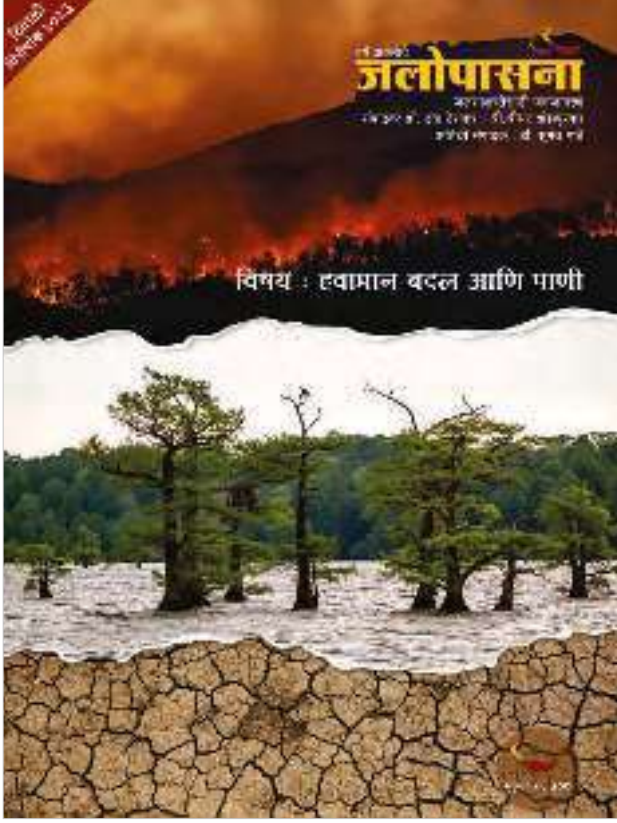




Cover Story

**Marathwada Navanirman Lokayat (Manavlok)
- Shri Vinod Hande**

जलोपासना



For last 10 years we are publishing one Dewali Magazine by name Jalopasana. This issue is completely devoted to water and its problems. For the 11th Issue , topic chosen was Climate change and Water. This issue was published on 25th November, 2023 at the hands of famous literate, Dr. Aruna Dhere who was the Chair person of Akhil Baratiya Marathi Sahitya Sammelan. This publication took place in the auditorium of Bhandarkar Institute, Pune.

Jalsamvad



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Mouth Piece of Bharatiya Jala Sanskriti Mandal

■ December 2023

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Climate change- Whose responsibility ?

Even today, it is not clear as to who is responsible for the changes in the climate. Some say that it is the human being who is responsible for this change. But there are some scientists who do not accept that human beings are totally responsible for this change. They say that it is a natural phenomenon. They assume that there is a cyclical behaviour in the climatic conditions. If we go across the age old Indian literature, it is said there that the climate moves in a circular fashion, each cycle lasts for 60 years. Every cycle includes 60 sanvatsaras, each sanvatsar representing a particular stage of climate. For example, there is one sanvastar by name Raudra sanvatsar where heavy rains, cyclones are noticed. Western thoughts are quite different. It is said there that one cycle lasts for 120 years. If we study the statistical principles it is assumed there that there should be sufficient observations if certain inferences are to be drawn. Their assumption is that for correct results, at least 20 observations should be available for the study. One observation is that of 60 years. Naturally, for 20 observations a period of 1200 years should be at our disposal. But unfortunately, required data for all such years is not available anywhere.

Naturally, one question arises here, is there any alternate way to get some information pertaining to changes in climate in absence of such statistical information. Science is developing very fast and taking the advantage of this development, scientists have evolved some different technique to get some information. If a tree is cut, information pertaining to past rainfall, temperature, climate can be had from the circular growth lines on the log of the cut wood. Experiments are on the way to bring perfection in that study. Logs of different trees have different circular growth lines telling us a different story.

One more fact cannot be ignored. Though not for long period, statistical information is available for some recent years in connection with rainfall, temperature, flow of winds, climate. Various government agencies created specially for this purpose are working day and night in collecting this information. But most of this information relates to land and not the sea surface. We know that two third of the earth is covered by sea and only one third is covered by land and so to draw any conclusion only on the basis of the present information which mostly pertains to land is not advisable. Efforts are needed to collect that information as well. Information pertaining to temperature of the water in the sea, air currents created because of that temperature which affect the movement of air and water on the land surface would be very useful to draw some valid conclusions.

Does this mean that we should neglect the present havoc (may be due to Nature or man) caused by climate change? Of course not. Increase in the carbon die oxide, may be due to excess use of thermal electric power, use of petrol or diesel driven cars and trucks, deforestation and the change in the way of life of human beings. Causes of climate change can be disputed but not the effects. These effects are making our normal life miserable. The researchers are conducting meetings and conferences all over the world. Presently, one such conference is being held at Dubai. We wish all the best for such a conference. Let some wisdom prevail in this conference.

Dr. D. G. Deshkar
Editor

Organization - MANAVLOK

Shri Vinod Hande

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‘MANAVLOK’ stands for ‘Marathwada Navnirman Lokayat’. Marathwada is the central part of Maharashtra, NAVNIRMAN means Recreation and LOKAYAT denotes ‘for the people, by the people’. This indicates recreating rural development for the rural people with the support of rural people. It is a non-profit organization established in 1982 by Dr. Dwarkadas Lohiya, when he was studying in an Ayurveda college in Nanded. Organization is registered under Society Registration Act 1860. Dr. Dwarkadas Lohiya is popularly known as “babuji”. Organization is working in the following sectors,

- Watershed Development Program.
- Krushak Panchyat.
- Disaster Relief Service.
- Women Empowerment.
- Janasahayog. Social Work College,
- Self Help Groups.
- Sanitation,
- Advocacy, and
- Monitoring and Evaluation of Govt. Programs for Integrated Rural Development.

Vision of MANAVLOK is to solve socio-economic problems of the community and provide them a better life. The objective of the MANAVLOK is to improve the socio-economic status of the rural people through above mentioned programs and improving education level of the region. Little about Journey of MANAVLOK. In the early 1970 socialist group of youth began seeking solutions to social and political problems of the rural community with a aim of achieving harmony in the society. After nearly 20 years of

effort they concluded that socio-political change was not possible without economic change. With this point of view Dr. Dwarkadas Lohiya laid down foundation of MANAVLOK organization in 1982 for upliftment of rural people. Shri Dattatray Deshmukh is the president of MANAVLOK. Philosophy of MANAVLOK, “Go to the people, live among them, Learn from them, love them, start with what they know, build on what they have”.

MANAVLOK helps common people to take initiative for their improvement and to give back right place to women in socio economic and political setup and creating awareness of their own identity among them. For that MANAVLOK setup “Manaswini Mahila Prakalp”. They give support to the economic development of women through skill training, capital support etc. They also provide seeds and fertilizers to Self Help Groups and also help them in getting various government schemes.



To overcome the droughts in Ambejogai, MANAVLOK has created SAZ i.e. Special Agriculture Zone as rural economics depends on agriculture. 80 percent of farmers are dry land holders. This SAZ project of organization is divided in two parts. First part covers area development which covers development of the surrounding area land, water and forest areas. Second Part covers generation of social, health, economic and educational richness among rural community. Crops that require excess water like sugarcane, bananas and grapes are restricted in this SAZ area. Farmers are encouraged to employ methods like sprinklers and drip irrigation system for other crops. In SAZ area farmers are strictly prohibited for digging bore wells for irrigation. Drinking water will be available to all throughout the year, even during severe drought.

Over the period of their journey MANAVLOK has experience of overcoming the challenges and difficulties. Their staff is now equipped with carrying out variety of plans and policies related to community development. They motivate rich to help poor and stronger to help the weaker. Following are the figures that show achievement of MANAVLOK so far,

- Benefited 4468+ villages.
- 100+ projects completed.
- Partnership with 35+ agencies.
- 2176304 are total beneficiary.

There are two objectives before the organization. First is short term objective and second long term objective.

Short term objective

- To improve the productivity of agriculture land through timely support of seeds, fertilizers, irrigation facilities, land renovation and farm mechanization.
- To create employment opportunities in areas to limit migration problem via skill training and financial support.
- To improve the status of women, rural poor and youth through awareness programs.

Long term objective

- End Migration.

- Empowering the poor
- Empowering women
- Restoring the ecological balance
- Building sustainable ecosystem.
- Mobilizing people by creating awareness about social responsibilities.



MANAVLOK is having it's Headquarter at Ambejogai in Beed district of Marathawada and sub office at 1) Salegaon Dist. Osmanabaad, 2) Pardhewadi, Dist. Latur, 3) Patoda, dist. Beed, 4) Pisegaon, Dist. Beed, 5) Poos, Dist. Beed, 6) Yelda, Dist. Beed, and 7) Manaswamini Mahila Prkalp, Dist. Beed.

Work of MANAVLOK in the sector of Watershed Development.

Marathavada is well-known for drought. MANAVLOK implements several activities in hundreds of villages to minimize the problems of people due to drought and make villages water rich. The best way to tackle this scarcity is watershed development. MANAVLOK is implementing following activities to achieve the goal of drought proof village. Government of Maharashtra has selected MANAVLOK for implementing their watershed program.

- Continuous Contour Trench (CCT)- CCTs are excavating continuous trench (60cm wide*30cm deep) on continuous contour lines which are marked with the help of contour marker. Trenching is being done starting from top to bottom. Distance between the trenches will depend upon the slope.



- **Deep Continuous Contour Trench(DCCT)-** This type of activity is done with the help of earthmovers. Trench size is 1m*1m along the contour line is excavated so that more water will be stored.

- **Loose Boulder Structure (LBS)-** These are the small structures constructed in the upper ridge of watershed area having a slope of 5% where run off is high. It is performed by labors with stone available at local site. It also protects soil erosion from hilly area and also helps in vegetation.

- **Stone Bunding-** This is also done with the help of labors. Size of bund here 0.30*0.80*0.60m and also constructed with stones available at site.



- **Earthen Nala Bund(ENB)-** These are generally built to temporarily halt the flow of water, to enable soil conservation and storage of water.



The material used for this bund is a mixture of soft rock and black cotton soil.

- **Composite Gabion Bund-** This is a combination of gabion structure and Cement Nala bund. Water storage capacity is approximately equal to cement nala bund with low construction cost. This is totally a labor job. A concrete wall of 2 M is constructed then with stone chain mesh is bounded together to increase it's strength.

- **Farm Bunding(FB)-** This is water and soil moisture controlling activity performed at the slope of the farm field. The bunds of 1 meter wide



and 1 meter deep constructed by using machine or labor. The purpose of this activity is to control

erosion of fertile soil from farm field.

- Water Accumulating Deep trenches – A trench of 5*3*2M in size is constructed along the streams where there is moderate flow. This trench acts as a barrier to the flowing water and also trap fertile soil.



- Farm Pond- Farm pond is a structure constructed in the farm to store water which provides water to the plants during scarcity of water. These are small in size which stores water from surface runoff.

- Cement Nala Bund- This activity is performed to create more water storage. A bund is of 2 meter height along river and stores water back up to 100 meters.

- Desilting and pouring silt in Farm Land- Desilting activity is performed with the help of earthmovers machine. Fertile silt from dry water body is excavated and farmers cart that fertile soil to their farms. The main purpose of this activity to restore the original storing capacity of dams and to increase the soil fertility and crop production.



MANAVLOK is performing this activity since 2016 and has desilted more than 50 dams. 4 million cubic meters of silt removed in 6 districts and 14 blocks of Marathwada. MANAVLOK is working with Govt. of Maharashtra on it's "Galmukt Dharan, Galyukt Shivar" project.

- Doha- This is a rejuvenating activity. Rejuvenating is done by widening and deepening of existing nala or river. The size of Doha varies between 10-15 M which depends on the local site.

- Recharge Shaft- This activity is performed in river basin where water percolation is poor, mostly in the black cotton soil. A 100feet bore-well is drilled and trench of 2.5*2*2 meter is dug and filled with stones, pebbles and sand to increase recharge.

- Rejuvenation of River Holna- Rejuvenation work of Holna River and it's tributaries was carried out in the villages of Patoda, Palaskheda, Devala from Ambejogai block of Beed district. Work of rejuvenation started in Jan.2016 in the presence of water expert Honorable Mr. Rajendra Singh. The beneficiary villages contribute through Shramdaan people's contribution. Shramdan includes activities like deepening and widening of river, nalas with compartment bunding, construction of Doha, soak pits, tree plantation ect.. Villagers raised 25 per cent of fund through contribution and rest by MANAVLOK. Similarly rejuvenation of Tube-wells and desilting of and deepening of Old well were also carried out by MANAVLOK.

- Water saving device- The this activity drip or sprinkler system is supplied by MANAVLOK to farmers to develop micro irrigation system for optimum use of available water.



Project of Aasha Ki Bunde – This project was jointly taken by UNICEF, ACWADAM and MANAVLOK. The main object of this project is to strengthen the arrangement for drinking water safety and security planning in rural areas of three



districts (Latur, Pune , Osmanabaad) of Maharashtra. In Latur district project was implemented in Sept.2018 with duration of three years to complete work in 45 villages of Latur district. Role of MANAVLOK in this project is of CBO (Community Based Organization). MANAVLOK had taken help of 45 trained persons of the villages to develop a public document for drinking water safety and security.

Agriculture project : Majority of population in our society is farmers and our economy is depending on agriculture. Development in agriculture will improve the socio-economic issue among farmers. MANAVLOK focuses on conducting awareness and training, soil testing, seed treatment, pest management and good agriculture practice. During 1993 earthquake in Latur, MANAVLOK provided various agriculture tools like pick axes, spade, tin baskets, spray pumps, drinking water storage tanks for cattle ect. in more than 1500 families of 34 villages were benefited.

Krushak Panchayat : This is part of agriculture project. Here MANAVLOK initiated many projects for farmers to uplift their socio-economic life and formed Krushak Panchayat (farmer's Club) during 1983. There are around 1500 members and approximately 30000 beneficiaries. This Krushak Panchayat has changed into SHGs during 2006. MANAVLOK is focusing on the marginal farmers to

be free from money lenders. These marginal farmers are finding financial difficulties to buy seed, fertilizers, sprinklers, drip irrigation set for agriculture purposes. These farmers have no access to loan from bank for many reasons so they fall in trap of money lenders. MANAVLOK provided above material at market rate and MANAVLOK recovers amount from them with 2 per cent interest.

Production Enhancement Project : This is also a part of agriculture project. Here MANAVLOK implements several projects for improving per acre production and productivity of crops in their area of working. They worked for improving soybean production and for better price for farmers. The drumstick cultivation projects was implemented by MANAVLOK in 55 acres of land in Beed and Parbhani dist.s of Maharashtra and in a state of Andhra Pradesh. MANAVLOK has also worked for the production of custard apple and Guava in their beneficiary villages.

Organic Farming : Organic farming is crop production method where use of pesticides, fertilizers, genetically modified organisms, antibiotics and growth hormones is avoided. It also helps in maintaining environmental health by reducing pollution level. It helps in keeping agriculture production sustainable and at a higher level. MANAVLOK is supporting farmers to bring more area under organic farming.

Animal Care : A large number of farmers in India depends on animal for their livelihood. MANAVLOK works for the good health of farm animals by conducting vaccination camp. They also provide financial help to the farmers to raise their animals for supplying milk, eggs, meat etc.. MANAVLOK is regularly trying to support small, marginal farmers and landless labors for income through animal husbandry. They also distribute cows, goats and buffaloes.

MANAVLOK also works is in the field of Health, Education, Rural Development, Women empowerment and disaster relief work for socio-economic development of villagers in their working area.



To carry out the work in better and organized way to reach to their mission organizations needs partners to support and guide them in technical matters. They also need financial support from society to reach to their aim. Likewise MANAVLOK has a big list of collaborating partners and funding agencies. Few of them are listed,

Collaborating partners

- ATE Chandra Foundation.
- L&T Financial Services.
- Caring Friends
- Maharashtra Village Social Transformation Foundation .
- UNICEF
- ACWADAM
- THERMAX
- Save Indian Farmers.
- Maharashtra Seva Samiti Organization etc.

FUNDING Agencies

- Caring friends
- Dasra
- Give India
- Reliance Industries Limited
- Thermax Limited Pune
- Piramal Foundation, etc.

For their dedicated 40 years of services in the society for the upliftment of life of poor villagers MANAVLOK has been awarded with so many prestigious awards and appreciation certificates. Few of them are,



Latest events of MANAVLOK

- 23rd July 2023- One day workshop on “Youth Awareness: Dream and Challenges”
- 3rd June 2023 Toy bank Training
- 2nd June 2023 Publication of the report on the River Campaign by District Collector.
- 1st April 2023 Manavlok’s 41st Anniversary.

- 1st April 2023 Organic Farm Production Exhibition. Etc.

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Note : While designing the issue of Jalsamvad - English we find very interesting news, information and articles specially on water and its management. That tempts us to include the same in our issues. Getting formal permission for this inclusion is that way difficult. Therefore our effort is to print them as it is in our magazine. We may kindly be excused for such inclusions. We express a deep sense of gratitude to the original writers.

Thanks.



World Water Day - 2021

Water as a valuable good

Shri. Gajanan Deshpande, Pune -(M) : 9822754768



(A new article series has been launched from August 2021 to learn more about the importance of World Water Day and the various water awareness programs implemented every year.)

Many problems are arising at the national / international level in relation to water. Due to various reasons, especially due to population growth and increasing industrialization, water availability is becoming more critical day by day. Increasing urbanization is increasing the stress on this precious water resource.

Everyone has a feeling that whenever water is available in unlimited nature, it is free in the economic sense. But the economic value of water becomes more apparent only when supply falls short of demand. When access to water becomes scarce, its economic value increases, as many users compete to obtain it.

Proper use of water is one of our important traditional water rituals. However, the value of water is often misunderstood. Therefore, it can be seen that the practice of saving water has decreased recently. Although water is provided by nature, it has economic value. Recognizing that value and moving towards sustainability through proper water management is the need of the hour. Water resources should be used keeping in mind that they will be useful to future generations. For this two aspects of integrated thinking and public participation are very important. Keeping this in mind on the occasion of World Water Day-2021, the topic "Value of Water" was taken for public awareness and efforts were made to inculcate the following five principles regarding water in the

minds of the people.

Five important principles of water:

1. To recognize the different values that water has and to inform different groups and communities about all decisions that affect water;
2. Build consensus and trust in upholding values by adopting fair, transparent and inclusive practices;
3. To protect watersheds, rivers, aquifers, associated ecosystems and resources including watercourses used for present and future generations;
4. To sensitize, educate and raise awareness among all stakeholders about the intrinsic value of water and its essential role in all aspects of life;
5. Ensuring that there is adequate investment in the institutions, infrastructure, information technology and innovation required to deliver the many benefits of water.

Till now there was a kind of belief that water is given by nature and that it is abundant and free. So it works no matter how you use it. But that belief has gone and now we should use water sparingly and we should look at the management of that water from the point of view of how it will increase the productivity of that water from the economic point of view and how it will benefit us more and more. So, the society has started calculating the capital and annual recurring costs of water management and the returns we get from it, and the feeling that water has value is now slowly gaining importance among people.

The whole world has now realized that water is an economic commodity. Many simple and straightforward examples can be given to understand how water acquires this economic

value. E.g. when we drink a cup of tea, we never consider how many liters of water it takes to make that much tea. We simply assume the simple equation that one cup of tea equals one cup of water. But if we think about it in depth, we realize that it takes 70 liters of water to make one cup of tea. A common man may wonder whether this is an equation or a puzzle. But 15 liters of water is required to produce the same amount of sugarcane used in a cup of tea. An animal consumes about 20 liters of water for the milk used in one cup of tea. After such calculations, we will realize how 70 liters of water is required for one cup of tea. No one accounts for such water and it is wasted on the assumption that water is available for free.

Farmers use water as an essential factor for agricultural production. In fact, water is the single most influential factor in the cost of production of agricultural commodities. Despite this, the cost of water use or the cost of water is not taken into account while determining the price of agricultural produce. When a well is dug, water is needed and it is considered that we have got that water for free, because no one has to pay for that water. But such free water is later lifted thoughtlessly and horticultural crops grown. Over time, when the water reserves in that land are exhausted, more and more deep wells have to be dug. In many of those bore wells often don't have water and are dry. However, it costs a lot. Due to these expenses, many farmers become indebted, some even commit suicide. It is then realized that the cost of water is high and it is not free.

The water we get in our house through taps is supplied by the municipality. But for water to reach us, we have to spend much money on it, like, firstly pumping the water from the dam to the water supply in the city with the help of an electric pump, where it involves the cost of electricity, the cost of water purification, and the cost of establishing the manpower for all this management, etc. But we don't realize the real cost of water and we use it indiscreetly. If this water is saved and used for other productive purposes, it contributes to the development of the nation.

Keeping in mind that water has value, we can plan many solutions. Like, a shower is used for bathing in many homes, whereas a bucket of water is enough for bathing. Therefore, if you take a bath with a bucket instead of a shower at home, you can save several liters of water. Also, if the used water is diverted to plants, then that water can also be used twice.

Every society can save and store water by adopting the methods of rainwater harvesting and water recycling and that way every house can have availability of water required throughout the year. Also water used at home can be made available for second reuse also through recycling. Various water recycling machines are available in the market these days. By using these machines, we can treat the water that has been used earlier for many purposes at home and reuse it again and again.

If a washing machine is used for washing clothes at home, several liters of water used in it is wasted every day. We can use this water for flushing the sink and save it from wasting.

Water has immense value from economic, social, religious and ecological perspectives. Achieving future food security while using water resources sustainably is a major challenge for this and future generations. The big question is how we can increase the productivity of water, so that more is produced per drop.

Our's was once a prosperous and civilized country with regards to water. Now we have to be sure that we use our water resources wisely keeping in mind the value of water. Although nature has freely given us water, its value is immense. Therefore, we need to move forward towards water sustainability only by recognizing that value.



Sikkim tells us to be very careful before allowing

any new hydropower project in the Himalayas

Vishwa Mohan

Glaciology and hydrology expert, IIT Indore associate professor Mohd Farooq Azam tells Vishwa Mohan that uncertain weather events driven by climate change played a role in Sikkim, hydel projects must be reviewed for risk exposure and any new project in the Himalayas allowed only after assessing its impact on local geology and communities.

What could have triggered the Glacial Lake Outburst Flood (GLOF) in Sikkim ?

Heavy precipitation in northern Sikkim probably started the GLOF from South Lohnak pro-glacial Lake. The lake's been growing over a few decades and was one among the region's potentially dangerous lakes. Colleagues who investigated this lake had warned about its associated potential hazard in 2021.

One can infer from pre-and post disaster satellite images that possibly some heavy precipitation induced avalanche hit the lake and it was partially breached, releasing 20-25 million cubic meters of water. This is roughly equal to the volume of ice / rock mass that detached from Ronti Peak, which resulted in the Chamoli disaster on February 7, 2021.

Some floating ice chunks can also be seen on post disaster satellite images of the South Lohnak lake. Villages and towns downstream in Sikkim are still under threat as the lake did not breach completely, and may now be more vulnerable, We're awaiting high - resolution satellite images and satellite based precipitation amounts to investigate the disaster further.

Can it be attributed to climate change ?

Yes, Climate change is working in two ways.

First, global warming is resulting in glacier wastage that is more pronounced post 2000 in the Himalayan region. Receding glaciers are leaving overdeepenings (ground eroded to very deep depths) at terminus region, which fills with meltwater thus creating pro-glacial lakes. These are often held by fragile moraine - dams (glacier sediment at the ridges). These lakes grow in both size and numbers with global warming.

Second, climate change is resulting in extreme weather. Frequency of extreme precipitation and heatwaves is only increasing. Extreme precipitation makes pro-glacial lakes more vulnerable to breaches. This was the case in Kedarnath's disaster. in 2013 where Chorabari pro glacial lake was completely breached. Sikkim's breach is probably a similar case.

How vulnerable is the Himalayan range ?

Extremely vulnerable. The high altitudes make it more vulnerable to climate change. The 1.5° C Global temperature rise is expected to result in a 2.1 - 2.4 ° C rise in temperature in the Himalayan region.

With warming, Himalayan glaciers are rapidly wasting their mass, winter snow covers are decreasing, high elevations that received good snowfall are now seeing more rain, permafrost in thawing - resulting in slope instability land subsidence etc.

Our modelling studies that initially, up to around the year 2050, the increased glacier and snow melt would result in more water in the river system and then reduced amounts of meltwater post-2050.

The higher rate of melting of these frozen storages during the 2022 heat wave in western

Himalayas complemented last year's floods in Pakistan.

Are hydropower projects worth it in this seismologically vulnerable region ?

India still produces around 55% of energy from coal. Ours is a land of rivers with huge hydropower potential. We're only using 30 % of this. To reduce black carbon emissions and grow our economy, we need more hydro power.

However, we need to assess existing proposed hydel plants for natural hazards. Satellite based remote sensing makes it easy to investigate upstream regions of any hydel plant. We need better infrastructure planning and we need to bring in glaciologists, meteorologists, Seismologists when building in the Himalayas.

How can human settlements and existing project be safeguarded in the Himalayan region ?

Isro has published a list of potentially dangerous pro - glacial lakes in the Himalayan region. These need observation, especially the

upper reaches near settlements and infrastructure.

Peru and Nepal mechanically siphon water from potentially dangerous pro - glacial lakes in a controlled manner. We can start such practices and modify them as required. We need high elevation meteorological stations for more accurate weather forecasts. Most of us use remote - sensing methods but we also need to develop our capacity in field glaciology.

Five to six glaciers are under observations in the Himalayas - out of 40000 glaciers. Early warning systems in sensitive regions need to be installed to allow downstream communities time to vacate villages and towns. New settlements or development work in the Himalayas must be controlled, and allowed only after rigorous assessment of the project impact on local geology / communities.



Climate change causing infra sectors of

\$ 850 bn a year globally : Report

Harish Kumar Agre

“Coping with climate change challenges - Synergy through partnership at G20”
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ABSTRACT

In the recent past, Climate change has grabbed unmatched focus from scientists, environmental experts, researchers and the academia. The very aspects of our life including livelihood, public health, global economy, peace and security are under severe threat due to the impinging impact of climate change. As a result there is drastic change in the ecological systems leading to issues pertaining to change in the chemical cycling, biodiversity and natural resource conservation. The present paper deals with the need for urgent action and strategies to be aligned with the sustainable development goals through synergistic partnership at the international level. Also the paper outlines some suggestions on measures that could be considered for transformation in policies and develop cooperation for a better and more sustainable future through the interaction and cooperation at the union of G20.

Keywords: Climate change, SDGs, Partnership, Synergy, Comprehensive policy, Framework, G20.

Introduction:

Climate change is one of the major challenges of our time and adds considerable stress to our societies and to the environment. From shifting weather patterns that threaten food

production, to rising sea levels that increase the risk of catastrophic flooding, the impacts of climate change are global in scope and unprecedented in scale. Without drastic action today, adapting to these impacts in the future will be more difficult and costly. This overview deals with the concept of Global Climate Change, the associated terms, causes, consequences, solutions and its potential health impact. It shows the need to act urgently if we are to avoid an irreversible build-up of greenhouse gases (GHGs) and global warming at a potentially huge cost to the economy and society worldwide.

Therefore, addressing climate change requires an “unprecedented level of cooperation, not only between countries, but also between different levels of Governments, private sector and individuals. Climate change is one of the major challenges of our time and adds considerable stress to our societies and to the environment. From shifting weather patterns that threaten food production, to rising sea levels that increase the risk of catastrophic flooding, the impacts of climate change are global in scope and unprecedented in scale. Without drastic action today, adapting to these impacts in the future will be more difficult and costly. This overview deals with the concept of Global Climate Change, the associated terms, causes, consequences, solutions and its potential health impact. It shows the need to act urgently if we are to avoid an irreversible build-up of greenhouse gases (GHGs) and global warming at a potentially huge cost to the economy and society worldwide.

Scientists refer to this type of long-term climate

change as “natural

Since Industrial Revolution, the impact of greenhouse gases had a devastating effect on mankind due to the emission of toxic gases through combustion, deforestation and agricultural practices which in turn had led to global warming and climate change. During this period changes have been observed in the climate include extreme temperatures, changes in precipitation patterns, changes in the frequency and distribution of weather events such as droughts, storms, floods and heat waves, sea level rise and consequent impacts on human and natural systems. Many scientists opined that the impacts of climate change is devastating for natural ecosystems and that climate change poses an existential threat to human civilisation. However, action to respond to climate change has been sluggish. Climate change draws attention to the relationship between science and society, challenges global governance institutions, and triggers new social movements.

“Climate” is the average of the weather conditions at a particular point on the Earth. Typically, climate is expressed in terms of expected temperature, rainfall and wind conditions based on historical observations. “Climate change” is a change in either the average climate or climate variability that persists over an extended period. The Earth’s climate has always changed. Changes in the Earth’s orbit, the energy output of the sun, volcanic activity, the geographic distribution of the Earth’s land masses and other internal or external processes can influence climate.

Due to climate change, desertification is on rise. While heat waves and forest fires are becoming more frequent, Increased warming in the Polar Regions has contributed to melting permafrost, glacial retreat and sea ice loss. High intensity temperatures are also causing more damaging storms, droughts, and other extreme disasters. Tremendous changes due to environmental factors on mountains, coral reefs, and the Arctic is forcing many species to rehabilitate or go extinct in the wild. Even if efforts to minimise future warming are successful, some

effects will continue for centuries. These include ocean heating, ocean acidification and sea level rise.

Genesis of the problem:

As per UNDP’s Human Development Report (HDR), 2007/2008, “Climate Change is predicted to be the issue of our generation”. This problem is not one which a single country or locality is facing in isolation. In fact, the issue is international in nature which is a repercussion of the fact that the atmosphere is common to the entire mankind. The term ‘global warming’ is one aspect of the broader term ‘climate change’. Global warming is a natural phenomenon observed increase in the average temperature of the air near Earth’s surface and oceans in recent times and its projected to continue in the similar manner. Global Warming is primarily result of building up of greenhouse gases in the Atmospheric component. The average Global temperature has increased by 0.74oC between 1906 and 2005. Global sea level has reached the average rate of 1.8mm/yr during 1961-2003, the rate has been faster during 1993-2003 (@3.1 mm/yr).

As per the available data the monsoon rainfall at all India level remains unpredictable, however surface air temperature from 1901 to 2000 indicates a notable warming of 0.4°C for last 100 years. While no significant long-term trend has been observed in the frequencies of large-scale droughts or floods in the summer, monsoon season and the total frequency of cyclone storms that form over Bay of Bengal has been consistent over the period from 1887 to 1997, glaciers in Himalayas are receding at an alarming pace. At the same time, it may also be admitted that as per the Geological Survey of India, glaciers worldwide are passing through a phase of recession as a natural cyclic process. There is a projected increase in rainfall by 15-40 percent by the end of the 21st century with high regional variability besides increase in mean annual temperature by 3°C to 6°C by the end of the 21st century. The warming is projected to be more pronounced over land areas, with the maximum increase over northern India. The warming is also

relatively greater in winter and post-monsoon seasons.

As per the data available from Fourth Assessment Report of 2007 of the Working Group III of the Intergovernmental Panel on Climate Change (IPCC) clearly indicates that there is enormous growth observed in the emission of GHGs during the pre-industrial time, showcasing an increase of 70 per cent between 1970 and 2004. The largest percent of impact during this period was observed from energy supply (an increase of 145 per cent). The growth in direct emissions from transport sector had been 120 per cent, wherein industry contributed 65 per cent and land use, land use change, and forestry (LULUCF) 40 per cent.

Future Impact of Global Warming

Human Development Report (HDR) 2007/08 states that “Mahatma Gandhi once reflected on how many planets might be needed if India were to follow Britain’s pattern of industrialization. We are unable to answer that question. However, we estimate in this Report that if all of the world’s people generated greenhouse gases at the same rate as some developed countries, we would need nine planets. While the world’s poor walk the Earth with a light carbon footprint they are bearing the brunt of unsustainable management of our ecological interdependence”.

Why G20 Matters:

The rise of the G20 represents a significant development on the global economic horizon. The G20 is the leading forum of world’s major economies that seek to develop global policies to address today’s most pressing challenges. The G20 has 19 member countries and the European Union which represent 90 percent of global GDP and 80 percent of global trade and 2/3rds of global population. The G20 was born out of a meeting of G7 Finance Ministers and Central Bank Governors who saw the need for a more inclusive body with broader representation in addressing the world’s financial challenges. The G20 has been at the forefront of battling financial crisis- the Global Financial Crisis 2008-09, the Eurozone Crisis in 2010

and the COVID-19 pandemic Crisis in 2020 – each of which have taken a devastating toll on global growth and welfare. India’s positions at G20 meetings reiterate its deep commitment to multilateralism and commitment to United Nations 2030 Agenda on Sustainable Development and Sustainable Development Goals (SDGs).

In 2016, the G-20 committed itself to the Action Plan on the 2030 Agenda for Sustainable Development including the Sustainable Development Goals (SDGs) and the Addis Ababa Action Agenda on Financing for Development (AAAA). The 2030 Action Plan envisaged bold transformative steps through both collective and individual concrete actions at international and domestic levels. The G-20 further sought to improve sustainable livelihoods with its endeavours in energy and climate despite the United States Plan to withdraw from the Paris Agreement. The G-20 assumed the responsibility for launching the Africa Partnership in recognition of its goal for fostering sustainable and inclusive economic development.

Need for urgent and universal actions:

Initiatives to be taken at the national level:

- i. Solar Energy: India stands 4th in solar PV deployment across the globe as on end of 2021. Solar power installed capacity has reached around 61.97 GW as on 30th November, 2022. Presently, solar tariff in India is very competitive and has achieved grid parity. Furthermore we need to accelerate the pace to ensure maximum usage of this resource.
- ii. Energy Efficiency & Sustainable Habitats: Concept of Green buildings has to become a new norm to achieve sustainability ensuring reduction in usage of resources and improving the efficiency.
- iii. Conservation of water: Water stands to be elixir of life. Effective and efficient use of the most valuable resource following water conservation techniques is the need of the hour.
- iv. Aligning Sustainable Development Goals (SDGs) with reference to climate change: Sustainable development and climate action are linked – and both are vital to the present and future

well-being of humanity. Therefore all the SDGs needs to be achieved.

v. Involve Samaritans and communities to curate new ways and means: The SDG framework provides a platform for G20 countries to take the lead on a reconfiguration of public policy processes to engage citizens and empower communities through an inclusive and whole-of-society approach. Without such a transformative measure the SDGs will not be attained. The 1978 Alma Ata Declaration emphasized the mainstreaming of health equity on the international political agenda and its focus on primary healthcare and people-centred care: “People have a right and duty to participate individually and collectively in the planning and implementation of their healthcare” (Medcalf et al. 2015). Since then, the concept of primary healthcare has become a core concept of the World Health Organization’s (WHO) goal of health for all (Medcalf et al. 2015). Engaging communities in decision-making, planning, and implementing programs and policies that are about their own health and well-being leads to citizen empowerment and positive sustainable change (Freire 1970:125; Prost et al. 2013; Hernández et al. 2017; Gaventa and Barrett 2010). However, this engagement needs to go beyond broad participation of citizen groups, as the inclusion of women and the most vulnerable groups in these processes as key stakeholders and agents of change is crucial in addressing the challenge. Regular dialogue and relationship building between system actors and service users are central to addressing tensions, changing mind-set and fostering respectful and culturally appropriate eco-friendly practices (Hernández et al. 2017).

Future Response Strategy required for Climate Change:

Promotion of clean development technologies: Clean development technologies needs to be emphasized as it brings outcome oriented results towards achieving sustainability. This mechanism can develop R&D and improve dynamic capability at the different levels.

Afforestation and conservation of forests:

Innovative ideas in the plantation of trees needs to be incorporated to improve the forest cover and bring back to the minimum required 33% using new technologies such as drones.

Cleaner and lesser carbon intensive fuel for transport: Low carbon emission fuel technologies to be adopted to bring down the greenhouse gas emissions.

Encouraging Mass Rapid Transport systems: In Indian context, logistics and supply chain is playing a crucial role in transport of goods and services, there is dire need to make significant changes to cut down the emission and monitor the pollutant impact on environment.

Environmental quality management: Awareness needs to be created among the individuals to understand the processes behind manufacture of products and the cost and resources involved in shaping them to final products. The cradle to grave and circular economy principles needs to be adhered.

Conclusions: The impact of climate change on environment can only be reduced with effective mitigation and adaptation measures. Therefore it is required to follow the international conventions and protocols stringently to recover the damage happened to earth and reduce the ecological foot print. Through the premier forum for international economic cooperation at G20 there is a way forward to broaden the discussion on policies that are beneficial towards resolving the global climate change issues where in they need to support the under-developed nations in transfer and exchange of technology and financial funding. Furthermore the climate action the measures suggested would guide us to mitigate the greenhouse gas emissions and make the Earth a liveable planet. India being one of the strict follower of international conventions had laid the roadmap to president the summit and bring strategic partnership to curtail the significant amounts of carbon emissions.

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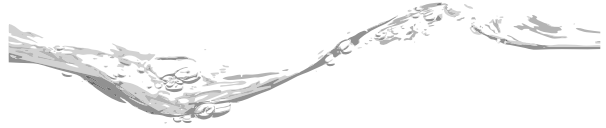
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Stockholm Water Prize-2019

Prof. Dr. Jackie King, South Africa

Shri. Gajanan Deshpande, Pune (M) : 9822754768



(An article series has been launched in August 2020 to learn more about the World Water Prize winners and their work.)

Dr. Jackie King of South Africa was awarded the 2019 Stockholm Water Prize for her global contributions that have radically changed river-management. She has developed a more precise scientific understanding of river flows by providing decision-makers with the tools and methods necessary to make a thorough assessment of the costs and benefits of managing or developing river systems.

Dr. King began her method development work as a researcher at the University of Cape Town, funded by the South African Water Research Commission. Later, she and her colleague Dr. Kate Brown and Dr. Alison Joubert further developed those methods to create ecosystem models to demonstrate the ecological and social consequences of damming rivers and the consequent reduction of water in rivers. This has enabled an objective assessment of the negative impacts and associated costs on aspects of water-resource development such as hydropower schemes and irrigated crops.

Humble and energetic, Dr. Jackie King has never sought high-profile jobs. She was more interested in working as a scientist and was free to tell the world what she felt needed to be said about river degradation. She was more than happy to hear clearly the silent voices of the river-system and the people who depended on it. If we pursue ill-informed development and management, the rivers will deteriorate rapidly and we will all lose out, she says.

Dr. King's commitment, to raise awareness about the value and importance of rivers to millions of people, has earned her a highly respected position among academics and water managers globally. Her scientific rigour, selfless dedication and effective enlightenment have transformed the whole way of thinking, talking and working about the flow of life and water.

Dr. King's early work greatly influenced South Africa's 1998 National Water Act. She is now guiding governments and organizations around the world more. First as a researcher and later as a consultant, she has worked in more than 20 countries and administrations of the Mekong, Zambezi, Indus and Okavango river basins among others.

Dr. King explains that every government has the right to determine its own path of development. It convinces administrators in decision making that healthy river ecosystems are not a luxury but a basis for sustainable development. She helps in effectively evaluating various options by providing them with transparent and useful information.

Dr Jackie King says, "Governments involved in water resource development realize the potential benefits, but do not realize the costs involved in improving degraded rivers. Now we can show all these environmental and social costs in the same way as the benefits planners show. There is a new type of information, which was not available until a few years ago, that helps the rulers to understand the many good and bad aspects involved in development in making future planning decisions".

Dr. King was the co-founder and principal researcher of the Department of Freshwater Research at the University of Cape Town for nearly four decades. She now works independently as an Emeritus Professor and Consultant at the Institute for Water Studies, University of the Western Cape. Her achievements as an aquatic ecologist have been impressive in the recently established field of environmental flows.

Dr. King has been awarded gold and silver medals by the South African Society of Aquatic Scientists for her work. She has also been honored with South Africa's "Women in Water" award for her research work. She is also the recipient of South Africa's "Living Planet Award" in 2016. She participated in the educational programs of preparing several textbooks. She has published more than 100 research articles in international journals and conferences.



What to do with these Stones and Debris?

Dr Ajit S Gokhale

M : 9870423023



Silt and debris have come to light as a serious cause of flooding in the rivers. Not just in Konkan, but in Maharashtra and in many places in India and abroad too, the issue of devastating unprecedented flooding in rivers has become a cause of serious concern. In response to this, a vigorous campaign of desilting has been started by people in Konkan to tame such floods. While keeping the rivers flowing is the need of the hour, it is essential to understand various aspects of the process to avoid negative consequences.

Approximately 1160 years ago, in Kashmir, ruled a benevolent King Avantivarman. During his time there was a great flood in his kingdom, a major river called Vitasta (Jhelum) flooded very badly. Swollen due to the Himalayan streams feeding her, they brought in large quantities of stones and shingles and spread them within the riverbed near Srinagar, the capital. In the subsequent rains, the fertile fields on both the banks became water logged. Agriculture on large areas suffered. The following year there was a heavier flood and the agriculture was lost again. As the water flowed faster in the downstream part of the silted up portion of the river, that length also became dry, very quickly. So the effect was at the site of siltation, upstream of the site and also downstream of the site.

Dealing with this crisis seemed impossible. No one knew how to get out of the crisis. At such a time, a young man named 'Suyya' (local term representing 'Surya' the Sun) told his friends, "It is not as difficult a situation. I can solve this easily." Word spread. The king summoned Suyya and asked him to walk the talk. Undeterred, Suyya said,

"Maharaj, it will take two pots of gold coins to resolve this."

The king replied, "Do the work first, and I will reward you not just with two but four pots of gold coins, joyfully." Suyya laughed and said, "Maharaj, I have no use for the coins. I am asking them from you as a tool to declutter the choked riverbed. I humbly request you, to come to the river with those two pots of gold coins along with your courtiers."

Thus all the townspeople went in procession to the river... Suyya, helped the king and the courtiers to broadcast the gold coins into the stones choked river. Everyone saw the coins gleaming in the sunlight dropping in the crevices of the stones. Then, he got the king to proclaim that whoever finds a gold coin can keep it as his own. As soon as the announcement was made, all the citizens, with great enthusiasm, started removing the rocks and stones from the river to claim their respective coins. In this way, many enthusiastic hands, driven by the hope of personal gain, worked hard to clear the riverbed. The emperor was surprised. Suyya got him to give orders to the soldiers to get to work. He properly used those stones and made a good and strong fortification on both the banks of the river. Within a short period of time the entire region was cleared of silt and the surrounding agriculture and all life around it was restored to normalcy. It was a collective effort, the region became free from floods.

Recognizing his wisdom, the king appointed Suyya as his counsellor. Suyya had deep knowledge of nature, rivers, and the psychology of people. He brought irrigation water to many places

by making canals from Vitasta the wild river which had become tame now. Due to this, Avantivarma's kingdom became very prosperous.

This is not just a myth or a fable; it is a historical account recorded in the Rajatarangini, the great epic poem written by the poet Kalhan in the court of King Lalitaditya of the Avantivarman dynasty.

Now let's return to the present day. Today, not only in Konkan but in Maharashtra and many places in India, flooding in rivers has become a serious problem. Here, we speak about rivers, and streams that have been affected by anthropogenic factors ('unnatural' induced by humans). We are talking about the consequences of human interference with the natural flow of water. Such rivers bring more challenges than the blessings to the regions they traverse.

In any stretch of natural stream the silt comes in and goes away at its natural rate. And it does not pose any great problem in those natural streams. Towards the origin of the river the silt is in the form of large rock fragments and huge boulders. The young river breaks them down to large stones. By the time a river reaches adolescence, she makes them more rounded and smaller. A teenager river grinds them to pebbles or shingle to sand, while she starts meandering on plains. As the river matures further, she pulverizes the sand in to fine clayey silt. It becomes soft like 'sindoor' when the river reaches her matrimonial home, that is the sea. This is what happens in Natural Streams. These rivers take the riches in sand and silt from their mothers house to the matrimonial one. In turn, during the rainy season, they bring back rich bounties of fish and other aquatic life to the waterfalls on the cliffs and fields in the hills, in the form of ascending fish. Wherever this two-way transport is undisturbed, no one asks what to do with this silt, because then the riverine system is in natural equilibrium.

Then where does it become a problem? Who asks this question?

Following people ask this question; The farmers whose fields have gotten washed away by

floods, caused by the excessive deposited silt in the river. It is also asked by those villages, who until recently, were free from floods and have started losing their households and cattle and people to the floods. This question is also asked by the Bhorpi, Ghorpi, Bhoi, Koli and Aagari fishermen who have lost their livelihood due to filled up pools. They ask, "where have the pools gone? from where, for generations immemorial, we have been catching fish?" The question is also asked by those sailors who used to bring in large cargo about 25 to 30 km in-shore from the sea. Those sailors also ask, what has happened to the deep waters in these magnificent creeks? In their depths, we used to ply easily up and down the river. It is also asked by a tribal bhagat (Shaman) from Chas village in Mokhada, who says, "I had told that engineer not to build a check dam here, next to our village Dahad (Deep perennial pool of water in the stream bed) because I knew that the check dam will cause our deep water pool to silt up. But that engineer and contractor did not listen to an old, illiterate person like me. They built the check dam, and the next year, we lost the deep water pool to the stones that piled in. Now, we do not know how we can regain our deep water pool." What to do with this silt and debris?

Does it mean that the question is asked by the people from the sea coast only? Not really, I have heard this question from farmers on the banks of Godavari and her tributaries. The region that could give three crops a year, now gives only one or at the most two. Ironically many cannot get crop during the rainy season. Large accumulation of silt in the river beds causes the rivers to breach their banks. Water enters the fields and stays there for almost a month. It is impossible to do kharif cropping because of waterlogging. And its difficult to get water for the summer crops.

The same question is also asked by migrants from villages of Uttar Pradesh and Bihar. They say, "Sir our fields and huts were washed off by mighty rivers like Sharayu and Kosi. They have turned to mud. Some others say, "So much coarse silt has come from the river that farming is just

impossible." What to do with the silt? That is the reason we are roaming from place to place to try and live honestly. But people say we are unwanted migrants. What to do with the silt?

Same question was asked by a Bengali who had lost his pond to the silt.

'The silt is a natural part of any river ecosystem', this statement holds good only in case of those streams and rivers which are free flowing, in their natural state. As can be seen from the illustration below, very few large rivers are retaining free flow. All others are dammed and the continuity of their flow is broken. The smaller streams and rivulets have been bunded in hundreds of places by so called water conservation experts and government engineers and contractors. A large percentage of them, the bunds, are practically useless. Out of twenty four river basins in Konkan, 18 rivers are terribly affected by the large quantities of silt. The remaining 6 are suffering from carrying sewage and Industrial effluents. This anthropogenic silt originates in building Ghat roads, in construction of rail roads, normal roads, tunnels for hydroelectricity, via ducts, bridges, breaking of hills for making dams, Lake tapping debris from Koyana, deforestation, culverts, low clearance bridges, normal bridges and their approach ramps which act like dams during the rainy season and also due to disposal of debris in the rivers.

Now, about where to, where not to, how to, and when to remove this silt?

It is to be removed from those deep pools that are now filled by stones, shingles, sand, and silt. It is not to be removed from the pools, which are, as they were, several decades ago.

Now about how much of the silt should be removed? About 10% of each pool should be filled with silt. The remaining 90% should be water. For example, if a pool is 40 feet deep, about 4 feet in it could be stones, pebbles, gravel, and sand. Remaining 36 feet should be water.

The silt removed should be taken away and placed in such a way that it does not come back, at least for the next 4 to 5 decades.

How to remove this silt? If it is little in quantity, it can be done through human efforts. The villagers can be appropriately compensated through MG Narega for the same. If the Silt quantity is huge, it should be removed by mechanical means. While removing the silt, the flow paths should not be straightened. All the old turns and natural obstructions should be maintained as they are. Furthermore, depending on the slope of the streams, at appropriate intervals, some part of the silt should be left as it is and stabilized so that it acts like a speed breaker. These speed breakers will ensure that the river does not become a water highway. Rather, it becomes a series of deep pools and natural obstructions to the path of water.

Where to place the removed silt? A simple answer is, send it back to the place from where it has come. If the silt is soil which has come from the farms, send it back to the farms. If the silt is large and small stones which have come from digging for tunnels, roads, etc, then obviously, they can not be sent to farms. If the river has become wider by destruction of farms on the bank, such large material can be deposited appropriately such that it reforms the field bunds. Smaller material can be placed in between, and the fields can be remade.

On each layer of material dumped, a loaded dumper or any available heavy vehicle shall be run again and again. Thus, the layers will be compacted and become consolidated. The slopes of such material should be kept as minimum as possible. At the most 45 degrees, if they are steeper, the river flow and gravity carries it downstream.

What to do with the extra silt? We should employ it wisely. If it is like mud, use it in fields or brick making. If it is large stones use them as stones or crush them and make non-violent altruistic gravel and crush sand. As against the gravel and crushed sand made by violently blasting the hill side.

Is it happening somewhere? Yes certainly, a few weeks ago in Jammu I saw they were making porous concrete using crushed stones from the

river. This porous concrete, was being used for fairly eco friendly work. So when it happens there it should be possible here as well. Why not?

We did study various rivers from Konkan e.g. Arjuna and Kodavali from Rajapur, Baav river from Sangameshwar, Kal river from Mahad. We did a detailed survey of the accumulated silt and quantified the volume to be removed and gave suggestions to various organizations desirous of making their rivers free of excess silt.

Main source of water for Rajapur is British era bund called Saybacha Bhandara on Kodavali river. This Bund was completely silted up. This reduced the water supply to the town. It was necessary to remove the silt. About 100,000 cu m of silt was accumulated here. We recommended that, part of this could be used in making a dam in nearby village, Shil. Extra silt could be used for making construction material. We strictly forbade use of this silt for pitching on the banks of the river. As the river was sure to take it back into Herself. In kal river of Walan Valley except for one pool, that of Shri Varadaayinee Mata, all other pools were choked up due to debris deposited by dam, ghat road and tunnels made for hydroelectric power. 99,904 cu m of dredging was recommended.

While surveying Baav River in Sangameshwar, the casual factor found was the tunnels of Konkan railway. Banning sand dredging for last 10 years, near village Dingani, has choked Jaygad Creek. We studied about 12 km of river stretch including the tributaries. One major tributary is Saptalingi. The hill sides on her banks are literally made into a battered sieve by stone quarries. They are clearly visible on Google Earth. This river has over 6 m column of silt trapped in her. Its volume comes to 19,56,000 cubic meters. If it is removed, the place will hold 1,95,60,00,000 litres of water. There is another angle to it. While the accumulated silt in the river heats up and radiates heat, water collected in its place remains cool and cools the surroundings. Removing silt and giving water its rightful place will help in Global Cooling.

With that background we need to come together to do appropriate survey and study in

coordination with the administration, people, and organizations, for dredging, desilting and appropriate deposition and utilization of the silt.

Kondgaon Sakharpa experienced annual flooding since 1949. In 2020 we villagers came together collected Rs 30,00,000. NAAM Foundation helped with free pocklen. We did three and half months of work and dredged the river bed to give her back her original form. Thus despite torrential rainfall, our villagers remained drought free.

Mugdha Sardeshpande, Sakharpa Kondgaon 9270246901

Our village Natal is in the foot hills of Sahyadri, about 17 km from kankavali. We worked on the dredging of our river in 2018. In one and half months we cleared 12 km of choked stream bed. NAAM Foundation helped in a big way. We consolidated the shingle on the banks. Since then despite of heavy downpour we haven't had any devastating flood. We are also working for making bunds on the river for retaining more water.

Vishwanath Sawant

President Gram Vikas Mandal, Natal 9769264430

Earlier, in our village, Devale we could take two crops very easily on the water of our village stream. The after 1990 the stream started silting up. And we started facing water scarcity and potential flooding. We got our village survey done through organization of Dr Ajit Gokhale. Accordingly we collected 7to 8 lakh Rs of people's contribution and dredged 2 km stretch of our river. We freed 6 deep pools (15 ft deep each) from the choking silt. We used the silt for tree plantation. Despite heavy rains, we haven't had any flood. And we have enough water even in Summer.

Nilesh Kolvankar, Devale 8375271668

This year, we did silt removal work in a stream for about one and a half kilometres in Wahal village of Chiplun taluka. The doh which was earlier for cattle etc. was cleared. An area about 200 feet

long and 100 feet wide along the embankment of the stream had a lot of silt deposited to a depth of about 6 to 10 feet. NAAM Foundation has been a big help for securing the JCB for this work. Funds were made available from the Gram Panchayat and by public participation. The dredged silt was in the form of fine soil and it was given to local people for farming use. The silt in the form of gravel was used for road improvement and necessary construction. Now efforts are being made to conserve water by constructing dams in a proper manner.

Sujit Wahalkar, Wahal 9930917433

We removed a lot of silt from Kal river in the villages of Valan Khurd, Valan Budruk, Warange and Vagheri in Mahad taluka. We suffered both from flooding during monsoon and water scarcity during summer. We conducted a complete survey of Kal river through Dr. Ajit Gokhale's organization. After that, in 2022, we carried out silt removal work in a two kilometer long stretch of the river with the cooperation of NAAM Foundation, Government and villagers. There was no flood anywhere during that monsoon and a lot of water could be seen in the rejuvenated deep river pools even in summer for the first time after 40 years. All the workers of 'Kal River Rejuvenation Committee' have contributed a lot to this cause. Such work is required in about 22-23 streams in Kal river valley.

Chandrakant Utekar, Walan 9987098563

In the year 2018, we cleaned part of the Sonvi river in Vighravali village of Sangameshwar taluka. We removed silt from about half a kilometer stretch of the river within the check dam. A few deep pools in the river bed were cleaned. Due to this, we have not experienced floods in the last five years, and we have some water remaining during the summer, as opposed to complete draught prior to 2018. The removed silt was used for road works. This same river flows through villages like Katvali and Ozar. It is necessary for the people of all the villages to come together and get this work done in a more comprehensive and organised manner.

Kamalakar Indulkar, Vighravali 9702606055

In the year 2019, we carried out the silt removal work of about three kilometers of the river bed in the village of Kelavali in Lanja taluka. Till then, the problem of water scarcity was felt very intensely. While clearing the silt, we cleared two pools of water, each about 12 to 15 feet deep. There, we also discovered a new spring. We experience lesser water scarcity now as a result of this increased water storage. The removed silt was dumped in some open places outside the river basin, appropriately. Our efforts are continuing to increase the water storage at the source of the river.

Arvind Chavan Kelavali. 9967835992

In the year 2021, in the village Rangav of Sangameshwar taluka, we removed silt through Naam Foundation. Since 1992, a lot of silt had accumulated in the river bed, causing yearly floods. In April 2021, by collecting about two and a half lakh rupees through public participation, we removed silt from a stretch of about three and a half kilometer length of the river. Chandrakant Mirgal put in lots of efforts in this success. There is an urgent need to build small removable check dams for water conservation on this river.

Suryakant Khatate, Mouje Rangav Youth Organisation, 7391882414

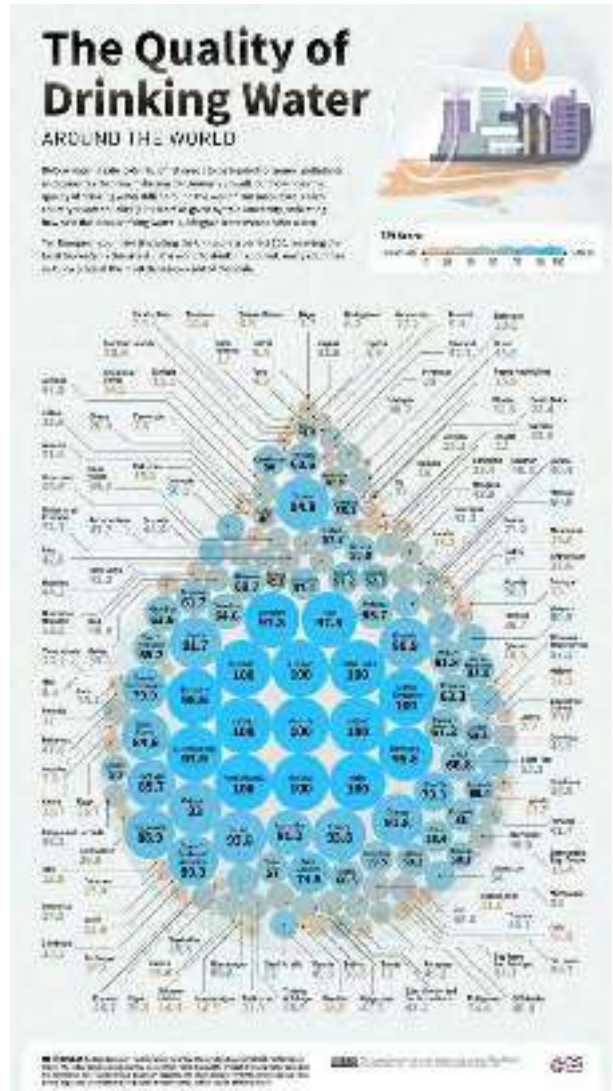
In the year 2019, through the organization 'Umlati Prithvi', we removed silt from a stretch of about three and a half kilometers in Kadwai village of Sangameshwar taluka. This village was experiencing severe water shortage in summer. With the help of many organizations and individuals, we studied the three and half kilometre long river bed and worked for 42 days to remove silt. Therefore, recently there is a significant increase in the water level of around 15 wells around. We have constructed four removable dams in the riverbed to retain the water.

Irfan Chikte, Kadvai, 9619203034

Arjuna and Kodavali, the two main rivers of Rajapur taluka, connected to Rajapur city, have been facing siltation problems for the past several years. Through NAAM Foundation, we conducted a silt survey and in December 2022 we started desilting the Kodavali river and dam. About 45 thousand cubic meters of silt was removed in a stretch of about 700 meters from ITI College to Jawahar Chowk. For this purpose, a fund of Rs. 33 lakh was collected from public participation. Today, as the dams and rivers are desilted, the risk of flooding has been reduced to a great extent and the water scarcity during summers has also been eliminated.

Hon. Guardian Minister generously provided a fund of 25 lakhs, and helped make the stretch from Jawahar Chowk to Ganesh Visarjan Ghat free of silt. After that, Hon. Guardian Minister has given a fund of 50 lakhs, through which, further de-siltation work is going on in the Arjuna river from Ganesh Ghat to Kondhetad bridge and further to the highway. About 130,000 cubic meters of silt was removed from Saybacha dam, which will benefit Rajapur city in the future.

Prashant Bhosale, Chief Officer, Rajapur City



Extreme weather impact: 20,000 children

displaced every day in last 6 years

By Kiran Pandey

At least three of every 10 persons displaced across the world due to weather-related disasters was a child

Over the last six years, weather-related disasters have forcefully displaced at least 134.1 million people, of which 32 per cent or 43.1 million were children from 44 countries, according to a new report.

This means 20,000 children were displaced every day on an average during 2016-2021, according to estimates released by the United Nations Children's Fund (UNICEF) October 6, 2023.

Thus at least three of every 10 persons displaced across the world due to weather-related disasters was a child, the report showed.

Storms (21.2 million) and floods (19.7 million) have been the most damaging and accounted for 95 per cent of forced child displacements in this period, according to Children Displaced in a Changing Climate.

These numbers are an underestimate as there are still large data gaps, acknowledged the authors of the report. The region with the largest number of weather-related child displacements was East Asia and the Pacific, followed by South Asia, UNICEF estimates showed.

A little over 53 per cent (23 million) of the children displaced were in three countries – Philippines (9.7 million), India (6.7 million) and China (6.4 million). These three countries were highly prone to weather-related disasters and so, the risks may increase further due to climate-driven extreme weather events.

The report acknowledged that these countries conduct pre-emptive evacuations in

catastrophe situations. When correctly executed, such actions can prevent deaths and also lessen the damage caused by displacements, it said.

SIDS, Horn of Africa impacted significantly. The greatest proportion of child population displaced, however, was in Small Island Developing States (SIDS) and countries in the Horn of Africa, the report showed.

Storms have been the most destructive for children in these regions, according to UNICEF. Around 76 per cent of children in Dominica, a small-island developing country in the Caribbean Sea, had to leave their homes due to weather disasters. This means that three-fourth of the children in the island nation got displaced due to storms. In Cuba, 31 per cent of the children were displaced due to storms.

The Northern Mariana Islands, Dominica, Saint Martin (French part), Sint Maarten (Dutch part) and Vanuatu also witnessed a disproportionately high number of storm-related displacements of children.

South Sudan and Somalia recorded the greatest number of child displacements from floods relative to the size of their child population – 12 per cent of the children in South Sudan had to leave their homes due to weather disasters.

In Somalia, 11 per cent of the children were displaced due to natural disasters.

Both the African countries implement and document significantly fewer preventative evacuations, suggesting that children residing here may be even more susceptible to the risk of displacement.

From 2016-2021, over 1.3 million children

were internally displaced due to droughts across 15 countries. Of these, around 730,000 or over 50 per cent were recorded in Somalia, with another 340,000 Ethiopia and 190,000 in Afghanistan. A major proportion of these displacements happened without early warning or efforts to minimise the impacts of displacement.

Wildfires led to 810,000 new child displacements. Of these, over a third happened the year 2020, said the UNICEF report.

Most of the child displacements due to wildfires were in the United States, Canada and Israel, with reliable early warning and disaster risk reduction mechanisms in place as well as reliable data systems. So, most of the displacements were pre-emptive evacuations.

Children may be especially vulnerable in SIDS and the Horn of Africa, with high disaster risk but little preventative evacuations. This includes Mozambique, where the poorer populations are disproportionately affected and have a limited ability to recover from calamities that strike back-to-back, the authors noted in the report.

So, risk mitigation, adaptation and preparedness will be most critical and urgent in these countries, suggested the report. To save lives and prevent disruption to children's access to vital services, these countries must prioritise embracing preemptive evacuations and other climate mobility choices

Worrying projections

Most of the displacements due to all hazards including riverine floods, cyclones and storm surges were projected to be from India, Bangladesh, Vietnam, Philippines and China, according to the report.

However, in terms of relative numbers, the nations with the child population most affected by disaster displacement were the Bahamas, the British Virgin Islands and Antigua and Barbuda, the findings established.

Riverine floods, which displace over 3.2 million child displacements annually, is

projected to cause most of the child displacements in the future, the authors noted. Over the next 30 years, riverine floods would result in around 96 million displacements.

The report released ahead of the 28th Conference of Parties to the United Nations Framework Convention on Climate Change reminded that forced displacement of children will affect commitments made by countries under the Paris Agreement, Sendai Framework, Sustainable Development Goals and Global Compacts for Migration and Refugee.

So, the needs of migrants and displaced children must be included in the local, national, regional and international climate strategies like National Adaptation Plans, Nationally Determined Contributions, DRR strategies and wider frameworks for sustainable development, suggested UNICEF.

In July 2022, the International Organization for Migration and UNICEF also recognised the challenges faced by children forced to flee their homes due to climate-related emergencies and launched landmark guidelines to protect and empower them.



More people moved into high flood zones, exposing

larger populations to water disasters: World Bank

by Zumbish

Most countries, especially in East Asia, saw more settlements in regular flood zones, ultra-high flood zones than in dry areas

Human settlement in the world's riskiest flood zones increased 122 per cent since 1985, making a lot more people vulnerable to water disasters from climate change, according to a study by the World Bank.

The growth was 80 per cent for the safest areas, the report published in Nature journal October 4, 2023 stated. The study authors looked at settlement extent and expansion using satellites instead of population. The world's overall built-up regions grew 85 per cent from 1985 to 2015.

"People are on a search for better lives and better jobs and then sort of get stuck in bad lands because that's what they can afford," said study co-author Stephane Hallegatte, as quoted by international news agency Associated Press (AP). "They know it's dangerous when they arrive." Hallegatte is a World Bank senior climate adviser and expert on disaster economics.

As per the study findings, the problem is driven by middle- and low-income countries. "Richer countries like the United States and parts of Europe are seeing more growth in safer areas than flood-prone ones," it highlighted.

China and Vietnam both saw their settlement extent more than tripling in the past 30 years, increasing far more than their dry land areas, the authors noted.

The study also pointed out :

Most countries, especially in East Asia, saw more settlements in regular flood zones and ultra-high flood zones than in dry areas.

Libya, which suffered from devastating flooding last month, had an 83 per cent increase in settlement extent in the worst flood zones.

Pakistan, also affected by catastrophic flooding both last year and this year, had an 89 per cent increase.

"What's happening is that as a nation grows a bit wealthier, there's a change from rural to urban and people leave the country to go to cities, which are often near waterways that flood in places," said the study lead author Jun Rentschler, as quoted by AP. Rentschler is a World Bank economist.

"What you would expect is that initially you settle in a safe space, but as the city expands, it's more likely to grow into areas that it previously avoided, flood zones for instance."

Reportedly, the study researchers go on to raise the issue: "Is it cheaper to fortify these dangerous areas or better to move people out?"

As per the study report, Dar es Salaam, Tanzania, is a poster city for this problem. "It boomed from a fishing village of about 83,000 people in 1950 to more than seven million people now, according to World Population Review," the study authors told AP.

On the other hand, the United States saw dry settlements increase 76 per cent and the highest flood settlements go up only 46 per cent, the report pointed out. Other countries with more dry settlements than ultra-wet include France, Sweden, Austria, Finland, Japan, Canada and India, it also stated.

Populations growing into flood zones doesn't mean that climate change isn't a major problem, the study authors were further quoted as

saying. "In fact, they are intertwined," Rentschler added.

"And in both cases, poorer countries could keep from falling into a trap middle-income countries are doing now," Hallegatte was quoted as

saying by AP. With urban development, smart planning can prevent some of those moving into the riskiest places, he added.



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**Climate change to trigger mortality risks from
air pollution, flooding: Researchers warn ahead
of COP28 - By Seema Prasad**



Health “can be the engine” and “it can be the ultimate motivation for combatting climate change and doing something more fundamental,” World Health Organization Director Maria Neira recently said in an interview with the BMJ medical journal, published by the British Medical Association.

Neira indicated that talking about climate change from the health perspective in terms of reducing asthma, lung cancer and cost to the health system can “completely change the speed and the ambition in our negotiations on climate change.”

For the first time in history, the 28th Conference of Parties (COP28) to the United Nations Framework Convention on Climate Change will have an entire day committed to health on December 3, 2023. This dedicated day will focus on the need to adapt health systems worldwide in response to climate change and the financial burden resulting from climate and health crises.

Two months ahead of COP28, the latest edition of the medical journal by the British Medical Association highlighted the intersection between climate change and health to shed light on



this crucial linkage with several new studies on this theme.

Ozone contributes to the warming climate, and coal combustion releases particulate matter, which in turn increases mortality risk.

One particular paper focused on establishing the synergistic interaction between air pollution and mortality. To accomplish this, researchers analysed significant associations of exposure to particulate matter (PM 2.5) and ozone with total mortality in 372 cities across 19 countries and regions between 1994 and 2020.

The analysis included 19.3 million deaths attributed to all causes. It was found that overall, 5.3 million and 1.9 million deaths were attributed to cardiovascular and respiratory diseases, respectively. The median annual mean concentrations of PM2.5 and Ozone across the 372 cities were 11.4 µg/m³.

A significant synergistic interaction was also identified between PM2.5 and ozone for total mortality, with a synergy index of 1.93. Generally, an indication >1 denotes a synergistic interaction, whereas a number <1 indicates an antagonistic interaction, the researchers added. These are measures to establish the interaction between air pollution and mortality risk.

Another article published in the same edition made a case for listing pollution on death certificates to enable policies that could reduce air pollution.

“It is important that a major source of preventable death should appear in our national statistics as this underpins decision making. Death certification is a key way data on cause of death are collected.”

More than 6.5 million deaths a year globally are attributable to air pollution, the Lancet Commission on Pollution and Health said. This number is increasing because of the rise in fossil fuel usage.

As action on air pollution has failed to keep pace with evidence, perhaps attributing death to air pollution might spur some action in the right direction, the authors proposed.

Another study, published in the journal, focused on mortality risks with flooding associated with climate change. The study found cardiovascular and respiratory deaths, mortality risks increased and persisted for up to 60 days (50 days for cardiovascular mortality) after a flooded day.

About 761 communities from 35 countries or territories were included in the analyses.

“Communities with the most flood days per year during the study period were located in the areas along the Mississippi in the United States, the Pacific coast of Latin America, Lake Victoria and the Volta in Africa, South East Asia, the coastal areas of mainland China and the eastern coast of Australia,” the study said.

“From 2000-2019, 47.6 million all-cause deaths (8.5 million causes of death in 142 communities from six countries or territories were non-external), 11.1 million cardiovascular deaths, and 4.9 million respiratory deaths were included in analyses,” the study added.

According to a 2022 study by the University of Hawai and the University of Wisconsin-Madison, from the 375 known infectious pathogenic diseases in circulation worldwide, about 58 per cent can be aggravated by climate change. Hazards include warming, droughts, wildfires, extreme precipitation, floods, rise in sea levels and land cover changes.

“Heatwaves and persistent heavy rainfalls were associated with amplified transmission of vectorborne diseases such as dengue, chikungunya, Zika, and West Nile virus,” the latest edition of the BMJ journal emphasised further.

“At present an ongoing outbreak of dengue is putting tremendous pressure on the health systems in Bangladesh. Rising temperatures, increased flood events, storms, and droughts were linked with heightened incidences of waterborne, respiratory, and skin diseases,” the journal added.

Jayakwadi Dam



This is Jayakwadi Dam constructed at Paithan on the Godavari River. Due to poor rains in Maharashtra, it could not get enough water from the source of origin of the river. The upstream politicians from Nasik and Ahmadnagar were deadly against to give the required quota of water to Marathwada Region. The matter was taken up to the Supreme Court and it is only after the decision of Supreme Court in favour of Marathwada Region, with great hesitation water was released to Marathwada.

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