JANKI DEVI MEMORIAL COLLEGE

UNIVERSITY OF DELHI

ENVIRONMENTAL SELF ASSESSMENT REPORT 2019-2020

Prepared by:
Ms. Ifrah Rehman
Assistant Professor
Department of Environmental Studies
and
Ms. Pouriangthanliu
Assistant Professor
Department of Sociology

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University of Delhi

Environmental Self-Assessment Report 2019-2020

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Introduction

Educational institutions have a vital role to play in societal and environmental reform. In the current deteriorating environmental scenario, it is crucial that these institutions lead by example and pave the way for future generations by harbouring and implementing environment friendly initiatives and technologies within their campus. Janki Devi Memorial College (JDMC), University of Delhi, a premier institution for higher education in the capital, founded in 1959 by the famous Gandhian, Shri Brij Kishan Chandiwala, in the memory of his mother, Smt. Janki Devi, has been diligently fulfilling this responsibility for six decades. The concept of environment consciousness permeates the core functions of this institution, and the Environmental Self-Assessment Report is an honest attempt to analyse the college's environmental policies.

The Environmental Self-Assessment Report or the 'Green Audit' annually collates and assesses the environment friendly activities and initiatives being carried out in JDMC. Last year, we had also invited experts to carry out an external Green Audit, but due to the Covid-19 pandemic, we have not been able to do so this year. The Green Audit report is divided into seven sections, each covering a different aspect of the college.

As usual, the Department of Environmental Studies collaborated with AVANI- the Environment Club of the College to conduct the Green Audit. We are also indebted to Dr. Kaushal and Mr. Avinash from the Administrative Office and the Garden Committee for providing us the relevant data and information, respectively.

Physical Profile

The physical layout of the institution is a good indicator of the ideology of the organisation. For an academic institution, the structure and design of the college campus can encourage positive thinking within the students and the faculty. Green spaces provide an environment, which nurtures a connection with nature and is often the only connection to greenery for students coming from densely populated parts of the city.

Surrounded by fragments of the Central Ridge, which is a part of the Aravallis, and the bustling market of Karol Bagh and residential areas like Rajendra Nagar, JDMC overlaps natural and man-made ecosystems. Providing a learning environment to over 3,000 students and a spacious work environment for faculty and non-teaching staff requires a robust and well-planned infrastructure, which optimally utilises the physical space. Out of the total plot area of 43,108 sq m, the main college building covers around 30% of total areas. Approximately 42% of the campus consists of green spaces. A new hostel aims to provide on-campus accommodation to outstation students.

The college is disabled-friendly and provides all possible support to remove any hindrances for disabled students. Ramps on all floors and an elevator allow free movement of wheelchairs. The students are also sensitised on issues relating to disabilities in their peers. The physical profile of the campus is given in Table 1.

Figure 1 College Hostel

Table 1: Physical profile of college

S.No.	Description	Area (m^2)
1.	Plot area	43,109
2.	Playground area	10,442
3	Surface parking area	3,775
4.	Road area	4,407
5.	College building built-up area	8014
6.	Staff residence area	1,717
7.	Girls Hostel Building	2,066
8.	Administration office area	450
9.	Green and landscaped areas	18,203
10.	Existing covered area on ground	4,639
	A)College block	1,455
	B)Library block	1,011
	C)Canteen block	565
	D) Covered seating	475
	E) Stage	255
	F) Music room	120
	G) Home Science Lab	264
	H) Vocational Training Centre	493
11.	Existing covered area on first floor	2,737
12.	Existing covered area on second floor	638
13.	Net covered area on all floors	8,015

Water Profile

In terms of bio-geographical location, Delhi falls under the ‘Semi-Arid’ zone of India, which means availability of fresh water is always a matter of concern. According to the official 2011 census, the population of Delhi stood at 16.8 million, which has expanded further in the last nine years. As per the Delhi Jal Board data, the daily water consumption has risen to 1.1 trillion litres by 2005, a tenfold increase from 1976. One can safely say that it is probably higher as of now. Hence, the water profile of an institute is a vital cog in its environment friendly design.

Water bills were analysed in order to understand the consumption pattern (in kl) of the college. The data is presented in the table below and shows a monthly/bi-monthly unit consumption of water. The water consumption is split between the academic block and the teaching staff quarters. The bills for Academic Block are generated approximately every 60 days, while the Teaching Staff Quarters bills are generated monthly. The primary use of water in campus is for drinking and sanitation. Janki Devi Memorial College has taken significant steps toward utilising harvested rainwater on campus. The water consumption from Academic block meter has been shown in the table. It can be seen that there has been a rise in average monthly water consumption from average of 136 kl to 176 kl. Therefore, JDMC will now try to reduce the water consumption in future. Further, the second meter (i.e. teaching staff quarters) has not been working, so the bill was generated on the basis of random meter readings and hence the data is approximate and cannot be compared. However, the average monthly water consumption of teaching staff quarters was 160 kl during 2019-2020 based on random readings.

Table 2: Water consumption in Kilolitres (kl)

Month	Academic Block	Month	Academic Block
Jul-18	495	Jul-19	217
Aug-18		Aug-19	
Sep-18		Sep-19	371
Oct-18	20	Oct-19	
Nov-18		Nov-19	276
Dec-18	670	Dec-19	
Jan-19		Jan-20	259
Feb-19		Feb-20	262
Mar-19	164	Mar-20	
Apr-19		Apr-20	238
May-19	144	May-20	240
Total (kl)	**1493**		**2101**
Average (kl)	**136**		**176**

Energy Profile

Several environmental problems can be traced back to non-renewable energy resources. Air pollution due to burning of fossil fuels, water and soil pollution due to coal mining and oil drilling, displacement of tribal communities, loss of forest land due to dams etc. are some of the impacts of extracting and utilising non-renewable sources of energy. It is imperative that judicious consumption and conservation of energy should be at the heart of every institution's design and functioning.

Electricity bills of the college were assessed and the monthly unit consumption was compiled as below. The table indicates that the peak electricity consumption was in the summer months, with the highest consumption in the post-monsoon period. The average monthly electricity consumption was 24,759 kWh for 2016-17 and 29,466 kWh for 2017-2018, 31,281 kWh for 2018-19 and 28,704 kWh for 2019-20. The College will be taking steps to reduce its electricity consumption and shift towards renewable sourcesof energy.

Table 3: Electricity Consumption

Month	Electricity Consumption (kWh)	Month	Electricity Consumption (Kwh)
Jul-18	34192	Jul-19	29798
Aug-18	43549	Aug-19	42294
Sep-18	48794	Sep-19	47033
Oct-18	35792	Oct-19	55280
Nov-18	21808	Nov-19	27728
Dec-18	24352	Dec-19	22800
Jan-19	22272	Jan-20	25456
Feb-19	18144	Feb-20	28240
Mar-19	25712	Mar-20	20816
Apr-19	35145	Apr-20	8224
May-19	34329	May-20	8078
Average Monthly Electricity Consumption	**31281**		**28704**

Solid waste generation profile

Municipal solid waste consists of the non-hazardous waste material produced in the city limits. Commonly identified as ‘garbage’, it is the end point for most natural resources in the urban environment. Sanitary Landfills and Incineration are the two common methods employed by the government to dispose the waste material, both of which contribute to various forms of pollution. Thus, it is imperative to understand how much waste material JDMC produces and how is it disposed off.

The primary sources on campus include the canteen, hostel mess and the garbage cans around campus. Garbage from the campus is collected on a daily basis in a handcart. Though it is difficult to weigh the garbage and estimate the mass, the volume of the garbage can be approximated with some degree of accuracy. The dimensions of the empty cart were measured to be 122 cm (Length), 82 cm (Breadth) and 79 cm (Depth). Upon loading the cart, the height of the garbage was approximately 89 cm. The volume of the fully loaded cart was calculated to be 0.89 m^3. The frequency of the collection was monitored for a period of seventeen weeks (Table 4).

Leftover food material and plastic was the main component of this waste. In addition to this waste, recyclable waste is sold to recycler. The details of rags sold during 2017-2018 and 2018-2019 is provided in Table 5 and Table 6.

The college has taken steps to develop its compost through newly installed compost machine. JDMC has also incorporated ‘segregation of waste at the source’ by installing the blue and green dustbins at multiple places in the college for easy handling of the waste.

Table 4: No. of carts of waste generated

Dates	Week	Quantity (Number of solid waste carts per week)	Number of solid waste carts per day
01-01-2020 to 06-01-2020	1	13	2.17
07-01-2020 to 13-01-2020	2	14	2.33
14-01-2020 to 20-01-2020	3	14	2.33
21-01-2020 to 27-01-2020	4	15	2.5
28-01-2020 to 03-02-2020	5	15	2.5
04-02-2020 to 10-02-2020	6	16	2.67
11-02-2020 to 17-02-2020	7	17	2.83
18-02-2020 to 24-02-2020	8	15	2.5
25-02-2020 to 03-03-2020	9	14	2.33
		Average no. of solid waste cart per day	2.20

Table 5: Waste sold to recyclers during 2018-2019

Category of Waste	Total
Paper (kg.)	204
Iron (kg)	849
Aluminium (kg)	20
Plastic (kg)	58

Table 6: Waste sold to recyclers during 2019-2020

Category of Waste	Total
Paper (kg.)	123.9
Iron (kg.)	444
Aluminium (kg.)	22.5
Plastic (kg.)	42.5
Electric cable (kg.)	40

Vegetation Profile

Green spaces are rare in a crowded city like Delhi, and for students and employees, a college campus can often be an oasis. The green cover also is a factor that attracts many students to this beautiful campus year after year. The department of Environmental Studies and AVANI – the Environment Club initiated the Tree Census in order to understand and quantify the floral diversity of the campus. The project also aimed to educate the students about the different tree species that they encounter in their daily lives. The tree census was done by Mr. Akash Verma and Dr. Rajwant Kaur (former faculty members) in the year 2016-2017 with the help of students. The students referred to *Trees of Delhi: A Field Guide* by Pradip Krishen for correct identification of trees.

A total of 300 trees were found in the college campus, which included 45 unique species. Neem (*Azadirachtaindica*) was the most prolific tree species, followed by Champa (*Plumeria rubra*) and Ashok (*Polyalthialongifolia*). The campus also had some well-established Banyan trees (*Ficus benghalensis*), which are a keystone species as their fruits (figs) provide nutrition to a large variety of animals, including several bird species. A related observation was the invasion of *Vilayati Kikar* (*Prosopisjuliflora*) from the periphery of the college. We identified 14 individuals, which had established themselves in the area behind the new hostel construction. Adequate steps should be taken to remove these trees as they have a tendency to spread quickly and overpower the local vegetation.

Overall, the tree census yielded a wealth of knowledge about the floral diversity on the campus.

Table 7: Tree Species Census

S.No.	Common Name	Scientific Name	Count
1	Amaltas	*Cassiafistula*	6
2	Arjun	*TerminaliaArjuna*	1
3	Ashok	*Pofyalthialongifolia*	18
4	Bakain	*Meliaazedarach*	4
5	Banyan	*Ficusbenghalensis*	5
6	Belpa	*Aeglemarmelos*	3
7	Cabbage Palm	*Saba/palmetto*	6
8	Champa	*Pfumeriarubra*	25
9	Chamrod	*Ehretialaevis*	3
10	Chir Pine	*Pinusroxburghii*	3
11	Christmas tree	*Araucaria cu/umnaris*	2
12	Cycas	*Cycas sp.*	17
13	Dhak	*Buteamonosperma*	1
14	Fiddle leaf Fig	*Ficuslyrata*	1
15	Firangipani	*Plumeriaobtusa*	4
16	Floss Silk Tree	*Ceibaspec1osa*	2
17	Harsingar	*Nyctanthesarbor-tristis*	2
18	Lmli	*Tamarindusindica*	4
19	Indian Rubber Tree	*Ficuselastica*	3
20	Jaggery Palm	*Caryotaurens*	1
21	Jamun	*Syzygiumcumini*	3
22	Jarul	*Lagerstroemia speciosa*	5
23	Kadi Patta	*Murrayakoenigii*	1
24	Kassod	*Sennasiamea*	6
25	Katthal	*Artocarpus heterophyllus*	1
26	Lasara	*Cordiadichotoma*	1
27	Mahua	*Madhucalongifolia*	1

S.No.	Common Name	Scientific Name	Count
28	Mango	*Mangiferaindica*	12
29	Maulsari	*Mimusopselengi*	6
30	Neem	*Azadirachtaindica*	82
31	Oak	*Casuarina equisetifolia*	2
32	Orange species	*Trifoliate orange*	1
33	Peepal	*Ficusreligiosa*	9
34	Royal Palm	*Roystonearegia*	8
35	Safeda	*Eucalyptiscamaldu/ensis*	4
36	Saptaparni	*Alstoniascholaris*	3
37	Sema l	*Bombax ceiba*	1
38	Shahtoot	*Morusalba*	6
39	Sheesham	*Dalbergiasissoo*	4
40	Silver Oak	*Grevillearobusta*	2
41	Siris	*Albizialebbeck*	3
42	Sonjna	*Moringaoleifera*	2
43	Traveller's Palm	*Ravena/a madagascariensis*	2
44	Vilayati Kikar	*Prosopisjuliflora*	14
45	Weeping Bottlebrush	*Callistemon viminalis*	8
46	Unidentified	—	2

Sustainable Activities

Janki Devi Memorial College prides itself on the numerous environmental initiatives, which have won the college many accolades. We believe that sustainable development must go beyond the classroom and the books, and permeate into the core functions of the institution. With this in mind, the College has initiated several programmes over the last two decades, which reflect the environmentally friendly ideology of the institution.

Rain Water Harvesting Programme

The Rain Water Harvesting Programme in JDMC came as part of an initiative taken by Ms. Aruna Ludra, a faculty member of the English department of the college. She donated Rs. 30,000/- to the college on her retirement and the project was implemented with the help of the Centre for Science and Environment (CSE) in June 2001. CSE continued to monitor groundwater level up till 2008. The cost of the entire Rain Water Harvesting system was Rs. 70,000/-. It won the college the Chief Minister's Institutional Rain Water Harvesting Award in 2007.

Rainwater Harvesting System

1. *Rooftop Water Harvesting*

The runoff from the terrace of the college building is channelled into three recharge wells located at three different locations, each measuring 1m x 1m x 2m. All the rooftop rainwater outlets, except that from the Tutorial Block, discharge into storm-water drains and then to the recharge structures. In the Tutorial Block, a network of pipes linked through chambers take the rainwater to the recharge wells. To facilitate groundwater recharge, all structures are provided with 15m deep borewells of 150mm diameter. Layer of bricks filled inside the recharge ensure proper filtration of the harvested water.

2. *Surface Runoff Water Harvesting*

The runoff from the unpaved area is intercepted at the main gate by a collection trench. From here, the runoff eventually drains into an abandoned open well, which facilitates ground water recharge.

The total rooftop and surface area for collection stands at 32,170m^2. With the average annual rainfall in Delhi being 611mm, the campus has the potential to harvest over 19,000 m^3 or 19,000,000 litres of water annually. Current volume of rainwater harvested 6880(m^3) or 68, 80,000 litres. This represents about 35% of the total rainwater harvesting potential of the campus. JDMC utilises the ground water through three borewells inside the campus to cater to the water requirements of the college.

Impact

The Janki Devi Memorial College is located in Delhi's Ridge area. The water level in the college premises was 35.8 m below ground level (bgl) in May 2002. After implementing the RWH system on the campus, water levels rose remarkably. The water level in September 2002 was 22.1 m (bgl) while in May 2003 it was 25.0 m (bgl), a rise of 10.8 m even during the peak summer month. The water level in July 2003 was recorded at 35.9 m (bgl). The data was collected and analysed by the project tram from Centre for Science and Environment.

Renewable Energy

Solar energy is the most abundant, easy, and cost-effective renewable energy to harvest. It is also the most important of the non-conventional sources of energy because it does not generate any carbon dioxide and contributes to the efforts against global warming and climate change.

On13th May 2016, JDMC signed a Power Purchase Agreement (PPA) with Azure Solar Solutions Pvt. Limited for 25 years under the Renewable Energy Service Company (RESCO) Model of the Ministry of Renewable Energy. Azure Solar Solutions Pvt. Limited is engaged in the business of building and operating solar power plants, including grid-connected rooftop power projects. Under

the PPA, Azure Power installed the solar plant at JDMC, free of cost.

How does it work?

The College currently purchases electricity from two sources. The primary source is BSES which provides electricity through the main grid at a rate of Rs. 8.00 per unit of electricity consumed. The solar system generates electricity from the incident solar radiation falling on the PV modules and supplies it to the college at a rate of Rs. 3.20 per unit of electricity consumed.

A Net Energy Meter isused to keep track of the power generated from installed solar panel system. Any solar energy that inot used simultaneously with its production goes back into the electrical grid through the meter. At night or on cloudy days when the system is not producing power to meet the building requirements, the college draws electricity directly from the grid. The Electricity Utility generates a bill for the ‘net’ consumption for any given billing period and provides a credit for any excess produced during a given period.

The solar plant installed operates on a solar photovoltaic system of 58.90 KW capacities. The plant is installed on the rooftop measuring approximately14,402 square feet and has a shade free area of approximately12,292 square feet. The setup includes 84 panels, two inverters that modulate the voltage, a portable weather monitoring station, and a data logger and transmitter. The data logger collects the necessary data from the system and wirelessly transmits it to the Azure Power Monitoring team.

Parameters for the Solar Panel System

#	Parameters	Value
1	System Size	58.9 kW
2	Expected Annual Energy Generation	As per Schedule IV
3	Module Type	Polycrystalline Modules
4	Inverter Type and Rating	String Inverters
5	Electrical Parameter for interconnection	Interconnection in existing LT panels at 3 phase, 415V, 50 Hz
6	Mounting type	Fixed structure
7	Surface Azimuth Angle	0 degree
8	Tilt Angle	10 degrees
9	Wind Resistance	150 Km/ Hr

Contribution to the College

The solar power plant came into operation in the month of December 2016. During 2019-2020, 15% of the energy demand of college was met by solar energy generation. Since the installation of solar panel, JDMC could see the difference in reduction of electricity bills as the electricity bought from the solar plant is priced at a much lower rate. We look forward to having the solar power plant generating at full capacity as summer approaches. The solar plant, coupled with power saving installations, will aim to fulfil the complete energy demand for the college in the coming years.

Table 8: Solar electricity generation and export (kWh)

Month	Solar Electricity Generation	Solar Export Units	Month	Solar Electricity Generation	Solar Export Units
Jul-18	4532	64	Jul-19	4427	16
Aug-18	4365	32	Aug-19	5762	96
Sep-18	5942.6	16	Sep-19	5021	32
Oct-18	4134.8	0	Oct-19	4843	0
Nov-18	4541.4	0	Nov-19	3814	32
Dec-18	4012	0	Dec-19	3156	0
Jan-19	3572	48	Jan-20	3178	16
Feb-19	4714	80	Feb-20	4267	16
Mar-19	6594.8	32	Mar-20	3841	96
Apr-19	6173	48	Apr-20		
May-19	7299	64	May-20		
Average monthly generationand export	5080	35		4257	34

***A break in the readings from March 2020 due to COVID19 Pandemic.

Composting

In 2019, college took an initiative in waste management. A composting machine model 24-25 and capacity 25-30 kg. per batch (fully automatic with inbuilt shredder) was installed on 26-02-2019 to decompose the organic waste of the campus. The details of the compost generated are tabulated below in Table 9:

	WASTE INPUT (in kg)	COMPOST OUTPUT (in kg)
June 2019	50	20
July 2019	70	26
Aug 2019	75	39
Sep 2019	72	40
Oct 2019	35	10
Nov 2019	10	4
Dec 2019	20	8
Jan 2020	52	19
Feb 2020	25	7.5
Total	409	173.5

Green Activities - AVANI

The Environment Club AVANI, at the JDMC was set up in 2004. The club began with simple ideas like on-the-spot painting competitions and slogan and poster making in an effort to encourage students' interest in the environment. The "green treasure hunt", which involved locating tree species on campus, continues to be a much-awaited annual event.

Avani, the Environment Club of Janki Devi Memorial College, consists of students from different departments who form its green brigade, which is engaged in promoting eco-friendly options for a healthier and greener environment.

Figure 2: Avani activities

Convenors: Ms. Vandana Madan

Co-convenors: Dr. Abha Jain, Ms. Bhawna Pal, Ms. Anuradha Goel, Dr. Kanika Kakar, Ms. Pouriangthanliu, Ms. Ifrah Rehman, Dr. Nemika Relhan, and Ms. Karishma Ahlawat.

Avani organised a plethora of activities during 2019-2020 reflecting its commitment towards clean, healthy and green environment.

Activities:

- Avani held its fourth inter-college debate competition, **Green Matters on June 6th, 2020**. The topic of the competition was **Human suffering will worsen unless environmental exploitation ends.** The competition was held virtually due to the pandemic situation of COVID-19. It was a success as 25 students from different colleges had enrolled for the competition out of which 19 participants were able to join. JDMC's former principal, Dr Indu Anand, was the Guest of Honour for this event, under whose guidance this society was introduced to the college. Dr Suraj Beri, Assistant Professor, Sociology Department, Indraprastha College for Women, University of Delhi, judged the competition. Dr Swati Pal, the principal of the college graced the occasion by attending the debate. She congratulated the team Avani for making students introspect and think about the relevance of environment during COVID-19 times. The winners of the competition were Shristi Singh (first position), Anandita Mishra (second position) and Subia (third position) from Indraprastha College for Women, Atma Ram Sanatan Dharma College and Lakshmibai College, respectively.
- The Students of Avani, the Environment Club of JDMC, along with others who are hostel residents as well as students of Environment Science, made **environment videos**, which they posted on social media, as well as **posters** that underlined the urgent need to deal with environmental issues as a part of the **World Environment Day Celebration** on June 5th, 2020. The students also **planted saplings** on this day in their residential areas to show their commitment to greening the environment for a healthy tomorrow.
- Two student members of Avani, Shefali and Aditi of Ist and IInd Year, respectively, among others, conscious of their social responsibility have been using the Covid-19 lockdown period to engage in **making face masks** from recycled cloth with the support of their family.

They have been distributing them since the first week of April, 2020 to the needy both in Delhi and outside in Raipur, Chattisgarh.

- Avani, the Environment Club organised a **session** by Ms Parul Sethi from **Edible Routes** on February 19th, 2020. The session enlightened the students on how to grow their own food and vegetables in an organic and sustainable way. The session was very informative as students were also given useful tips regarding how they may set up the green zone in their college.
- On February 19th, 2020 Avani, the Environment Club, **dispatched** 254 kilograms of **paper waste for recycling** to the Paper Recycling Company, **Green-O-Tech India**. The waste paper recycling activity of team Avani is an excellent example of a green initiative of converting waste to wealth.
- The Internal Quality Assurance Cell (IQAC) in collaboration with Avani organised a workshop on 'Single Use Plastic' to educate and create awareness on harmful implications of plastic-waste on January 29th, 2020. The workshop was well attended by the students and faculty members of the college. It was conducted by Ms. Rachel and Mr. Srijan from the NGO *Chintan*, which works for creating a safe and healthy environment. It consisted of a power-point presentation and engaging students in multiple activities, which highlighted plastic as a non-degradable and hazardous waste and hence, a threat to environment and planet earth. Recycling and ways to reduce plastic use were suggested. The need for appropriate plastic waste segregation was also highlighted.
- A seminar on cervical cancer was organised by Avani on January 29th, 2020. Madhu Yadav from Cancer, Awareness, Prevention and Early Detection Trust (CAPED) addressed the students regarding the most glaring health challenges in India – cancer. The seminar reflected on the cause of women-related cancers, with a specific focus on cervical cancer.

- As a part of *Swacchta Pakhwada* drive, students from team Avani participated in cleanliness drive on January 22nd, 2020. The students were given brooms and poly-bags

to clean the college campus.

- A Slogan Writing Competition with the theme of Water Conservation was organised on January 22nd, 2020 by National Service Scheme (NSS) in collaboration with Avani as a part of *Swacchta Pakhwada* drive. The competition spread the message and generated awareness about the urgent crisis of water shortage and hence, the need for conserving it.
- On January 10th, 2020 Avani held its annual event, 'Create from Waste'. The theme for the event was '*Hope in Times of Fear-Ek Ummeed*.' The event was well participated with teams from colleges of the University of Delhi. The participants were to create models on the given theme from the trash and dry waste displayed. The models created by the participants reiterated the fact that even garbage could tell a story when one puts creativity of mind and heart in it.
- The students from team Avani along with faculty members, Ms. Ifrah Rehman and Dr. Nemika Relhan participated in the 'Good Air Summit' on November 13th, 2019 at Jawaharlal Nehru Stadium, Delhi, reflecting the responsibility of the youth for saving environment. Through various mediums such as dance performances, paintings, and skits, the summit informed students regarding Delhi's deteriorating environment and air pollution and its implications on the health of the residents. Further, the summit included a panel discussion by environment experts like Justice Swatantra Kumar, former chairperson of National Green Tribunal, and Shri Chintu Kwatra, founder of Beach Warriors and *Khushiyaan* Foundation, which encourages students to take lead in making their city air clean and pollution free.
- The team Avani in keeping with its mission to fight plastic waste set up stalls to sell cloth bags during the *Diwali Mela*, Jyotsna and the North East Festival on October 21st, 22nd and 31st, 2019. The stalls were a part of *Aao Bag Banaye* component of Avani. The team Avani successfully sold cloth bags to the faculty members and students reiterating its commitment to create a plastic-free environment. A sum of Rs. 3,000 that was collected from the sale of the cloth bags was given to the Student Aid Fund, Janki Devi Memorial College.

- The faculty member from team Avani, JDMC, Dr. Nemika Relhan attended the inauguration programme of the 4th steering committee meeting of the 'Global Snow Leopard Programme' (GSLEP) organised by the Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India, co-organised by GSLEP secretariat on October 23rd, 2019 at Vigyan Bhavan. The event was inaugurated by many dignitaries including the Chief Guest, Minister (MoEF&CC), Secretary (MoEF&CC) and members of other snow leopard range countries. On this occasion, MoEF&CC launched the National Protocol on Snow Leopard Population Assessment in India and mentioned the importance of conserving the habitats of snow leopards.
- The team Avani successfully completed its collection clothes, dry ration, and medicines for Bihar flood victims and sent it to the NGO *Goonj* on October 5th, 2019. The collection started on October 1st, 2019. Both students and teaching staff donated generously in cash and kind showing their concern for humanity.
- The team Avani participated in the 'Climate March' organised by the Department of Environment on October 4th, 2019 reiterating its concern for safe environment and mother earth. The march started at 2:45 p.m. from the gate of Janki Devi Memorial College circling around the Ganga Ram Hospital Marg and back to the college. The principal of the college, Dr. Swati Pal, took the lead and encouraged students to join the march. The participants enthusiastically raised slogans like 'climate change is not a lie, don't let our people die' and '*pariyavaran ki raksha, humari suraksha*' during the march to draw attention of the public on the issue of climate change.
- The faculty members and students from the team Avani participated in a conclave on 'Circular Economy of Plastic Waste and Livelihood Opportunities and Excellence Awards for Academia and Community' at NDMC Convention Centre, New Delhi, on September 25th, 2019. The conclave was organised by Pandit Deendayal Upadhayay Smriti Sansthan (PDDUSS) to fulfil the vision of our honourable Prime Minister, Shri Narendra Modi, to make India plastic-waste free. Team Avani found the conclave enlightening and informative as it spelt out details of PDDUSS' no plastic campaign, which is divided into three phases. In the first phase, PDDUSS and eco-clubs would

educate students of Delhi-NCR based colleges and schools about the ways to tackle plastic pollution. The second phase involves the students educating their families and holding workshops along with PDDUSS volunteers, in local communities/societies regarding negative implications of plastic usage. The third phase would include citizens-led movement to collect waste across Delhi along with the waste-pickers community, which will be sent to a recycling facility to convert the collected waste into daily use products.

- The Annual Treasure Hunt Competition was organised successfully by Avani on September 11th, 2019. There were 15 students from the first year who participated in the competition. The students gathered outside the college cafeteria where they were given a list of environment-based questions for which they were required to find answers by looking around in the college. The competition was fun-filled and an enriching experience for the students.
- On August 30th, 2019, six students from team Avani participated in the Youth Summit organised at the Apeejay School of Management, Dwarka. The Summit included students taking part in the paper presentation and poster-making competitions. Shri Anto Alphonse, Deputy Commissioner of Police, Dwarka, was the chief guest for the Summit. The Summit focused on the need for making world eco-friendly and doing sustainable development.
- The team Avani successfully delivered its collection to the NGO *Goonj* on August 27th, 2019. The students and faculty members actively participated in collecting old clothing, shoes, edibles, and stationary for donation to Goonj. Around forty students from the team Avani assisted in this task. Avani's association with *Goonj* is not new. We have continuously collaborated with and donated to *Goonj*, which reflects our commitment to serve humanity and save the environment. *Goonj* recycles old clothes and distributes them among the rural poor. Also, it makes items like bags for sale in the market and the income generated from them is used for providing education to children in the rural area.
- On August 10th, 2019, two students of team Avani attended a conference on the 'Role

of Women and Media in Water Conservation' organised at the Hindu College, University of Delhi. The conference focused on the issue of water crisis. Sadhvi Pragya, the chief guest of the conference, shared information regarding her organisation, SAHS, which works for conservation of water. The conference was extremely enriching and informative for the students as Professor Gyan Prakash, Department of Environmental Studies, University of Delhi, spoke about the water conserving techniques of Rajendra Singh, the 'waterman of India', and the *Jal sahelis*, the women water warriors.

- The Environment Club of JDMC, Avani, actively engaged in offering assistance to Centre for Wildlife Rehabilitation and Conservation (CWRC) to look after five orphaned baby rhinos, who had lost their mothers in Assam floods. The CWRC is the only facility in India where orphaned and/or injured wild animals of several species are hand-raised and/or treated and subsequently returned to the wild. Strategically located in Borjuri village adjacent to the Panbari Reserve Forest near Kaziranga National Park in Assam, the centre attends to a wide range of wildlife emergencies resulting from natural calamities. The team Avani collected a sum of Rs. 20,150/-, which was used to purchase 65 Lactogen milk powder boxes, which will be used to feed the baby rhinos. The Lactogen boxes were delivered by parents of a student of the team Avani on August 5th, 2019 to CWRC. This initiative of team Avani was highly appreciated by the local people and animal lovers of the state of Assam.
- On March 6th, 2019, Avani for the third time successfully organised the inter-college debate 'Green Matters.' The topic for the debate was 'Building Dams on Rivers is More Important than Regional Cooperation and Environmental Sustainability.' The debate was well attended with students from and outside the University of Delhi participating individually and in a two-member team and speaking bilingually for and against the motion. There were three prizes given for the best speakers and two for the best interjections. The debate was judged by Dr. Swati Diwakar and Prof. Gyan Prakash Sharma, Department of Environmental Studies, University of Delhi. They pointed out to the students the significance of making cost-benefit analysis while constructing dams and also the need for protecting natural systems. Dr Indu Anand, the

former principal of JDMC, was the guest of honour. Dr. Swati Pal congratulated the team Avani for successfully hosting the debate and thanked the judges for sparing their valuable time and gracing the occasion.

Figure 3 AVANI students made masks and distributed them during the lockdown in March 2020

Garden Committee

The college gardens are campus treasures full of tall trees, colourful flower beds and a variety of plants that add to the beauty and peaceful ambience of the college. Our gardens include Main (front) garden, herb garden, rose garden with exclusive display of rockery and a green cliff at the entrance with the name of the college written on it.

During 2019-20, to begin with, the flower beds in the entrance (front) garden were reshaped and new varieties of flowers were added to them. The college boundary walls were decorated with new flowers. This year, being the diamond jubilee year, some new plants (including *Terminalia arjuna*, Exzora, Gudhal, Rudraksh, Amla, Sahjan, Jamun, Madhu Malti, Palm, Begonia, etc.) were added to the herb garden, which already houses 150 varieties of herbal species. This year, students also joined the club as members and participated with full zeal. The members visited noted public gardens to gather new and innovative ideas for developing our gardens better. To top it all, the college garden committee secured the first position, under three categories namely Cactus, Bonsai and Dracaena; 2nd position, under Flower arrangement (West) and 3rd prize in Succulents at the University Flower Show, 2020. The College was also bestowed with the Jagrani Devi Memorial Cup.

The herbs, numbered trees of college, and potted plants can be easily identified during a garden tour with their popular (common) names and scientific (botanical) names clearly written on placards. The overall impression of open green spaces surrounded by trees and shrubs in garden creates a clean and green college environment.

Figure 4 WORLD ENVIRONMENT DAY 2020

Environmental Education

Department of Environmental Studies at Janki Devi Memorial College makes extra effort to provide a wholesome educational experience for the students. The Ability Enhancing Compulsory Course (AECC) in Environmental Studies was initiated in 2014 and the Department of Environmental Studies teaches Environmental Science to approximately 500 students in each semester. Apart from classroom teaching, the students are taken out of the campus on environmental fieldtrips.

At the start of 2019-2020, the first semester students began field visits in October to the Aravalli and Yamuna Biodiversity Parks as a part of their AECC Environmental Studies curriculum. Despite the October heat, the students relished the outdoor experience and were able to relate the theoretical classroom knowledge to natural ecosystems. Students of the second semester had their excursions in February-March 2020. The department organised sixteen visits between the two parks in order to accommodate all the students over the course of two semesters.

Figure 6: Educational visit at Yamuna Biodiversity Park

Conclusion

The Environmental Self-Assessment was a landmark project in the sixty-year history of Janki Devi Memorial College. In a constant effort to keep up with the changing times, it is important to understand where one stands in the present. In the environmental scenario, an institution has a duty not only towards itself, but also to the students and society to evolve with the shifting tides and to contribute towards a greener and cleaner future. Of the many tools available to assess the impact of one's activity on the environment, a Green Audit is indispensable.

Janki Devi Memorial College is an environmentally and ecologically responsible institution and is actively carrying out many activities to improve the environment such as rainwater harvesting, solar energy generation, waste management, recycling etc. The College has taken an initiative to improve its environmental performance further recently by establishing the compositing unit. Not only this, students and faculty members are actively working towards environmental awareness through various activities of the Environmental Club Avani.

This project would not have been possible without the encouragement and support of the Principal, Dr. Swati Pal, the administrative staff, faculty members and the students. It is their assistance and collaboration that has brought this Green Audit to fruition.