The initiative was aimed at mobilizing the youth to envision and commit themselves to an India free from drug abuse.

The centrepiece of the event was the symbolic *Tree of Life*, set up in the college courtyard. Students, teachers, and staff members actively took part by penning down their heartfelt wishes and personal



## *Green Audit Report of D.A.V College Sector-10, Chandigarh*

pledges on colourful paper leaves, which they then tied to the branches of the tree. Each wish represented an individual's hope and determination to contribute to the eradication of drugs from society.





# **GREEN CAMPUS MANAGEMENT**





## **8.0 GREEN CAMPUS MANAGEMENT**

Trees play an important ecological role within the urban environment, as well as support improved public health and provide aesthetic benefits to cities. In one year, a single mature tree will absorb up to 48 pounds of carbon dioxide from the atmosphere and release it as oxygen. The amount of oxygen released by the trees of the campus is good for the people in the campus. So, while you are busy studying and working on earning those good grades,

All the trees in campus are also working hard to make the air cleaner for you. The college has adopted the 'Green Campus' system for environmental conservation and sustainability. The main three pillars are zero carbon footprint, positive impact on occupant health and performance of 100% graduates demonstrating environmental literacy. The goal is to reduce CO<sub>2</sub> emission, energy, and water use, while creating atmosphere where students can learn and be healthy. The college campus spreads over 16 Acres of land comprising of 64749.7sq.m. is green area. The area is immensely diverse with a variety of tree species performing a variety of functions. Most of these tree species are planted in different periods of time through various plantation programmes organized by the authority and have become an integral part of the college. There are large varieties of trees spread all around the campus. A thick belt of large shady trees exists in the periphery of the college. This barrier reduces noise and cut down dust and storms from outside.

### **8.1 EFFORTS FOR CARBON NEUTRALITY**

Burning of fossil fuels (such as petrol) has an impact on the environment through the emission of greenhouse gases into the atmosphere. The most common greenhouse gases are carbon dioxide, water vapour, methane, nitrous oxide and ozone. Of all the greenhouse gases, carbon dioxide is the most prominent greenhouse gas, comprising 402 ppm of the Earth's atmosphere. The release of carbon dioxide gas into the Earth's atmosphere through human activities is commonly known as carbon emissions. Vehicular emission is the main source of carbon emission in the campus, hence, to assess the method of transportation that is practiced in the institute is important.

The carbon neutrality or having a net zero carbon footprint refers to achieving net zero carbon emissions by balancing carbon released with an equivalent sequestered or offset method. Simply, carbon neutral means removing as much carbon dioxide from the atmosphere as we put in.





## 8.2 CARBON EMISSION PROCESSES IN THE CAMPUS:

There are no direct carbon emission processes or activities in the campus except the use of LPG in canteen & hostel kitchen and limited movement of vehicles. The use of electricity, water and stationery are resulting in the carbon emission indirectly.

The major sources of direct carbon emission are from the petrol/diesel driven vehicles, human breathing, consumption of LPG, waste disposal and indirect sources are electricity, paper/stationary, etc.

D.A.V. premises includes educational institute, including boys' and girls' hostel for students, residence for institutional staff and other staffs.

### COLLEGE CARBON OFFSETTING INITIATIVES:

#### 1. REDUCING THE USE OF ELECTRICAL ENERGY:

- 100 kw Solar Power Plant in the campus to conserve electricity.

#### 2. REDUCING THE USE OF STATIONERY

- Communication to the faculty through conventional paper circulars has been almost replaced with the use of e-mail service or text message.
- Whole campus has the Wi-Fi accessibility.
- Admission to the campus through on-line portal is initiated.

#### 3. INCREASING GREEN VEGETATION ON THE CAMPUS:

- D.A.V. is situated in a lush green environment.
- Every building in the Campus is surrounded by trees and lawns
- Well planned plantation of wide varieties of trees and shrubs decorate the campus, and the campus looks beautiful.
- Plantation programmes are undertaken on the campus to increase the number of plants.
- Varieties of plant species are used in the campus for the development of green belt.
- Out of total campus area of 64749.7 sq meters, green cover of the campus is about 31124 Sq.m which is about 48%.



## INITIATIVES TAKEN BY THE COLLEGE TO MAKE THE CAMPUS ECO- FRIENDLY

- Avoid paper and plastic cups and plates in public functions where food is served. Instead, use utensils that can be washed and reused. Set up a compost facility to turn biodegradable waste into compost.
- This should be used for cultivating organic vegetables in grow bags and pots. D.G. sets are the direct emission source of pollutants. Therefore, low sulphur diesel is used as per the norms. However, the use of LPG in canteen & hostel kitchen and limited movement of vehicles are the other sources of emissions in the college campus.

### *Ways that you can promote sustainability and help your college go green:*

- Install Recycling and Composting Stations on Campus
- Set Up an E-Waste Drive
- Start a Moving Season Donation Program
- Attend Summits on Sustainability
- Reduce Paper Waste
- To protect and conserve ecological systems and resources within the campus.
- Recycle and Compost.

## 8.3 CARBON ABSORPTION BY FLORA IN THE INSTITUTION

- There are 394 full grown trees and 210 semi grown trees of different species on the campus spread over 16 acres.
- Carbon absorption capacity of one full grown tree 22 kg CO<sub>2</sub>. Therefore, Carbon absorption capacity of full-grown trees  $394 \times 22 \text{ kg CO}_2 = 8668 \text{ tons of CO}_2$ .
- The carbon absorption capacity of 210 semi-grown trees is 50% of that of full-grown trees. Hence the carbon absorption  $210 \times 11 \text{ kg of CO}_2 = 2310 \text{ tons of CO}_2$ .
- Carbon absorption capacity full grown & semi grown is 10978 tons of CO<sub>2</sub>.

**Total of CO<sub>2</sub> emissions reduction =10978 tons per year**



### **OBSERVATIONS**

- College has installed Bio-composting facility for kitchen waste in the hostel and Organic-Composting facility in the college campus for dry/wet waste.
- Use eco-friendly construction materials for new buildings.
- E-waste management system needs to be adopted.
- Install green roofs or vertical gardens where possible.
- To prevent water spillage and excessive usage in washbasins, urinals, and toilets, the installation of push-type taps is strongly recommended."
- Native plant species that grow rapidly will be planted to enhance green cover and promote ecological sustainability."
- Awareness among students and staff about green environment shall be done using tools like display boards.





**2024-25**

# **ENVIRONMENT AUDIT REPORT**



**D.A.V. COLLEGE**  
**SECTOR-10, CHANDIGARH**

*July 2025*



Prepared by:  
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## AUDIT CERTIFICATE



### Shivalik Solid Waste Management Limited

Regd. Office : Village Majra, P.O. Dabhota, Teh. Nalagarh, Distt. Solan, Himachal Pradesh - 174 101  
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GSTIN: 02AAJCS7647D1ZE CIN:U33130HP2005PLC028806

Ref. No. SSWML/PRA/EIA/15-26/2014

Dated 26/5/25

## Certificate of Environment Audit Assessment

Presented to

*D.A.V. College, Sector-10, Chandigarh*

This is to certify that D.A.V. College, Sector-10, Chandigarh has been assessed by Shivalik Solid Waste Management Limited for a comprehensive evaluation of the environmental impact within its institutional framework, in accordance with the requirements of the Environment Audit mandated by the National Assessment and Accreditation Council (NAAC).

The audit encompassed a comprehensive evaluation of the college's environmental practices, including waste management, water conservation. Based on the documentation and evidence submitted, the institution's performance was found to be **satisfactory** and in alignment with environmental sustainability standards.

The proactive efforts undertaken by the college management and faculty in promoting environmental sustainability are **highly commendable and noteworthy**. Their commitment reflects a forward-thinking approach towards ecological responsibility and institutional excellence.

We extend our appreciation for their dedication and encourage continued progress in fostering a sustainable academic environment.



An ISO-9001:2015, ISO-14001:2015, ISO-45001:2018 Certified Company



Providing Solution for Clean Environment

Website : [www.sswml.net](http://www.sswml.net)





## ACKNOWLEDGEMENT

Shivalik Solid Waste Management Limited (SSWML) would like to thank the management of D.A.V. College sector-10, Chandigarh for assigning this important work of Environment Audit. We appreciate the co-operation to the teams for completion of assessment.

We would like to specially thank (*Dr. Mona Narang - Officiating Principal*) D.A.V. for giving us an opportunity to evaluate the performance of the campus from the environment audit guidelines perspective.

We would also like to thank Dr. Raghubir Singh , *Coordinator, IQAC*, for his continuous support and guidance, without which the completion of the project would have not been possible. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements. We are also thankful to

- *Dr. Nikhlesh Thakur*
- *Dr. Raghav Khanna*
- *Dr. Yogesh*
- *Dr. Mumtaz Oswal*
- *Dr. Kriti Kuthiala Kalia*
- *Dr. Raman Kamboj*
- *Dr. Harjeet Singh*
- *Dr. Arun Kumar Sharma*



### **DISCLAIMER**

SSWML Audit Team (Dr. Simranjit Kaur, Ms. Kamini Bhardwaj) have prepared this report for D.A.V College, Chandigarh based on input data submitted by the representatives of college complemented with the best judgment capacity of the expert team.

While all sensible care has been taken in its preparation, details contained in this report have been compiled in good faith based on information gathered.

It is further informed that the conclusions have arrived following best estimates and no representation, warranty or undertaking, express or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

If you wish to distribute copies of this report external to your organization, then all pages must be included.

SSWML and its staff shall keep confidential all information relating to your organization and shall not disclose any such information to any third party, except that in the public domain or required by law or relevant accreditation bodies.

SSWML staff have signed individual confidentiality undertakings and will only receive confidential information on a 'need to know' basis.



## **CONTEXT AND CONCEPT**

In India, the process for environmental audit was first mentioned under the Environment Protection Act, 1986 by the Ministry of Environment of forests on 13<sup>th</sup> March 1992. As per this act, every person owning an industry or performing an operation or process needs a legal consent and must submit an environmental report or statement.

The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory from the academic year 2019-20 onwards that all Higher Educational Institutions should submit an annual Green, Environment and Energy Audit Report. The grade given by NAAC is crucial for state universities to operate optimally and maintain their reputation. The NAAC accreditation helps a college/university to apply for and obtain UGC grants, RUSA grants, financial donations, etc.

In view of the NAAC circular regarding environment auditing, the college management decided to conduct an external environment assessment study by a competent external auditor.

The term 'Environmental audit' or 'Green audit' means differently to different people. Terms like 'assessment', 'survey' and 'review' are also used to describe similar activities. Furthermore, some organizations believe that an 'environmental audit' addresses only environmental matters, whereas others use the term to mean an audit of health, safety and environment-related matters. Although there is no universal definition of Green Audit, many leading companies/institutions follow the basic philosophy and approach summarized by the broad definition adopted by the International Chambers of Commerce (ICC) in its publication of Environmental Auditing (1989).

The ICC defines Environmental Auditing as: "A management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of safeguarding the environment and natural resources in its operations/projects."



## **EXECUTIVE SUMMARY**

The rapid environmental degradation at local, regional, and global level is leading us to global “Environmental poverty”. Stabilization of the human population, adoption of environmentally sound and sustainable technologies, reforestation and ecological restoration are crucial elements in creating an equitable and sustainable future for all humans in harmony with nature and natural resources.

Thus, academic leaders must initiate and support mobilization of internal and external resources and knowledge so that their institutions respond to environmental challenges. As an Institution of higher learning and research, D.A.V is deeply concerned and unconditionally believes that there is an urgent need to address these fundamental problems and reverse the trends of environmental degradation.

The rapid urbanization and economic development at local, regional, and global level has led to several environmental and ecological crises. On this background, it becomes essential to adopt the system of the Green Campus for the institute which will lead for sustainable development.

The term ‘Environmental audit’ means differently to different people. Terms like ‘assessment’, ‘survey’ and ‘review’ are also used to describe similar activities. Furthermore, some organizations believe that an ‘environmental audit’ addresses only environmental matters, whereas others use the term to mean an audit of health, safety and environment-related matters. Although there is no universal definition of Environmental Audit, many leading companies/institutions follow the basic philosophy and approach summarized by the broad definition adopted by the International Chambers of Commerce (ICC) in its publication of Environmental Auditing (1989).

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“A management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of safeguarding the environment and natural resources in its operations/projects.”



# INTRODUCTION



## 1. INTRODUCTION

Environment audit is quantitative and qualitative data to track air, soil and water waste, and to gain actionable insights to improve the operational performance in the atmosphere. This audit is generally used to observe the clean and green environment of an Organization. It provides a 360° view of a surrounding campus and makes it easy for Owners / Managers / Environmentalists to collaborate, measure, control, and reduce environmental impacts.



Finally it leads to enhancing the quality of life for human beings, animals and plants. Environment audit initiatives are the need of the hour across the world due to change in environmental conditions, global warming and increasing human population. It aims to make a sustainable and friendly environment.

Environment audit is a well-developed process of extracting information about an Organization that provides a realistic assessment of how the Organizations take steps towards protecting the environment. In order to save the eco-friendly atmosphere of an Organization, well-developed environmental objectives and targets should be undertaken to reduce the harmful effects to a greater extent. The audit process can minimize the environmental pollution in the campus remarkably which in turn reduces the global warming that affects as a whole. As per the Government law, the environmental legislations should be followed by all the Institutions and organizations and make sure that their activities should not destroy the environment. An environmental audit is a kind of assessment supposed to create awareness of environmental compliance and implementation gaps in the management system, along with related corrective movements.

## 1.1. ABOUT COLLEGE

D.A.V. College Chandigarh was founded in 1958, when the city of Chandigarh was in its infancy. The college has grown with the city, becoming an integral part of the region's socio-cultural milieu. The college belongs to the family of the famous D.A.V. institutions, founded by Mahatma Hans Raj, and inspired by the great visionary-Swami Dayanand Saraswati-the doyen of the Arya Samaj, who believed that "True education consists in promoting knowledge, civilized manners, virtuous character, self-control and other moral qualities and in dispelling ignorance". He had always felt that the scientific knowledge of the west needs to be absorbed in the cultural milieu of India.

The DAV movement, which started in 1886, gives a practical shape to the ideals of Swami Dayanand's educational philosophy which aims to develop a modern scientific approach among the students, coupled with an understanding of their roots in the ancient Vedic Culture.



The D.A.V College, Chandigarh is trying to bring about this synthesis by imparting to the students the best of new world humanistic, scientific and technical knowledge with the sense of history of their rich cultural heritage-the Anglo and Vedic values. D.A.V. work to achieve these broad objectives. College successfully launched Postgraduate programs in Commerce, Biotechnology, Chemistry, Mathematics, Physics, Zoology, English, Economics, Psychology, Public Administration, Sociology and P.G. Diplomas in various fields. The college has earned a respectable name in the field of sports. D.A.V.



College produced 69 International Sportsmen & women like the legendary Kapil Dev, Yuvraj Singh, Yograj, Dinesh Mongia, Jeev Milkha Singh, Irina Brar and Anjum Moudil.

This tradition is alive and kicking even today. Young scholars, inspired and fired by glowing examples of their predecessors, do their best to maintain the high levels of excellence year after year that are very rarely achieved elsewhere. When they come here, success is only a sacred word in their prayers; when they leave, success is actually a solid weapon in their hands. With this weapon they proceed further to win all battles of life. The coloured achievements of the college in the field of education, cultural activities and sports have enabled us to play host to four Vice-Presidents, one Prime Minister, several Union Ministers, Governors, Chief Ministers, great religious Leaders and other dignitaries. They have graced our functions on many occasions to bless and motivate the students and staff.

## HIGHLIGHTS

- One of the premier institutions of higher learning since 1958.
- Constantly endeavoring to promote many Languages and culture.
- Key institution for imparting quality education in all disciplines.
- Highly educated & qualified faculty.
- Regular curricula revision and upgradation in tune with changing market and societal needs.
- Top priority accorded to learner centric teaching pedagogy.
- State-of-the-art infrastructure with smart classrooms.
- Equipped with the best library in the region.
- Outstanding placements.
- Wide and strong alumni Base.
- Safe & secure environment for students especially girls.
- Taken new initiatives for promoting entrepreneurship, start-ups and employability.
- Low fee structure.
- Fully Wi-Fi Campus.



## The Vision and Mission of D.A.V. College, Chandigarh :

### ➤ VISION

- *To promote the foundational values like work culture, spirit of public service, inculcating discipline, dedication & determination in students.*
- *To impart IT enabled education by providing a conducive atmosphere leading to intellectual, spiritual and academic growth of students with an aim to build professional attitude, communal harmony and nurture lofty ideals of Vedic Culture.*
- *To empower the young students by providing them holistic education with emphasis on alignment of theory with practice, academia with industry and fostering the sense of enterprise with motivation and professionalism.*

### ➤ MISSION:

- *To give a practical shape to the ideals of Swami Dayanand's educational philosophy which aims to develop a modern scientific approach among the students, coupled with an understanding of their roots in the ancient Vedic Culture.*
- *To provide a unique and different learning environment in the stream of Science, Commerce, Management, Humanities & Information Technology by imparting knowledge, skills, hands on practical training and industry exposure along with a strong value system in order to groom the students as competent, dynamic and socially awakened citizens of the country.*
- *To impart to the students the best of new world humanistic, scientific and technical knowledge with the sense of history of their rich cultural heritage-the Anglo and Vedic values.*



# ENVIRONMENT AUDITING



## 2. ENVIRONMENT AUDITING

Environment auditing is the process of identification and determination of the institution's practices in creating awareness and practising the environment friendly measures. Over the period of time over exploitation of resources like energy, water, etc. have resulted in the environmental degradation. It is necessary to check whether our way of living and handling resources is not going to cause detrimental effects in our surroundings. Environment audit Report aims at summarising the college's contribution and its activeness in creating awareness and consciousness in practically applying the environmentally friendly measures towards an institute.



Environmental audits ensure that the environment is not disturbed from its balanced existence, so that it provides an eco-friendly atmosphere. Similar to that of Environmental audit, Green campus audit is also a type of assessment to ensure that the Institution and Organization campus should grow a large number of trees, shrubs, herbs, lawns, climbers, twins and lianas in their campus to produce more amount of oxygen and absorb more amount of carbon-di-oxide to provide a healthy Environment.

Environmental audit provides vivid dimensions on how waste materials are being managed and the source of wastes along with the solutions for environmental degradation is managed. Environmental Management System (ISO EMS 14001:2015) should be implemented by every Organization to ensure that the eco-friendly campus is being given to the stakeholders. Eco-friendly youth leadership programmes, green campus practices, social responsibility and Institutional values comprehending the relationship with the ecosystem for a sustainable environment are being evaluated (IGBC, 2021).

There are various efforts around the world to address environmental education issues. Environmental Management Systems (EMS) is very popular in the educational sector, but the general belief is that EMS is something pertaining to industries only. Other parts of the world have started adopting compatible environmental management systems either voluntarily or for promoting standards by external certification. International environmental standards do not suit the existing Indian educational system. Hence, EHS Alliance has developed a compatible system by developing locally applicable techniques.

## OBJECTIVES OF THE ENVIRONMENTAL AUDIT:

- Environmental education through systematic environmental management approaches.
- Improving environmental standards
- Benchmarking for environmental protection initiatives
- Sustainable use of natural resource in the campus.
- Financial savings through a reduction in resource use
- Curriculum enrichment through practical experience
- 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

## NEED FOR ENVIRONMENT AUDITING

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

## GOALS OF ENVIRONMENT AUDIT

*An environment audit of D.A.V. College has been conducted with specific goals as:*

- Identification and documentation of environment practices followed by college.
- Identify strength and weakness in environment practices.
- Analyse and suggest solution for problems identified.
- Assess facility of different types of waste management.
- Increase environmental awareness throughout campus
- Identify and assess environmental risk.
- Motivate staff for optimized sustainable use of available resources.

- 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.

## **BENEFITS OF ENVIRONMENT AUDIT TO EDUCATIONAL INSTITUTIONS**

*There are many advantages of Environment audit to an Educational Institute:*

- It would help to protect the environment in and around the campus.
- Recognize the cost saving methods through waste minimization and energy conservation.
- Empower the organization to frame a better environmental performance.
- Environmental education through systematic environmental management approach
- Improving environmental standards
- Benchmarking for environmental protection initiatives
- Sustainable use of natural resource in the campus.
- Curriculum enrichment through practical experience
- Developing an environmental ethic and value systems in young people
- It portrays good image of college through its clean and green campus
- Finally, it will help to build positive impression through green initiatives to the upcoming NAAC visit.

**The Environment Audit of D.A.V College has been conducted for the year 2025-26.**

**Figure 1** shows the Location map of D.A.V. Campus, and **Figure 2** shows the Google map image of the college. The **Table 1** above shows Area distribution of the campus and **Table 2** shows the Facilities available in the campus.

**TABLE -1 DAV CAMPUS AREA DISTRBUTION**

<b>Facilities</b>	<b>Existing</b>
<b>Campus area</b>	16 Acres (64749.7 sq.m)
<b>Covered/ built-up Area</b>	75940.33 sq.m.
<b>Uncovered Area</b>	45850.65 sq.m.70%
<b>Green Area based on Google Image</b>	31124 sq.m.
<b>Population Density</b>	Students 8073 Teachers 242 Non-Teaching: 90
<b>Floating/Residential</b>	750
<b>Water Source</b>	Tube well, tanks MC.
<b>Classrooms</b>	87
<b>Laboratories</b>	45
<b>Seminar Halls</b>	4
<b>Classrooms with LCD facilities</b>	1
<b>Classrooms with Wi-Fi/ LAN</b>	87
<b>Seminar halls with ICT facilities</b>	2
<b>Video Centre</b>	1

**TABLE - 2 AVAILABLE FACILITIES AT THE CAMPUS**

S.No.	Facilities available in the campus
1	Garden area
2	Playground
3	Kitchen
4	Toilets
5	Composting Pits
6	Laboratories
7	Canteen
8	Hostel Facility
9	Dispensary
10	Botanical Garden
11	Drainage system



FIGURE 1: LAYOUT MAP OF D.A.V CHANDIGARH

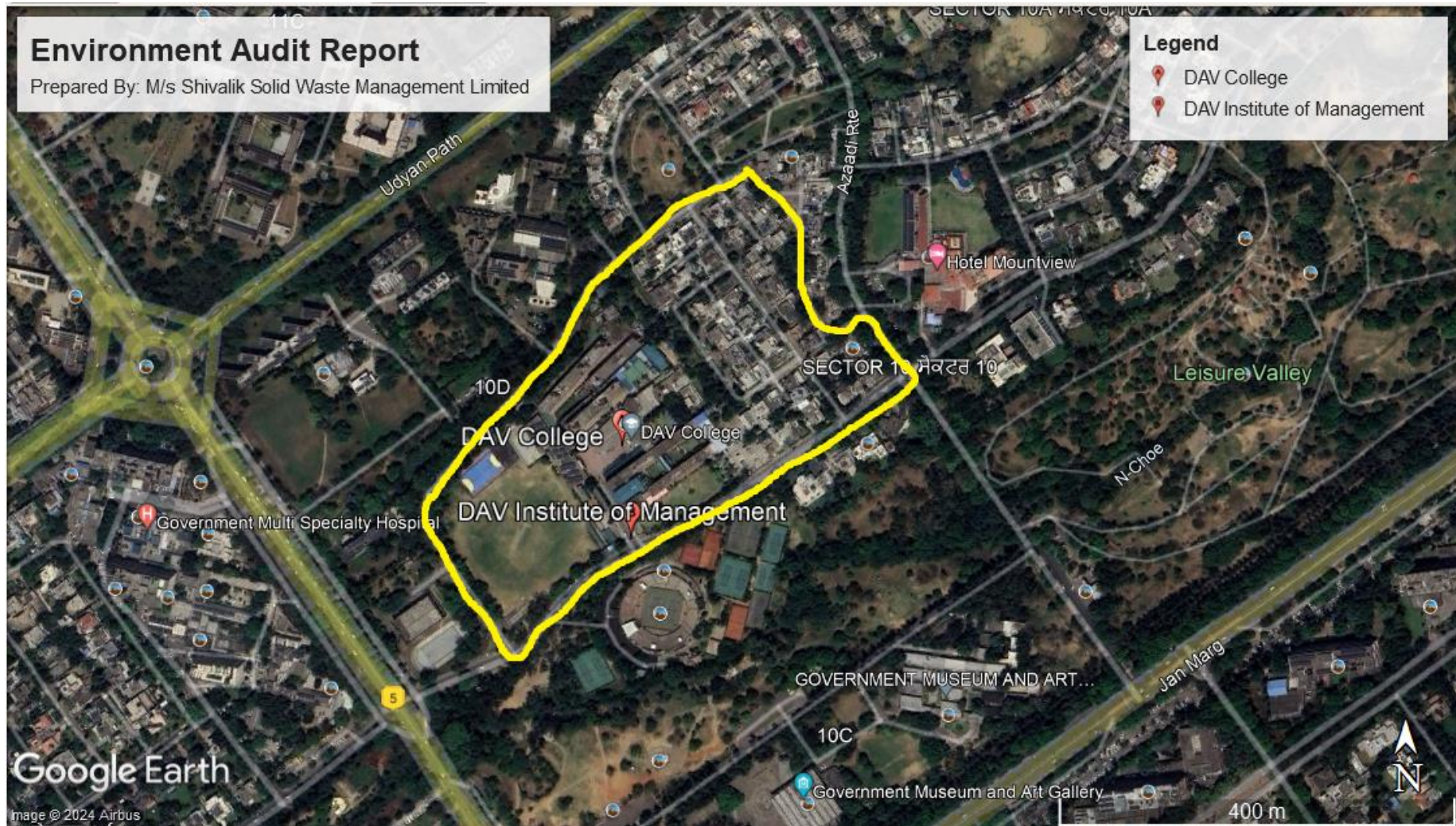


FIGURE -2 GOOGLE MAP IMAGE OF D.A.V CHANDIGARH



## **TARGET AREAS OF ENVIRONMENT AUDITING**

Environmental auditing is essentially an environmental management tool for measuring the effects of certain activities on the environment against set criteria or standards. Depending on the types of standards and the focus of the audit, there are different types of environmental audit. Organizations of all kinds now recognize the importance of environmental matters and accept that their environmental performance will be scrutinized by a wide range of interested parties. Environmental auditing is used to :

- Investigate
- Understand
- Identify

## **METHODOLOGY OF ENVIRONMENT AUDITING**

The criteria, methods and recommendations used in the audit were based on the identified areas of concern. During audit, the methodology included preparation and filling up of questionnaire, physical inspection of the campus, observations, and review of the documents, interviewing responsible persons and data analysis, measurements, and recommendations. The methodology adopted for this audit was a three-step process comprising of:

### **I. Pre-Audit**

- Plan the audit
- Select the audit team
- Acquire the background information
- Visit the site .

### **II. During Audit Process on Site:**

- Understand the scope of audit
- Analyze the strengths and weaknesses of the internal controls
- Conduct the audit
- Evaluate the observations of audit program
- Prepare a report of the observations side by side

### **III. Report Preparation:**

- Produce a draft report of the data collected
- Produce a final report of the observations and the inference with accuracy
- Distribute the final report to the management



As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent. The rapid urbanization and economic development at local, regional, and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time reduce a sizable amount of atmospheric CO<sub>2</sub> from the environment.

The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory that all Higher Educational Institutions should submit an Annual Environment Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through carbon footprint reduction measures.



# **WATER MANAGEMENT**



### 3. WATER MANAGEMENT

Water auditing is a systematic & scientific examination of water accounts of the projects. It is an intelligent & critical examination by independent organization. It is a critical review of system of accounting. A water audit determines the amount of water used in different sectors; amount of water lost from distribution system due to leakages. Comprehensive Water Audit can give a detailed profile of distribution system & water users, thereby facilitating easier & effective management of resources and improved reliability. It has proved to be an effective tool for understanding & assessment of performance level of the projects. Water auditing involves checking of sector-wise water use against project planning.

#### 3.1 FRESH WATER REQUIRMENT:

The D.A.V college in-houses maximum 227 boys and 403 girls in hostels and few faculty members. The floating population of the college maximum 8540 & approx. 50 visitors per day, all available courses including non-academic staff. As per NBC, 2016 norms, the requirement of fresh water for domestic use including for flushing purpose works out to about 471.81 KLD. The details are given below in **Table -3**.

**TABLE-3 MAXIMUM WATER REQUIREMENT FOR DRINKING & FLUSHING**

S. No.	Particulars	Occupancy	Rate of Water Demand	Total Water Requirement (KLD)	Water Requirement	
					Domestic (Fresh Water)	Flushing (Recycled Water)
1	Students	8006	45	360270	200150	160120
2	Faculty	263	45	11835	6575	5260
3	Residential/Hosteler	680	135	91800	61200	30600
4	Visitor	50	15	750	250	500
5	Non-Teaching	159	45	7155	3975	3,180
<b>Total</b>				<b>4,71,810</b>	<b>2,72,150</b>	<b>1,99,660</b>
<b>Green area</b>				<b>31124 sq.m.</b>	<b>4.32 l/sq.m.</b>	<b>134.4 KLD</b>

During 2024-2025 freshwater requirement of college was 272.15 KLD and the recycled water was 199.66 KLD. In addition, 134.4 KLD water is used for Horticulture. The water demand is being met through M.C. water tanks installed within the campus, harvested rainwater and tankers supply from available sources. Other key points regarding water management are as below:

- Water Storage tank available within the campus to store raw water.
- Water sprinklers are used for watering of lawns for conserving use of water.
- The estimated wastewater generation on full occupancy 377.44 KLD (80% Of water consumption) which is discharged in the sewerage system of MC Chandigarh.



**FIGURE 3: WATER CONSERVATION**

### 3.2 WASTEWATER TREATMENT AND DISPOSAL:

Wastewater generated from D.A.V College is being disposed to MC Sewer.

### 3.3 RAINWATER HARVESTING:

- Rainwater harvesting system is installed in DAVC Campus. Rainwater collection system installed for collection of water from the rooftop of Building No. 1, 2 and 3 and from Girls and Boys Hostel Buildings.
- Total Water storage capacity in the campus is 70000 lit.
- Storm Water Collection structures are designed in accordance with the Indian Standard (IS 14961:2001) BIS guidelines for rainwater harvesting by roof water collection system.
- Roofing of the tank is painted with non-toxic paints.
- Storage tanks are made using RCC structure.
- This water is used within the campus for other than drinking purpose such as for maintaining the garden within the premises by vertical water sprinkling, moping etc.
- Water sprinklers are used for watering of lawns for conserving use of water.



- Storm water collection tanks are located at different places in the campus.
- Total capacity for storage of harvested rainwater is 250 KLD.



**FIGURE 4: RAINWATER HARVESTING & CONSERVATION**



# WASTE MANAGEMENT

#### 4.0 WASTE MANAGEMENT:

It provide guidelines and simplify the process of categorizing, quantifying, managing, and disposing of solid wastes in the organization. Waste management is a critical component of organization's operating policies. Waste Management Plan (WMP) includes the proper handling, collection, storage, manifesting, transportation, and disposal/recycling of the solid waste generated without harming the environment.



The procedure is designed to assist in an organization wide effort to provide protection to the environment and to comply with environment laws and legislative policies and regulations regarding proper waste management. The waste management covers solid wastes, biomedical and electronic wastes, kitchen and food wastes, plastic wastes, wastes, wastewater, hazardous waste materials, acids and chemicals. The waste management plan has been developed properly in compliance with environment laws and legislative policies and regulations.







The organization should monitor and inspect waste management related facilities and activities directly resulting from executing the scope and amendments of Waste Management Plan. Guidelines for proper handling, categorization, recording, minimization, recycling and disposal of all types of waste associated with organization operations and projects are part of this procedure may be undertaken. Additionally, abandoned materials and materials intended to be recycled are considered wastes. It should be taken into account while WMP in prepared and executed in the organization. It is very important to understand this concept, because even though something is going to be recycled, it must be managed as a waste until it is actually recycled. The wastes are categorized as hazardous and non-hazardous wastes depending upon the quantum of causing the adverse effect to the environment. The hazardous waste should be disposed properly by ignitability, corrosivity, reactivity, irritability and toxicity behaviours. In ignitability, the flash point should be less than 60°C. Similarly, in corrosivity, the pH should be less than 2.0-3.5 or greater than or equal to 12.5-13.5. Similar to that of ignitability and corrosivity, the reactivity should be inherently unstable under ordinary conditions or when exposed to water. In irritability, when in contact with body the inflammation should not be caused. Toxicity should not cause risk of injury to health of

organisms or the environment. Similar to that of hazardous waste management, non-hazardous waste may still present hazards to employees who handle them.

To create effective waste management plans, College first need to know the types of waste they produce.

we have compiled a list of various kinds of waste commonly generated on institutional campus:

Furthermore, solid waste covering Biodegradable, Non-Biodegradable and Hazardous Wastes. These wastes are either in to recycling or reuse or combination of both. Thus, the minimization of solid waste is essential to a sustainable college. The auditor diagnoses the prevailing waste disposal policies and suggests the best way to combat the problems. It is therefore essential that any environmentally responsible institution examine its waste processing practices.

Coding system for different type of waste	
Waste material	(Colour or code)
Glass	(blue); 
Metals	(green); 
Plastic	(white); 
Oily rags	(black); 
Used oil	(red); 
Rubbish / trash	(yellow) 

#### 4.1 SOLID WASTE MANAGEMENT SYSTEM:

As per norms the quantum of waste generation max 0.45 kg per capita per day, the estimated waste generation is 2427 Kg/day on full occupancy.

**TABLE -4 MAXIMUM WASTE GENERATION**

S.No.	Particulars	Occupancy	Rate of Waste Generated (Kg/Cap/Day)	Waste Generated (Kg)
1	Students	8006	0.25	2002
2	Faculty	263	0.25	66
3	Non-Teaching	159	0.25	40
4	Hosteler	680	0.45	306
5	Visitor	50	0.25	13
<b>Total</b>				<b>2427</b>

*Source: For Waste Collection, Chapter 3, Table 3.6, Page no. 49, Central Public Health & Environment Engineering Organization, Ministry of Urban Development, Government of India, May 2000.*

**SOURCES OF VARIOUS WASTES AND THEIR DISPOSAL**

- Canteen:** The food waste generated from the canteen is collected and given to the recycler. Plastic waste is generally less generated from the canteen.
- Library:** The most generated waste is paper waste. It is taken for recycling.
- Store:** Not much waste is generated, Paper waste generated are recycled and reused.
- Office:** Paper waste generated are recycled and reused.
- Garden:** Plastic and paper waste is comparatively less. Fallen leaves are collected and used in Organic-composting unit.
- Auditorium:** The wastes are collected after each program and disposed it category wise.
- Health Centre:** Biomedical waste generated from Health Center is segregated in colour coded bins.
- Classrooms:** Paper wastes are collected in the waste basket and recycled.
- Laboratory:** The broken glass wastes and the useless instruments are disposed for recycling after thorough washing.
- College Premises:** Plastic waste generated is usually less but paper waste is generated in a larger amount are recycled through vendor.



### Waste from Laboratory

- The acidic/alkaline waste is drained after reasonable treatment to make it neutral non-hazardous. Wastewater neutralisation has been provided separately for discharging wastewater from Chemistry lab and Biotech labs.
- Water based chemical reactions are carried out minimizing hazardous solvent chemical usage.
- Segregated wastes are kept in colour coded bins.



The organic waste from Kitchen of Girls & Boys Hostel Mess and from college canteen is collected separately and sent to Authorized vendor. Grease trap (to remove oil and solid) is used for discharging the water into sewerage system.

- Polythene bags are totally banned in the campus and other non - decomposable are separated before disposing the organic wastes.
- Organic waste from garden is swept & collected in a pit for conversion into manure for using into the garden.
- Old furniture is sold to the authorized seller or recycler. Wood of old or spare furniture is used again for other purpose.
- Biomedical waste from the PHC is segregated in the color-coded bins and Dispose of as per Biomedical Waste Management Rules, 2016.
- Coloured dustbins are kept for easy segregation of the waste from the campus.
- The municipal waste from the campus is segregated at the sources and handled with care to ensure that the “The clean and green “environment.
- The trash from girls’ and boys’ hostel is segregated and collected daily from door to door to ensure clean and hygienic atmosphere within hostel building.

Estimated quantity of the municipal waste during 2024-2025 shall be approx. 2427 Kg/day.

The solid waste generation is mostly from hostels, campus, residential blocks, and mess which will be handed over to Municipal Corporation Chandigarh.

Dustbins are used all over the campus. At every place two dustbins green and blue are provided for the purpose of segregation of waste at the source. green dustbin is for wet waste *i.e.*, food, vegetables etc. and blue dustbin is for dry waste *i.e.*, plastic, glass, and paper waste.



**FIGURE 5 : SEGREGATION OF WASTE IN COLOR CODED BINS**



**FIGURE -6 : CONVERSION OF KITCHEN WASTE IN MANURE**



### **VERMICOMPOSTING:**

Reduce waste at D.A.V Campus, recycling efforts must be improved, and organic recycling services must be provided. Additionally, students, faculty, and staff must be properly educated on proper waste management practices. The constant production of new products and packaging means knowledge of recyclable and compostable materials has become a complex and confusing topic for many people. In a society that values convenience, the current “throwaway” lifestyle encourages a linear approach to the production and disposal of products, rather than a circular approach that regards waste as simply another resource. College students, staff, and faculty often lead busy lives and value convenience; as they go about their day rushing between activities and classes, the purchase of single-use products is often the most convenient choice. The consequence of this convenience comes in the form of high quantities of waste. In an era where societies around the world are becoming more conscious of the issues surrounding waste, D.A.V College can greatly improve its image by increasing the diversion rate -- the rate in which waste is removed from the main campus. D.A.V College free of litter, 50 dustbins in the campus under Swachh Bharat Mission, Govt. of India to manage the waste generated in the campus have been installed. From where, the workers can easily clean the garbage regularly. From campus households, departmental buildings, canteens, hostels, thousands of students and staff filter in and out of campus on a daily basis which generates lot of garbage. It is our duty to keep the campus neat and clean by managing the garbage. The pristine campus will raise the morale of the student and leave a lasting impression on visitors. As a result, maintaining a clean campus through various solutions like making of vermicompost should be regarded as an important aspect of college maintenance and also as an opportunity to implement sustainable initiatives within waste management.

### **DISPOSAL OF WASTE GENERATED FROM KITCHEN**

#### **Biodegradable Waste :**

Wet waste from kitchen and campus canteens, leaves and other wastes being biodegradable in nature is converted to nutrient rich compost by eco-friendly method of composting. The institute practices different composting strategies such as

- Pit composting
- In-vessel composting



**FIGURE 7 : COMPOSTING PIT**



**FIGURE 8 : IN-VESSEL COMPOSTING**

**Non-Biodegradable Waste from kitchen:**

This type of waste including oil bottles, plastics, cans, broken glass wares, tins and other discarded material like cardboard, waste paper, packaging cartons etc., are sold to authorized vendors through annual auction.



## 4.2 HAZARDOUS WASTE MANAGEMENT:

Waste management is one of the vital environmental issues since last few decades. It has been noted that the generation of waste increases with increasing population, industrialization, and urbanization etc. The waste management strategy includes both non-hazardous and hazardous waste management. Non-hazardous waste does not cause potential threat to environment, but instead hazardous waste is the waste that poses substantial or potential threats to public health and the environment. Rapidly growing industrial sector has contributed to the generation of large quantity of hazardous waste material. Therefore, to reduce environmental hazard, proper attention is required during storage, segregation, transportation, and disposal of hazardous waste, because it cannot be disposed as off in the environment.

### SOURCES OF HAZARDOUS WASTE GENERATION IN D.A.V. CHANDIGARH:

Waste oils (HSD) from DG sets, damaged CFL's, empty paint boxes & Laboratory waste.

### CATEGORIES OF HAZARDOUS WASTE:

- Contaminated broken glassware like test tubes, beakers, pipettes.
- Left over chemicals.
- Spilled chemicals
- Used nutrient media in Biotechnology, chemistry lab

## 4.3 E-WASTE MANGEMENT



E-waste management is a process to collect e-waste, recover and recycle material by safe methods, dispose of e-waste by suitable techniques to reduce its adverse impacts on environment.

### SOURCES OF E-WASTE GENERATION IN D.A.V. CAMPUS:

The E-Waste generated from the D.A.V. campus in the form of obsolete computers, instruments *etc* is disposed through Vendors.

#### 4.4 PLASTIC WASTE:

The college authorities make constant efforts towards segregation and appropriate disposal of plastic waste. The usage of single use plastic products in canteen has been banned /prohibited by College. Students are also made aware about the harmful effects of plastic products and are motivated not to use plastic cups, bottles and spoons.



A campaign ‘International Plastic Bag Free day’ was launched on 3rd July 2021 with an aim to eliminate the use of plastic bags. Our college has also adopted this ideology and has become part of this noble cause. Several activities have been conducted in the college campus as an initiative to spread awareness about harms of using plastic as a part of this campaign. The activities conducted include **Pledge ceremony, Awareness Talk, Slogan Writing, Poster Making and Rally- 'Say No to Plastic Drastic'**.



# ENVIRONMENT MANAGEMENT



## **5. ENVIRONMENT MANAGEMENT:**

Environmental protection planning is an important component of overall planning and implementation of eco-friendly and green campus of an organization. It is addressing issues ranging from human health and sanitation to various organization and protection of plants, animals and microorganisms including wildlife habitats. Environmental Management Plan (EMP) is an important integration document between the various approvals, authorizations and specific components and/ or activities that are carried out in the campus without harming the environment. EMP is committed to manage its assets with its core values to protect the health and safety of people and the environment and to comply with Environment Health and Safety laws, regulations and Health and Safety standards. A clean environment is important for the success of an organization to save for the future generations to ensure in safe use of air, land, and water resources. The management of an organization should endeavor to continually improve our environmental performance and to prevent the environmental pollution. All the organization are expected to support our environmental goals while providing clean and environment friendly work culture. The main purpose of the EMP is to outline environmental protection measures to be followed during the organization development and to ensure that commitments to minimize environmental effects are met. The EMP should provide a reference document as per the legislative requirements for personnel when planning and/or conducting specific activities in the campus surroundings. In line with the Environment Policy, impact on the physical, chemical and biological environment should be determined along with statutory requirements and other environmental commitments.

As part of green audit of campus, we carried out the environmental monitoring of campus including Illumination and Ventilation of the classroom. It was observed that Illumination and Ventilation is adequate considering natural light.

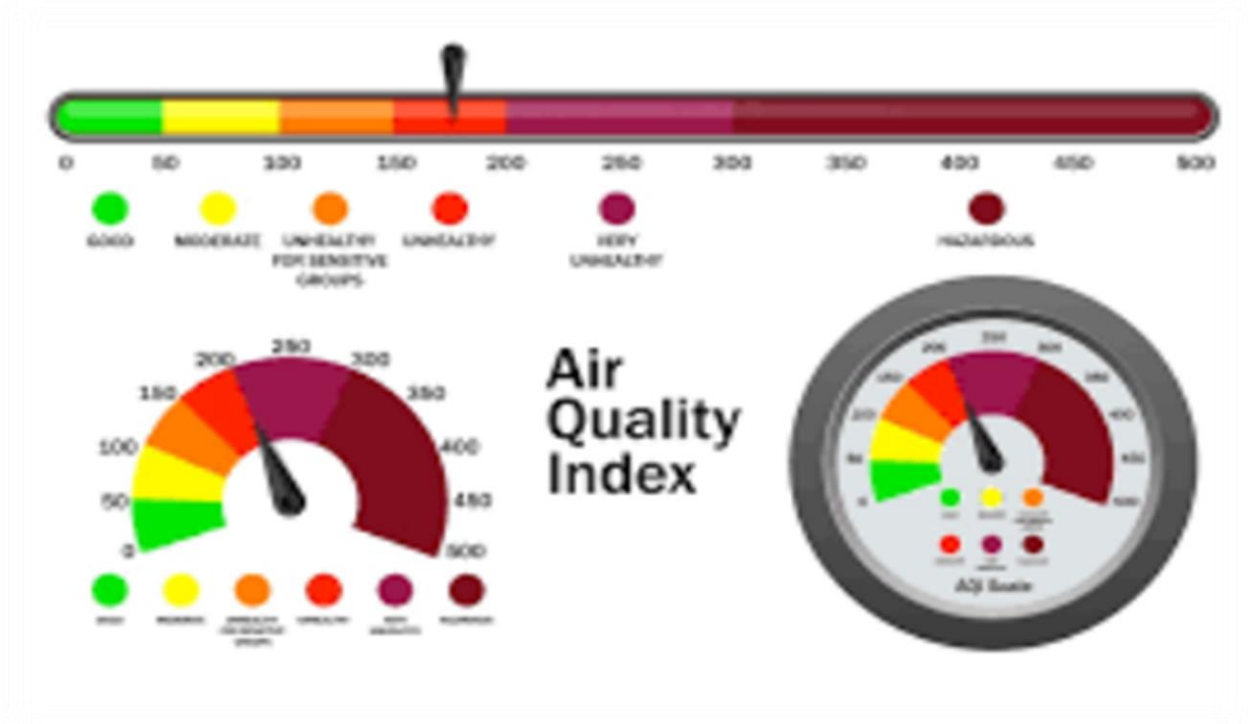
### **5.1 OUTDOOR ENVIRONMENT:**

Air Quality Index (AQI) transforms complex air quality data of criteria pollutants into a single number (index value), with nomenclature and colour. AQI was launched on 17 October 2014 in India to disseminate information on air quality in an easily understandable form for the general public. AQI has six categories of air quality which are defined as Good, Satisfactory, Moderately Polluted, Poor, Very Poor and Severe. AQI is considered as ‘One Number- One Colour-One

Description' for the common man to judge the air quality within his vicinity. The formulation of the index was an initiative under *Swachh Bharat Mission (cleanliness Mission)*, based on the recommendations of IIT Kanpur and the Expert Group formed in this regard. The earlier measuring index in this regard was limited to three indicators, while the current measurement index had been expanded with five additional parameters. The measurement of AQI is based on following pollutants, namely

- Particulate Matter (size less than 10 µm) or (PM10),
- Particulate Matter (size less than 2.5 µm) or (PM2.5),
- Nitrogen Dioxide (NO<sub>2</sub>)
- Sulphur Dioxide (SO<sub>2</sub>)
- Carbon Monoxide (CO)
- Ozone (O<sub>3</sub>) and
- Ammonia (NH<sub>3</sub>)

### INDICATORS & CATEGORIES OF AIR QUALITY INDEX



The Ambient air quality was monitored, and the reports are shown in section 5.3.

### 5.2 INDOOR ENVIRONMENT:

Indoor environment was monitored for visual comfort, thermal comfort, ventilation and noise levels in each College campus blocks.



**5.3 ENVIRONMENT MONITORING:**

**TEST RESULTS OF AMBIENT AIR QUALITY:**



**TEST RESULTS OF GROUND WATER**





**TEST RESULTS OF SOIL QUALITY**



**TEST RESULTS OF AMBIENT NOISE**



# HEALTH AND SAFETY MANAGEMENT

## 6.0 HEALTH AND SAFETY MANAGEMENT

It is outlined the mitigative measures and the best management practices followed in the organization in terms of developing eco-friendly and green campus. It is recommended to carry out a complete assessment and control of all potential hazards and risks arise in the organization without harming the environment. It is to ensure that no significant adverse environmental health and safety impacts by carrying out various infrastructure facilities created to improve the human eco-system of the organization may be implemented. The facility should be designed to include fire protection systems, multiple gas, flame, smoke and low- and high temperature detectors and alarms, and automatic and manual shut-down systems in terms of planning and implementing the best practices of environmental health and safety management system.

The high level of automation, regular preventative maintenance, and safeguards the environmental pollution and the provision for safe emergency shut-downs should be should be maximized in the organization. In addition, all the employees and management people should be trained properly in studying about environmental health and safety management system which will be useful for protecting the environment without causing any adverse effect on the environment. All personnel should be advised to undertake an extensive workshop as well as training programmes to ensure safe operating practices such as safety operations, hazards management, safety and emergency procedures and environmental management.

### 6.1 FIRE SAFETY:

Fire safety appliances were in place in some departments/Sections however few departments/Sections / floors lacking these systems. It is recommended to install fire safety measures at each departments/Sections floor wise and building wise. The fire safety measures adopted by institute need to be verified by Directorate of Fire Services.



## 6.2 HEALTH SAFETY:

Health safety measures were reported in place as per requirements in each building/block wise in respect to safe and potable drinking water supply with RO systems. Drinking water sample was tested for the purpose of portability and suitability of water quality. The available water quality was found to be safe for domestic and human consumption. Water test report as enclosed above. Health community center is operational in campus for primary health checkups and treatments in case of any medical emergency or medical requirements. To cater to any emergency health situations, the college has one First aid room in hostel. It is equipped with all basic medical equipment like stethoscope, blood pressure meter, wheelchair, thermometer, oxy-meter, antiseptic creams/liquid, Band-Aids, cold packs etc. and some basic medicines. The expired medicines are disposed off in a proper manner.



FIGURE 9 : HEALTH CARE FACILITIES

## 6.3 FACILITIES FOR DIVYANGJAN (DIFFERENTLY ABLED):

Facilities for disabled people should be characterized by at least easy access to buildings, to the rooms, to the toilets, to the recreation areas. In D.A.V campus provision of ramps, rest rooms, wheelchairs provided for differently abled persons.



#### **6.4 TRAFFIC & PARKING AREA:**

Designated parking areas are in place sufficient to manage daily traffic fleet in the campus. Designated parking areas help to manage daily traffic movement and to avoid nuisance and accidental risks in the campus.



## **RECOMMENDATIONS**

- College should maintain the environment related regulations and environmental policy as per the requirement.
- E-waste management system needs to be adopted.
- Install Recycling and Composting Stations on Campus



**2024-25**

# **ENERGY AUDIT REPORT**



**D.A.V COLLEGE SECTOR-10,  
CHANDIGARH**



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*July 2025*

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### AUDIT CERTIFICATE



Prepared by



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#### DISCLAIMER

SSWML Audit Team, (Dr. Simranjit Kaur, Ms. Kamini Bhardwaj, Mr. Naveen Kumar) have prepared this report for D.A.V College, Chandigarh based on input data submitted by the representatives of



college complemented with the best judgment capacity of the expert team.

While all sensible care has been taken in its preparation, details contained in this report have been compiled in good faith based on information gathered.

It is further informed that the conclusions arrived following best estimates and no representation, warranty or undertaking, express or implied is made and no responsibility is accepted by the Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

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SSWML staff have signed individual confidentiality undertakings and will only receive confidential information on a 'need to know' basis.

## CONTEXT AND CONCEPT

In alignment with the mandate issued by the **National Assessment and Accreditation Council**



(NAAC), New Delhi, it is now compulsory for all **Higher Educational Institutions (HEIs)** to submit an **Annual Green, Environment and Energy Audit Report** beginning from the **academic year 2019–20**. This initiative underscores NAAC's commitment to fostering sustainable development, environmental responsibility, and energy efficiency within the academic ecosystem.

The **NAAC accreditation** is not merely a quality benchmark—it is a strategic enabler for institutions.

A favorable NAAC grade empowers colleges and universities to:

- Access **University Grants Commission (UGC)** funding
- Qualify for **Rashtriya Uchchar Shiksha Abhiyan (RUSA)** grants
- Attract **philanthropic donations and CSR contributions**
- Enhance institutional credibility and stakeholder confidence

Recognizing the significance of this directive, the **college management has proactively initiated a comprehensive Energy Audit**. This audit aims to evaluate and document the institution's performance in key areas such as:

- **Energy consumption and conservation**
- **Renewable energy adoption**

The findings of this audit will not only fulfill NAAC compliance requirements but also serve as a strategic blueprint for continuous improvement in environmental sustainability and energy efficiency.

## EXECUTIVE SUMMARY



Availability and utilization of energy drives the growth of economy and advancement of any country and thus, the demand of energy is increasing day by day. The worldwide mounting energy crisis with galloping cost hike, concern for environmental protection and open market competitive economy possesses serious challenge to Indian universities/colleges to survive and grow. One of the easier available options for survival is 'Energy Conservation' thereby saving environment and cost reduction through strategic energy management. It also gives a positive orientation to energy cost reduction, preventive maintenance and quality control programs. This is the translation of conservation ideas into reality by blending techno economically feasible solutions within a specified time frame.

Energy conservation is a worldwide objective. The energy policy of the Government of India calls for conservation of energy. The enactment of the Energy Conservation Act 2001 amongst others has emphasized upon the power of the appropriate Govt. to enforce efficient use of energy and its conservation.

This study has mapped power system parameters at the source, Distribution Panels and various equipment's. It has also mapped illumination level at various activity areas in the D.A.V. College, where the team was permitted to enter for the study. The study could identify concerned problem areas, barriers towards maintaining right use of available facilities and come out with cost effective solutions. It also recommends cost effective and fast pay back solutions for performance improvement of all the systems.

Energy today has become a key factor in deciding the product cost at micro level as well as in dictating the inflation and the debt burden at the macro level. Energy cost is a significant factor in economic activity at par with factors of production like capital, land and labor. The imperatives of an energy shortage situation call for energy conservation measures, which essentially mean using less energy for the same level of activity. Energy audit attempts to balance the total energy inputs with its use and serves to identify all the energy streams in the system and quantifies energy usage's according to its discrete function. Energy audit helps in energy cost optimization, pollution control, safety aspects and suggests methods to improve the operating and maintenance practices of the system. It is instrumental in coping with the situation of variation in energy cost availability, reliability of energy supply, decision on appropriate energy mix, decision on using improved energy conservation equipment instrumentation and technology.

Energy audits are the key to systematic approach for decision making in the area of energy management. It attempts to balance the total energy inputs with its use and serves to identify all the energy streams in a facility. It quantifies energy usage according to its discrete functions.

The energy audit would give positive orientation to the energy cost reduction, preventive maintenance

and quality control programmes which are vital for production and utility activities. Such an audit programme will help to keep focus on variations which occur in energy costs, availability and reliability of supply of energy, decide on appropriate energy mix, identify energy conservation technologies retrofit for energy conservation equipment etc. The primary objective of energy audit is to determine ways to reduce energy consumption per unit of product output or to lower operating costs. The present report shows the energy audit report for D.A.V. Campus.

➤ **OBJECTIVE OF THE STUDY :**

The Energy Audit is conducted with the aim of evaluating and optimizing the institution's energy usage, promoting sustainability, and ensuring compliance with regulatory standards. The specific objectives include:

- Assess Current Energy Consumption.
- Promote Energy Conservation.
- To encourage the adoption of energy-saving practices and technologies.
- Evaluate Renewable Energy Integration.
- To assess the existing use and future potential of renewable energy sources within the campus.
- Ensure Regulatory Compliance.
- To verify adherence to guidelines outlined by NAAC.
- Support Sustainable Development Goals (SDGs) - SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action).
- Enhance Awareness and Accountability.
- Estimating the institution's carbon footprint.



## 1. INTRODUCTION

Energy is one of the major inputs for the economic development of any country. The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect. Also, it can be said as “the strategy of adjusting and optimizing energy, using system and procedure so as to reduce energy requirements per unit of output while holding constant or reducing total costs of producing the output from these systems”. The energy audit is key to a systematic approach for decision making in the area of energy management. It attempts to balance the total energy inputs with its use and serve to identify all the energy streams in a facility.

As per the Bureau of Energy Efficiency, Energy Audit is the key to a systematic approach for decision-making in the area of energy management. It attempts to balance the total energy inputs with its use and serves to identify all the energy streams in a facility. It quantifies energy usage according to its discrete functions.

In any institution, the energy consumption is found to be one of the top most cost involving aspect. It is also observed that often Energy has the highest potential for cost reduction. The primary objective of conducting Energy Audit at D.A.V. College Chandigarh is to understand more about the ways energy is used in the college and help in identifying the areas where waste can occur and where scope for improvement exists. Such audit programmes help reviewing variations in energy costs, availability and reliability of supply of energy, decide on appropriate energy usage, identify energy conservation technologies, retrofit for energy conservation etc.

## 2. ABOUT COLLEGE

D.A.V. College Chandigarh was founded in 1958, when the city of Chandigarh was in its infancy. The college has grown with the city, becoming an integral part of the region's socio-cultural milieu. The college belongs to the family of the famous D.A.V. institutions, founded by Mahatma Hans Raj, and inspired by the great visionary-Swami Dayanand Saraswati-the doyen of the Arya Samaj, who believed that "True education consists in promoting knowledge, civilized manners, virtuous character, self-control and other moral qualities and in dispelling ignorance". He had always felt that the scientific knowledge of the west needs to be absorbed in the cultural milieu of India.

The DAV movement, which started in 1886, gives a practical shape to the ideals of Swami Dayanand's educational philosophy which aims to develop a modern scientific approach among the students, coupled with an understanding of their roots in the ancient Vedic Culture.

The D.A.V College, Chandigarh is trying to bring about this synthesis by imparting to the students the best of new world humanistic, scientific and technical knowledge with the sense of history of their rich cultural heritage-the Anglo and Vedic values. D.A.V. work to achieve these broad objectives. College successfully launched Postgraduate programs in Commerce, Biotechnology, Chemistry, Mathematics, Physics, Zoology, English, Economics, Psychology, Public Administration, Sociology and P.G. Diplomas in various fields. The college has earned a respectable name in the field of sports. D.A.V. College produced 69 International Sportsmen & women like the legendary Kapil Dev, Yuvraj Singh, Yograj, Dinesh Mongia, Jeev Milkha Singh, Irina Brar and Anjum Moudil.



FIGURE 1- D.A.V. CHANDIGARH INFRASTRUCTURE

This tradition is alive and kicking even today. Young scholars, inspired and fired by glowing examples of their predecessors, do their best to maintain the high levels of excellence year after year that are very rarely achieved elsewhere. When they come here, success is only a sacred word in their prayers; when they leave, success is actually a solid weapon in their hands. With this weapon they proceed further to win all battles of life.

The Coloured achievements of the college in the field of education, cultural activities and sports have enabled us to play host to four Vice-Presidents, one Prime Minister, several Union Ministers, Governors, Chief Ministers, great religious Leaders and other dignitaries. They have graced our functions on many occasions to bless and motivate the students and staff.



## COLLEGE HIGHLIGHTS

- One of the premier institutions of higher learning since 1958.
- Constantly endeavoring to promote many Languages and culture.
- Key institution for imparting quality education in all disciplines.
- Highly educated & qualified faculty.
- Regular curricula revision and upgradation in tune with changing market and societal needs.
- Top priority accorded to learner centric teaching pedagogy.
- State-of-the-art infrastructure with smart classrooms.
- Equipped with the best library in the region.
- Outstanding placements.
- Wide and strong alumni Base.
- Safe & secure environment for students especially girls.
- Taken new initiatives for promoting entrepreneurship, start-ups and employability.
- Low fee structure.
- Fully Wi-Fi Campus



## The Vision and Mission of D.A.V. College, Chandigarh :

### ➤ VISION

- *To promote the foundational values like work culture, spirit of public service, inculcating discipline, dedication & determination in students.*
- *To impart IT enabled education by providing a conducive atmosphere leading to intellectual, spiritual and academic growth of students with an aim to build professional attitude, communal harmony and nurture lofty ideals of Vedic Culture.*
- *To empower the young students by providing them holistic education with emphasis on alignment of theory with practice, academia with industry and fostering the sense of enterprise with motivation and professionalism.*

### ➤ MISSION:

- *To give a practical shape to the ideals of Swami Dayanand's educational philosophy which aims to develop a modern scientific approach among the students, coupled with an understanding of their roots in the ancient Vedic Culture.*
- *To provide a unique and different learning environment in the stream of Science, Commerce, Management, Humanities & Information Technology by imparting knowledge, skills, hands on practical training and industry exposure along with a strong value system in order to groom the students as competent, dynamic and socially awakened citizens of the country.*
- *To impart to the students the best of new world humanistic, scientific and technical knowledge with the sense of history of their rich cultural heritage-the Anglo and Vedic values.*

### FACILITIES:

- Sprawling 16 acres Campus
- Exclusive IT Block
- College Auditorium
- Library
- Multimedia Room
- Conference Room
- Seminar Room
- Smart Class Rooms
- Gymnasium with indoor sports facility
- Fully Equipped Computer, Language and Science Laboratories
- CCTV: 24\*7 Surveillance Facility

- High Speed Wi-Fi Connectivity
- Research Lab
- Spacious, Hygienic Food Canteen
- Minimart: Shops for Books, Stationary, Photostat, Daily Needs
- Beautiful Landscaped Parks
- On-Campus ATM Facility
- Facilities for Physically Challenged/Visually Impaired Students (Ramps, Washrooms, Wheelchair, Tactile Paving)
- Parking of vehicles

### OVERVIEW OF FACILITIES:



### 3.0 ENERGY AUDIT

Energy is one of the major inputs for the economic development of any country. The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect. Also it can be said as “the strategy of adjusting and optimizing energy, using system and procedure so as to reduce energy requirements per unit of output while holding constant or reducing total costs of producing the output from these systems”. The energy audit is key to a systematic approach for decision making in the area of energy management. It attempts to balance the total energy inputs with its use and serve to identify all the energy streams in a facility.

Energy Audit of D.A.V. College and its campus was conducted in 2025-26. In order to optimize the power consumption in the whole DAVC campus, the internal energy audit was conducted.



The instructions given by the audit team are implemented. The institution is also utilizing renewable energy by installing street solar lights and Solar Plant in the campus. The present audit is to collect the details required for external auditing and Pre-audit activities.

- Regular monitoring of equipment's and immediate rectification of any problems.
- Employment of more solar panels and other renewable energy sources.
- Conduct more save energy awareness programs for students and staff.
- Observe a power saving day every year.
- Automatic power switch off systems may be introduced.

***The present audit is to collect the details required for external auditing and Pre-audit activities.***

**THE PRE-AUDIT ACTIVITIES INCLUDE THE FOLLOWING:**

1. The college area/division that are to be audited, need to be determined and selected.
2. The auditee was informed of the date of the audit enabling them to adjust and become a part to the concept.
3. The audit plan was designed in such a way that it accommodated changes based on information gathered during the audit and effective use of energy.

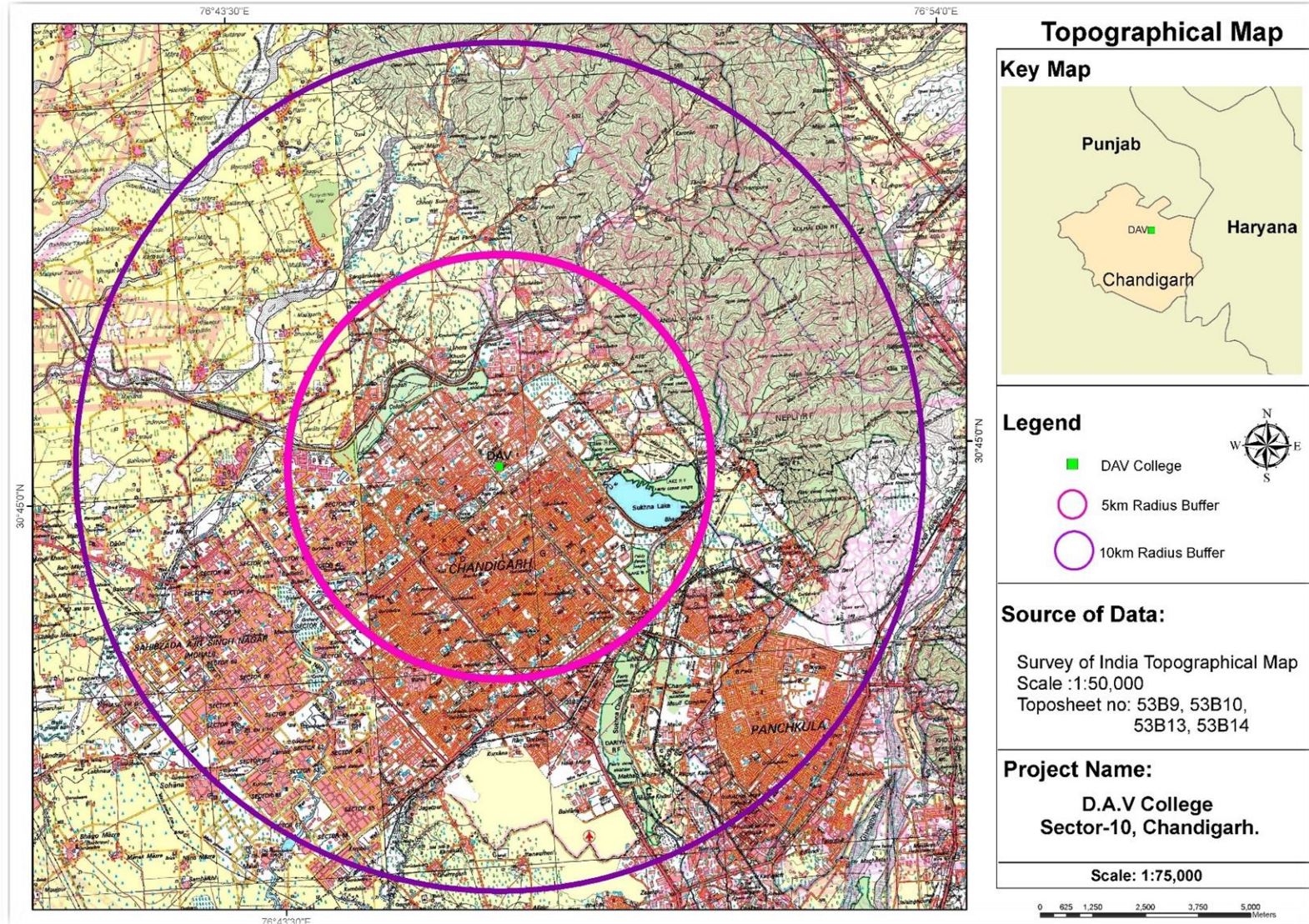


4. Energy Audit Committee and assignment of responsibility were established.
5. The chosen working papers were collected. This facilitated the auditor's investigations on the sites.
6. The background information on the facility including the facility organization, layout and processes, and the relevant regulations and standards, were collected.

#### **4.0 ON SITE AUDIT ACTIVITIES:**

The opening meeting is the first step held between the Energy Audit team and college staff. In this meeting the purpose of audit, the procedure and the time schedule were discussed.

1. Second step is inspection for onsite activity. In this step, the audit team discovered matters which are important to the audit, but which were not identified at the planning stage.
2. Onsite phase of the audit developed a working understanding of how the facility manages the activities that influence the working environment.
3. Gathering audit evidence *i.e.*, collecting data and information.
4. Communicated with the staff of the auditee to obtain most information.
5. Evaluate the audit evidence against the objectives established for the audit.



**FIGURE 2: LOCATION MAP OF D.A.V. COLLEGE CHANDIGARH**

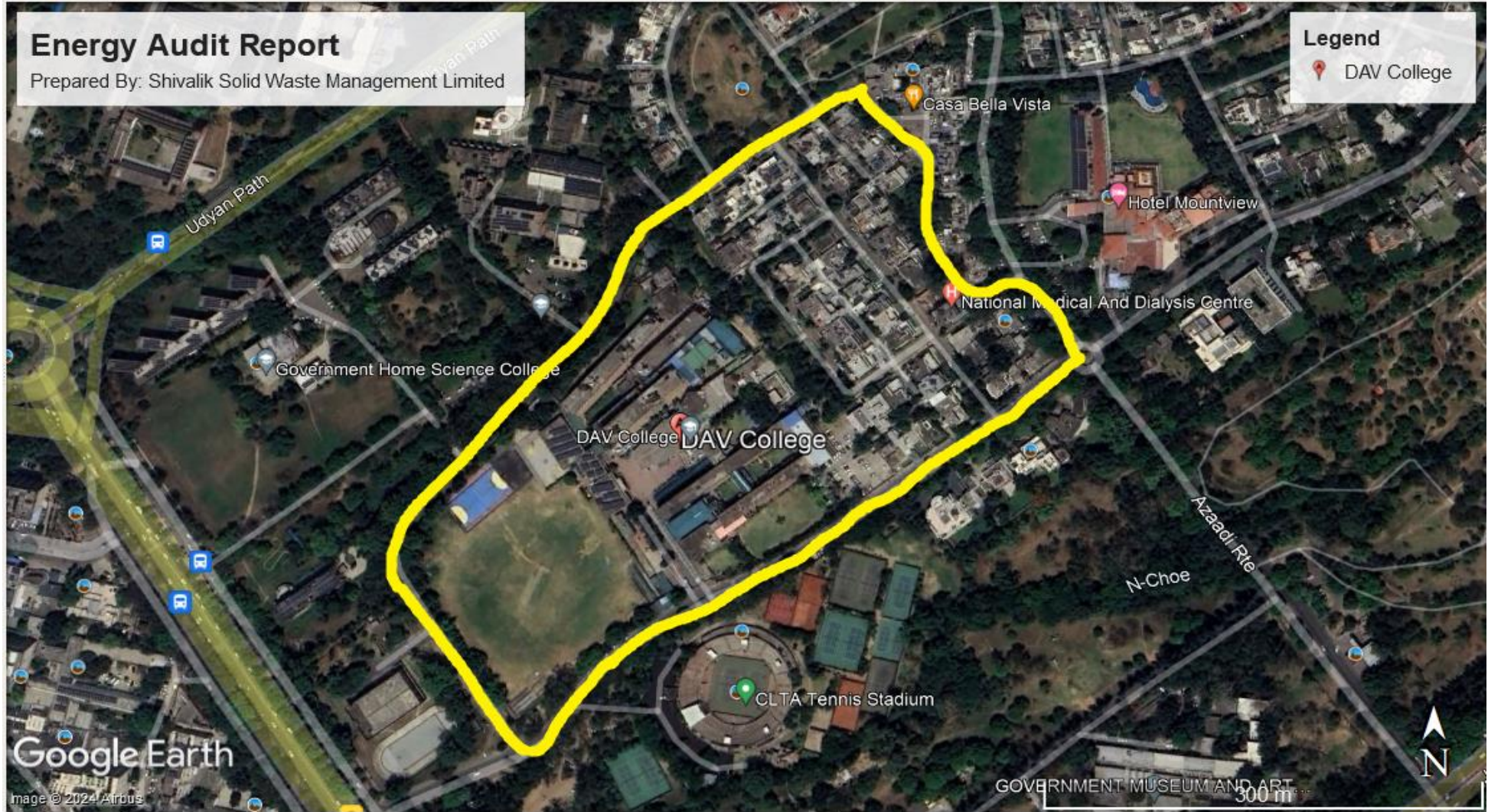


FIGURE 3: GOGGLE IMAGE MAP OF D.A.V. COLLEGE CHANDIGARH



## 5.0 PROCEDURE FOLLOWED:

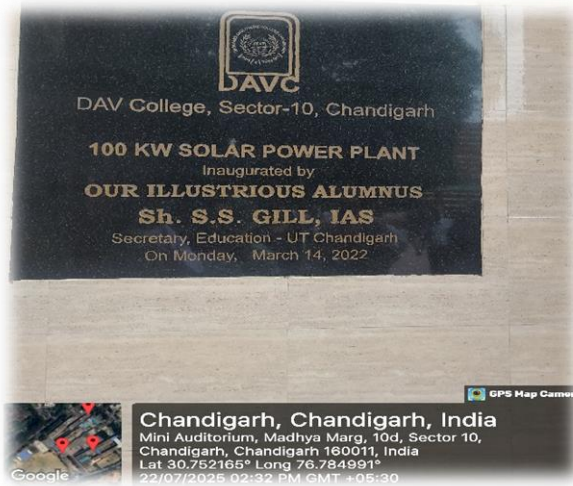
Audit was conducted and the following areas have been covered in the study.

- Energy Sources
- Energy Consumption
- D.G. Sets
- Air Conditioning
- Use of Electricity during peak hour and Non-Peak Hour
- Distribution Network
- Lighting
- Computer Screen and Printer

There are more than 20 refrigerators, approx. 249 air conditioners, in the D.A.V campus. The students, teaching and non-teaching staffs and the visitors to the campus also contribute to carbon-dioxide emission. Thus, an effort has been made to access the carbon emissions from possible energy sources.

## ENERGY SOURCES:

Energy resources are utilized by all the departments, support services and the administrative buildings of D.A.V. College, Chandigarh which include electricity, solar energy, LPG and liquid petroleum. Major use of the energy is at office, canteen, hostel and laboratories, for lighting, transportation, cooking and workshop instruments. Electricity is the major energy sources of the campus. Electricity is supplied by Chandigarh Electricity Board, Chandigarh. Diesel oil is being used in the DG sets for in-house generation of electricity during power cut. The institute has installed solar power plant having a capacity of 100 kW.



**FIGURE 4: USE OF LED, SOLAR LIGHTS AND SOLAR PV IN COLLEGE CAMPUS**

### **ENERGY CONSUMPTION:**

For the college, the applicable electrical tariff is in two parts i.e., a fixed cost (Demand Charges) and unit (kWh) rate. The average monthly unit consumption of the college is 170835 Kwh and the average monthly electricity bill amount is around Rs. 9,06,575/- (June 2025). The average monthly unit cost would be around Rs. 8/ Kwh.

### **DG SETS:**

There are three DG sets of capacity of 250 KVA, 125 KVA & 40 KVA each, installed in the college. There is hardly any power cut so the running hour of DG set is very less. It is advisable to put an energy meter on each DG set then it would be easy to conduct the efficiency of DG set. This way, the operator could also note down the unit generation and oil consumed. The operator may record the operating parameters of the sets in this manner in future.

### **AIR CONDITIONING:**

In the college, there are 249 split/window air-conditioning units to maintain comfort temperature in the office/ classrooms, hostels, Auditorium/ office etc. Package units are installed mainly for the Auditorium. Due to the study being done in winters, the Energy efficiency assessment could not be done for the ACs. However, it was observed that some split ACs fitted in the office are 5 star rated, which is good from energy efficiency point of view. It is recommended that whenever new split/ window ACs are being installed, it should be 5 star rated. Filters of package units were also checked during study which was found clean. Proper cleaning of ACs is very important for its output performance. At least, once in two months cleaning of ACs filter is recommended during the season.

### **USE OF ELECTRICITY DURING PEAK HOUR AND NON-PEAK HOUR:**

The applicable electricity tariff is also based on the timing of the day, but it may not be applicable in case of domestic LT/ HT type connection. Thus, non-essential activities consuming electricity should be conducted in the non-peak hours, this will also be helpful in maintaining the demand graph. It is recommended to avoid the use of electrical gadgets for cleaning, watering etc. during the peak hours. This type of work should be executed during the non-peak hour.

### **DISTRIBUTION NETWORK:**

There is a main electrical panel installed near the DG Set. All the distribution cables are going from the main panel to all the buildings, submersible pump, street light etc. Sub panels are installed in the buildings. There is a taping on each floor from the raising mains. During the

study, it was observed that the conductor size is good according to ampere load. No conductor was found over heated or its insulation burnt. Adequate size of conductor is going to feed the utility area. So, distribution losses are within the limit.

### LIGHTING :

The institute has adopted healthy alternate source of energy in the college campus including hostel. All old electrical fittings have been replaced by energy efficient LED tube lights. The total lighting (luminary) load of the college is about 8 kw which includes fluorescent tubes 36w/40w, LED lights 12w/15w & 36w etc. LED lights are good from energy efficiency point of view. LED tube lights are also available in the market, which is also good from energy efficiency point of view. Whenever 36/40w tube gets fuse (not in warranty period) then it could be replaced by 18w/ 9w LED tube. During study, tube lights were ON in the classroom, and it was observed that illumination was good in the class room near to window but illumination was down near the entrance door and its wall side. It is advisable to increase some tube lights in the classroom for better illumination.

In addition, there are 18 nos of streetlights which are working on solar power with battery. These lights are switched ON in the night with the help of timer.

### COMPUTER SCREENS AND PRINTERS

Old Computers screens are gradually being replaced by LCD monitors to reduce energy consumption. Old printers are also being replaced gradually with latest energy efficient printers.

### SOLAR ENERGY:

The institute has installed a solar power plant of capacity of 100kW.

**TABLE 1: SOLAR POWER PLANT**

Particular	Unit	Value
Installation of Solar Power Plant	KW	100
Annual Saving Units	kWh/year	1,86,000
Electrical Unit Cost	Rs. /kWh	8 avg.
Annual Monetary Value	Rs/ Year	14,88,000

### Advantage of solar power plant:

1. Financial benefit
2. Renewable Energy Sources
3. Reduces Electricity Bill
4. Energy Independence

5. Solar Panels Increase Home Values
6. Long-Term Savings
7. Low-Maintenance Costs

**Avoiding the use of batteries in Solar PV system:**

In a grid connected solar PV system, any excess energy generated can be fed back to local utility grid and can be taken back at later stage when required. Thus, there is no need to store the surplus energy in batteries for later use, thus, avoiding the heavy costs of batteries. Also, since batteries are eliminated, the maintenance costs of the system also reduce to a great extent. Batteries may be required only when there are frequent power fluctuations/outages.

**Produce more today, use that tomorrow:**

If there is a surplus of power generation than the consumption, the surplus can be fed into grid system and if consumption increases, it can be taken from the grid.

**Analysis of Energy consumption and costs:** The college is well equipped with electricity supply. Each department, hostels, classrooms possess computers, printers, fans, plug points, tube lights, bulbs etc. As part of “Green Campus” initiation, D.A.V. has plans to shift from conventional energy to solar energy to reduce electricity bill and increase the usage of solar energy installed on Roof tops of the campus.

**6.0 OTHER INITIATIVES TAKEN BY THE COLLEGE FOR ENERGY CONSERVATION:**

The entire operations of the college are computerized, the administrative block, Accounts wing, library, admission procedures, examination, and even the entry to the student's hostel is digitized. The student's portal displays all their academic information online also. The IT cell works efficiently round the clock to provide IT services throughout the college Campus and Hostels. They ensure the smooth and efficient functioning of the IT Services like all activities on the smooth working of campus wide LAN & WLAN facility, and surveillance system:

The following measures are undertaken by the Concerned Department for the conservation of energy.

- Copper chokes in tube lights are converted to electronic chokes which consumes less energy.
- LED (120 Watt) have been replaced by the 40W LED lights.
- Halogen Lights ( 1000 watt) in campus replaced by Flood lights (100 Watt)



- 36-Watt CFL's replace with 18w PLL Lamp LED
- 36-Watt IGW TS LED fitting replace with 18/20-Watt
- 65W/150Watt sodium lamp replaced with 30-Watt street lights LED.
- 85watt, 150watt & 250watt replaced with 45-Watt street lights
- 400-watt metal lamp replaced with 100-watt flood lights
- Energy saving fans are used in new classrooms and hostels. All heavy load fans replaced by more energy efficient fans( Five-star rating).
- Tripping system is used in case of short circuiting, overloading, and circuit break off.
- New Air conditioners with Three Star & Five Star rating in power saving fitted in Department of Computer Science, lecture halls, staff rooms.
- Timer based street light have been installed in the campus.
- Replacement of resistance regulator with electronic regulator.
- Replacement of CRT monitors with LCD monitors fitted with Computers.
- Replacement of DOT matrix printers with Desk Jet printers.
- Implementation of energy saving techniques is ensured *i.e.*, Lights and fans are switched off by floor peons and staff after completion of the last lecture of the day.
- Air-conditioners in staff room switched on at 08.45 a.m. and switched off when the faculty moves to lecture rooms.
- All rooms are provided with large windows to ensure appropriate natural light and ventilation so that the use of electricity can be minimized.
- All the rooms of the campus are equipped with CFL/LED.
- Eco friendly and pollution control compliant DG set installed as standby electricity supply. This shows the Institution's commitment towards energy conservation.
- The major materials used for construction of the building is steel, cement, bricks, metal, flooring tiles/stones, sanitary and hardware items, electrical fittings, water etc. The building materials with low-embodied energy and which are locally available is used in construction.
- Day to Day behavior is taken care to conserve energy.



**FIGURE 5: 100 kW SOLAR POWER PLANT & SOLAR PANEL**

## **GENERAL ENERGY CONSERVATION TIPS**

### **ELECTRICITY**

- Schedule your operations to maintain a high load factor.
- Minimize maximum demand by tripping loads through a demand controller



- Use standby electric generation equipment for on-peak high load periods.
- Correct power factor to at least 0.99 under rated load conditions.
- Set transformer taps to optimum settings.
- Shut off unnecessary computers, printers, and copiers at night.

## MOTORS

- Properly size to the load for optimum efficiency.
- (High efficiency motors offer of 4 - 5% higher efficiency than standard motors)
- Check alignment.
- Provide proper ventilation.
- (For every 10°C increase in motor operating temperature over recommended peak, the motor life is estimated to be halved)
- Check for under-voltage and over-voltage conditions.
- Balance the three-phase power supply.
- (An Imbalanced voltage can reduce 3 - 5% in motor input power)
- Demand efficiency restoration after motor rewinding.

## FANS

- Use smooth, well-rounded air inlet cones for fan air intakes.
- Avoid poor flow distribution at the fan inlet.
- Minimize fan inlet and outlet obstructions.
- Clean screens, filters, and fan blades regularly.
- Use aerofoil-shaped fan blades.
- Minimize fan speed.
- Check belt tension regularly.
- Eliminate variable pitch pulleys.
- Use variable speed drives for large variable fan loads.
- Use energy-efficient motors for continuous or near-continuous operation.
- Eliminate leaks in ductwork.
- Minimize bends in ductwork!
- Turn fans off when not needed.

## HVAC (HEATING / VENTILATION / AIR CONDITIONING)

- Tune up the HVAC control system.

- Consider installing a building automation system (BAS) or energy management system (EMS) or restoring an out-of-service one.
- Balance the system to minimize flows and reduce blower/fan/pump power requirements.
- Eliminate or reduce reheat whenever possible.
- Use appropriate HVAC thermostat setback.

## LIGHTING

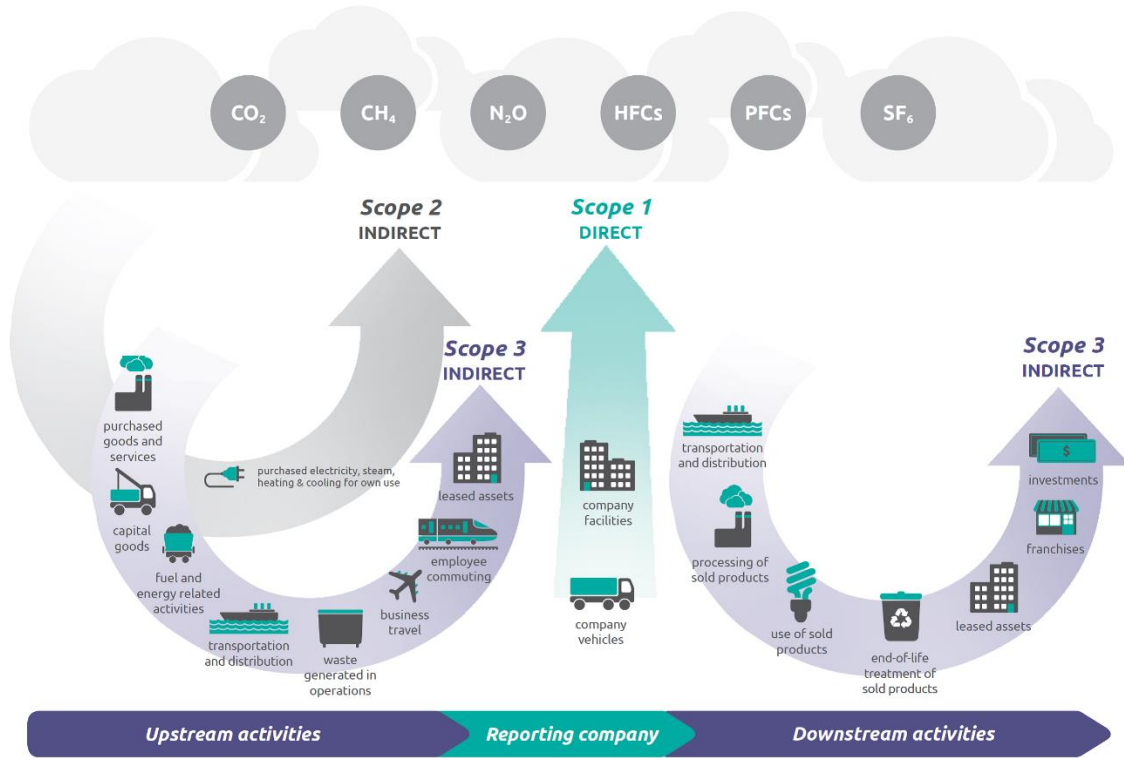
- Reduce excessive illumination levels to standard levels using switching; delamping, etc. (Know the electrical effects before doing de-lamping.)
- Aggressively control lighting with clock timers, delay timers, photocells, and/or occupancy sensors.
- Install efficient alternatives to incandescent lighting, mercury vapour lighting, etc. Efficiency (lumens/watt) of various technologies range from best to worst approximately as follows: low pressure sodium, high-pressure sodium, metal halide, fluorescent, mercury vapour, incandescent.
- Select ballasts and lamps carefully with high power factor and long-term efficiency in mind.

## 7.0 GHG EMISSIONS AND EFFORTS FOR CARBON NEUTRALITY

Institutes, as innovation drivers in science and technology worldwide, should be leading the Great Transformation towards a carbon-neutral society and DAV college has picked up this challenge keeping the same in mind. Carbon Neutrality or having a net zero carbon footprint refers to achieving net zero carbon emissions by balancing carbon released with an equivalent sequestered or offset method. Simply, Carbon neutral means removing as much carbon dioxide from the atmosphere as we put in.

### CARBON EMISSION SOURCES ON THE COLLEGE CAMPUS:

Carbon emissions are categorized in three different types i.e. Scope 1, 2 and 3 as per the organization operations, and in its wider value chain. Scope 1 emissions are direct greenhouse (GHG) emissions that occur from sources that are controlled or owned by an organization (e.g., emissions associated with fuel combustion in boilers, vehicles etc.). Scope 2 emissions are indirect GHG emissions associated with the purchase of electricity, steam, heat, or cooling. Scope 3 emissions are the result of activities from assets not owned or controlled by the reporting organization, but that the organization indirectly affects in its value chain. Scope 3 emission sources include emissions both upstream and downstream of the organization's activities.



**FIGURE 6: CATEGORIZATION OF CARBON EMISSIONS**

Source: [https://ghgprotocol.org/sites/default/files/standards/Corporate-Value-Chain-Accounting-Reporting-Standard\\_041613\\_2.pdf](https://ghgprotocol.org/sites/default/files/standards/Corporate-Value-Chain-Accounting-Reporting-Standard_041613_2.pdf)

An attempt has been made to calculate the possible scope 1 and scope 2 emissions as per the data availability. Under scope 1 emissions activities like use of LPG in canteen & hostel Kitchen and limited movement of fossil fuel run vehicles is there. The purchased electricity is covered under the scope 2 emissions.

**TABLE 2: SCOPE 1 GHG EMISSIONS**

Fuel type (e.g., solid fossil)	Fuel	Amount of fuel	Units (e.g., kg or kWh)	All GHGs (tonnes CO <sub>2</sub> e)
<b>Gaseous fossil</b>	Liquified Petroleum Gases	25,200	litres (l)	38.01
Liquid fossil	Diesel oil	1401	litres (l)	4.24
Liquid fossil	Motor gasoline	380	litres (l)	0.91
<b>Total GHG emissions from fossil fuels (tonnes CO<sub>2</sub>e):</b>				<b>43.16</b>

**TABLE 3: SCOPE 2 GHG EMISSIONS**

Fuel type (e.g., electricity)	Fuel	Amount of fuel	Units (e.g., kg or kWh)	All GHGs (tonnes CO <sub>2</sub> e)
Electricity	Hydro	19214.5	kWh	5.52
	Thermal	19214.5	kWh	180
<b>Total GHG emissions from fossil fuels (tonnes CO<sub>2</sub>e):</b>				<b>185.52</b>

Further attempts made to offset or reduce the carbon emissions are also elaborated in the next section.

**COLLEGE CARBON OFFSETTING INITIATIVES:**

**A) REDUCING THE USE OF ELECTRICAL ENERGY:**

- Solar Energy is used in streetlights.
- 100 kW Solar Power Plant installed on rooftop.

**Table 4: CARBON EMISSION REDUCED BY LED**

	Tube Light	LED
<b>Power Consumption (Watt)</b>	36	<b>18</b>
<b>KWh (units of electricity used each Hour)</b>	0.036	<b>0.018</b>
<b>Hours of Operation per day</b>	8	<b>8</b>
<b>Carbon Emissions (tons) per year per light</b>	0.00743	<b>0.00371</b>
<b>Reduction in Carbon Emission (tons) per year/ lamp</b>		<b>0.00372</b>
<b>Total Number of Bulbs replaced Till Now (approx)</b>	200	<b>200</b>
<b>Reduction in Carbon Emission (tons) per year</b>		<b>0.744 (-i)</b>

There are 0.744 (tons) per year reduction in Carbon Emission which is achieved due to replacement of tube light by LED lights, Table 4 details the power consumption per hour and carbon emission per year.

**TABLE 5 – CARBON EMISSION REDUCED BY SODIUM VAPOUR HALOGEN LIGHT REPLACE BY LED**

	Sodium Vapor Halogen Light	LED
<b>Power Consumption (Watt)</b>	65	<b>30</b>
<b>KWh (units of electricity used each Hour)</b>	0.065	<b>0.03</b>

Hours of Operation per day	8	8
Carbon Emissions (tons) per year per light	0.0134	0.00619
Reduction in Carbon Emission (tons) per year/lamp		0.0073
Total Number of Bulbs replaced Till Now(approx.)	200	200
Reduction in Carbon Emission (tons) per year		1.46 (-ii-)

The Table 5 shows, number of Sodium vapor light is replaced by LED reduction of carbon emission by 1.46 tons per year.

**TABLE 6 – CARBON EMISSION REDUCES BY SOLAR POWER**

	Normal Electricity	Solar Power
Power Consumption (Watt)	500 kW	100 KW
KWh (units of electricity used each Hour)	0.005	0.001
Hours of Operation per day	24	24
Carbon Emissions (tons) per year	0.00103	0
Reduction in Carbon Emission (tons) per year		0.00103(-iii-)

Similarly, the D.A.V College has further proposed to reduced Carbon emission by Extend Solar Power plant in the campus.

The quantum of reduction in Carbon Emission by installing solar plant is shown in Table 6.

**Total Carbon Emission reduced = ((i+ii+iii)( 0.744+1.46+0.00103) 2.20 Tons/Annum.**

**\*Considering the Emission Factor: 0.2064 Tons CO<sub>2</sub>/Year/KWh**

## B) REDUCING THE USE OF STATIONERY

- Communication to the faculty through conventional paper circulars has been almost replaced with the use of e-mail service or text message.
- Whole campus has the Wi-Fi accessibility.
- Admission to the campus through on-line portal is initiated.



### C) INCREASING VEGETATION ON THE CAMPUS:

The campus is situated in the well-planned City in a lush-green Environment.

#### PLANTATION INITIATIVES

- Every building on the Campus is surrounded by trees and lawns.
- Well planned plantation of wide varieties of trees and shrubs decorate the campus.
- Plantation programmes are undertaken on the campus to increase the number of plants.
- Out of 64749.7 sqm of campus area, 31124 sqm of green cover exists in the campus, this is about 54% green cover.
- Limited numbers of Automobiles of Staff & Students are permitted inside the campus in the designated Parking area to keep the campus pollution free.

#### CARBON ABSORPTION BY FLORA IN THE INSTITUTION

- There are 394 full grown trees and 210 semi grown trees of different species on the campus spread over 16 acres.
- Carbon absorption capacity of one full grown tree 22 kg CO<sub>2</sub>. Therefore, Carbon absorption capacity of full-grown trees  $394 \times 22 \text{ kg CO}_2 = 8668 \text{ tons of CO}_2$ .
- The carbon absorption capacity of 210 semi-grown trees is 50% of that of full-grown trees. Hence the carbon absorption  $210 \times 11 \text{ kg of CO}_2 = 2310 \text{ tons of CO}_2$ .
- Carbon absorption capacity full grown & semi grown is 10978 tons of CO<sub>2</sub>.

Total of CO<sub>2</sub> emissions reduction (i+ii+iii+iv) =  $0.774+1.46+0.00103+10978 = 10980.23 \text{ tons per year}$

Net reduction =  $10980.23 - (185.52+71.643) = 10722.6 \text{ tons per year}$





**RECOMMENDATION:**

- Sensor-based lights may be provided in public utility areas to conserve electrical energy.
- Use star-rated appliances
- Enable power-saving modes on computers and printers
- Install energy meters for sub-metering and monitoring
- Conduct energy awareness training
- Awareness drives on carbon emission reduction may be carried out.
- Use of public transport or pooling of vehicles should be promoted.