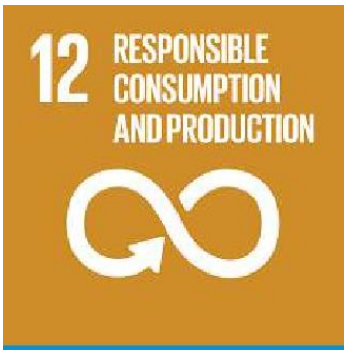
GREEN BEANS SOCIETY



ANNUAL MAGAZINE

2019-20

GREEN TALK

GREEN BEANS SOCIETY

KAMALA NEHRU COLLEGE

UNIVERSITY OF DELHI

greenbeanscoreteam@gmail.com

For more than two decades, Green Beans Society of Kamala Nehru College has been working towards sensitizing and encouraging students to protect and preserve the environment and also inculcates in them the idea to spread awareness so as to make the world a more sustainable place. Our efforts are eco kaleidoscopic in nature ranging from working at grassroot levels to participating at Nation al level seminars and collaboration with international organisations like world wildlife fund for nature.

We aim to inculcate the idea of sustainable lifestyle and reduction of wasteful consumption among young women.

CONTENTS

CONVENER'S ADDRESS

Water is a highly important part of the earth's environment including in its role to help in sustaining life on earth. It also plays an important part both directly and indirectly in numerous ways for multiple human activities.

However, the world is increasingly facing challenges due to the deterioration of water resources due to environmental pollution, excessive usage, climate change etc. An increasing amount of people are facing difficulty in getting access to clean drinking water and there are many instances of severe shortages and droughts.

There is a need to consciously and judiciously use water and to engage in practices that promote sustainable use of water resources and prevent its degradation and depletion. My best wishes to the students for bringing out this magazine of the Green Beans Society.

Dr. Pratibha Bhalla

Teacher Convener

From the Editor's Desk

"The wars of the TWENTY- first CENTURY will be fousht OUER water" - Ismail SERASELDIN

In Water: The Epic Struggle for Wealth, Power and Civilization, journalist Steven Solomon argues that water is surpassing oil as the world's scarcest critical resource. In sot5, NASA Satellite Data revealed that st of the world's 37 large aquifers are severely water-stressed. With growing populations, and increased demands from agriculture and industry, researchers indicated that this crisis is only likely to worsen.

Critically depleted aquifers need to be revived by community efforts, according to Rajendra Singh also known as the "Water Man of India". Singh was awarded the Ramon Magsaysay Award for community leadership in soot, and the Stockholm Water Prize in sot5.

Community action can be powered only if community is aware of the issues and the solutions that can be brought about. Green Talk sot9-so is an effort by the Green Beans Society to generate awareness on various environmental issues through insightful articles, poetry, paintings and memes. Though disparate in their contents, the articles in this issue of our annual magazine point to the important issue to save the planet earth and the issues which are affecting the earth. A newsletter mirrors the vision and mission of a society thus we also talk about the activities that our club has taken up in the whole year in the concern for environment.

We wish that this newsletter serves as a glimmer of inspiration to every reader to ELPRESS their ideas in an eloquent and informative manner. With a sense of pride and satisfaction, we would like to say that with the active support of the faculty advisers and the members of the Green Beans Society, this issue of "Green Talk, sot9-so" has come alive.

Gurleen Kaur (Student Convenor)
Disha Jha (Creative Head)
Green Beans Society

Water For Life

Water is an indispensable resource. This goes without saying. The Indian Civilization is grounded in the concept of 'panchamahabhutas'. It propounds that all life on Earth is composed of five elements- Akash (Sky or space), Paani(Water), Prithvi(Earth), Agni(Fire) and Vayu(Air). Hence, water conservation has both religious, mythological as well as scientific and environmental dimensions.

Water is considered "Divine" by the Vedas, referred to as 'ap' in Sanskrit. Apas is addressed in four Suktas as the God of waters. Indra, Varun and Parjanya are directly or indirectly related to water in the texts. Parjanya means "the clouds causing the downpour of rains", represents water in the form of rain, which sustains life on earth. Parjanya is therefore deified in the Rig Veda. The famous Nadi sukta (River Hymn RV 10-75) extrapolates rivers as life bestowing, life nurturing and life protecting Divine Mothers. Ahnika Sutravali names the seven sacred rivers as Ganga (River Ganges), Yamuna (River Jamuna) Sindhu (River Indus), Sarasvati, Narmadha, Godavari and Kaveri. The theme of our last year's publication was 'Celebrating the Connect'. Therein, we concluded that religious beliefs can help establish that 'connect' with the environment. The same spirit has to be followed for water conservation.

The condition of our water bodies is appalling. The Comptroller and Auditor General (CAG) report on water pollution was tabled on December 16, 2015. According to the report, 'Water Pollution in India', the process of identifying lakes and rivers for pollution has been flawed. The examination extended to 140 projects across 24 river stretches and 22 lakes in 116 blocks across 25 states of India. All the rivers test- checked had high levels of organic pollution with low levels of oxygen, replete with bacteria, protozoa (due to faecal discharge). The lakes were on the deathbed due to eutrophication and excessive weeding. The report further added that only 10 percent of the wastewater generated in the country is treated. The rest is discharged into the 14 major, 55 minor and several hundred other rivers. The checks were found to be inadequate, maximum penalty or fine for a case relating to water pollution is just Rs 10,000. "The cost of non-compliance became significantly lower than the cost of compliance with the provisions and rules and orders under the Acts," points out the report.

In the 1980's, the Central Pollution Control Board (CPCB) tried to prepare an inventory of the sources of pollution, but the lack of information from the State Boards curbed the activity. This meant that the nature and magnitude of pollution was unclear, and hampered the effectiveness of the water quality conservation measures. We know that there is an elephant in the room, but we do not know where the elephant came from.

At the international fora, there is significant policymaking with regards to water pollution and conservation. The Millennium Development Goals agreed in 2000, aimed to halve the proportion of people without sustainable access to safe drinking water and basic sanitation between 1990 and 2015. The decade of 2005-2015 was observed as the International Decade for Action 'Water for Life'. The primary goal was to promote efforts to fulfill international commitments made on water and water related issues. However, the low and middle- income countries fared poorly in this goal. In 2014, a total of 748 million people did not have access to even an improved drinking water source. Currently, 2.5 billion people lack access to improved sanitation and over one billion still practise open defecation. In order to fill the gap created by the poor implementation of the Millennium Development Goals, the Sustainable Development Goals (SDGs) were adopted as a consequence of the Rio+20 Summit. Of the 17 Goals, the sixth goal deals with ensuring availability and management of water and sanitation for all. Goal 14 deals with conservation and sustainable use of oceans, seas and marine resources. This highlights the importance accorded to issues relating to water.

According to a report by Niti Aayog, 21 Indian cities including the national capital will run out of ground water by 2020. Another report highlighted that by 2030, the demand of water would be double and if not handled meticulously, 60 crores Indian would be denied of safe drinking water. These startling facts call for immediate action from all the stakeholders: the government, the civil society and the indigenous people.

In August 2019, The Delhi Jal Board (DJB) made it mandatory for all the properties with an area of 100sq metres and above to have functional rain water harvesting systems, with strict penal provisions for defaulters. According to the Delhi Jal Board, if 100 litre of water is used, around 80 litre of waste water is generated. This is over the warning of Niti Aayog, that Delhi would deplete its groundwater by 2020 if the current rate of exploitation continues.

India is the biggest consumer of freshwater in the world today, accounting for about 750 billion cubic metre annually, according to the World Bank. Lack of proper infrastructure and awareness with regard to wastewater recycling in India has resulted in over exploitation of India's water resources and there are barely existent mechanisms on wastewater recycling. Only 30 per cent of India's wastewater is recycled. The Swachh Bharat Mission has helped redirect attention towards wastewater recycling. A number of organisations like Xylem India, Jaldhara Technologies and Wabage have risen to the occasion to provide wastewater treatment solutions in the country. Wabag was instrumental in building the first plant for recycling of wastewater to drinking water in Namibia and plans to replicate the same in India as well. A full- scale implementation of such models in India will reduce the over usage of India's water resources for drinking purposes.

While the recycling of waste-water is being brainstormed in the policy-circles, one cannot underestimate the importance of the other two R's: Reduce and Reuse. Reducing usage of water by judiciously mapping the 'actually needed' and the 'actually used' quantity is the key. Calculating one's water footprint can be useful in mapping the utilisation of water. Such an exercise was undertaken this academic year by the society members for a large sample size. We made our participants aware of their footprint and prescribed measures to reduce the same. In our households, reusing water should be a norm. The water drained from water purifiers can be used for washing the threshold. Most of us simply throw it away after tagging it as "waste-water".
"A drop of water is worth more than a sack of gold to a thirsty man". No quote can explain our times better, when camels are being killed in Central Australia as they create water scarcity during the prevailing drought. Without water, the humans would no longer be humane. And to protect the humanity in the humans, we need to preserve our water resources.

Gurleen Kaur
Convener, Green Beans Society

She is water.
Powerful enough to drown you.
Deep enough to save you.

We need lot of blue to remain

green.

If you save water,

water will save you.

A Call for Conservation

Water is one of the most valuable resource on this planet for humans as well as flora & fauna. It is essential for the survival of living organisms. With 70% of the surface of earth covered with water, only 2.5 percent of it is freshwater. This minute quantity is available for bathing, drinking, cooking food and other activities that sustain personal lives as well as the entire economies. With modernisation, water use has changed and consumption has risen drastically. Various developmental projects and programmes have threatened freshwater water sources and caused scarcity around the globe.

Quality woes

Factors affecting water quality:

- OVERUSE-overuse of water by those with plenty of the resource is a major problem. Inefficient utilisation in domestic, agriculture and industrial practice has depleted it at an alarming rate.
- WATER POLLUTION- The smaller proportion of freshwater is further polluted by oils, chemicals and carcasses, affecting the total quantity of freshwater available.
- CLIMATE CHANGE-Abrupt changes in weather patterns due to "heating of the earth" has increased the frequency and intensity of floods and droughts and further affected quantity and quality of freshwater.
- GROUND WATER DEPLETION – With urbanisation, concrete jungles have taken over the mighty forests. Excessive deforestation has prevented ground water recharge and overpumping for agricultural purposes have depleted the aquifers.
- HEAVY METAL POLLUTION- Arsenic and lead pollution is a major concern that has come to fore due to improper disposal of industrial waste. Arsenic pollution is a problem in the states of West Bengal, Rajasthan and Madhya Pradesh, while Lead poisoning has been a focus in Chhattisgarh and Central India.

The problem is extremely serious, as it may lead to lack of access to clean drinking water, sanitation issues leading to deadly diseases like typhoid, fever and water-borne illnesses. This calls for the need to maintain the quality of the existing water sources for sustenance of production processes and lifestyles.

Lessons from the Past

Romans built big-bridge like structures called aquaducts, which helped bring water from distinct springs and mountains into the city. The first successful efforts to control the flow of water were made in Mesopotamia and Egypt, where the remains of the prehistoric irrigation works still exist. In ancient Egypt, the construction of canals was a major endeavor of the pharaohs and their servants, beginning in Scorpio's time. One of the first duties of provincial governors was the digging and repair of canals, which were used to flood large tracts of land while the Nile was flowing high. The land was checkerboarded with small basins, defined by a system of dikes.

Archaeological evidences show that the practice of water conservation is deep rooted in Ancient Indian tradition. India is best known of preserving its traditional methods even in 21st century. A revival of the ancient traditional methods can be useful to solve the water crisis we face. Some traditional methods of rain water harvesting used in India are Guls and Kuls, which were built by people of Western Himalayas to divert water. Roof top rain water harvesting is commonly used to store drinking water in Rajasthan. Inundation Channels are developed in the flood plains of Bengal to irrigate fields. Khadins and Johads are adopted in arid and semi-arid regions of Rajasthan wherein some agricultural fields were converted into rain fed storage structures. In Bikaner, Phalodi and Barmer, all houses have tanks for storing drinking water. Tanks are part of the well-developed roof top rain water harvesting system.

Rainwater Harvesting

The southern state of Tamil Nadu is a success story of utilising rain water harvesting for rejuvenating the region's water sources. Launched in 2001 as the brainchild of erstwhile Chief Minister Jayalalithaa, it made rainwater harvesting mandatory for all government and residential buildings. In 2016, Tamil Nadu witnessed the worst drought in the last 140 years. In response to the crisis, water bodies and supply channels were cleaned. Small check dams were set up to store water near streams and borewells with drinking water. Defunct borewells were converted into water recharging ones through rainwater harvesting. Desilting of tanks in flood-prone areas such as Cuddalore and Nagapattinam helped improve resilience and can be applied to other regions for better crisis management. Taking a cue from Tamil Nadu's success story, the Delhi government made it mandatory for all houses over 100 square meters and above to install a water harvesting system. While properties built after the cut-off date of July 28, 2001 will need to install a water harvesting system by March 31' 2020, older houses will be given one year from the date of the public notice to comply. Defaulters will have to pay 1.5 times their water bill amounts.

Watershed Management

Watershed management is the process of micro- regional planning of a watershed to ensure conservation of soil and water resources. In 2009, the Watershed Development Component of Pradhan Manti Krishi Sinchayee Yojana (WDC-PMKSY) was introduced for harnessing, conserving and developing degraded natural resources such as soil, vegetative cover and water. The major activities taken up under the WDC-PMKSY include ridge area treatment, drainage line afforestation, soil and moisture conservation, rain water harvesting, horticulture, and pasture development. World Bank assisted Neeranchal strengthens the implementation of watershed development in Andhra Pradesh, Chhattisgarh, Gujarat, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan and Telangana. Ensuring access to irrigation to every farm (Har Khet Ko Pani) and efficient use of water (Per Drop More Crop) are important objectives of this programme.

Institutional Setup

The Ministry of Jal Shakti was formed in 2019 after merging two ministries; Ministry of Water Resources, River Development & Ganga Rejuvenation and Ministry of Drinking Water and Sanitation. The formation of this ministry reflects India's commitment towards mounting water challenges that the country has been facing over the past few decades. The ministry launched a water conservation campaign, with an emphasis on 1592 stressed blocks of 256 districts of the country. The 'Jal Shakti Abhiyan' focused on five aspects - water conservation and rainwater harvesting, renovation of traditional and other water bodies, reuse of water and recharging of structures, watershed development, and intensive afforestation. The programme gave a fresh impetus to the country's water conservation.

Community Participation

Shri. Gajendra Shekhawat, Minister for Jal Shakti extolled the role of community in water management. Panchayat Institutions as elected constitutional bodies, are appropriate institutions to which powers of water governance must be devolved. At the same time, policies and programmes for strengthening the capacities of PRIs, both logistical as well as financial, are urgently required. Role of Non-governmental organisations like FORCE, NEER FOUNDATION, JAL BHAGIRATHI FOUNDATION and WATER AID INDIA can liaison with the government on matters related to water

and plan projects for wastewater management at local level. Apna Talab Abhiyan is an example of how community can play an instrumental role in watershed management. Implemented mainly across Mahoba district of Uttar Pradesh, dried up dug wells in fields of farmers were revived by adopting Apna Talab. The talabs helped sustain crops during drought years. The role of spiritual organisations in the realm of conservation also merit attention. The Rally for Rivers, a national movement launched by SadhguruJaggi Vasudev of Isha Foundation is a movement to save India's lifelines. Blending ideas of religion with environmental conservation would mould a form of 'environmental spirituality' that could help inspire a larger crowd to action.

Windows to the world

There are several innovative and efficient steps that have been taken up all round the world. Techniques vary depending on each country's particular needs and strengths, but they usually involve one or more of three methods: desalination, water conservation and water recycling. "United Kingdom" is a leader in smart water metering technology, enabling residents to monitor their water usage online. Smart meters provide users with more detailed information about how water is being used and in what quantities. It allows households to get a better hold on their water usage each month and encourages residents to install water efficient appliances and other water-saving technologies in their homes. It also helps customers pinpoint leaks that cause increased usage. In Spain,Water supply and sanitationis characterized by universal access and generally good service quality, while tariffs are among the lowest in the EU. The government has set up desalinisation plants, converting sea water into drinking water and recycling water. These techniques if adopted in India, could be useful in nudging to towards 'a water responsible' attitude.

It is often said, "Action begins at home". Small acts that reduce personal waterfootprint can go a long way in reducing aggregate demand for water resources and thus aiding its judicious usage. Small acts such as closing the tap while brushing teeth or washing hands, taking shorter showers, switching over to a bucket bath and less frequent baths can be undertaken at a personal level.

"You never know the worth of water until the well runs dry". This calls for action before it gets too late. A delicate balance between production and consumption of goods and services and conservation needs to be reached. All of us admit that we do not want to live without the luxury of consumption, but are we ready to have water as a luxury? Governments around the world are overhauling the water pricing norms. At the same time, water-related conflicts are testing the ideals of cooperative federalism. This calls for an independent statutory water regulator, for ensuring equitable access to water for all and its fair pricing. Water raises legal, geographical, political, ethical as well as philosophical issues that need to be confronted at one-on-one basis.

Gurleen Kaur (BA Economics (H) 3rd Year)
Rupam Mishra (BA Political Science (H) 2nd Year)
With Inputs from
Kriti Madan and Shiksha Goyal, (BA Economics (H) 1st Year)

SUSTAINABLE TOURISM

Being an incredible source of income and employment to host countries and substantive opportunity for businesses and visitors, tourism- all over the world is expanding sharply.
India's tourism industry itself generated 40 million jobs and was growing at fastest pace at7% of the G20 countries in 2018. The success of this industry in India can be attributed to spectacular picturesque, attractive beaches and hill stations, vibrant history and culture and vast geographical diversity with 25 biogeographic zones and 30 UNESCO World Heritage Sites. However, such growth and sudden influx of tourists has brought about serious environmental threats. Recently, a destination wedding worth Rs. 200 crore in Auli, Uttarakhand, generated 306 quintals of garbage in less than 4 days in contrast to the entire district producing less than 20 quintals of trash on a normal day. Mount Everest has been termed as the highest waste dump. Unprecedented shaving of shorelines has destroyed marine habitats.
"This overrun of tourists and unregulated tourism" is damaging destinations without repair which calls for an appreciation of sustainability, for the tourism industry to thrive for generations to come. In this direction, there is a series of success stories presenting how tourism can boost the economy without damage to nature. Steps such as a ban of single-use plastics in the Himalayan region, provision of bringing back all non- biodegradable items
by hikers in Sikkim have been taken by respective governments. Individual efforts such as picking up 5.5 Lakh Kg of plastic and non- biodegradable waste for a period of three years in Himachal Pradesh alone is notable in this regard. Common efforts include using energy-efficient devices, wastewater recycling at resorts, etc.
Though useful, these efforts are not sufficient and comprehensive interventions are required for the tourism industry to become a catalyst for change. Also, it is much necessary for the guidelines issued by various international and national agencies to not remain restrained in written form but to get adopted holistically for a sustainable future.

Manu Arya
Geography Hons., 2nd Year

Delhi's Air Crisis

Air pollution is the major problem facing Delhiites every year. Since the past years, although the problem is all year round and worsens during the winter months. The air quality in Delhi, capital of India, according to W.H.O survey among 1650 countries is amongst the worse in the world. Alarmingly, India has world's highest death rate from chronic respiratory diseases and asthma, according to the same survey. The poor air quality is damaging the lungs of a large number of children in the capital. On 25th November, the Supreme court made a statement saying "Delhi has become worse than hell". There are several reasons for Delhi's pollution:-

1) Stubble burning- Delhi shares its borders with states of Punjab, Haryana and U.P. The farmers in these regions burn stubble that remains after harvesting the Kharif crops during October and November. Approximately 35000 tonnes of stubble was set on fire, according to reports. The blowing winds carry the dust and smoke to the capital region, deteriorating the quality of air.

2) Weather- During winters, the dust and smoke particles remain suspended in the air and are locked up in the air which does not rise higher in the atmosphere leading to smog.

3) Vehicular emission- The increased number of vehicles, majorly run by petrol and diesel contribute to the pollution levels in the city. Inadequate public transport increases dependency on private mode of transportation.

4)Firecrackers- the burning of crackers during Diwali also contributes to air pollution making the problem worse.

5)Construction activities and thermal power plants also contribute to air pollution.

Conclusion

The alarming levels of pollution leads to serious and long-term health problems. Air purifiers can be of some help indoors but it is not a viable solution for a large segment of the city's population. It is important for people to take some initiative in order to bring a change. Reducing use of private vehicles to public transport is an import behavioural intervention to bring about long-term change in the pollution pattern in the city. Resident Welfare Associations (RWAs) should implement campaigns to avoid the burning of leaves, trash at the micro-level. The State Government also needs to look into the emissions generated from burning to Ghazipur and other landfills. Maintenance of roads by government for efficient use of fuel in vehicles needs to be taken up at Public-Private Partnership (PPP) basis. School children should be encouraged to use the school bus or bicycle for transportation needs. Carpooling should also be promoted. The Odd-Even Campaign launched at the height of smog in November'2019 helped to move in this direction. The menace of pollution can be dealt with few steps and initiatives. One must also support the government in the steps and actions they take to solve the problem.

Gurleen Kaur and Kriti Madan
BA Economics (H)

The Broken Pieces

When the soil disappears, the soul disappears
- Ymber Delecto

The above quote aptly summarizes the twin problems of environmental degradation on the one hand and the question of human survival on the other. The present Anthropocene epoch is witnessing rapid environmental degradation, whose causes are partially of an inherent nature and partially caused by human activities. The causes range from deforestation, pollution to faulty agricultural practices, unplanned urban development and so on. One such cause discussed at length in this article is Desertification. Before we get into the impacts of desertification, let us first define the term itself. United Nations defines desertification as," land degradation typically in dry areas resulting from various factors, including climatic variations and human activities". Going by the definition, it is evident that desertification is a characteristic of the arid regions however, it has come to wreak havoc even in the non-arid areas of the world. As per a research by the United Nations Convention to Combat Desertification (UNCCD), about 168 countries of the world are affected by desertification, within the continents the most affected are Africa and Asia respectively.

Within Africa, Tunisia is the worst hit where overgrazing, deforestation and limited natural resources are believed to be the major contributors; apart from Tunisia countries like Libya, Algeria, Morocco and Egypt also suffer from the problem of desertification. With respect to Asia, countries like China, India, Iran, Mongolia etc. are severely affected. Desertification not just hampers the appearance of an area but also makes survival next to impossible. Land areas affected by desertification become sterile and unfit for the growth of crops, such a situation makes it difficult to keep pace with the increasing food grain demand as a result of rapidly growing world population. Agrarian economies bear the brunt of the situation as the farmers lose their livelihood due to scarcity of fertile land coupled with economic crisis as a result of low productivity of food grains. However, with time countries have become more conscious towards the problem of desertification and are committed to combat it.

Action Against Desertification is one such initiative taken by African, Caribbean and Pacific Group of States (ACP) in order to promote sustainable land management, restore drylands and degraded lands in Africa, the Caribbean and the Pacific respectively; The Great Green Wall is another such initiative which was launched in 2007 by the African Union with the aim to restore Africa's degraded landscapes and since its launch a lot of progress has already been made (Ethiopia: 15 million hectares of degraded land restored, Sudan: 2000 hectares of land restored); In India too schemes such as Pradhan Mantri Fasal Bima Yojana (PMFBY), Soil Health Card Scheme etc. are doing their bit to fight desertification. Finally, it can be concluded that cooperation among countries, adherence to international protocols and agreements and sustainable management of resources are the three most important weapons to fight desertification.

Latika Rathore
B.A (Hons) Geography, 3rd Year

Eco-Feminism

In contemporary times, the issue of Environmental degradation is on the rise. There are a number of approaches to view the problem. Ecofeminism is one of this approach. Deriving its meaning from two terms 'Eco' and 'Feminism', Ecofeminism simply provides a way of thinking at environmental problems as well as women's subjugation by encouraging interconnectedness with the environment and politically organizing of women.

As an activist and academic movement, ecofeminism has been emerged out of the manifold social movements: the peace movements, the feminist movements, movements related to the environment during the period of 1970's and 1980's which aims to address and eliminate all forms of domination while recognizing and embracing the interdependence and connection humans have with the earth.

The central idea of ecofeminism is that social and environmental issues are not separate, that the causes for the mistreatment of women, as well as the environment stem from the very same notion of 'DOMINANCE', there is the need to view women's issues and the environment collectively. Ecofeminists view environmental degradation as the consequence of powerlessness and inequality which is sustained by a modern male dominated social structure and also define 'Masculinity' and 'Femininity' as socially constructed categories which helps people to determine that the environment is linked to social processes such as colonialism and development. In an attempt to symbolize women as par with the nature or the Earth itself, Ecofeminists demonstrate important ties that strongly bind women and environment together.

First, in most countries especially in poorer ones, women are more connected to the nature because they are socially entitled with the responsibilities of maintaining household so, they are the ones who go in search of wood and fuel. Secondly, since women are closest to nature due to their entitled responsibilities of providing food, fuel, healthcare; its degradation will directly impact them in terms of health as well as of their infants. These intersections of women's issues with that of nature provides a unique and valuable view through which interdependence between human and nature and so the need of mutual care and support for each other is recognized. These intersections of women's issues with that of nature provides a unique and valuable view through which interdependence between human and nature and so the need of mutual care and support for each other is recognized. Currently, ecofeminism has had only budding effects in the realm of conservation. It is still in the development. However, there have been significant contributions on behalf of ecofeminist thinkers and writers who have paved the way for grassroots activism and helped spread the word about this young discipline.

As climate change continues to affect all corners of the world, it is becoming more and more important that our views of the environment and our relationship to the planet begin to evolve into something more holistic. Ecofeminism provides an additional alternative to ecological thought and social organisation, while promising solidarity among women and those who suffer from oppression, as well as sympathizers.

Jyoti Gupta (B.A Political Science (H)), 3rd Year
With inputs from JahnviKathuria

Une histoire d'eau

L'eau est la vie! S'il n'y avait pas d'eau, il n'y aurait pas de vie! Connaissez-vous toutes les formes de vie de toutes les espèces de flore et de faune qui peuvent vivre grâce à l'eau? L'eau est la force derrière toute l'industrie, l'agriculture, la fabrication et le commerce. Il est de notre responsabilité de conserver ce nectar de vie. Ce n'est possible qu'en changeant notre vision de cette merveilleuse ressource naturelle. Nous devons nous assurer qu'il n'y a pas de pollution des plans d'eau en déversant des déchets tels que les eaux usées, les effluents et autres substances toxiques. Nous devons également veiller à ce qu'il n'y ait pas d'émission de gaz à effet de serre dans l'atmosphère. La population et le gouvernement doivent assurer l'installation des effluents et des usines de traitement des fumées dans les unités industrielles, d'ordures et d'égouts.

Water is life! If there was no water, there was no life! Do you know that all the life forms of flora and fauna survive on Earth, thanks to water? Water is the force behind all industry, agriculture, manufacturing and trade. It is our responsibility to conserve this nectar of life. It is only possible by changing our vision of this wonderful natural resource. We must ensure that there is no pollution of water bodies by dumping waste such as sewage, effluents and other toxic substances. We must also ensure that there is no emission of greenhouse gases into the atmosphere. The population and the government must ensure the installation of effluents and smoke treatment plants in industrial, garbage and sewage units.

Maanya Chaudhary
BA Geography (H), 2nd Year

DITCHING SINGLE- USE PLASTIC

The Prime Minister Narendra Modis pearheaded the campaign against single-u se plastic. You must have observed howg overnment intervention has helped fightt he menace of plastics. To contribute tot his cause, the Green Beans Societyst arted a campaign namely 'DitchingSin gle Use Plastics'. The society aims togen erate awareness about these silentkille rs through social media and otherplatf orms.


8 WAYS TO REDUCE
YOUR SINGLE-USE PLASTICS
There are an estimated 5 TRILLION pieces of plastic in the ocean worldwide, with 8 MILLION metric tons added to the ocean each year*. Wildlife are dying at a rapid pace due to the ingestion of or entanglement in plastics.
1
PLASTIC WATER BOTTLE
REUSABLE BEVERAGE CONTAINER
2
TO-GO COFFEE LIDS
TRAVEL COFFEE MUG
3
PLASTIC AND PRODUCE BAGS
REUSABLE CLOTH BAGS
4
SINGLE-SERVE COFFEE PODS
A POT OF COFFEE
YOU can help reduce waste by removing single-use plastics from your everyday activities.
5
COFFEE PLUGS AND STIR STICKS
TRAVEL COFFEE MUG
6
BALLOONS
ECO-FRIENDLY DECORATIONS
7
STRAWS
STRAW FREE
8
DISPOSABLE LIGHTER
MATCHES

SINGLE-USE PLASTICS: The problem does not end by calling a ban

Plastics are a huge burden on the environment, but single-use plastics pose great danger. To understand the severity of the issue, let us first try to understand what single-use plastics are. Single-use plastic or disposable plastics are used only once before they are thrown away or recycled. These are usually used in straws, cups, and packaging. The products include plastic bags, cups, plates, small bottles, straws and certain types of sachets. The worst form of single-use plastics is the multi-layered packaging used in sachets for packing and storing tobacco products such as gutka. Many other eatables like chocolates, biscuits, chips and liquid food products are packed in them.

Concerns are growing worldwide about plastic pollution, with a particular focus on the oceans, where nearly 50 per cent of single-use plastic products end up, killing marine life and entering the human food chain, studies show. These are used worldwide and amazingly our ability to cope with this plastic is already overwhelmed according to a United Nations report only 9 % of nine billion tonnes of plastic ever produced has been recycled. Not just environmental effects but also the economic damage of plastic is very large. Plastic litter in the Asia Pacific region costs its tourism, fishing, shipping industry. Studies suggest that the total economic damage to the world's marine ecosystem amounts to $13 billion every year. Hence the severity of the problem is enough to justify the ban on single-use plastics in the country.

Prime minister Narendra Modi is leading efforts to scrap single-use plastics by 2022. E-commerce companies like Amazon, Flipkart, Shein etc. will also be asked to cut back on plastic packaging. A ban on single-use plastics would have multi-factorial effects on industry, a study by FICCI had said. Such a ban would increase the price of most FMCG products as manufacturers would try and shift to alternative packaging. Unfortunately, this ban could not be imposed as it seemed disruptive for industries coping with an economic slowdown and loss of jobs.

The government has now focused on behavioural interventions towards biodegradable substitutes. The Prime Minister also stressed that citizens must buy indigenous products and must strive to make the policy of "Make In India" a success. It is our responsibility as well as our duty not just towards the environment but also towards our coming generations to avoid the use of single-use plastics as much as possible. "For a greener and better tomorrow "Say no to plastics today".

Jahnvi Kathuria and Kriti Madan
B.A Economics (H) 1st Year

LETTER FROM A SINGLE USE PLASTIC

Dear Human,

Hope the letter finds you in good health. I am a SINGLE-USE PLASTIC, the love of your life. The one who has been given a prime position in your heart.

The time has come to break this relationship. I want to see you happy.

You always feel that life is not easy without me but what about your mother (earth). We aren't compatible

with each other. It will take you some time to understand my decision but I know you

will understand with time.

I am IMMORTAL and CORRUPTIVE. My presence may ease your life but will degrade your health and your family's (the planet).

We can't continue this alliance, because I do not want to see your destruction.

Boycott me, be a

rational and matured human being. Get out of your comfort zone, other alternatives are waiting for

you. They will be great companions in the long run. Initially, you may feel a bit uncomfortable

with them but at least you are out of this abusive relationship. Think about your mother (EARTH), your GRANDCHILDREN,

your OWN LIFE.

Find a new partner

For YOU

Also, for the EARTH

Rupam Mishra
BA Political Science (Hons) , 2nd Year

Plastic: An Evolving Concept

Low cost, versatility
multi- usage and ease of production
Traits enough to approve plastic manufacturing
That too in profuse proportions

Polythene bags, styrofoam
or be it remoulded polypropylene
Weapons of mass destruction
were now, again, being created

Deep and vast oceans
Paradoxically, choked in plastic
Effect not restricted to this
as fishes' lungs filled with poison
was now another misery being added

Trapped in landfills, blocking drains
And going up in carcinogenic smoke
Microplastics entering the food chain already
Indeed, plastic is reluctant to rot.

Misguided us, need plastic's blanket ban
for we're standing on catastrophe's brink
look for substitutes in eco- friendly form,
save planet Earth from getting shrink.

Manu Arya
B.A Geography Hons, 2nd Year

How do you see plastic?

I know how my mother sees plastic,
As something her
daughter constantly preaches against and
As something the sabziwala uses despite
The one hundred bans on it.
I know Dadaji sometimes forgets to take the jute bag
I have carefully put behind the front door,
When he goes to get the milk,
And he sees plastic as what I avoid by changing our
Milk delivery to glass bottles
(He hates it).
I know how my father sees plastic,
As the secret stash under the sink that
Will always have the right- sized bag
For his shoes, or polish, or toothbrush
When he is travelling;
I know my sister loves to put
Pretty wrapping paper
Around birthday gifts
Because her friends have
And that's how she sees plastic.
And my best friend loves
Her coffee cold,
So her straws have a count
Of about seven every week,
One for every day,
That's how she sees plastic.
See, here's the thing, it doesn't matter,
How you see plastic
As long as you see it
As a harmless necessity,
And not as something choking
The planet, the world,
How would you feel, if I shoved broken
pieces of an old plastic bowl
Down your throat?
That is probably how the earth feels,
So tell me,
How do you see plastic?

Shivanshi Bhadouria
Geography(H) (Third Year)

Poet's Corner

आपो हि ष्ठा मयोभुवस्था न ऊर्जे दधातन ।
महे रणाथ चक्षसे ॥१॥

यो वः शिवतमो रसस्तस्य भाजयतेह नः ।
उशतीरिव मातरः ॥२॥

तस्मा अरं गमाम वो यस्य क्षयाय जिन्वथ ।
आपो जनयथा च नः ॥३॥

O Water, because of your presence, the Atmosphere is so refreshing, and imparts us with vigour and strength.
We revere you who gladdens us by your Pure essence.

Apah Suktam

(Rigveda 10.9)

What I have lost

When I stroll around
Those gleeful moments have turned to be gloomy now
The breeze around touches me after bouncing back from tall buildings
Those days have disappeared when these breezes sustained the fragrance of those elated flowers
I am tired of searching of that peace which healed my inner conscience every time when I was stressed
Those days have vanished when there were no demise due to hunger
Those days have dispersed when no child slept on footpath, no family was homeless.
Even after gaining so much of the technological potential, l lost...
I lost the most sacred gift

When I needed you, you were always there.
When I was hungry, you were there to feed me.
When I was homeless, you provided me with shelter.
When I was unconcealed, you provided me with clothes.
When I was stressed, you healed me with your grace.
Yet I became narcissistic, you were always philanthropic.
When you needed my small effort, I became oblivious.
I realize I have been responsible for your destruction.
It is all because of my greed.

-Urvashi
BA Economics (H), (2nd Year)

Earnestly Yours

Sometimes pastures are green while sometimes barren
So skeptic the mountain trends
Undeterred those, will surely meet success.
When god created the world, he created for a purpose
Nurtured stars , cradled flowers
Unfurled the seven coloured ribbons
All this and more countless creations
Just for his most beloved humans
Have we celebrated his gifts
Or hadn't we been outrageously greedy
The Mother Earth's womb is going barren ,
The flower can't breathe, the seasons do not show
The water cycle disrupts , the ozone dented
This is what we have done.
When he created world ,
The lord said , child-
Bestow I all this on you
For this world unique is
- earnestly yours.
Let us pledge, let us unite
To fight the wrong
Let us ignite this spirit
Spit the anger, love humanity
Growth, prosperity divinity be ours
No tears, no gloom
Let the world be ours
A lovely flower to bloom.

Naina Jain
BA Geography (Hons), 1st Year

कुछ पल प्रकृति के संग

चलो कुछ पुराने दोस्तों के
दरवाजे खटखटाते हैं,
देखते हैं उनके पंख थक चुके है,
या अभी भी फड़फड़ाते हैं।

वे बेतकलुत्फ़ होकर
बेरहमी से पेड़ों को काटते हैं,
या अभी भी उनकी छाया में बैठकर,
उनसे बातें किया करते है।

वे अनजान बनकर,
प्लास्टिक का प्रयोग करते है,
या स्वयं के अलावा,
पर्यावरण के बारे में भी सोचते है।

सिर्फ दूर खड़े होकर देखते है,
किसी को जल दूषित करते हुए,
या बोल उठते है, दिल की बात
प्रदूषण को रोकते हुए।

चलो कुछ पुराने दोस्तों के
दरवाजे खटखटाते हैं,
स्वयं को ही नुकसान पहुचाने वालो को,
जागरूक करते हैं।

सौम्या गुलाटी
बी.एस.सी गणित

WORD SEARCH

HERE IS A WORD SEARCH FOR YOU TO CHECK HOW WELL YOU KNOWYOUR ENVIRONMENT

S	S	R	D	U	C	T	O	H	G	I	M	N	O	F	U
U	L	G	O	C	V	S	P	N	I	T	R	O	G	E	N
S	J	B	C	O	G	P	Y	H	Y	I	O	P	E	C	B
T	I	V	K	N	H	A	D	A	P	T	A	T	I	O	N
A	O	S	P	S	I	Q	K	B	U	Z	W	L	G	L	O
I	N	S	O	E	A	D	E	I	Y	B	Q	Y	S	O	N
N	T	H	G	R	E	E	N	T	A	I	L	I	N	G	I
A	L	I	D	V	U	F	X	A	P	S	O	T	L	Y	G
B	U	O	N	A	V	W	E	T	L	A	N	D	D	P	I
I	S	L	S	T	J	O	X	H	P	E	R	E	S	L	U
L	G	D	O	I	I	D	O	S	K	U	Y	I	O	B	T
I	L	B	I	O	S	P	H	E	R	E	O	L	W	A	L
T	R	A	I	N	F	O	R	E	S	T	S	I	G	H	O
Y	S	T	B	T	R	E	F	O	R	H	I	G	H	L	Y

ANNUAL REPORT

2019-20

During the session of 2018-19, many events were organised by the Green Beans Society. With the same momentum and zeal, we moved on to the year 2019-20. A good number of applications were received from environmental enthusiasts to work for the society. Of the 93 applicants, 60 students were finally admitted to the society. On 20th August 2019, an Orientation Programme was conducted for the new members of the society. The teacher conveners as well as the student core team members acquainted the students with the activities conducted last year as well as the activities planned for the year ahead.

This year, a novel idea of Group Discussion series on a host of environmental issues. The first group discussion was conducted on 28th August, 2019 on Pacific Plastic Belt. The Great Pacific garbage patch is actually "two enormous masses of ever-flowing garbage". It is also described as the Pacific trash vortex and is a gyre of marine debris particles in the north central Pacific Ocean. The collection of plastic and floating trash originates from the Pacific Rim, including countries in Asia, North America, and South America. The issue was first explained by the co-convener Taveri Rajkhowa. Later, the topic was left open for discussion. The main issues discussed were a) How did it become a problem? b)How can it be solved? and c) Consequences on the environment and human life.

On 8th September, members participated in the UN dialogue with Deputy Secretary General Amina J. Mohammed on Sustainable Development Agenda and the need for Climate Action. The event began with Anshul Tewari, the founder of Youth Ki Awaaz speaking on the need to take multiple steps and to create a path not just for ourselves, but for our communities. Only if we follow the maxim of "Think Globally, Act Locally", a change can be brought across the World. Deputy Secretary General took this opportunity to interact with the youth of Delhi on approaches to minimize the impact of climate change. She saw political will when it came to the UNSDGs. The Sustainable Development Agenda for 2030 is not legally binding. The onus is on the governments around the globe to make commitments in the areas like climate action, sanitation and hygiene etc. She further spoke on the need of inspiring a new age of leaders and change makers. India, with its youthful population, would be a leader for this long-drawn war for humanity.

In the series of group discussions, the second discussion was held on 18 September'2019. In light of the issue of increasing water pollution, the agenda focused on Unconventional Water Treatment methods. The participants shared their experiences of water and traditional treatment methods utilized in their villages and rural areas they visited. The following questions were deliberated on: a) sources of water pollution b) How water, which is the basic requirement, is being commodified in modern times? C) How water pollution affects the environment and the earth as a whole? The brainstorming session observed ideas and small steps to ensure that water is not polluted at home in particular and in our surroundings in general. Members agreed how going back to our roots is the ultimate way to be in symphony with nature.

The Creative Team updated its board on the theme ‘Amazon Wild Fires’. This was set in the background of disastrous fires which burnt the ‘Lungs of the World’ in the month of August. Amidst the international attention the issue got, the board brought to the fore the background to the fires, the implication for the ecosystem and the world and the steps to mitigate such disasters in the future, at the national as well as international level.

In the month of September, this session’s core project involving Water Footprint Calculation using random sampling technique was undertaken. The society members were divided into 8 teams, each headed by a group leader. The questions were simple and dealt with one's day to day activities, without involving difficult calculations. A sample of 800 students was taken, a reasonable representation of the population. An average water footprint of students of our college. The society built behavioral interventions and awareness programmes at the college level, which would be completely data driven using the data mined from the surveys. Enthusiastic participation of the students ensured that the process of data collection was completed within a month. After this, the unique water footprint was calculated using the calculated developed by the researchers at UNESCO-IHE.

Moving out of our comfort zone, our Society members participated in the Global Climate Strike on 20th September’2019. Fridays for Future Delhi had organised this strike-cum-march from Lodhi Garden Gate no. 1 to the Ministry of Environment. The students protested against the indifference of the governments around the world on the issue of climate change.

Prime Minister Narendra Modi is spearheading the campaign against single-use plastic. You must have observed how government intervention has helped fight the menace of plastics. To contribute to this cause, the Green Beans Society started a social media campaign in October on 'Ditching Single Use Plastics'. The society generated awareness about these silent killers through social media and other platforms. Poetry, meme and articles were composed by society members to express their views on the topic.

Another group discussion was organised on 23rd October in collaboration with the Sustainable Development Goals (SDG) Council of Global Youth KNC Chapter. The discussion concentrated on the Goal 7 of the Sustainable Development Goals-"to ensure access to affordable and clean energy for all". A brief presentation on the theme was followed by an interactive session. Deliberations on the role of government and administration, the common masses in handling this sensitive issue were conducted. The discussion also highlighted the technological and infrastructural impediments in accessing clean energy by the developing world. The diplomacy, politics and economics behind clean energy was discussed thoroughly.

On 1st November, 2019, the college's composting plant was inaugurated and a short training programme was conducted. The resource person was Sh. TRN Rao, who has been associated with Swarn Vasudha, an organisation working on making composting at home feasible for more than five years now. Sh. TRN Rao is a civil engineer by training and a passionate environmentalist. During the workshop, he demonstrated the process of composting using the biodegradable waste from the college canteen.

An awareness workshop on River Yamuna was organised by the Department of Environment, Government of Delhi NCT on 6 November 2019 at the Delhi Secretariat. Two members of the society, Manali Shandilya and Disha Dubey, both from 1st year participated in the workshop along with Ms. Akanksha. The aim of the workshop was to bring awareness amongst the students of schools and colleges regarding the heavily polluted River Yamuna.D.R. Sanjeev Agrawal began the workshop by putting forward the facts about the River Yamuna as well as basic terms related to watershed development and wetlands. Following him Ms. Jyoti from the Force Organization delivered her lecture upon the cultural and economic significance of the River and on its rejuvenation. Mr. Vishal Gandhi, scientist at the Central Pollution Control Board discussed the unknow facts about the river. He also brought in our knowledge the ongoing government policies to rejuvenate the River. Ms. Nigam Agrawal informed the gathering about the environmental concerns of immersion of idols in rivers. She concluded with the guidelines provided by the Honorable National Green Tribunal upon the idol immersion. The workshop concluded with an open panel discussion.


GREEN BEA NS SOCIETY
THE BURNING
WI LD
AMAZON
FIRES


10 YEARS LEFT
HIGH ON
HIGH ON
ENACTUS CLIMATE CHANGE


NOT OLD ENOUGH TO WATCH PORN
BUT OLD ENOUGH TO WATCH
OUR PLANET GET FUCKED


CLIMATE ACTION NOW
GO FOSSIL FREE


JUSTICE FOR EARTH
We Are The First Generation To Feel


HIGH ON
GO FOSSIL FREE


KAMALA NEHRU COLLEGE
GREEN BEANS SOCIETY
Presents
Canteen Waste Management
System / Compost Plant


BIODEGRADABLE
WASTE
PLEASE DUMP ONLY THESE ITEMS IN
GREEN BEANS SOCIETY

Water Footprint of students at Kamala Nehru College

What is water footprint?

Most activities that humans undertake daily and the commodities that they use consumes water. The concept of water footprint defines the virtual water content of a commodity as the volume of water that is actually used to produce the commodity, measured at a place where the commodity is actually produced (Allen, 1993, 1994). The inverse of the virtual water content is known as the water productivity of a crop.

On the same lines, as the concept of virtual water content, the concept of the water footprint is a consumption-centric indicator of water use (Hoekstra & Hung, 2004; Hoekstra & Chapagain, 2007). The water footprint is a measure of humanity's appropriation of fresh water in volumes of water consumed and/or polluted. It is an approximation of the amount of water used to produce each of the goods and services that we consume (Table 1). Conceptualized by Arjen Hoekstra, it belongs to a family of environmental footprints that makes one aware of how the production and consumption choices create pressure on already depleted and polluted water resources. It can be measured for an individual, a single process (such as paddy cultivation), for a product (such as a pair of jeans, for the fuel we put in our car), for an entire multi-national company or a particular country, or globally – in a specific river basin or from an aquifer. In our report, the focus lies on calculating the personal water footprint of a sample of students from Kamala Nehru College, University of Delhi.

Table 1: Global Average Virtual Water Content of select products, per unit of product.*

SNo.	Products	Virtual Water Content (in litre per year)
1.	1 pair of jeans	10,500
2.	1 pair of shoes (bovine leather)	8000
3.	1 cotton T-shirt (250 g)	2000
4.	1 glass of milk (200 ml)	200
5.	1 bag of potato crisps (200 g)	185
6.	1 cup of coffee (125 ml)	140
7.	1 cup of tea (250 ml)	35

* Source: A. Y. Hoekstra · A. K. Chapagain, 2005, Water footprints of nations: Water use by people as a function of their consumption pattern, Water Resource Manage (2007) 21:35–48

The pressure on water resources is rising due to increasing population while the quality is falling due to water pollution. Nearly 600 million Indians face high to extreme water stress and about 2,00,000 people die every year due to inadequate access to safe water. Deteriorating water quality is stalling economic growth, worsening health conditions, reducing food production, and

exacerbating poverty in many countries. The World Bank estimates that if this situation continues, there will be a loss of 6% of India's GDP by 2050. This dire situation calls for mapping consumption of water resources and taming them to channelize growth without significantly affecting their quality. In our efforts, towards conservation and sustainable use of water, we have calculated the water footprints of individuals, primarily students of the College who are from diverse backgrounds both spatial and socio- economic. This step is towards raising environment awareness and concern and contributing in the achievement of the sustainable development goals.

Sampling Methodoogy

The data collection for calculating the water footprint was carried through **simple random sampling technique**. It involves picking a desired sample size and selecting observations from the population in such a way that each observation has an equal chance of being selected until the desired sample size is achieved.

Determining the Sample Size: A good maximum sample size is usually 10% of the population, as long as it does not exceed 1000. In our case, the total number of students in College (N) = Undergraduate + Post graduate students = 2551+239 = 2790 (Based on Annual Quality Assurance Report (AQAR, 2019)

Number of students sampled (n)= 800

Sample size: (n/ N) * 100%

= (800 / 2790) * 100%

= 28.67 %

Hence, the sample size is a good representation of the population.

Each member of the survey team had to survey 14 students of the college. Every participant had to answer a few questions about their lifestyle and water consumption pattern followed. All the participants for the survey were females from an age group of 18-20 years presently residing in Delhi and nearby areas. The questionnaire used (footprint calculator) for the survey was developed by the researchers at United Nations Educational, Scientific and Cultural Organization and IHE Delft Institute for Water Education (UNESCO-IHE). The link to the water footprint calculator used for the survey is given below:https://waterfootprint.org/en/resources/interactive-tools/personal-water-footprint-calculator/personal-calculator-extended/. The survey was conducted from September to December 2019. The students were first oriented about the water footprint calculation process. After the data was collected for 800 samples. Using the data for personal water footprint, domestic water consumption and food consumption, behavioral interventions and programmes were built at the college level to create awareness of how water could be judiciously used and domestic water footprint could be lowered.

Results and Analysis

The water footprint was calculated for 800 students of the college. The water footprint calculated has been presented as a frequency distribution as follows:

Table2: Distribution of Water Footprint amongst the students (sample size, 800)

Class Interval (Unit : m3 /year)	**Frequency** (Number of people with the water footprint corresponding to the respective intervals)	**Relative Frequency (%)**
400-899	187	23.37
900-1399	249	31.12
1400-1899	167	20.88
1900-2399	86	10.75
2400-2899	43	5.38
2900-3399	35	4.38
3400-3899	30	3.75
3900-4399	3	0.375
Total	**800**	100

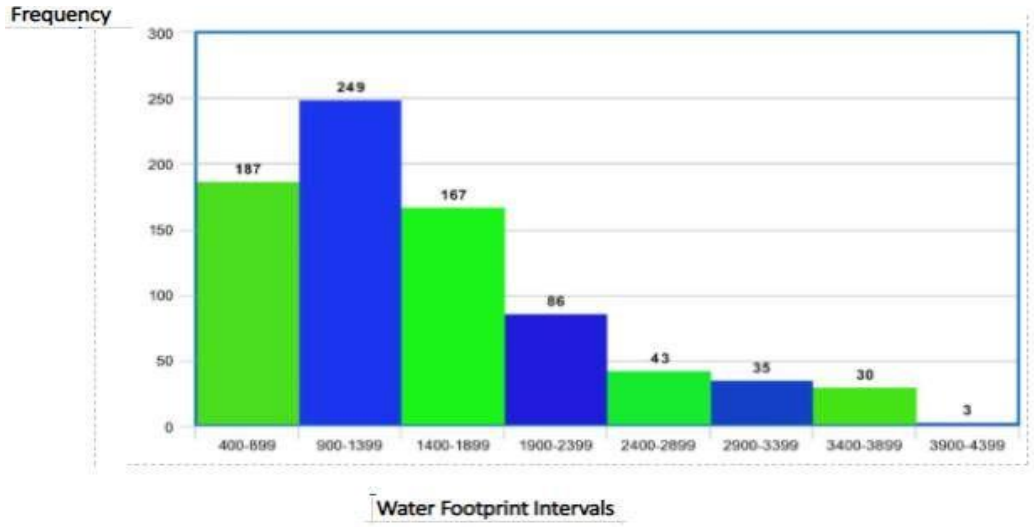


Figure 1: Distribution of Water Footprint of Students Sample in Kamala Nehru College.

The average personal water footprint was calculated to be **1518.54 m^3/year.** A large group of students (485), which corresponds to 60.625 % of the sample size, have a water footprint less than the average. Alternatively, 39.375 % of the sample have a water footprint more than **1518.54 m^3/year.** Hence, the distribution is positively skewed. The median water footprint is 1298 m^3/year. Maximum water footprint is 3907m^3/year, while the minimum water footprint calculated was **412 m^3/year.**The mean as well as the median class interval is **900-1400 m^3**/year

Range of the distribution = Maximum value – Minimum Value = 3907- 412 = **3895 m^3/year**

Per capita water footprint of India was **980 m^3 /year in 1996-2005.** The water footprint of the sample of college is in line with the nationally determined footprint.

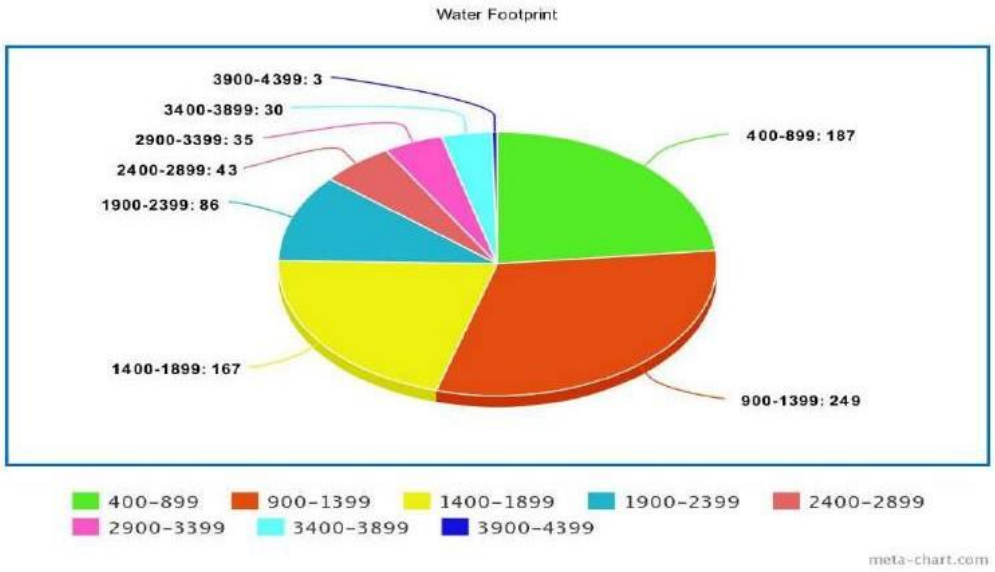


Figure 2: Water footprint distribution in Kamala Nehru College

The global average per capita water footprint related to consumption was **1385 m^3 /year** over the period 1996-2005. Consumption of agricultural products contributed to 92 % of the total water footprint, followed by industrial goods (4.7 %) and domestic water use (3.8 %).

The per capita water footprint of India was **980 m^3 /year**, while for the US, it was **2486 m^3 /year**. For China, the average water footprint was **782 m^3 /year.**

The water footprint of an individual is a function of food consumption, domestic water consumption and that of industrial goods.

We explain the different components here:

- **Water Footprint accruing to the food consumption** is calculated using the data of consumption of cereals, dairy products, meat products, eggs, potatoes, fruits and vegetables, fat and sugar content. In addition, cups of coffee and tea consumed per week were also used in calculating the water footprint.
- **Water Footprint accruing to Domestic water consumption** is calculated using the average time taken while using shower, number of times teeth are brushed and hands are washed along with dishes are washed.
- **Water Footprint accruing to Industrial Goods consumption** is measured through the percentage of family income consumed in a year.

Water Footprint accruing to food consumption

Food component largely determines the personal water footprint. Domestic water consumption is the second most important factor followed by the consumption of industrial goods. **In our sampling, a direct relationship was found between the water footprint and the consumption of cereals, meat and dairy products.** The respondents whose water footprint was greater than the mean value had higher consumption of cereals and meat products. On the other hand, students with water footprint lesser than the mean value had lower than the mean cereal consumption and negligible meat consumption.

Crops with a high yield or large fraction of crop biomass that is harvested generally have a smaller water footprint than crops with a low yield or small fraction of crop biomass harvested. The ascending order of water footprint of the following crops are:

sugar crops< vegetables< roots and tubers< fruits< cereals< pulses< spices < nuts. The average water footprint for cereal crops is 1644 m^3 /ton, thus a high cereal consumption leads to a higher water footprint.

The **water footprint of meat** from sheep is 10400 m^3 /ton, while that of goat is 5500 m^3 /ton and **chicken is 4300 m^3 /ton. The global average water footprint of chicken egg is 3300 m^3 /ton, while the water footprint of cow milk amounts to 1000 m^3 /ton.** Hence, consumption of animal and dairy products also leads to a higher water footprint. We explain higher values of water footprint using the food consumption.

Case 1: Food component in the case of Water Footprint lesser than the mean

Total water footprint: 665 m^3/ year

Water footprint accruing to food consumption: 392 m^3/ year

The total water footprint was 665 m^3/ year, less than the mean water footprint. The food component consumption of water is 392 m^3/ year. The cereal component was 130 m^3/ year, and meat and the dairy component were both 0 m^3/ year.

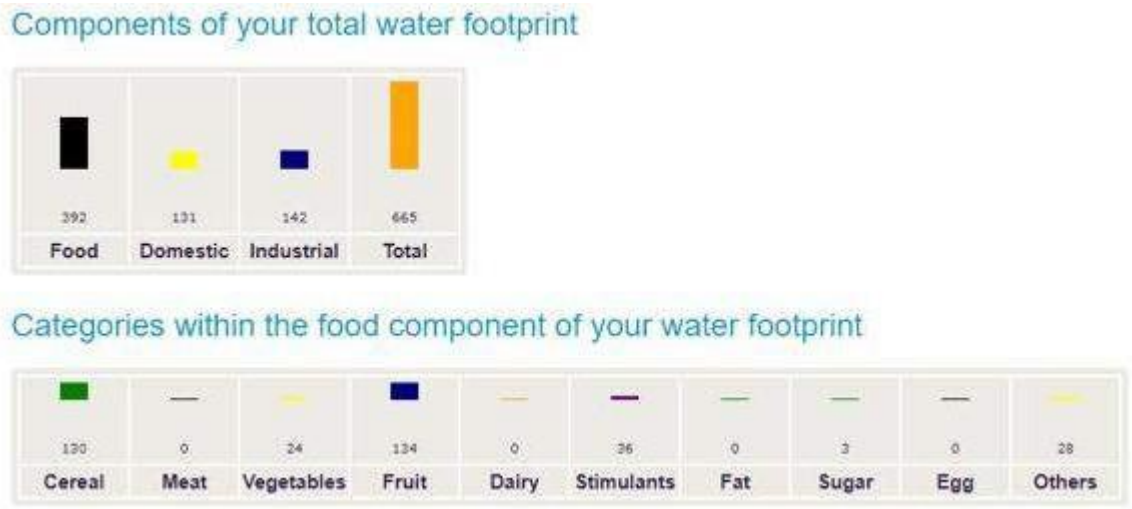


Figure 4: Breakup of water footprint for a sample with footprint smaller than the average.

Lower consumption of dairy, egg and meat products led to a lower than mean water footprint in Vasundhara's case.

Case 2: Food component in the case of Water Footprint higher than the mean

Total water footprint: 1580 m^3/year.

Water footprint accruing to food consumption: 1297m^3/year.

The total water footprint was 1580 m^3/year, greater than the mean water footprint. The food component was 1297 m^3/year. The cereal component was low at 260 m^3, but the total food component was raised because of meat consumption (476 m^3) and dairy consumption (214 m^3).

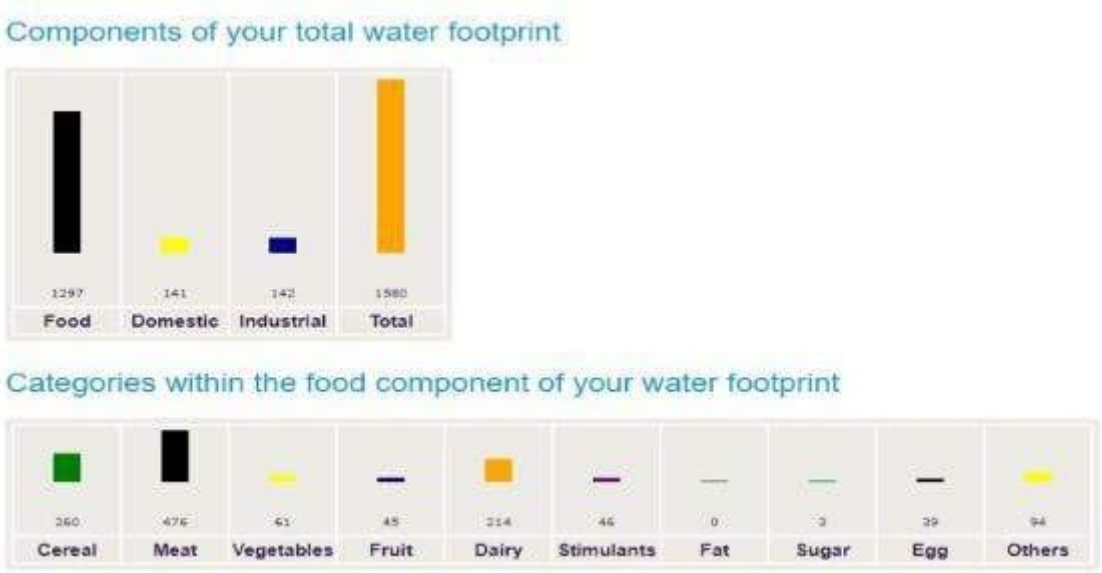


Figure 4: Breakup of water footprint for a sample with footprint larger than mean

Water footprint accruing to domestic water consumption

Shower usage contributes to a higher water footprint accruing to domestic water consumption. In India, a bucket bath is traditionally used more often as compared to a shower or a bathtub, which has a smaller water footprint than latter. Talking of showerheads, the low-flow showerheads have a smaller water footprint as compared to standard showerheads. Conventional showerheads flow at 5 gallons per minute whereas low-flow showerheads typically flow at 2.5 gallons per minute. Those who reported using low-flow showerheads had a smaller water footprint than others.

A bath (using a bathtub) uses 35 to 50 gallons of water, whereas a 10-minute shower with a low-flow showerhead only uses 25 gallons. Those who reported a higher number of baths per week in the questionnaire had a higher water footprint.

Consider the example of Case 1

Total water footprint: 1045 m^3/year.

Water footprint accruing to domestic water consumption: 237m^3/year.

The domestic water component was 237m^3 due to more frequent shower consumption.

Figure 5: Water footprint accruing to domestic water consumption.

Sources of Error

The report is based on the data collected from students about their water consumption practices. The compiled data may contain some errors due to the following probable errors:

1. The respondents may interpret the meaning of questionnaire items differently due to differences in experiences, knowledge and attitudes. As a result, non-sampling errors may creep in, which cannot be removed by changing the sample size.
2. The respondents, due to lack of knowledge about consumption on day-to-day basis might give incorrect answers to the questions. They might understate or overstate the value response to a particular question unintentionally, thus deviating from the error- free survey research process.
3. The respondent may answer questions differently in the presence of an interviewer or by themselves. For instance, it is suspected that the answer to the question "Whether you leave the tap running while brushing teeth or washing hands?" may be answered differently. These highlight the non-sampling errors occurring as a result of non-sampling errors.

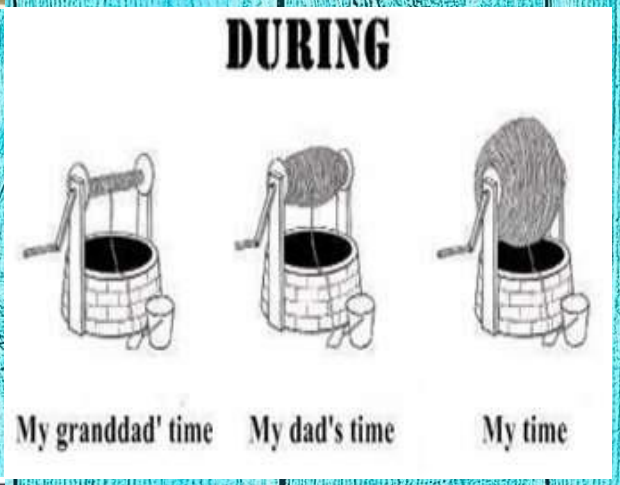
References

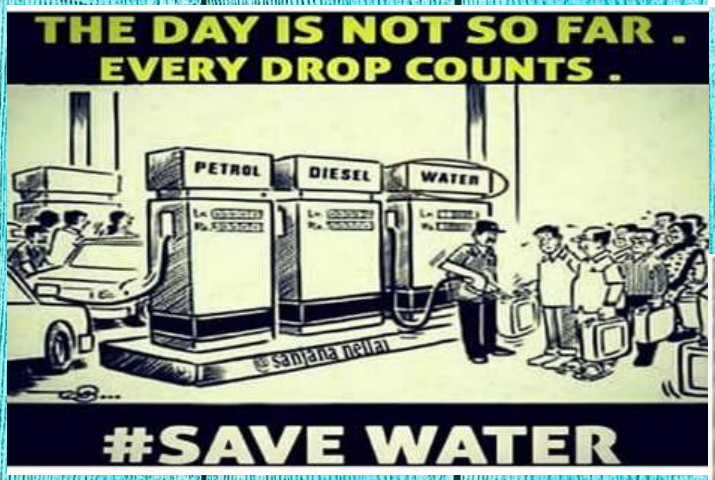
1. **D.A Kampman (2007), 'The Water Footprint of India'**
2. **A. Y. Hoekstra, M.M Mekonnen (2011), 'National Water Footprint Accounts'**
3. **Water Footprint, Centre for Science and Environment**
4. **A. Y. Hoekstra, M.M Mekonnen (2010), 'The Green, Blue and Grey Water Footprint of Farm Animals and Farm Products'**
5. **A. Y. Hoekstra, A. K. Chapagain (2005), 'Water footprints of nations: Water use by people as a function of their consumption pattern'**

For the master data set: Water Footprint of students of Kamala Nehru College

https://onedrive.live.com/edit.aspx?resid=EC5E742A2C430CCA!1471&cid=07a2aeaf-d50d-41a1-9790-e6901f523084&ithint=file%2cxlsx&wdOrigin=OFFICECOM-WEB.START.MRU

Meme Corner





Sukriti Singh
BSc. (H)
Mathematics

Some Green ideas

We asked the members of the Green Beans Society a simple question, “What is an innovative eco-friendly idea that you wish to implement?” Here are some unique answers. The answers explain how each individual has a unique interpretation about environment.

“The society can engage in making a prototype of the phytoremediation plant to clean up soil, air, and water contaminated with hazardous contaminants. This is very much needed in the most polluted city of the world, which is sieged in November by smog terror...”

-Maanya Chaudhary,BA Geography (H) 2nd Year

“I am good at drawing and can create awareness about grave environmental concerns through paintings and comic scripts. All of us know the fact but very few are motivated to act to improve the situation. A thought-provoking sketch can bring in the necessary motivation.”

-Saumya Mudgal and Gargi Jain ,BA Geography (H) 2nd Year

“Restaurants, hotels, food courts, eating arenas and malls should use eco-friendly straw, knives and spoons. They should be made of wooden or other recyclable items.”

-Vidushi Garg, B.A.Sociology(H), 2nd Year

“Plastic can be used over bricks to make small infrastructures. Making bricks using topsoil which is the most fertile part leads to soil degradation. We should switch over them.”

-Rosileena Sarania, B. A. Geography (honours), 3rd Year

“*We can organise symposiums and presentations for innovative and driven members. Creation of new knowledge is as important as implementation of old ideas”*

-Latika Rathore, B. A. Geography (H) 3rd Year

“If possible, we can develop an app named Eco Saver. It would provide advice on best ways to conserve energy at home. It would also tell about the worst polluted pockets in a city. Awareness would help plan steps to improve the condition.”

-Sanchita Biswas, BA Geography (H) 2nd Year

“There are constraints on natural resources. We can practice vertical gardening in the college campus to further improve the greenery and the scenic beauty of the area”

-Aditi Arun, B.A Philosophy (H), 1st Year

“DIY Art using plastic bottles and waste material is something that needs to be encouraged. We can have such workshops in the ECA break to teach this to more and more members”

-Sukriti Taneja , BSc. Mathematics (H), 1st Year

“We should have competitions such as Social Media Bee to award those who create maximum buzz about the environment related issues on social media.”

-Neha Pathak , BA Geography (H), 1st Year

The Photographer's Solace

Devanshi (Mathematics Honours)
Ritika Bisht (History Honours)