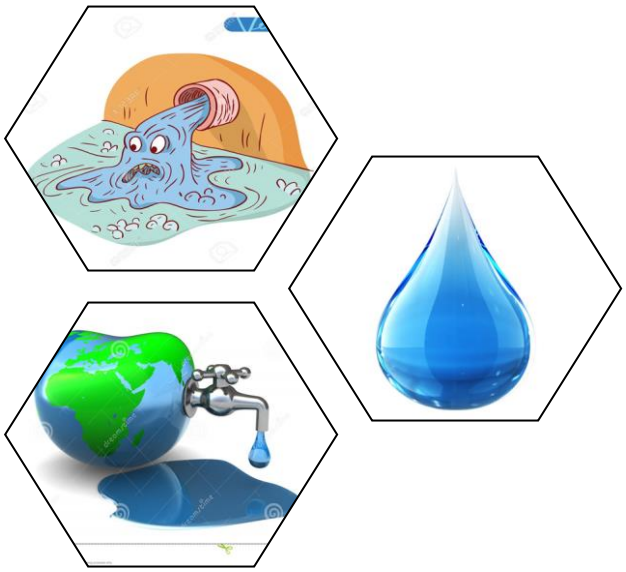
E-MAGZINE

MILIEU

Water and its many Facets



PRESENTED BY

THE DEPARTMENT OF GEOGRAPHY

SHYAMA PRASAD MUKHERJI COLLEGE FOR WOMEN

DELHI UNIVERSITY

2018-2019

From Principal's desk

The new edition of MILIEU the e-magazine of Department of Geography of SPM College is ready to be released.

The theme 'Water and its many facets' is very significant and relevant in today's situation. At this moment the whole world is discussing various issues related to water. I appreciate this effort of the department to take up such a topic which is crucial for the existence of mankind.

Publishing a magazine also provides an opportunity to the students to exhibit their talent. I congratulate the Department, editors and writers of this issue of the e- magazine.

All the best for future release of publications.

Dr. Sadhna Sharma
Principal (Officiating)

Message from Faculty Advisor

It gives me great pleasure to bring out the 2nd edition of Department of Geography E- Magazine, **"MILIEU".** After great pondering we decided to focus this issue on one of the basic requirements of life and a resource which is under great stress, Water. Hence, the theme of our magazine is **WATER & ITS MANY FACETS**.

Water is a finite and an irreplaceable resource fundamental to human well-being. It is renewable only if it is managed properly. It is critical for socio- economic development, healthy ecosystems and survival. It is at the core of sustainable development agenda. However, globally millions of population and various ecosystems are facing issues related to both the quantity and quality of water. So, we thought we would encourage students and teachers to write about what they feel about this very relevant topic in today's time. Our articles focus on some of the important issues making news today. We have highlighted on the stress that water resources are facing through various articles and creative pieces. Some good practices which can be emulated have also been incorporated. We call upon everyone to please engage themselves in this narrative and try to do their bit in creating awareness and bring about the much needed change.

I would like to express my gratitude to our Officiating Principal Dr. Sadhna Sharma for her support and encouragement. I would also like to thank our Teacher- in- charge Dr. Rachna Dua for her continuous guidance.

I also thank the editorial team and students for their contribution in making this magazine.

I hope you enjoy reading the magazine.

Ms. Anuradha Shankar

Message from the editorial desk

Dear Readers,

We are pleased to publish the second issue of the annual magazine of Department of Geography. This magazine was started with an aim to share knowledge with its readers as well as provide platform for everyone to express their ideas and showcase their creativity. I would like to thank all the members of the editorial team who had worked day in, day out for the success of this magazine. Next, I would like to express my sincere gratitude towards all authors who had submitted their write-ups. All the contributions are highly appreciated. I hope all the readers would like reading it as much as we enjoyed working on it.

Any suggestions or criticism would be welcomed.

Cheena Juneja
Student Editor

'To me, the greatest pleasure of writing is not what it's about, but the inner music the words make.' -Truman Capote

Writing is one the most valuable literary expression.

The inculcation of passion for creative thinking and writing amongst the students is one of the major objectives set by the Department of our college. This has been a step towards it and it has served as a great platform for students and other young minds to showcase their talent. The works included in this edition are extremely simple but will surely provide an opportunity to peep into the issue. It has been a lovely experience to see these enthusiastic writers put forth their views.

The publication of the magazine included a lot of planning compounded with team work. I am thankful to all the blooming writers who have responded to my call and penned their ideas and creative work for the magazine. I also acknowledge constant hard work of my co-editors. I would also like to extend my sincere thanks to Ms. Anuradha Shankar for her constant support and guidance through the entire process of planning and publication of the magazine. Finally, from the entire team of magazine, I wish all the readers a happy reading!

Pavi Beniwal
Student Editor

The editorial board is glad to release the current issue of the online magazine 2019.The contribution and dedication of faculty members, students and other writers has continuously helped the magazine in stepwise manner for achieving new mile stone.

The magazine provides a perfect platform to highlight the literary and artistic segments on the issue. The purpose of this college magazine is to unlock the hidden potential within the students and motivate the students.

I want to extend my sincere thanks to my editorial team for their support.
I am pleased to say that the creative writers have put in their best efforts to highlight the issue and we are very happy with their work. I would like to thank students and faculty for their kind & continued support in the progress of this magazine.

Enjoy reading!!!

Maithili Pathak
Student Editor

सम्पादकीय

"छिपी हुई हैं अनंतनिधियाँ, इन कर्ण धारों के हाथों में
विभागीय पत्रिका ही आधार बनी, अपनी अभिव्यक्ति दिखलाने में।"
किसी कॉलेज की विभागीय पत्रिकाका प्रकाशित होना अत्यंत ही हर्ष का विषय हैं।पत्रिकामात्र कुछ पृष्ठों का प्रकाशन नहीं हैं वरन्विभाग का दर्पण हैं जो विभागीय परिवार को शिक्षा के क्षेत्र में और अधिक सकारात्मक परिणाम देने के लिए प्रोत्साहन देने का महत्वपूर्ण कार्य करती हैं।भूगोल विभागीय पत्रिका 'MILIEU 'की हमेशा से यह कोशिश रही हैं कि विद्यार्थी अपने लेखन की सामर्थ्य- शक्ति को जान सकें।

मैं धन्यवाद करना चाहूँगी हमारी मुख्य -संपादिका सुश्री अनुराधाशंकर जी का, सभी शिक्षकों का,प्रमुखसंपादकीयमंडल का, तीसरे वर्ष (बी.ए.प्रोग्राम) की छात्रा प्रिया का तथा उन सभी विद्यार्थियों का जिन्होंने इस कार्य को पूर्ण करने में अपना सहयोग दिया।

अंतमें, मैं पूरी पत्रिका की टीम कीओर से आप सभी पाठकों का अभिनंदन करती हूँ।

Anjali
Student Editor

What's inside??

From the Faculty

Miles to Go

It is a great opportunity for me to write to the budding Geographers in the context of a most important universal asset i.e. Water. There can be no subject more important for human kind then water. A well-managed society is one that knows to treat its water with care and respect, but this precious resource is fast facing a crisis. Rivers and other water bodies are being overexploited. There is hardly any river that has escaped from pollution.

Geographically, India is one of the well-endowed countries in the world in terms of average annual rainfall. It doesn't matter how much it rains here, if you do not distribute and capture it, you can still have water problems. It is more so important, as our food productivity depends on amount of water available to the farmer. The old wisdom of "Catch water where it falls" stands true today. Rainwater harvesting is in the political and policy framework of the country making it mandatory to make it as an integral part of the new buildings. All this is good but not enough.

Emerging Water crisis requires a people's movement. President K.R Narayanan once said "India today needs a people's movement to meet its water requirements and to protect its water resources." It means that the civil society has to play a critical role in encouraging equity and sustainability in the use of water. More consumption of water means generation of large volumes of waste water which pollutes surface water sources as well as groundwater. We must reinvent and rework existing techniques for treating sewage in our cities. Untreated sewage is filling the drains and water bodies thereby contaminating drinking water. Alternate system of treating waste water should be the priority. At present system of Sewers is very costly.

Progress is impossible without change. And those who cannot change their minds cannot change anything. My message to the youth today is to bring forth new ideas that can change our future and to become part of the mission for new knowledge and new practices.

In the end I would like to say that to meet the water needs we have to make it every ones business. It has to be made into a National Movement.

Rachna Dua
Associate Professor, Shyama Prasad Mukherji College for Women, University of Delhi

Water and Sanitation in India

Abstract

Water and sanitation in India continues to be inadequate, despite longstanding efforts by various levels of government and communities at improving coverage. Clean water is critical to survival and its absence can impact the health, food security and livelihood of families across the world. Although our planet has sufficient fresh water to achieve a regular and clean water supply for all, bad economics and poor infrastructure can skew supply unfavorably. The sustainable development goals have committed the international community to expand international cooperation and capacity building on water and sanitation related activities and programs and also to support local communities in improving water and sanitation management. SDG goal 6 deals with the access to safe drinking water and adequate sanitation and hygiene to all. In India a number of innovative approaches have been tested to improve water supply and sanitation. These includes demand driven approaches in rural water supply since 1999, community led total sanitation, a public private partnership to improve the continuity of urban water supply and to use of micro credits for water supply and sanitation in order to improve access to water and sanitation.

Key words: water, sanitation, sustainable development, international cooperation, capacity building.

Introduction

"Every year , over 800,000 peoples including more than 340,000 children under five die from diseases caused by unsafe water , inadequate sanitation or poor hygiene" **(Antonio Gutierrez , Secretary General UN 2017).** According to WHO report, 3 in 10 people worldwide or 2.1 billion people, lack access to safe, readily available water at home and 6 in 10 or 4.5 billion, lack safely managed sanitation. One in three people don't have a toilet and 892 million people are forced to defecate in open. Clean water and good sanitation prevents water borne diseases like diarrheas, cholera etc.

In India the overall proportion of Indian households with access to improved water sources increased from 68% in 1992-93 to 89.9% in 2015-16. However in 2015, 63.3% of rural households and 19.7 % of urban households were not using improved sanitation facilities. According to World Bank, more than 520 million in India were defecating in the open (highest number in the world). To reduce these numbers the Indian government introduced several flagship programmes including the Swachh Bharat Abhiyan to clean India, the national rural drinking water programme, the Namami Gange and also implemented the sustainable development goals to achieve the accessibility of safe drinking water and sanitation.

Sustainable development Goal 6

Clean, accessible water for all is an essential part of the world we want to live in and there is sufficient fresh water on the planet to achieve this. However, due to bad economics or poor infrastructure, millions of people including children die every year from diseases associated with inadequate water supply, sanitation and hygiene. Water scarcity, poor water quality and inadequate sanitation negatively impact food security, livelihood choices and educational opportunities for poor families across the world. At the current time, more than 2 billion people are living with the risk of reduced access to freshwater resources and by 2050, at least one in four people is likely to live in a country affected by chronic or recurring shortages of fresh water. Drought in specific afflicts some of the world's poorest countries, worsening hunger and malnutrition. Fortunately, there has been great progress made in the past decade regarding drinking sources and sanitation, whereby over 90% of the world's population now has access to improved sources of drinking water.

Major targets

- By 2030, achieve universal and equitable access to safe and affordable drinking water for all.
- By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.
- By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.
- By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.
- By 2030, implement integrated water resources management at all levels, including through transboundary co-operation as appropriate.
- By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.
- By 2030, expand international co-operation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, waste water treatment, recycling and reuse technologies.
- Support and strengthen the participation of local communities in improving water and sanitation management.

  The level of investment in water and sanitation has been increased. In 1980 rural sanitation coverage was estimated at 1% and reached 95% in 2018. Also the share of Indians with access to improved sources of water has increased significantly from 72% in 1990 to 88% in 2008.

Major Recommendations

1. **Successful pro-poor sanitation programs must be scaled up**. Assistance is still not reaching large numbers of the poorest of the poor. Successful models must be replicated and scaled up to serve those who cannot provide for their own needs under existing service delivery systems.
2. **Investments must be customized and targeted to those most in need.** With more than 450 million Indians living below the poverty line, only a few of the poor who have inadequate sanitation can be assisted right away. Due to limited resources, programs should target groups or locations lagging behind the furthest.
3. **Cost-effective options must be explored.** Appropriate lower-cost solutions offer a safe alternative to a wider range of the population. Higher-cost options can be explored when economic growth permits. Regardless of cost, all systems should address sanitation all the way "from toilet to river."
4. **Proper planning and sequencing must be applied**. Investing in incremental improvements is an approach that one could consider if affordability of sanitation investment is an issue. Careful planning is required to ensure that investments do not become wasteful and redundant.
5. **Community-based solutions must be adopted where possible.** An approach known as Community-Led Total Sanitation (CLTS) has been found to be effective in promoting change at the community level. Efforts must address sociocultural attitudes toward sanitation and involve women as agents of change. Another innovation is the socialized community-fund rising, which has met great success among the rural poor.
6. **Innovative partnerships must be forged to stimulate investments.** The key is to stimulate investments from as wide a range of sources as possible, including the private sector, nongovernment organizations (NGOs), and consumers themselves. This may require working with a wide range of partners through innovative public–private partnerships.
7. **Building Capacity:** Establishing water project boards made up of community leaders who are trained by experts on how to monitor, maintain and repair water systems; training people in the use and repair of water pumps and generators; and training a core of local leaders in water safety and purification so they can lead workshops throughout the community and expand grassroots knowledge.
8. **Developing New Sustainable Water Sources:** Empowering local communities to drill new wells and boreholes and repair existing ones; build and repair water towers; and construct water troughs for livestock. In Mexico in 2014, over 300 people participated in community projects to improve access to water.

9. **Ensuring a Reliable Supply of Clean Water:** Providing equipment and training for testing and pumping water; empowering communities to build and repair latrines in homes, schools and public spaces; and lobbying local governments to devote public resources to water infrastructure projects.
10. **Implementing Water Conservation Techniques:** Mobilizing communities to initiate drip irrigation projects, which minimize the use of water and fertilizer by allowing water to drip slowly to the roots of plants, and to develop water catchment systems, which collect rainwater from a roof or other surface before it reaches the ground and store it for future use.
11. **Sanitation Programs:** Good hygiene is more than a convenience; water borne illness is a leading cause of childhood deaths around the world. The Hunger Project trainings and capacity building projects improve living conditions and save lives. In Africa in 2016, nearly 2,900 latrines were constructed, installed, or rehabilitated.

The current government has announced an ambitious target of providing universal water and sanitation coverage to India by 2019. While India has almost achieved universal coverage of drinking water, it is far from achieving universal access to piped water supply and providing a quantity of water that is consistent with international norms.

Seema
Assistant Professor, Shyama Prasad Mukherji College for Women, University of Delhi

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Water Borne Diseases: A Concern for India

Water is our life; however this life causes around 3.5 billion deaths annually because of its contamination. Lack of safe drinking water is one of the biggest challenges in the developing and poor countries. As per 'WHO', Diarrhea causes 4% of all deaths and 5% of disability. This gastrointestinal infection kills around 2.2 million people globally each year, mostly children under 5years of age are impacted. Diarrhea, Cholera, hepatitis, typhoid, polio and dysentery are some of the severe diseases caused by consuming contaminated water.

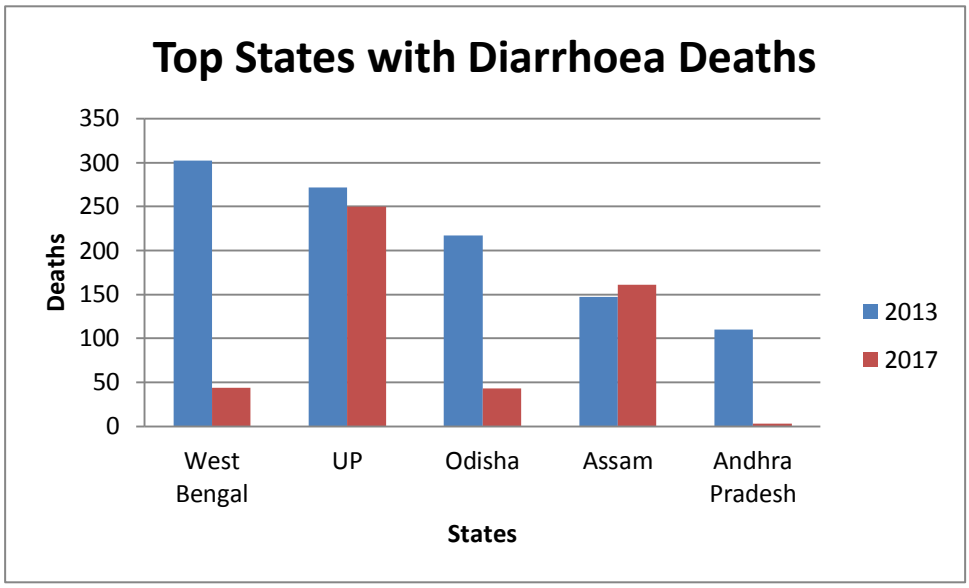
Unfortunately, safe drinking water though is a basic human right, but millions across the world do not enjoy this right, hence succumb to diseases. WHO reported that 2.1 people used unsafely managed water services and contaminated water globally in 2015. Around 423 million people used water from unprotected wells and springs and 159 million people collected untreated surface water from lakes, ponds, rivers and streams and about 2 billion people used drinking water source contaminated with wastes.

UN General Assembly in 2010 recognized the need and right of every individual to have safe, sufficient and affordable water for domestic and personal usages.The Sustainable development goals also highlight universal and equitable access to safe and affordable drinking water. But the growing population, climatic changes and growing urbanization is posing challenges for water supply systems. By 2025 it is estimated that about half of the world population will be living in water stressed areas. Though many countries are now focusing on reuse of water including India, however if the reused water is not treated properly that can cause further health hazards.

Report from 'Directorate of Health Services India', shows that since 2013 till 2017 about 69.14 million cases of water borne diseases have been reported with 10,738 deaths due to Cholera, acute diarrhea, viralhepatitis and typhoid. Acute diarrhea has caused maximum deaths in this period with 6517 deaths, followed by Viral Hepatitis (2143), Typhoid 2061 and Cholera 20.

The state wise datashows West Bengal reported maximum deaths (302) in 2013 due to acute diarrhea and UP reported maximum diarrhea deaths (250) in 2017. UP also reported highest number of typhoid deaths (161) in 2013 and 162 deaths in 2017. Delhi reported maximum viral hepatitis deaths in 2013 with 131 cases; in 2017 also the figure was equally bad with 133 deaths. Cholera has also taken many lives in India. The main cause behind all these deaths is consumption of contaminated water.

Top five states with maximum number of Acute Diarrhea deaths 2013 and 2017



*AP 2017 data does not include10 districts of Telangana

Delhi the capital of India also reported 62 and 63 diarrhea deaths in 2013 and 2017 respectively.

Fluorosis is a water borne disease which is crippling millions of people particularly in rural parts of India. Fluorosis causes both dental and skeletal deformities and neurological disorders and this disease is caused by consumption of water with higher percentage of fluoride. Also as fluoride is not visible to naked eyes and does not have smell or taste, it becomes harder for people to recognize its danger. Lack of information and awareness about this disease also delays the procedural treatments. In India as per 2014 data from Ministry of health and family welfare, Rajasthan reported maximum cases of fluorosis followed by states of Telangana, Andhra Pradesh and Madhya Pradesh.

Unlike the other commonly known water borne diseases such as typhoid, cholera, diarrhea etc., which have been controlled to a certain extent by the governments, tackling fluorosis still has remained a challenge due to lack of awareness among common people.

Today, India's concern is not only to tackle water shortage problems but also to ensure that people get safe and contamination free drinking water to control water borne diseases. Though as per 2011 data 86% of the total households get safe drinking water but this basic right of the remaining 14% is yet to be met. Governments with the help of NGO's, different social organizations and local bodies need to work together to make people aware of the consequences

of using contaminated water. Water borne diseases are controllable with sanitation and clean supply of water. Hence, if properly managed the water related crises can be tackled.

Dr. Gargi Kar Majumdar
Assistant Professor, Shyama Prasad Mukherji College for Women, University of Delhi

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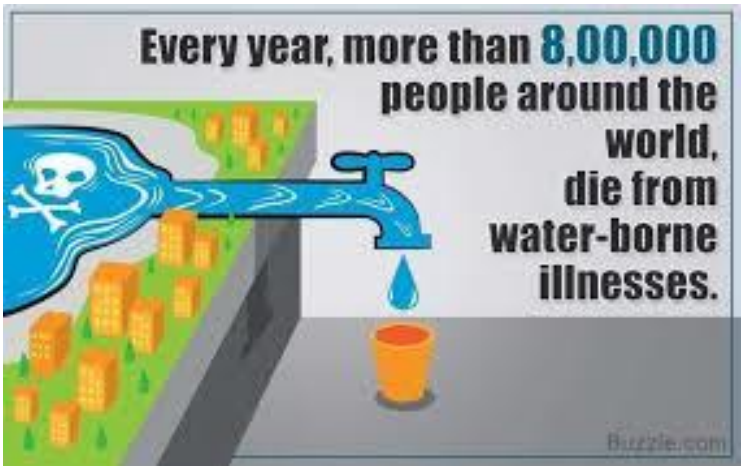
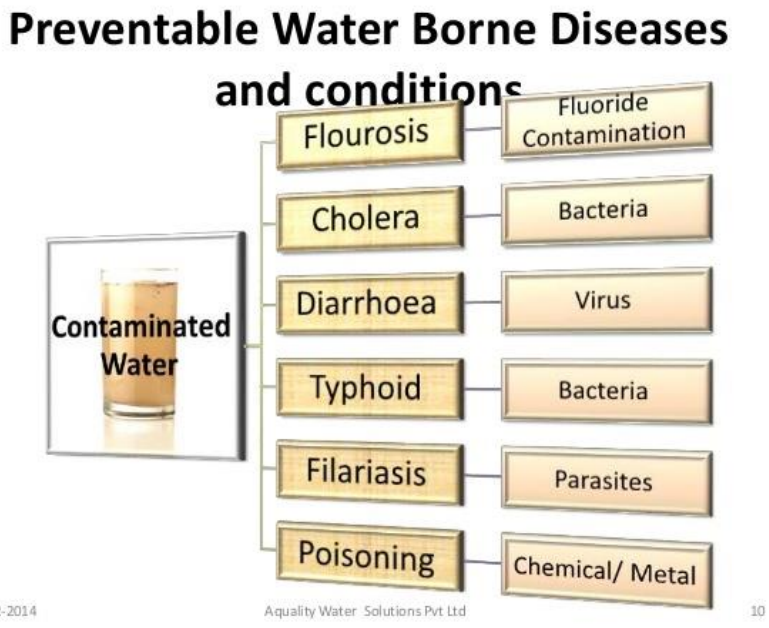
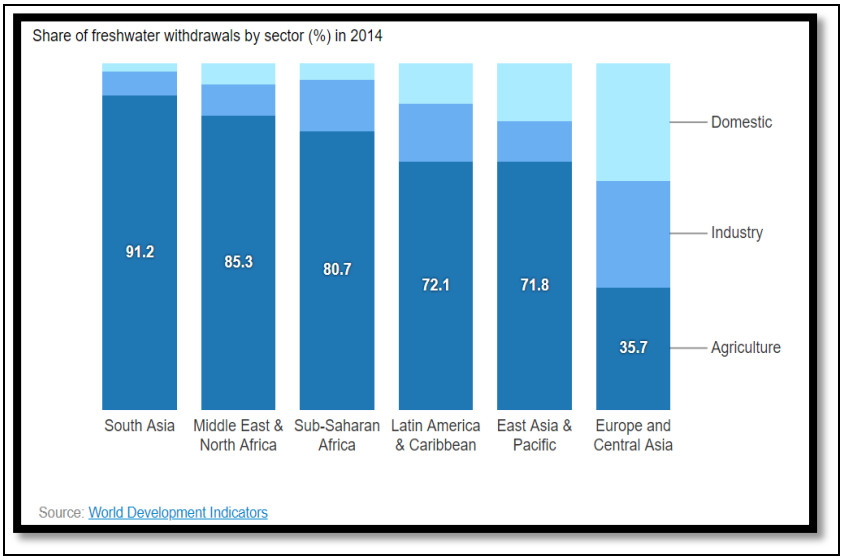




From the students

Water – The Elixir of Life

Water is called the "elixir of life". 71% of the earth is covered in water (hence the name blue planet) and up to 60% of human body is made up of water. In our daily life, we need water for drinking, washing, bathing, irrigation and power generation. We need water to cook our food. Even the clothes we wear and the houses we live in cannot be made without water. No manufacturing work can be carried out without water. It is not human beings alone who need water to live, animals and plants also need water to live. In fact, nothing on this earth can survive without water.



Water is of such an importance in our life that John F. Kennedy said: "Anyone who can solve the problems of water is worthy of two Nobel prizes - one for peace and one for science."

The need for water is increasing day by day because of increasing demand both from industrial and domestic sector. Increase in population is also putting more pressure on already scarce sources. But, daily replenishment rate of underground water and rivers is low and soon might be below the rate of water expenditure. This will pose a great threat to all humankind as we are yet to find an alternative to water and everything from our daily lives to industries run on large quantities of water. Man's misery in the absence of the availability of drinking water has been highlighted by renowned English poet, S. T. Coleridge in his celebrated poem, The Rime of the Ancient Mariner-

"Water, water everywhere, when all the boards did shrink;
Water, water everywhere, but not a drop to drink"

Early human societies have all settled along the fertile River basins of great Rivers like Ganga and Indus in India, River Yellow in China and River Amazon in Africa. This was made possible because of minerals brought along the streams of Rivers and deposited on its basin making the basin extremely fertile and perfect for early human settlements. Rivers played a major role in providing water to drink as well as enriching soil for crops. They also helped in navigational purposes and connected far flung areas.

Water is a free gift of nature. But there is a saying: 'We will never know the worth of water till the well is dry.' We don't value the things we get free in our life. We realize their value only when we don't get them. Think of a thirsty person in a desert. A drop of water to him is worth more than a sack of gold.

We keep wasting water in a variety of ways. We leave the taps running uselessly. We waste too much water in bathing and washing. We don't care to fix the taps or pipes that are leaking. We waste huge quantities of water in washing our floors, our cars, and bikes, our pots and pans. If we continue with all this, very soon a time will come when we shall have no water even for drinking purposes. And then, imagine, what will happen!

Water keeps evaporating into the air. And it is only the trees that help to bring it back as rain or snow. But we have cut down so many trees and forests that we get lesser rains now. As a result, our rivers, lakes, and ponds are going dry. And we are pumping out so much of the underground water that our wells are also going dry. The water level is sinking faster year after year. It is now time for us to wake up, or it would be too late!

If we want to continue living on this earth, we shall have to save every drop of water. We shall have to stop all wasteful uses of water. And as you will see, it is not very difficult to do this.

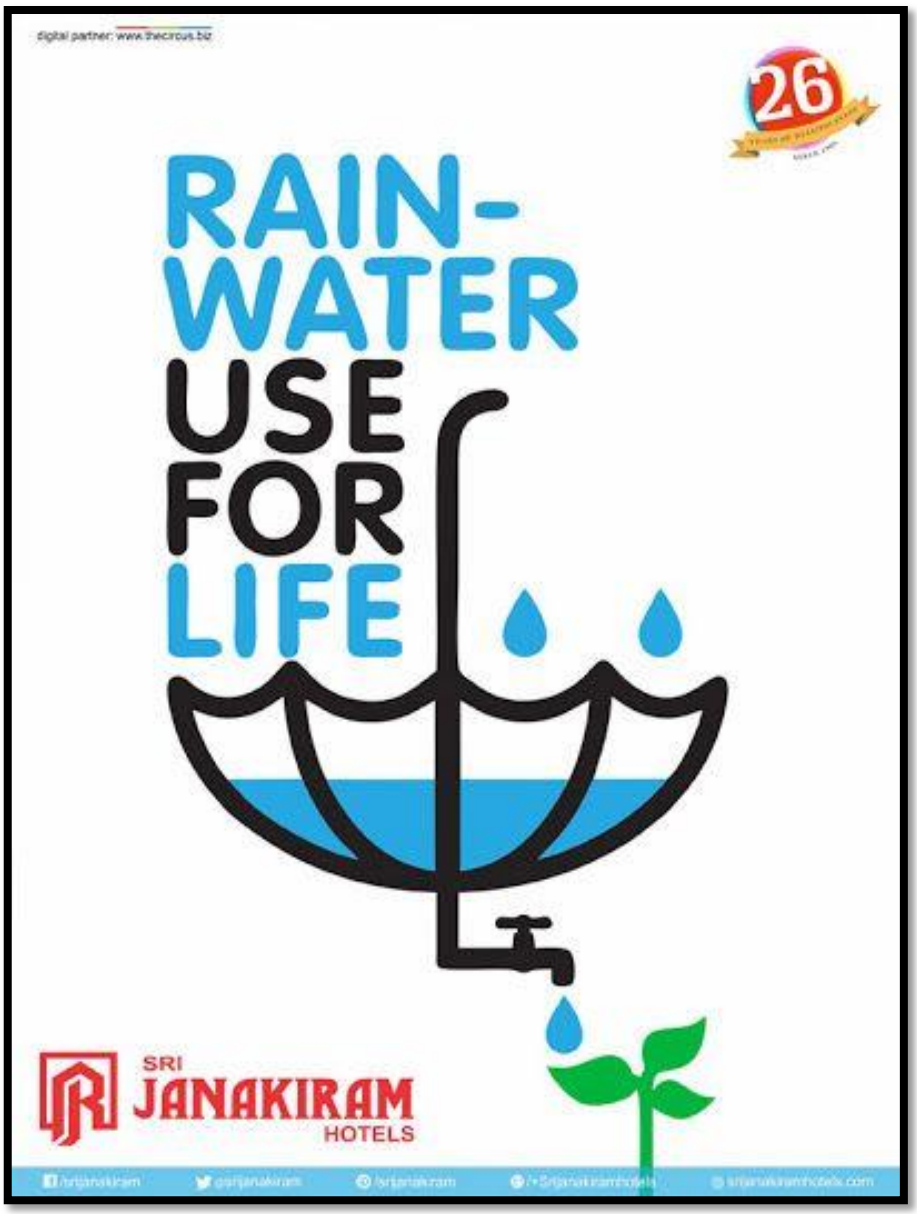
Some solutions to save waters are:

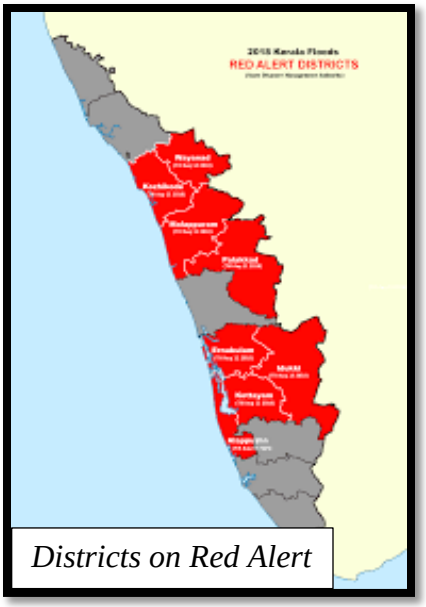
1. Check pollution- point and non-point. Example- like the Clean the rivers initiative taken up by the Governments
2. Collect and preserve the water which we get through rains efficiently by using methods such as rainwater harvesting, building more ponds, and building storage capacity to store this water without contamination.
3. Prevent overuse or regulate the use of water. For this, we can use water meters in homes and offices. Charge people in the proportion of water they use. Make it an expensive resource if water usage is wasteful. At our homes, avoid unnecessary flushing of toilets, use minimum amount of water for bathing, install small shower heads to reduce the flow of water, don't leave the tap running while washing the dishes in your kitchen, turn off the tap when not in use, especially when brushing teeth or washing clothes, check leakage of water from taps, overuse of detergents and fertilizers should be avoided, water lawns only when needed as overwatering can do more harm than good etc.

To conclude, water is a precious natural resource for sustaining life and environment. Effective and sustainable management of water resources is vital for ensuring sustainable development. In view of the importance of water for human and animal life, for maintaining ecological

balance and for economic and developmental activities of all kinds, and considering its increasing scarcity, the planning, and management of water resource and it's optimal, economical and equitable use has become a matter of the utmost urgency.

Muskan Rajput
B.A. (Honours) Geography 1st year





Districts on Red Alert

KERALA - Paralyzed By Devastating Flood Of 2018

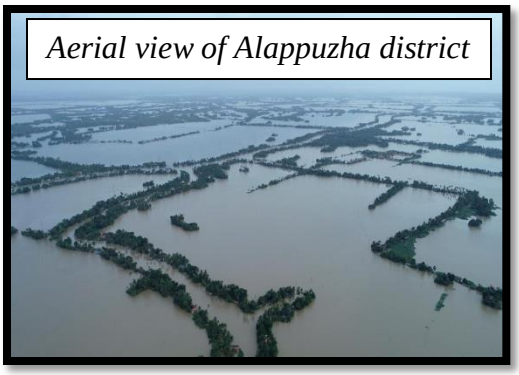
Kerala suffered worst monsoon flooding in August, 2018 with more than 1 million people displaced and more than 480 reported deaths. According to the Kerala government, one-sixth of the total population of Kerala had been directly affected by the floods and related incidents and eight of fourteen districts were under red alert.

Aid agencies and government groups set up more than 4,000 relief camps while rescue personnel made their way to submerged villages in helicopters and boats, bringing supplies and evacuating those they could find.

In the first 24 hours of rainfall, the state received 310 mm of rain. Almost all dams were opened which triggered landslides in the mountainous areas and swamped the coastal region of Kerala. The water level rose close to over flow level (due to heavy rainfall) leading to the flooding of local low-lying areas.

The Government of Kerala argued in the Supreme Court that the sudden release of water from the Mullaperiyar dam by the Tamilnadu government was one of the reasons for flood in Kerala. The Tamil Nadu government rejected the argument, saying that Kerala suffered the deluge due to the discharge of excessive water from the reservoirs across Kerala spurred by heavy rains. It was also argued that the flood surplus from the Idukki dam was mainly due to the flows generated from its own independent catchment due to unprecedented heavy rainfall, while the discharge from the Mullaperiyar dam was significantly less.

The Flood of 2018 was less intense than that of 1924 but the damage caused was far greater. Huge economic losses were incurred, production was affected, infrastructure was lost and tourism industry was hit hard. Main reason for the vulnerability of Kerala towards such a hazard was the challenge posed by its position amidst the Ghats. Many other causes include change in land use pattern occurring at times of unpredictable weather, quarrying that caused deforestation and blocking of the natural streams, mining, illegal constructions, cutting of trees in catchment areas of dams, high rise building constructions and other manmade factors that the state chose to brush aside.



Aerial view of Alappuzha district

Kerala received help in various forms from all over India. Funds were donated for speedy recovery from various states like Arunachal Pradesh contributed Rs 3.3 crore, Telangana Rs 25 crore etc. In addition to this Rs 100 crore was released by Home minister. P.M Modi also announced grant of Rs 500 crore to Kerala during the month of August. Contributions for rebuilding also came from overseas like UAE donated 50 lakh dollars.

After flood, Kerala came under the threat of severe drought. Water level in wells, ponds and rivers was recorded at its lowest and some wells even collapsed. The (CWRDM) Centre for Water Resources Development Management Research Institute under the state government, reported that heavy runoff with the top soil in the upland areas and the siltation in the rivers were the reasons for the falling water level. The top soil in the hills and uplands areas had been removed in the flash floods. Normally, a river flows through with the sand of its own bearing till the mouth. However, this time the discharge has been full, taking the sand and rocks along.

Kerala flood displayed the importance of maintaining balance between development and environment, in the absence of which devastating effects may surface. To avoid such situations our focus must be on better forecast and effective synergy, better planning for critical infrastructure etc. To combat such situations in future being prepared for possible mega disasters is important as well as a change in development approach is much needed.

Kanika Bhatia
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Source: http://chennaifloodmanagement.org/en/reports/chennai-flood-management-plan/

Water crises in India and its Solutions

Water is an existential need for humans. It is also one of the most under prioritized and over abused commodity of the human race. Water is an integral part of our life, but it has not been the central point of focus in the planning areas while we are evolving into an urban society.

Early civilizations realized the importance of water and planned their lives around it. They were born and lost on account of water. In today's time and age, we humans have the advantage of the knowledge on water, yet we do not pay heed to the impending danger of societies perishing due of lack of water.

In India, the first civilizations developed around the banks of the river Indus and Ganges and they are still thriving. The water usage was carefully planned in that time. The problem started in Post- colonial India, when the main concern was harnessing and storing the water via dams. However, with the increase in population and the development of cities, less importance was given to the availability of water or planning. In the year, 1951, the per capita availability of water, was 5177 m3. Now the per capita availability has reduced to 1545 m3 in the year 2011.

The main reasons behind water scarcity in India are:

- Inefficient use of water for agriculture: India is among the top growers of agricultural produce in the world and therefore the consumption of water for irrigation is amongst the highest. Traditional techniques of irrigation cause maximum water loss due to evaporation, drainage, percolation, water conveyance, and excess use of groundwater. As more areas come under traditional irrigation techniques, the stress for water available for other purposes will continue. The solution lies in extensive use of micro-irrigation techniques such as drip and sprinkler irrigation.
- Reduction in traditional water recharging areas: Rapidly increasing construction activities have led to an ignorance of the traditional water bodies that acts as a part of ground water recharging mechanism. The need is to urgently revive traditional aquifers while implementing new ones.
- Sewage and wastewater draining into traditional water bodies: Government intervention here is urgently required if this problem is to be tackled.
- Release of chemicals and effluents into rivers, streams and ponds: Strict monitoring and implementation of laws by the government, NGOs and social activists is required.
- Lack of on-time de-silting operations in large water bodies: that can enhance water storage capacity during monsoon is observed. This act alone can significantly add on to the water storage levels.
- Lack of efficient water management and distribution of water: between urban consumers, the agriculture sector and industry is seen. The government needs to enhance its

investment in technology required for management and include all stakeholders at the planning level to ensure optimization of existing sources.

Solutions to beat water scarcity

Capitalize on existing assets

The primary mission of a water operator in India should be to optimize existing infrastructure, such as water production and treatment plants, water networks and reservoirs. Basically, the idea is to supply water to more people while using the same capacities, rather than waiting for new infrastructures to be built. Efficient management is crucial in extending the scope of existing services.

For instance, since 2006 in Karnataka, as part of a performance contract with the cities of Hubli-Dharwad, Gulbarga and Belgaum and in partnership with the World Bank, it became possible to provide a continuous water supply to 180,000 people who previously, at best, received water for only a few hours a week.

Adapt services to ensure affordability

In the context of public-private partnerships, the public sector retains ownership of the assets and, most importantly, sets the tariffs. One of the main challenges here is to ensure that the cost of an individual connection is affordable and that tariffs are not prohibitive for the poorest people.

In the towns of Hubli-Dharwad, Belgaum and Gulbarga, working with the municipal corporations and the World Bank, a solution was devised in which it was ensured that charges for individual connection to the water network were affordable for all.

Create local customer services

Offering the most well-adapted customer service to all the users by targeting their needs precisely is a duty that every water distributor should complete.

For instance, in the city of Nagpur (Maharashtra), a new unit was created within the Customer Services Department of Orange City Water (the joint venture company between Veolia and Vishvaraj Environment Ltd.) named the Social Welfare Team.

All the members of this team were social workers from local communities who visited every household to explain the work of Orange City Water and answer their questions. They also carried out various service operations, such as dealing with applications for a water connection, subscriptions to the service and access to information about the water supply.

Apply the notion of "social businesses"

In the context of economic crisis and with the growing discontent among people, new business models are emerging. One of the most famous of these is "social business".Testing new models is another challenge for water operators, particularly when creating access to water to peri-urban and rural areas.

This is why, in 2008, a joint venture was launched between Veolia Water and Grameen Healthcare. Based on the "social business" model, the project was set up for a quality water service for two villages in Bangladesh where the country's groundwater reserves are not very deep and are naturally contaminated by lethal levels of arsenic.

The profits of the new service were to be reinvested to extend the distribution network and launch other similar projects. Thanks to this model, later more than 2,600 people had the access to drinking water in the villages of Goalmari and Padua Union.

Speak to users and raise awareness

If technological expertise is at the root of a project, too often social support is missing. Despite the fact that explaining good water use is essential to maximizing the benefits of the services for local populations, it is often being ignored.Communicating the relation between water, good hygiene and health, for example, should be one of our main responsibilities.

Access to drinking water is a concern that everyone in India faces, rich or poor. By distributing pressurized and potable water via taps, 24 hours a day and 7 days a week, we can ensure that everyone has equal access to this precious resource. As long as the will is there, it is possible.

Shifa Ashraf
B.A. (Honours) Geography 1st Year

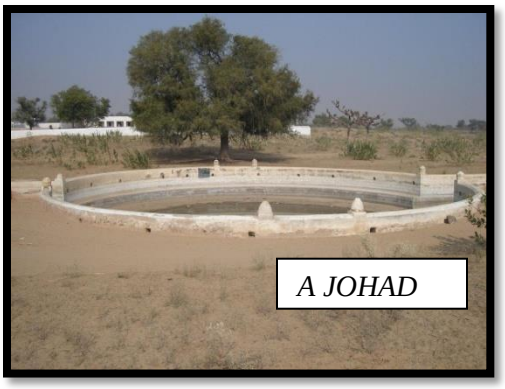
Waterman of India

How Rajendra Singh "Waterman of India" Solved Rural Rajasthan's Freshwater Crisis

Rajendra Singh is known as "The Waterman of India". He has worked to end the problem of water scarcity. He has succeeded in restoring groundwater levels and even reviving dried-up rivers in rural Rajasthan. What is even more interesting is that, this miracle has not been achieved with modern technology but by applying ancient water conservation techniques.

Singh's journey began in 1985 when he was just 28-years-old. As a social worker he found his way to Rajasthan's Alwar district with his four interns to set up a free health clinic. However, when they arrived, Singh realized that the villagers were more concerned about the lack of water than their health.

Within a few months, he had forgotten his original mission and began the impossible task of restoring the arid hinterland's water supply. Mr. Singh a trained Ayurveda doctor had no knowledge about water conservation. He met two locals named Mangu Meena and Nathi Bhalai who taught him the ancient art of building 'Johads' or water tanks. These water storage tanks are constructed with stone, concrete, dirt, or any other available material.

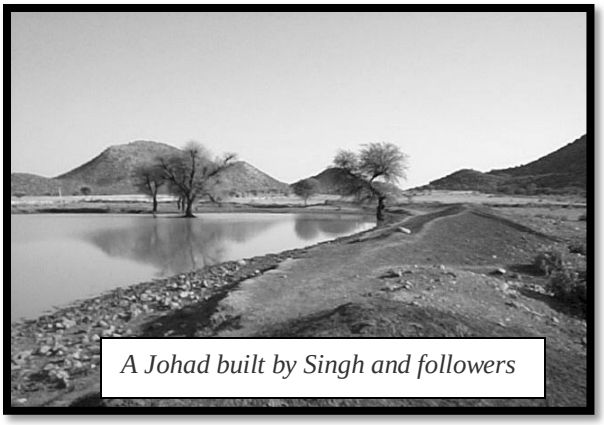


A JOHAD

Though simple, the structures that date back to 1500 BC, are an extremely efficient way to store rainwater for future use. As the collected water in them gradually drips into the ground, it helps in increasing groundwater levels. The only problem is that Johads require extensive amounts of manual labor which is why they are typically community driven projects.

It took him some time to convince the residents of Gopalpura (the village where he started his mission) in favor of Johad. However, once they saw it working, the community very energetically joined in the effort, and the idea started to spread like wildfire. Soon, residents of the neighboring villages came seeking Singh's help to try restoring water levels to their arid lands as well.

In addition to promoting the water storing structure within the village, Singh and his team also built Check Dams across streams or small rivers. Unlike Johads that store water, the Check Dams allows excess liquid to flow out. As it flows downstream, the water seeps into the ground uniformly and it helps in raising the water table across the entire length of the river or stream.



A Johad built by Singh and followers

To ensure the conservation efforts were not lost due to corporation ignorance, Singh and his group managed to stop over 40 water-intensive companies from setting up shop in this area. They also convinced the government to shut 470 mines, whose large pits collected so much rainwater that the groundwater never got replenished.

The activist, who has worked tirelessly on this project for the last 30 years, says these strategies have helped revive vegetation and increased the water retention capacity of the soil. Also, five of the once stagnant rivers, including the Aravari that have been dry for 80 long years, now flow year-round. Land under cultivation has grown five-fold leading to an increase in farm incomes. The best part is that men no longer have to leave town to seek employment and women only have to travel the short distance to the village well to obtain freshwater.

Singh's hard work that has changed the lives of the residents of over 1,000 villages has also earned him several honors, including the 2015 Stockholm Water Prize. The honor that comes with a cash prize of $150,000 is regarded as the Nobel Prize for water.

The director of the Stockholm International Water Institute, said," In a world where demand for fresh water is booming, we will face a severe water crisis in decades if we do not learn how to take better care of our water. Mr. Singh is a beacon of hope".

The 'Waterman of India' now plans to take off on a five-continent tour and convince water conscious communities to take matters into their own hands. He believes the communities should resist money and technological solutions offered by corporations and find ways to help themselves.

We also need to find a water man/women like Mr. Singh in us too for our bright future because we are surely going to face severe water crisis in future.

Anjali Solanki
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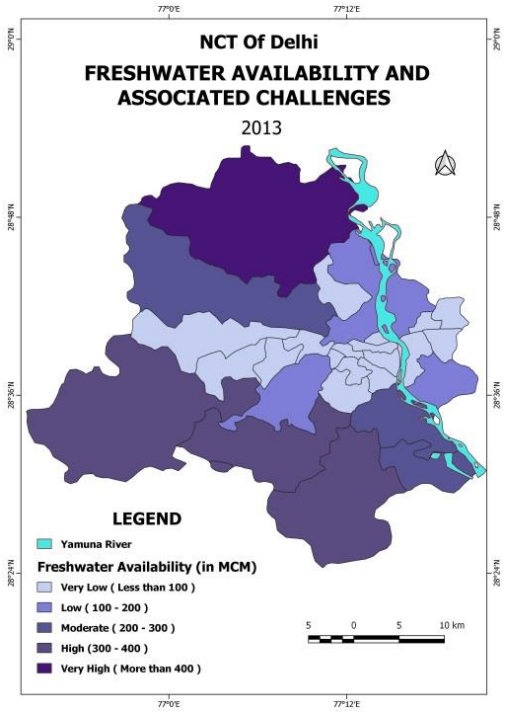
Freshwater availability in Delhi and Associated Challenges

Freshwater is naturally occurring water without significant salt content. It accounts for nearly 3% of Earth's water. The paper explains the availability of freshwater in Delhi and the challenges associated with its quality and quantity.

Delhi, officially known as National Capital Territory of Delhi is a Union territory of India. It consists of nine districts each having three tehsils. According to NAQUIM (National Project on Aquifer Management) Report of Delhi, 2013 the total availability of freshwater in Delhi is 3206.6 million cubic. This water is intensively utilized over the entire region.

Tehsils of Delhi have been divided into five categories on the basis of freshwater availability-



First category includes tehsils having Very low availability of freshwater with volume of less than 100 million cubic metres. This category includes tehsils; Model Town, Punjabi Bagh, Patel Nagar, Rajouri Garden, Sadar Bazar, Kotwali, Pahar Ganj, Darya Ganj, Karol Bagh Parliament Street, Connaught Place, Chanakya Puri, Gandhi Nagar, Vivek Vihar and Seema Puri. This may be attributed to high population density for example- Seemapuri has very high population density of 65,865 persons per sq. km, fast paced population growth, no or inadequate pipe connections, wastage of water due to poor water management etc.

Second category includes tehsils having Low availability of freshwater with volume of 100 – 200 mcm. It includes tehsils Civil Lines, Seelam Pur, Delhi Cantonment, and Preet Vihar. The reasons for this low availability of water are the same as the above. TehsilsSeelam Pur, Civil Lines, Preet Vihar lie close to River Yamuna yet high levels of pollution in the river keeps it water deficit.

"As per 2011 census, there are 33, 41,000 households in Delhi, out of which, 27,16,000 households were provided piped water supply system. About 4,61,000 households are getting water supply through tube wells/deep bore hand pumps/ public hydrants and remaining 1,64,000 households depended on other sources like rivers, canals, ponds, tanks, springs, etc." This data highlights that about 18% of households in Delhi lack piped water supply.

Third category includes tehsils which have Moderate availability of freshwater with volume of 200 – 300 mcm. The tehsils in this category are; Saraswati Vihar, Defence Colony, Kalkaji. These regions have comparatively high availability of freshwater.

Fourth category includes tehsils having High availability of freshwater with volume ranging from 300 -400 MCM. It includes tehsils; Najafgarh, Vasant Vihar and Hauz Khas.

The tehsils lying in the above two categories are not so densely populated, they have better piped water supply and in the areas adjacent to Najafgarh lake availability of ground water is high.

And the **Fifth category** includes tehsils having Very high availability of freshwater with volume more than 400 MCM. This category includes only one tehsil i.e., Narela. Narela has very high volume of freshwater even more than 600 MCM. The reasons being very low population density (Narela has population density of 3,051 persons per sq. km. only) and supply of freshwater from Yamuna because Yamuna contains freshwater upto the point where it crosses Narela and touches Civil Lines.

To conclude, India has only four per cent of world total freshwater while it consists of sixteen per cent of world total population. This shows great difference between demand and freshwater availability in the country. In case of Delhi, Delhi contains only 0.08 per cent of total freshwater of India but is home to more than 1.5 per cent of population of India. This figure shows that there is very low availability of freshwater in Delhi when compared with the needs of existing population. So, it is common for Delhi and its people to face the challenges associated with freshwater.

Challenges being faced by the city state-

- demand for water is ever increasing
- groundwater level has been lowering at an astounding rate
- the city state loses 40 per cent of water it supplies either due to leaking pipes or theft
- although the water treatment capacity has increased over the years the plants are unable to function to their optimum
- Yamuna is highly polluted
- water sharing issues with the neighbours

In the light of the above there is a need to take measures like- rainwater harvesting, groundwater recharge, proper management of water, methods to reduce wastage of water etc. All the stakeholders need to play an effective role if we want to revert the crisis which is looming large.

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Mankind without water

What will happen to the planet if water dries up?

With no oceans, ponds, rivers and lakes, Earth will appear very different. If evaporation will not take place there will be an evident lack of cloud formation. Drops of rain will become history for us. Earth may turn into planet like Venus with no humans and biodiversity. The absence of water will badly affect environment. Land will lose its fertility and its productivity. The infertile soil will fail to produce food grains, as a result humans will starve to death and their civilization will become extinct. Hence, the little fresh water which earth consists of makes life possible on Earth.

IMPORTANCE AND NECESSITY TO HUMANS

For human body water is very important. Each organ of the body depends on water for its functioning. Water is an important component of blood which carries nutrient and oxygen to and from cells. It regulates body heat and ensures that all our organs are working properly.

According to health authorities, a human body is required to drink minimum 2 liters of water a day to keep them self-hydrated. A person can stay long without food but can't survive more than a week without drinking water. 60% of our body's metabolism depends upon the quantity and quality of water we drink. Our kidney needs to function adequately to flush out waste from blood. With lack of water our body cells will shrink, brain will swell and it will ultimately lead to death.

DEATHS DUE TO DROUGHT

Water scarcity disrupts ecological balance and affects humans as well. Major droughts of 1990-2016 reveal the disastrous deaths caused by it.

China was hit the hardest when it faced the deadliest drought in 1928 which killed approximately 3 million people. It brought crop failure and widespread famine in province of Henan, Shaanxi and Gansu. India's drought of May 1987 affected over 300 million individuals. During this weather disaster, India's northern grain lands and milk production were badly affected. Less than a third of the country received normal rainfall that year, facing 26% rainfall deficiency. The dry period of April 1983 in Sudan caused around 150,000 deaths.

POOR QUALITY OF WATER

More than 1 billion people drink dirty water everyday day to survive. Diseases due to poor drinking-water cause 4.0% of the total deaths and 5.7% of the disabilities or ill health prevailing in the world. Contaminated drinking water is estimated to cause more than 5,00,000 deaths due to diarrhea each year. Contaminated water can transmit diseases such as diarrhea, cholera, dysentery, typhoid and polio.

INADEQUATE SUPPLY

Government records show that in 1980, just 1% of India's rural areas had the access to safe, usable water. Even today despite all the progress, a Water aid report in 2016 ranked India among the worst countries in the world for the number of people without safe water. An estimated 76 million people in India have no access to a safe water supply even today, and the situation is only getting more serious. By 2050 India is expected to face serious water scarcity which will affect its population and economy.

Events like "Dispute over water" in the Nile Basin, "Water shortages and public discontent" in Yemen, "Droughts, livestock prices and armed conflict" in Somalia, etc. prove that water is very important to us. "The next world war would be fought over water" is slowly becoming a reality with smaller events surfacing around the world.

To conclude, life without water would not be possible. If the quality and quantity of water will continue to deteriorate then mankind will suffer because:

"U Can Live Without Crop,

But U can't live Without a Drop"

So the need of the hour is to utilize this precious resource judiciously. It is important to understand that it is no longer a renewable resource which is going to last forever.

Baby Lipika Kumari
B.A. (Honours) Geography 1st year

जलसंरक्षण

परिचय

जैसा कि हम जानते हैं कि हमें और दूसरे जीवजंतुओं को धरती पर जीवित रहने के लिए जल की आवश्यकता की होती है।क्योंकि बिना जल के किसी भी ग्रह पर जीवन कीकल्पना नहीं की जा सकती।इसलिए हमें अपने जीवन में जल के महत्व को दर किनार नहीं करना चाहिए।

यह सर्व विदित है कि धरती पर जीवित रहने के लिए जल की बहुत ही जरूरत है क्योंकि जीवन जीने से संबंधित हमारी सभी क्रियाओं के लिए जल की आवश्यकता होती हैं।किंतु यह आवश्यकता वर्तमान में उत्तरोत्तर बढ़ती जा रही है जबकि पानी की आपूर्ति उसी अनुपात में नहीं हो रही। यही कारण है कि हम लोग (भारत और दुनिया के दूसरे देश) आज पानी की समस्या से जूझ रहे हैं।बावजूद जिस के कि हमारी धरती का लगभग तीन चौथाई भाग पानी से घिरा हुआ है।महासागरों में लगभग पूरे जल का 97 प्रतिशत भाग नमकीन पानी है जो इंसानों के उपयोग के लिए उपयुक्त नहीं हैं।धरती पर मौजूद पूरे जल का केवल 3 प्रतिशत भाग ही उपयोग लायक है जिसका भी 70 प्रतिशत भाग बर्फ की परत और ग्लेशियर के रूप में है अर्थात 1 प्रतिशत जल ही पीने लायक पानी के रूप में उपलब्ध हैं।अंतः जल का संरक्षण किया जाना आवश्यक हैं।

जल को क्यों बचाना चाहिए?

इस संदर्भ में यही कहा जा सकता है कि धरती पर जीवन के अस्तित्व को बनाए रखने के लिए जलसंरक्षण और बचाव बहुत ही जरूरी है क्योंकि बिना जल के जीवन संभवन हीं हैं।धरती ही एक ऐसा ग्रह है जहां पानी और जीवन मौजूद हैं।साथ ही भारत में उपलब्ध जल संसाधन की दृष्टि से आकलन करें तो यह बात समझ आती है कि 2001 मेंप्रतिवर्ष 1800 क्यूबिक मीटर पानी उपलब्ध था जो भविष्य 2050 मेंघटकर 1000 क्यूबिक मीटर हो जाएगा।आज पूरे भारत में पानी की कमी पिछले 30 साल की तुलना में 3 गुना हो गई हैं।देश की छोटी-छोटी नदियां सूख गई है या सूखने की कगार पर है।बड़ी-बड़ी नदियों में पानी का प्रवाह धीमा होता जा रहा हैं।एक अनुमान के अनुसार 1960 में हमारे देश 10 लाख कुएं थे लेकिन आज इनकी संख्या 2.40 करोड़से 3 करोड़ के बीच हैं।हमारे देश के 55 से 60 फ़ीसदी लोगों को पानी की

आवश्यकता की पूर्तिभू जल द्वारा होती है लेकिन आज भूजल की उपलब्धता को लेकर एक बड़ी कमी महसूस की जारही है।

इतना ही नहीं राष्ट्रीय अपराधरिकॉर्ड्सब्यूरो के सर्वेक्षण के अनुसार यह रिकॉर्ड किया गया है कि लगभग 16,632 किसान जिनमें 2,369 महिलाएंथी, आत्महत्या के द्वारा अपने जीवन को समाप्त कर चुके हैं, जिनमें 14.4 मामले सूखे के कारण घटितहुए हैं।इसलिए हम कह सकते हैं कि भारत जैसे दूसरे विकासशील देशों में अशिक्षा, आत्महत्या और दूसरे सामाजिक मुद्दों का कारण पानी की कमी भी ही है।हमें यह भी मालूम होना चाहिए कि विश्व में कई देश हैं जो सूखाग्रस्त हैं जहां नदियों का अभाव है और ऐसे स्थान पानी के लिए तरसते हैं।कई स्थानों पर तो प्रकृति के इस अमूल्य उपहार को खरीदकर उपयोग किया जाता है।नदियों में पानी की कमी, भुमिगत जल के स्तर में कमी, पेड़ पौधों की घटती संख्या, कृषि उत्पादन में कमी आदि यह कुछ ऐसे दुष्परिणाम है जो कि वर्तमान में हमें भविष्य के लिए आगाह कर रहे हैं कि हमें जलकासंरक्षण करना चाहिए।

जलसंरक्षण के उपाय

उपयुक्त परिच्छेदों से य हउल्लेखित होता है कि जलसंरक्षण जरूरी है ।अतः इस संदर्भ में समग्र प्रयास की जरूरत है यद्यपि सरकारें कुछ संस्थानों के साथ मिलकर जलसंरक्षण का कार्य कर रही है परंतु मात्र इत ना प्रयास से ही बहुत नहीं है क्योंकि यह विश्व व्यापीb समस्या है इसलिए पूरे विश्व के लोगों को मिल-जुल कर इस में सहयोग करना होगा तभी इस अमूल्य संपदा को बचाया जा सकता है।इसके लिए हमें अपने घरों में बूंदबूंद कर के बहते पानी को बचाना होगा।साथ ही लोगों में जलसंरक्षण के प्रति जागरूकता लानी होगी।जलसंरक्षण हेतु हमें कई कदम उठाने होंगे जो इस प्रकार हैं:-

- बर्तनों को धोते या साफ करते समय नल के स्थान पर टब का प्रयोग करें।
- शेविंग करते समय नल बंद रखें।
- हर नागरिक शाॅवर की जग हबाल्टी में पानी भर कर स्नान करें।
- उत्तराखंड जल संसाधन के अनुसार टॉयलेटमेंलगीफ्लैशकीटंकीमेंप्लास्टिक की बोतल में पानी भर कर रख देने से हरबार 1 लीटर जल बचाया जा सकता हैं।
- गंदे जल का फ्लैश में उपयोग कर के सभी जलसंरक्षण किया जा सकता हैं।

- वर्षा के जल कोछ तपर संरक्षण करके उसका उपयोग करना।इसलिए छत पर पानी की टंकी बनानी चाहिए।
- पर्यावरण के प्रति जागरूकता जरूरी है क्योंकि पर्यावरण संतुलन का सकारात्मक प्रभाव जलसंरक्षण पर पड़ता हैं।कटते वृक्षों के कारण भूमि की नमी लगातार कम होती जा रही है जिस सेभू जलस्तर पर बुरा असर पड़ता जा रहा हैं।
- जलसंरक्षण हेतु केंद्र और राज्य सरकार के कानून बनाएं।
- नदियों के जल में गंदा पानी कदापि नहीं छोड़ा जाए जिससे जरूरत पर उस जल का उपयोग पीने एवं अन्य उपयोग हेतु किया जा सकें।

इतना ही नहीं सरकार को भी जलसंरक्षण के संदर्भ में कुछ ऐसी नीतियां बनानी होगी कि औ द्योगिकइकाइयों से निकलने वाले पानी नदी- नालों में नामिले।इसके निस्तारण की अच्छी व्यवस्था हो जिससे खतरनाक रसायन पीने योग्य पानी में मिलकर उसे दूषितना कर पाएं।धरती पर बढ़ती जन संख्या के दबाव पर भी ठोसकदम उठाए जाने चाहिए।बरसाती जल इकट्ठा करके एवं उपयोग करने लायक बनाने की छोटी इकाइयों को बढ़ावा देना चाहिए जिससे बरसाती जल व्यर्थना जाए जैसे कि तालाब, पोखर, गड्ही इत्यादि।इस संदर्भ में इलाहाबाद उच्चन्यायालय की लखनऊ बेंचने एक मुक दमे में फैसला देते हुए कहा है कि, "प्रकृतिसंकटों से उभारने और स्वस्थ पर्यावरण के लिए परिस्थिति की संतुलन बनाए रखने वाले प्राकृतिक स्रोत जैसे तालाब, पोखर, नदी, नहर, पर्वत, जंगल और पहाड़ियों आदि सभी की सुरक्षा करना आवश्यक है ताकि सभी संविधान के अनुच्छेद 21 द्वारा दिए गए अधिकारोंका आनंद ले सकें।जल स्रोतों पर हुए अतिक्रमण हटाने का भी निर्देश हाई कोर्ट ने दिया है।"

यदि हम इन सब बातों का ध्यान रखेंगे और बच्चों को भी इसकी आदत डालेंगे तो निश्चित रूप से धरती और धरती पर विकसित होने वाली प्रकृति एवं जलजीवन खुश हाल होगा अंतःजलसंरक्षण हेतु समय रहते चेतन को जागृति करने की जरूरत है क्योंकि -

'रहिमनपानीराखिए, बिनपानीसबसून।

पानीगएनउबरे, मोती, मानुष, चून।।

Kavita Meena
B. A. (Honours) Geography 1st year

Traditions of Conserving Water

With an advancing world running out of water
It's time to turn back the conversation
To our roots and their effective systems
Through the traditional methods of water conservation

To **Kattas** built of mud and stones
Over small streams and tiny rivers
They stop and store and replenish the ground
Better than concrete dams much bigger

On we go to the **Sand Bores**
Dotting river banks on the coasts
Clean sweet water is pumped out
Leaving the salt at its sandy post

Then come the **Johads** in Rajasthan
That fell into disrepair and misuse
But droughts sowed the seeds of wisdom
They saw a revival and the situation diffused

Next, are the **Bawdis** of kings and queens
Their grand arches more suited to castles than for society
Ancient relics of a forgotten time
They are now the objects of archaeological fancy

Flowing through the hills in **Bamboo pipes**
Dripping spring water on black pepper crops
This irrigation system has a no wastage policy
Water slows and reduces but never stops

Then there's the easy urban solution
Rain on the roof stored in ground level **Containers**
Water for all and sundry purposes
A game with all winners and no losers

If these water containers are too expensive
Ferro-cement tanks come to the rescue
Made with budget materials and shaped any which way
Great for areas where rainfall obscures the view

Joy pumps should be installed in every school
Using free kid power and a merry-go-round
An overhead tank is filled with ease
By drawing up water from the ground

Cycle run water pumps are a free and great way
To burn calories along with conserving water
Saving time, fuel and electricity
The idea came from the head of a poor farmer

Rainwater syringe is picking up steam in Kerala
Since along the coast wells have salty water
Storing rainwater under sea level
This is how to pump out clean water in the summer

Made for women carrying matkas on their heads
Is the **Water Wheel** by a lady from the USA
To save them from the monotony and hard work
She devised this way

A **Kul** taps the glacier and carries pure water
Through diversion channels to the village
They can't do without it
The people of Jammu and Himachal Pradesh

Rainwater is collected from hilltops into ponds
Then passed into cattle yards below
On it goes to enter the paddy fields
This is the working of a **Zabo**

Eri means a tank in Tamil
Where this is used for over a third of their irrigation
A staple for agriculture in the state
It's one of the oldest water conservation systems
A **Khadin** will store the surface runoff water
In an embankment around the slope
The soil is moistened and loss of topsoil prevented
This system helps Jaisalmer cope

Virdas is used in the Rann of Kutch
To get freshwater with the help
Of natural depressions where
There are built shallow wells

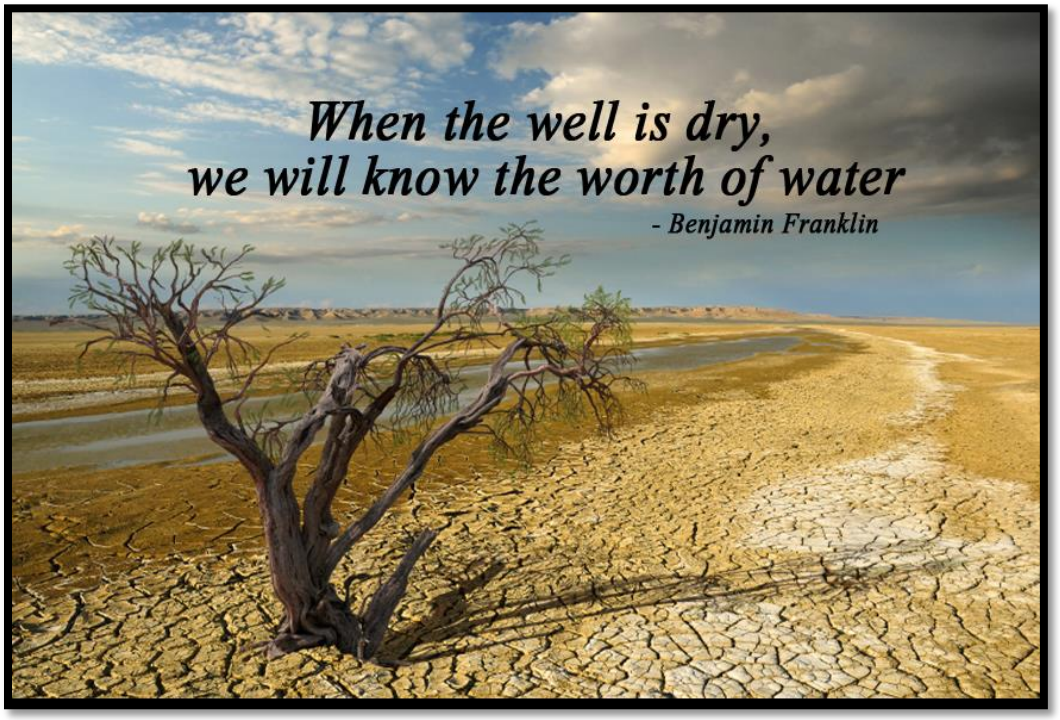
To irrigate paddy fields and coconut in the South
Where surface water is scarce
Surangam is used by making horizontal wells
In laterite rocks with care

Flood water harvesting is called **AharPynes**
It originated in South Bihar
It declined under the British rule
But later became the need of the hour

Kinds look like upturned cups
Resting in saucers that slope to the center
Sides of the well are covered with lime and ash
A natural disinfectant for rainwater

It's our duty to bring these methods to the forefront
And increase their reach and visibility
Because the answer to our problems lie in these traditions
And anchor our future with certainty

Maithili
B.A. (Honors) Geography 1st Year



A Virtual Reality

Today, a skinny pedestrian came at the threshold of my house. He was very thirsty and requested me for a glass of water to quench his thirst. I went to the kitchen and brought it. He took the glass and gulped it down very quickly. He looked very content after drinking it. It seemed as if he hadn't had it for many days.

I asked him "Isn't it is surprising to be this thirsty in winter season". "Didn't you get a single drop of water to wet your throat" I asked in a curious tone. He replied, "The place from where I have come, there is no winter season. We only experience a hot and dry climate round the year. You guys are fortunate to be able to experience various seasons throughout the year. We have scarcity of water. We have to work very hard to procure every drop of water he said. We wake up before sunrise every morning and spend hours walking just to find a water source. We stand in line to access a muddy hole in the ground that you share with both your neighbors and their livestock. We carry back huge amounts to amount on our backs etc. and the hardships don't end here."A bewildered expression prevailed over my face. I couldn't believe what all he just said. I wasn't able to understand what he was actually talking about. But he continued ….."If I am right then the last time I drank a cup of water was the previous week. I am coming from the year 2050 in search of water." Wait…Wait…What are you saying? Is it possible to travel from the future to present? I asked with curiosity. He replied, yes, it is. It is a world that you don't know. In the future, technology has advanced to its extreme level but at the same time nature has been deteriorated to its worst level. In the future, only limited sources of water have remained uncontaminated. There's a huge scarcity of water?

You guys are so lucky. You cannot imagine what we go through every day. In fact, the situation has worsened to such an extent that the possibility of 3rd WORLD WAR is increasing day-by-day. I asked him again "Is it true that a war on who controls water is going to be a reality? "He replied, "Yeah of course." The probability of its occurrence is too high. But you know I am welcoming this war". And by just saying these words he got lost in his own thought. I was so shocked that i could feel my heart beating fast and blood rushing inside me. But I was curious and excited; obviously, you don't meet someone from future every day and you don't hear this every day. Therefore, i continued and asked, "What do you mean?" He replied, "war will ensure huge loss of human population which will ultimately help in reducing stress from our limited water reservoirs". Ahem. I don't know what your reaction to that was just now, but I had to pick my jaw up off the ground.

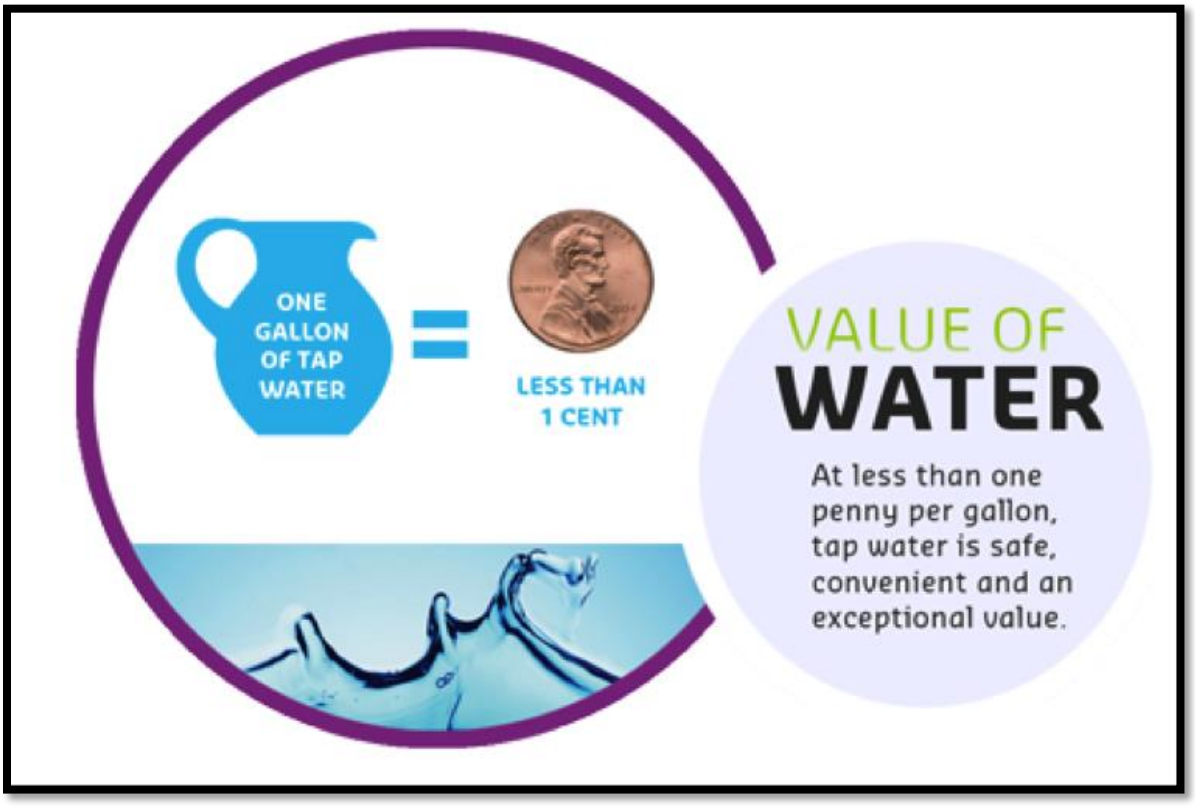
I looked at him and saw how sad he was. He said, i am requesting you, don't waste water rather utilize it judiciously so that you and your next generation will not have to face such a troublesome situation. This matter should be taken seriously because of the way you are polluting and wasting the water, soon you people might have to face a similar situation or may be even worse. If nature can bless us with one hand then by its other hand it can curse us too. If this

situation continues, then soon the day will come when everyone will quench their thirst from BLOOD". For a while, we both remained silent but soon the silence was broken. The countdown began 5…4…3…"It's my call. Now I have to go. GOOD LUCK" he said.

I sat there thinking about all that he said. He made me realize the seriousness of the issue and I will be forever grateful to him for this. "SURABHI ..... wake up and get ready for college". A sound came from the next room and it was my friend who was shouting.

I woke up slightly relieved but very determined. I pledged I would try to create as much awareness as possible about conservation of water. And from here I have started my small efforts focusing on good practices that we can all follow…….

Surabhi
B.A. (Honours) Geography 1st year



Let the Water Last!!!

The tap dripped day and night

No one came to shut it tight

It's every drop really counts

We will suffer for a small amount

A nightmare will ensue if all the water is lost!

To close the tap, what does it cost?

You drink a bit, the rest you throw

That water can help a plant grow

Let it be a matter of worth

Don't create a situation which is worst

So save water

Do your part

And let the water last!!!

Ayesha Khan
B.A. (Honours) Geography 1st year

Auto biography of the Last Drop

As I leave,

I could see the terror in the eyes of the little pink face,

Asking me to stay, to fulfill its very last wish

I could see the fear in mumbling lips of the ailing man old,

Reaching out to me with weak hands old

I could hear a hundred cries, a thousand screams,

Longing for the lost rivers, Longing for the sparkling streams

I could feel the pain of the little boys dying,

In the midst of the very earth drying

As I rise,

The earth seemed so tiny,

Tinier seemed the people,

With humungous tear drops quenching their thirsts.

I couldn't help but watch in wonder,

Gazing at the million dead bodies amidst the Ochre yonder

Watching the last brown leaf leaving the last standing tree,

Witnessing an apocalypse so eerie

Rivers aren't rivers any more,

Streams aren't streams,

Sand and parched earth is what's left behind,

and left behind are a thousand echoing screams.

The water clouds are long gone,

Black blanket now cover the blue unknown,

I couldn't help but pity the dying beneath,

But, they are reaping the fruits of the tree of destruction they have sown.

And as I leave,

I can see the turmoil of another world war,

I can feel the heat of the dying parched planet,

Radiating up into the sky

I can see the dying people, dying animals, the dying trees, the dying crops,

It's terribly heart breaking being the last water drop.

And as I leave,

I take along with me the soul of infinite beings, infinite greens,

I take along with me the very soul of the former blue planet.

Astha Bharti
B. A. (Honours) Geography 1st year

जल की गुहार

वर्षा से बहता है जल।
स्वच्छ एवं यह है निर्मल।
शीतल एवं स्वच्छ जल,
कल-कल-कल बहता हर पल।
जीवन का हैं यही आधार,
बंद करो अब अत्याचार।
जल ही जीवन कहते हो।
फिर भी व्यर्थ करते हो।
यदि इसे व्यर्थ बहाओगे,
तो अनमोल मोती कहां से लाओगे।
आकाश-पाताल एक करोगे,
तब भी ना मिल पाएगा।
नदियों का जल भी यूं ही,
धरातल में समा जाएगा ।
जल की भी सुन लो गुहार,
कहता हैं - बंद करो ये अत्याचार।
मत करो मुझे बर्बाद,
खत्म हो जाने पर करोगे याद?
मेरी बर्बादी करने से ही तो,
मेरी उम्र और भी घटती है।

मुझे पाकर सभी जीव
जीवन को यूं पाते हैं।
कमी अगर हो गई तो फिर,
यूं ही सूखे मर जाते हैं।
अगर न बचा पाए मुझको,
तो कैसे प्यास बुझाओगे?
पानी के लिए बिछेंगी लाशें,
फिर यही सब देखते रह जाओगे।
रुपए में भी ना बिकेगा,
फिर कर लेना मारामारी।

जल युद्ध का कारण हो सकता है,
सुन लो तुम आज्ञाकारी।
ग्लोबल वॉर्मिंग बढ़ा रहे हो क्यों?
बढ़ा रहे प्रदूषण आज।
जलवायु परिवर्तन बढ़ा रहे हो,
और बढ़ा रहे हो बर्बादी आज।
अम्लीय वर्षा बढ़ा रहे हो,
बढ़ा रहे हो सूखाआज।

भूजल को कम कर रहे हो क्यों?
कर रहे हो तबाही आज।
आज अगर मैं रो रहा हूं,
तो तुम भी कल पछताना।

संरक्षित कर लो मुझे,
वरना प्यासे मर जाओगे।
सतर्क हो जाओ। बात मान लो।
मेरी यह कहानी हैं।
करो फैसला। रहो सजग।
मेरी यही जुबानी हैं।

Anjali
B.A. (Honours) Geography 1st year

Departmental Activities

Inaugural Event of Geography Honours

Education is the key to our future. All of us are connected by the shared belief that the future of India lies in the hands of our next generation. We are living in an era of profound change, lying ahead of us are the immense challenges of the 21st century. Our world is changing at an unprecedented pace and the issues we face now are very different from those of 20 years ago. To remain in a leading position we are reshaping our education landscape to prepare a generation that could rise to these challenges.

Since its foundation in the year 1969, Shyama Prasad Mukherji College, University of Delhi has been fully devoted in nurturing new generation with vision, ideas, commitment and dedication to excellence. With the vital support from the college Principal, the Governing body and teachers the college introduced Geography Honours discipline in the year 2018. On 5 September 2018, the department celebrated its inauguration.

The function was graced by the Chief Guest Professor S.C. Rai, Head of the Department, Department of Geography, Delhi School of Economics, University of Delhi; Guest of Honor Professor Anu Kapur, Department of Geography, Delhi School of Economics, University of Delhi; Mr. Amrish Tyagi, Chairman of Governing body and the Principal of the college Dr. Sadhna Sharma.

Prof S.C. Rai spoke about the development of the subject Geography and its scope. He said that the subject is one of the oldest fields of study, which has attracted the attention of scholars from ancient times. It is both a natural science and a social science; it forms an interdisciplinary bridge that touches many other disciplines such as agriculture, science, health sciences, economics etc. Individual scholars tend to emphasize on different aspects of the spatial world. Sir also shared his views on scope of Geography. He stated learning or studying the discipline is getting much significance due to its increasing applicability both in corporate sector as well as in education. Geographers play a key role in contemporary world because of deepening global integration. He emphasized that Geographers with applied skills can find a variety of career opportunities as GIS experts, as

Social and Political analysis, cultural critics and so on.

Prof. Anu Kapur shared her views on '**Geography of Geography of India**.' She explained that the subject matter of Geography has a long history, which was crystallized in the beginning of the 20th century under the British tutelage, with the establishment of departments of research and teaching all over country. The first department of Geography in India was established in 1924. The attitudes of the nation in the post-Independence era changed with the ambition to provide education to its citizens and deliver all kinds of socio-economic development. To account this, number of schools, colleges, universities and institutions were created across the country. In 1965, the Government of India appointed a committee on Social Science, later the committee established the Indian Council of Social Sciences Research (ICSSR) in 1969. The Central Board of Secondary Education overhauled its curriculum in 1977, and grouped subjects like History, Civics and Geography under the category of Social Sciences and Physics, Chemistry and Biology as General Sciences. At the higher level of education several departments came up all across the country. The Department of Geography at Delhi School of Economics was established in 1949. It is regarded as one of India's finest academic institutions in Social Sciences. She also concluded with the scope of the subject and pointed out that the job market for Geographers is growing slowly but much needs to be done to improve the marketability of the subject. The students also participated in a small cultural program which was well appreciated.

Adeline Abbha
B.A. (Honours) Geography 1st year

रिपोर्ट-स्थलमंडलसंचालन

दिनांक 31 अक्टूबर 2018 को हमारे विश्व विद्यालय "श्यामाप्रसादमुखर्जीकॉलेज" में एक कार्य क्रम आयोजित किया गया था। इस अवसर पर मुख्य अतिथि माननीय डॉवी. आर. वी.रमन, सहयोगी प्रोफेसर, शहीद भगत सिंह कॉलेज, दिल्ली विश्व विद्यालय को बुलाया गया था।डॉ रमन के भाषण का मुख्य विषय 'स्थल मंडल में संचालन' था। अपने भाषण के द्वारा उन्होंने अपने अनुभव और विचारों को हम तक पहुंचाया।उन्होंने बताया कि पृथ्वी कैसे कार्य करती है और किस प्रकार विभिन्नतत्वों का निर्माण होता हैं तथा इस संचालन में कौन-कौन सीक्रियाएंशा मिल हैं।

प्रक्रियाएं दो प्रकार की होती हैं- आंतरिक क्रिया एंव बाह्यक्रिया। "आंतरिकक्रियाएं" वह क्रियाएं हैं जो पृथ्वी

के आंतरिक भाग में होती हैं। "बाह्यक्रियाएं" वह क्रियाएं है जो पृथ्वी के ऊपरी भाग पर घटित होती हैं।यह दोनों क्रियाएं मुख्य रूप सेस्थलमंडल के संचालन में शामिल हैं। उन्हें बताया कि यदि एक तरफ सेस्थलीय भाग का कटा वहो रहा है तो दूसरी तरफ उनका निर्माण भी हो रहा है।उन्होंने उदाहरण सहित बताया जैसे एक तरफ पर्वतका निर्माण होता है तो उसके दूसरी तरफ घाटी /खाई निर्माण हो रहा होता हैं।इस सिद्धांत का वर्णन उन्होंने विस्तृत रूप में रूप में किया।स्थलमंडल के संचालन के साथ उन्होंने पृथ्वी की आंतरिक संरचना को विस्तृत रूप से प्रकट किया और पृथ्वी की आंतरिक अवधारणा को पूर्ण रूप से प्रस्तुत किया। और यह स्पष्ट किया किपृथ्वी की संरचना पर तदार है - पहलीभू-पर्पट्टी, यह पृथ्वी की सबसे ऊपरी परत हैं।दूसरा मेंटल, यह मध्यम परत हैं।और तीसरी परत क्रोड, जो पृथ्वी के भीतर भाग में हैं।यह सबसे आंतरिक परत हैजो तापमान और दबाव की अधिकता के कारण ठोस रूप में स्थित हैं।

इसके अलावा उन्होंने हमें 'विवर्तनिकीसिद्धांत' से भी अवगत कराया और प्लेटविवर्तनि की सिद्धांत को उन्होंने ललित पर्वत के निर्माण द्वारा समझाया। डॉ. रमन उदाहरण के लिए हिमालय पर्वत तंत्र की उत्पत्ति की व्याख्या की। इस सिद्धांत के अनुसार यह माना जाता है हिमालय पर्वततंत्रइंडो- ऑस्ट्रेलियाई प्लेट और यूरोपीय प्लेट के अभिसरण का परिणाम है। इस प्रकार उन्होंने हमें इस सिद्धांत के द्वारा समझाने का प्रयास किया कराया कि स्थलमंडल संचालन किस प्रकार कार्य करता हैं। इन सभी सिद्धांतों

का वर्णन उन्होंने अपने अनुभव और सर्वेक्षण के आधार पर किया और उन्होंने अपने सर्वेक्षण के दौरान लिए कुछ फोटो और वीडियो भी दिखाएं।

Pooja
B.A. (Honours) Geography 1st year

A trip to Indian Meteorological Department

A trip to Delhi headquarters of Indian Meteorological Department (IMD) was organized by Department of Geography in order to provide practical knowledge of the concepts that we learn in our curriculum related to Climatology. IMD is national meteorological service of our country and the principal government agency in all matters relating to Meteorology, Seismology and allied subjects

We reached the headquarters (Lodhi road) at 10 am in the morning and our tour began from Central Hydromet Observatory. Here we were introduced to the techniques of Automatic temperature calculation at the Automatic Weather Station which stood at a height of 36ft as per the international standards. From here the data (digital) is transmitted to the centre at Pune. At Pune the data is processed further.

Next we were introduced to instruments used for calculating the local temperature and humidity i.e. Thermograph and Hygrograph respectively. Afterwards we saw the thermometers used for temperature calculations having maximum and minimum limits according to minimum and maximum possible temperatures of Delhi. Both the instruments and thermometers were placed inside Stevenson Screen which is a white wooden box with louvers to shelter them from directly heat of sun and allow air circulation.

Stevenson Screen housing Thermometers used for measuring Temperature

A Rain Gauge

The functioning of Self Recording Rain Gauge for recording amount of rainfall received was also shown. It continuously generates a graph based the rainfall received at that particular time of the day. A new graph paper is placed inside every morning at 8:30 (according to universal time of co-ordination)

Next stop was the room of Air Quality Monitoring System where the concentration of pm10, pm2.5 etc. were calculated in that specific unit of local area. Further down the tour at the National Ozone Centre,

the functioning of Ozone Spectrophotometer and flight of Ozonesonde (after every 15 days) attached to a balloon, released from Arjungarh metro station on every Wednesday was also explained.

Second part of the tour began at Satellite Meteorology building at the National Satellite Meteorological Centre where we were introduced to the concepts of Satellite Meteorology which includes types of satellites, geocentric orbits and the way clouds are detected etc. The INSAT series of satellites that provide data for weather forecasting, rainfall estimation etc. was also explained to us. The Real time Analysis of Products and Information Dissemination (RAPID) acts as a gateway to Indian satellite data and is hosted in the IMD website was also shown.

The last phase of the tour was at National Weather Forecasting Center. Here forecasting techniques used by the weather forecasters were briefly explained.

Group Photo at IMD entrance

Cheena Juneja
B.A (Programme) 3rd Year

A Lecture on Disaster Management

On 6th February, 2019 Department organized a lecture on Disaster Management in collaboration with Association for Geographical Studies. Dr. Amrita Bajaj, Assistant Professor, Shaheed Bhagat Singh College (M), University of Delhi & Secretary of AGS was our resource person. The lecture was divided into two segments

a. Overview of AGS
b. Lecture on Analysis Of Landslide Vulnerability: A Case Study of Kinnaur District, Himachal Pradesh.

AGS- Association for Geographical Studies was formed in 1979. The main motive of this association is to create an opportunity for Geographers to inherit, expand, evolve and disseminate information relating to Geographical research on different physical and human issues. It aspires to play a pioneering role in the education of Geography and aims to shine as the best in Geography education at national and international levels. Dr. Bajaj also spoke about the future plans of AGS which included promoting greater interactions between the geographic fraternities through seminars, workshops, dialogues and excursions.

In the next segment of her lecture Dr. Bajaj started with an overview of Disasters and then went on to explain it with her case study- Analysis of Landslide Vulnerability: A Case Study of Kinnaur District, Himachal Pradesh.

She explained-

- Major factors responsible for causing landslides – slope, aspect, rainfall, earthquakes, road construction and dam construction etc. through GIS maps of Kinnaur.
- The available institutional Framework in the district regarding disaster mitigation.
- Community perception and their preparedness for the disaster. Her research showed that local people play a major role in disaster preparedness. They help in information dissemination to the local authorities, in evacuation process and play an active role with the Panchayat in the rehabilitation process.

- Suggestions given by the Community - need of banning deforestation and constructional projects, maintaining balance of nature, launching proper awareness programs regarding Landslides.

Her lecture ended with their recommendations which they had also submitted to the local authorities. These included-

- Creating adequate infrastructural measures
- Rock fall protection
- Bottoms up approach to ensure that local concerns are included in the policy making
- Annual meetings with all the stakeholders
- Preparation of seasonal calendars of the events experienced in the district which would help in planning mitigation activities properly and effectively
- Organising more awareness campaign and training programs.

She ended her lecture with-

"The Secret of Crisis Management is not good v/s bad, it's preventing the bad from getting worse."

Astha
B.A. (Honours) Geography 1st year

Brain Teasers

QUIZ

1. _____ is a volcanic island-

a) Lakshadweep
b) Diego Garcia
c) Maldives
d) Barren Island

2. Sahara desert covers which of the following countries-

a) Botswana
b) Namibia
c) Kenya
d) Tunisia

3. _____ Project was launched on 19 April 1975?

a) Bhaskar
b) Rohini
c) Aryabhatta
d) Bhaskar 2nd

4. Wales is a part of which union

a) UK
b) USA
c) USSR
d) UNO

5. Match the following:

a) River Padma	i)Uttar Pradesh
b) Ghaghara	ii)Maharashtra
c) River Koyna	iii)Bangladesh
d) River Musi	iv) Telangana

6. Which National Parks lies in Rajasthan?

a) Keoladeo National Park
b) Neora Valley National Park

c) Desert National Park
d) Mukundra National Park
1) c and d 2) a , c and d 3) b 4) a and c

7. Which instrument is used for measuring rainfall –

a) Thermometer
b) Pluviometer
c) Anemometer
d) Richter

8. Which one of the following is the correct sequence of the given Indian cities in the deceasing order of rainfall?

a) Kochi-Kolkata-Delhi-Patna
b) Kolkata- Kochi-Patna Delhi
c) Kochi-Kolkata -Patna-Delhi
d) Kolkata- Kochi-Delhi-Patna

9. Among the following planets which one takes the maximum time for one revolution around the sun?

a) Earth 365 days
b) Jupiter answer 11 years 86 days
c) Mars 687 days
d) Venus 267 days

10. The correct sequence of different layers of atmosphere from surface to upwards is?

a) Troposphere-Stratosphere-Ionosphere-Mesosphere
b) Stratosphere-Troposphere -Ionosphere-Mesosphere
c) Troposphere-Stratosphere -Mesosphere-Ionosphere
d) Stratosphere-Troposphere-Mesosphere-Ionosphere

11. . The January isotherm taken as a basis for dividing India into tropical and sub-tropical zones is?

a) 210C°
b) 180C°
c) 120C°
d) 150 C°

12. Which lake is one third in Indian Territory and rest in Tibet (China)?

a) Wular lake
b) Tso Morari
c) Tso Kar
d) Pangong Tso

13. With which of the following deficiency is the Meteorological drought associated?

a) Rainfall
b) Water Supply
c) Soil Moisture
d) Ground Water

14. What is the correct sequence of the occurrence of following disasters

i.	Indian Ocean Tsunami	Dec, 2004
ii.	Bhuj Earthquake	Jan, 2001
iii.	Kosi Flood	Aug, 2008
iv.	Bhopal Gas Tragedy	Dec, 1982

a) i-ii-iii-iv
b) ii-i-iv-iii
c) iv-ii-iii-i
d) iii-i-ii-iv

15. Which of the following is true about gradient wind?

a) They flow parallel to the isobars
b) They originate in the horse latitudes
c) They are also called gradient winds
d) They originate in clam weather

16. What is sclerophyll?

a) Lake type
b) Vegetation
c) Settlement
d) Aerosol

17. The percentage of radiation reflected by an object is known as its

a) Albedo
b) Insolation
c) Advection

d) Convection

18. Onges are indigenous people of

a) Andaman
b) Gujarat
c) Orissa
d) Bihar

19. Which of the following soil types has high content of clay that forms deep cracks

a) Oxisols
b) Ultisols
c) Aridisols
d) Vertisols

20. Wheeler Island is located off the coast of

a) Gujarat
a) Nicobars
b) Orissa
c) Tamil Nadu

21. Piedmont plateaus are best explained as plateaus

a) Bordered only by mountains
b) Bordered on one side by mountains and on the other side by a plain or sea
c) Bordered on all sides by sea
d) Bordered on all sides by plains

22. Vernal equinox takes place in the month of

a) September
b) March
c) January
d) June

23. The line of maximum depth of a river channel is called

a) Slope
b) Basin
c) Thalweg
d) Face

24. Name the kind of lava formation seen in the picture

a) Pillow lava
b) Pahoehoe lava
c) Aa lava
d) lahar

25. The maximum concentration of ozone is found at what altitude and which layer of atmosphere?

a) 10 – 16 km in the Troposphere
b) 50 -55 km in the Mesosphere
c) 25-30 km in Stratosphere
d) 25-30 km in Stratosphere

26. Which of the following rivers have to cross an extensive desert area before it reaches the sea?

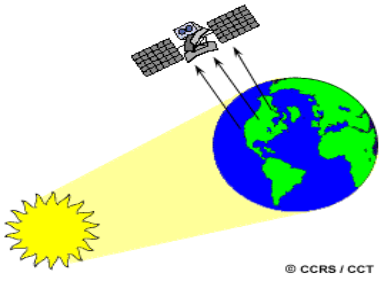
a) The Amazon
b) The Mississippi
c) The Hwang Ho
d) The Colorado

27. Which one of the following is not a perspective map projection?

a) Gnomonic
b) Stereographic
c) Orthographic
d) Equidistant

28. Type of remote sensing

a) Idea
b) Active
c) Passive



d) Hyper spectral

29. The path followed by a satellite is referred to as its

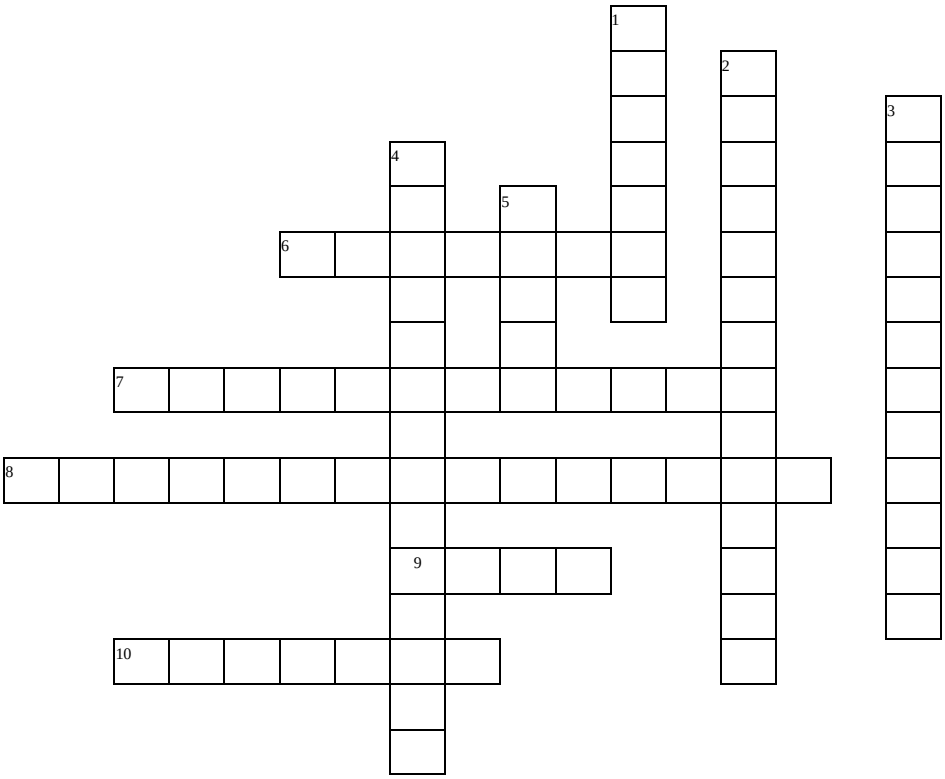
a) orbit
b) swath
c) pixel
d) Instantaneous field of view

30. Satellites at very high altitudes, which view the same portion of the Earth's surface at all times are called

a) Sun-synchronous
b) Geo- Stationary
c) Space shuttle
d) Spacecraft

Priya
B. A. (Programme) 3rd year

Crossword- 1



Across

6. Most common chemical pollutant in groundwater aquifers from agriculture
7. Most common pollutant found in oceans
8. The dead zone in Gulf of Mexico is created by which polluted river
9. The continent with maximum number of polluted rivers
10. The toxic chemical that contaminated 85% of the groundwater of Bangladesh

Down

1. Which industry is the major source of water pollution?
2. Major source of water pollution (80% pollution is caused due to it)
3. Most polluted lake on the Earth
4. Extensive concentration of nutrients like nitrogen and phosphorus in river bodies is known as_____
5. Most polluted river in the world

Prakshi Rana
B.A. (Honours) Geography 1st year

Word puzzle

RIVERS AROUND THE WORLD

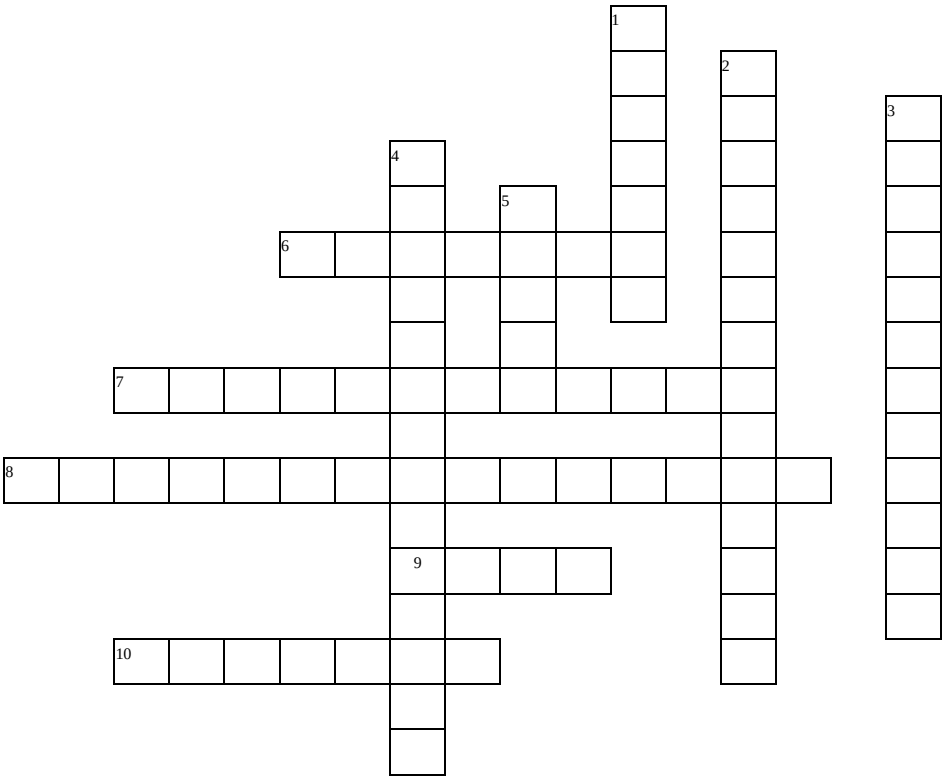
A	S	O	T	Q	P	E	R	S	T	E	E	D	R	E	D
T	S	K	A	W	L	Y	V	A	N	O	R	E	V	C	E
A	U	D	N	I	S	U	M	U	S	B	V	N	O	W	V
R	E	L	N	E	D	C	E	E	M	I	L	I	C	S	I
E	V	Q	S	B	J	I	N	S	R	T	O	H	I	E	R
V	A	O	O	H	R	N	A	Y	S	G	E	R	K	T	E
I	X	E	G	Y	E	P	D	O	A	A	D	C	I	A	V
R	K	O	L	L	O	D	N	R	T	N	I	J	P	R	I
H	O	F	A	E	A	Z	M	A	S	E	G	E	I	H	R
S	W	I	N	W	I	R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

CLUES-

1. Longest river in the world
2. Hindu's holy river and one of the longest river in India
3. Longest river in Asia and third longest river in the world
4. A trans- boundary river in South East Asia and world's twelfth longest river
5. Largest river by discharge volume of water in the world in South America
6. Longest river in Europe
7. The length of this river is conventionally measured in Rhine kilometres
8. One of the longest river in South America with the length of 2,140 kilometres
9. Fourth longest river in Africa and the longest East flowing river in Africa
10. Longest and one of the most historically important river of Western Asia
11. Chief tributary of the Ob river with the length of 4,248 kilometres
12. Second longest ever flowing completely in France
13. Myanmar's largest river and most important commercial waterway

Vanshika Amoli
B.A. (Honours) Geography 1st year

Crossword- 2



Across

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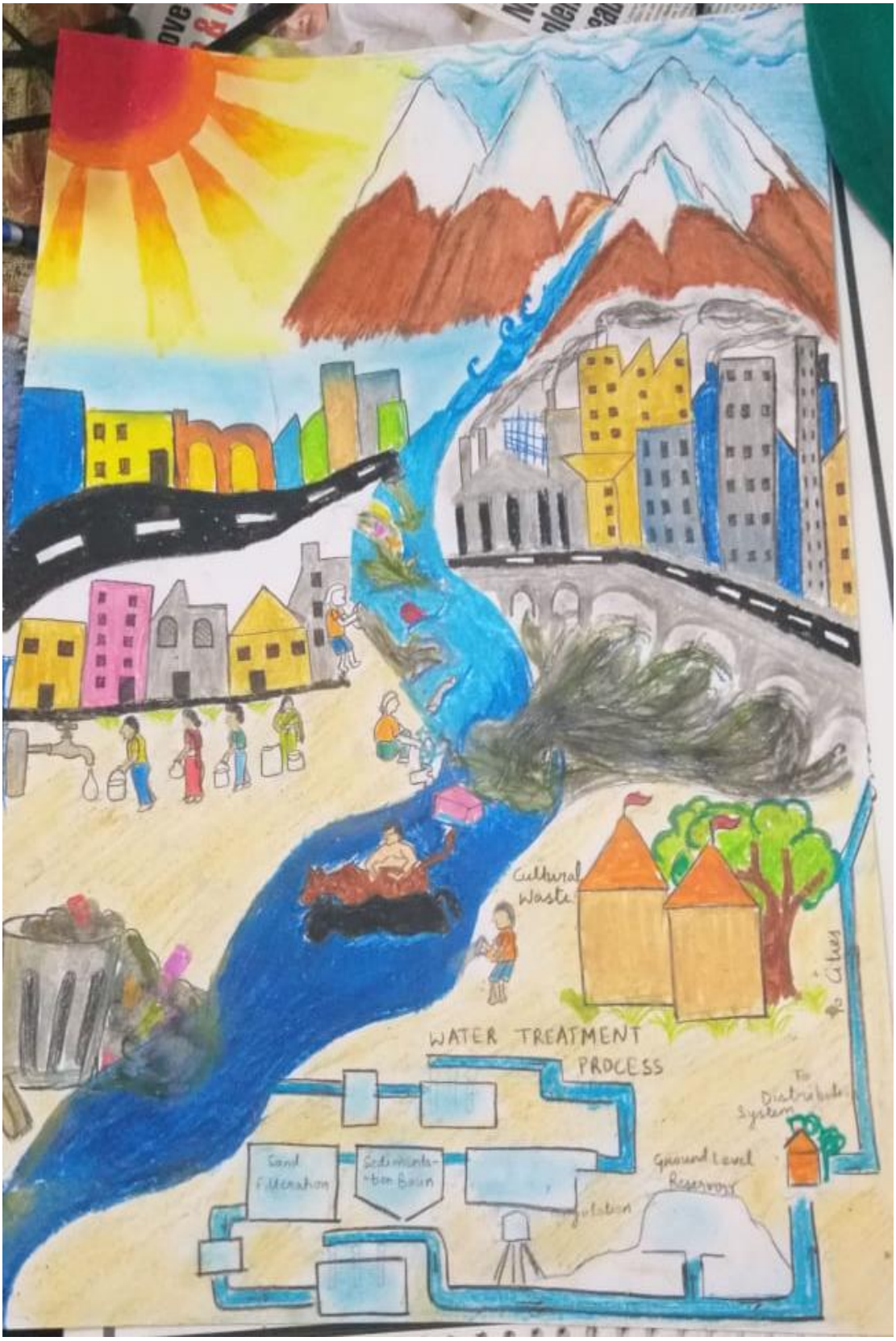
Nazneen Sultana
B.A. (Honours) Geography 1st year

POSTERS



Pavi Beniwal, B.A. (Honours), 1st year


EGO X ECO
Name- Monika
Roll no.- 0288
B.A. Programme 1st year

Raunak Sahni
B. A. (Honours) 1st year

ANSWER KEY

QUIZ

1. D) Barren Island

2. D) Tunisia

3. C) Aryabhatta

4. A) UK

5. Padma- Bangladesh; Ghaghara- Uttar Pradesh: Koyna- Maharashtra, Musi, Telangana

6. 4

7. B) Pluviometer

8. C) Kochi-Kolkata -Patna-Delhi

9. B) Jupiter (11 years 86 days)

10. C) Troposphere-Stratosphere -Mesosphere-Ionosphere

11. D) 150C°

12. D) Pangong Tso

13. A) Rainfall

14. C) iv-ii-iii-i

15. A) They flow parallel to the isobars

16. C) Settlement

17. A) Albedo

18. A) Andaman

19. D) Vertisols

20. C) Orissa

21. B) Bordered on one side by mountains and on the other side by a plain or sea

22. B) March

23. C) Thalweg

24. B) Pahoehoe lava

25 .C) 25-30 km in Stratosphere

26. D) Colorado

27. D) Equidistant

28. C) Passive

29. B) Swath

30. B) Geo- Stationary

CROSSWORD1

Across	***Down***	
2) Recharge zone	1) Dehydration	7) Desalination
5) Fluorosis	3) Floodplain	9) Drought
8) Aluminum Sulphate	4) Salinity	
10) Blue baby syndrome	6) Swamp land	

CROSSWORD 2

Across	***Down***
6) Nitrate	1) Leather
7) Microplastic	2) Domestic
8) Mississippi river	3) Lake Karachay
9) Asia	4) Eutrophication
10) Arsenic	5) Ganga

Here's Thanking-

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Head of the Department	*Dr. Rachna Dua*
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Faculty Advisor	*Ms. Anuradha Shankar*
Editorial Team	*Cheena Juneja, Pavi Beniwal, Maithali Pathak, Anjali*

All the people whose images we have used throughout the magazine at various places from free sources.