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THE AWARE CONSUMER

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THE LAST MILE
Every Drop Counts !

OUT OF THE BOX
Act Before It Reacts: Scarcity and Demand

IN FOCUS
No Water–No Life; No Blue–No Green!

SAVE WATER. SECURE LIVES

A Growing Concern When Each Year Global Water Consumption Increases By 2-3 Percent, While The Total Supply Of Fresh Water Remains Relatively Constant.

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SUPPORT THE CAMPAIGN

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Medicines such as Antibiotics have a Red Vertical Line on their pack to indicate that these should be consumed only on doctor's prescription. Always complete the full course as prescribed by the doctor.

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VIEWPOINT

BEJON KUMAR MISRA | bejonmisra@consumerconexion.org

EVERY DROP COUNTS

ONE OF THE GREAT contradictions in human nature is that we value things only when they are scarce. We only appreciate the water once the well runs dry. And the wells are running dry not just in drought-prone areas but also in areas not traditionally associated with water scarcity.

One-third of the world's population is going to suffer from chronic water shortages as estimated 30 years from now. The reasons for this are clear: greater demands on freshwater resources by burgeoning human populations; the diminishing quality of existing water resources because of pollution.

Each year global water consumption increases by 2-3 per cent, while the total supply of fresh water remains relatively constant.

The consequences of this scarcity will largely be felt in the arid and semi-arid regions, and will also be experienced in the rapidly growing coastal regions and megacities of the developing world. Evidence suggests that many of these cities already are, or will be, unable to provide safe, clean water and adequate sanitation facilities for their citizens - two fundamental requirements for human well-being and dignity. Let us not forget that about 80 per cent of all diseases and more than one-third of all deaths in developing countries are caused by contaminated water.

With finite freshwater resources on the one hand, and increasing demand, both in quantity and variety of uses, on the other, the need for water resources protection and management has never been greater. Major clashes over diminishing supplies of water may be the reason behind the source of future conflicts between nations.

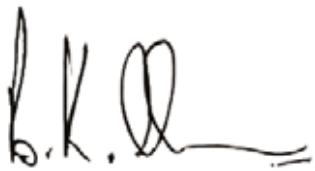
Policy makers, engineers and scientists are facing increasing pressures to improve environmental performance and reduce the risks to human health. Because water pollution is an insidious and all pervasive problem, cleaning it up is a matter of great urgency. It involves complex scientific, technological, economic and political factors that cut across national, regional and international borders.

Just as environmental issues must be viewed in a holistic manner, so water issues have to be tackled in an integrated fashion and the linkages with other environmental issues set out. Conserving freshwater resources requires groups or agencies to work together in a coordinated manner. Some of the current obstacles to effective water management include the promotion of short-term rather than long-term perspectives in decision-making; values and attitudes that underestimate the community's skills and intelligence; and lack of the funding necessary to implement policies and decisions. Education, training and the strengthening of local organizations and decision-making authorities can help to overcome some of these obstacles.

UNEP has initiated a number of programmes and activities aimed at alleviating the looming water crisis. Three key issues are being addressed. These are the integrated management of freshwater resources; greater efficiency and equity in the distribution and use of available water resources; and improving water supply and sanitation.

In a very real sense, water is life. Life on Earth started in water and without water life as we know, cannot continue. The water problems facing us as the new millennium begins can be solved if we muster the foresight to deal with long-term environmental problems and the willingness to invest in our future.

Save the drop! As a little effort definitely goes a long way.



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"With government announcements about shutting polluting industries along the Ganges, we'll see more industrial demand for water recycling in the coming decade."

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Sushri Uma Bharati
Minister, Water Resources, River Development & Ganga Rejuvenation
She emphasized that although there were no differences with either the PMO or environment ministry on Ganga and Uttarakhand hydel projects, she firmly believes that projects should not kill the river and stem its ecological flow.

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SHANNYN SNYDER
BACHELOR OF ARTS IN POLITICAL SCIENCE AND MASTER OF INTERDISCIPLINARY STUDIES IN ANTHROPOLOGY AND GLOBAL HEALTH, GEORGE MASON UNIVERSITY

Regardless of improvements to drinking water, many other water sources are contaminated with both bio and chemical pollutants, and over 21% of the country's diseases are water-related.

ROUNDUP

Water
A Story to Tell

Water is life. We cannot imagine our lives without water. But it is not going to last forever.

SUN IS A SINGLE source of energy to our planet. In absence of such vital source, life is impossible on globe. Similarly, water cannot be underplayed as it has immense relevance in lives. Human beings, birds, animals, and vegetation cannot exist without water. Alarmingly the sources of water have considerably depleted over a number of years owing to global warming. Results are evident from melting ice and the effect even seen on Antarctica.

The major cause of scarcity of water is the melting of ice due to global warming. Our bodies consists 70% of water. In the same manner globe is also covered with 70% of water and rest is land mass. Water is thus essential for our body, it helps in removing wastes from our body. Drinking sufficient water helps a person to stay away from various diseases.

Scientists all over the world are scrambling finding water even on other planets like Mars and Jupiter. Studies have revealed that water plays significant role in existence of life.

Necessity is the mother of invention as quoted over the centuries. Dependency on water and its diminishing sources have brought us to crossroads. Intellectuals reach to a conclusion that water needs harvest and conservation. Villages as well as cities need to discover methods in this direction. Rural areas have natural conservation and harvesting of rain

DATA BRIEFING

Our bodies consists 70% of water. In the same manner globe is covered with 70% of water and rest is land mass.

Benefits of Water

We all know water being the most essential part of life, has numerous benefits.

Some of its benefits have been defined under-

Relieves Fatigue - Water is the main component of human body. If one is feeling tired, there are chances that this may be due to inadequate consumption of water which in result makes the body to function less efficiently. Dehydration is one of the causes of tiredness. Thus drinking water in adequate amount can help the body to function more efficiently by reducing fatigue.

Protects from diseases- Water helps in removing wastes from our body. The larger amount of water a person drinks, the higher the chances of him/her staying away from diseases like headaches, migraines, other body infections etc. These diseases are often caused by not drinking plenty of water. Water also promotes better kidney function.

Improves Mood- Various researches indicate that a mild dehydration can negatively affect one's body and ability to think. A study conducted on 25 women published in the Journal of Nutrition found that remaining dehydrated can affect our mood and cognition. The color of our urine is another sign of how much hydrated or dehydrated a person is. The lighter the color is, the better the level of hydration is present and vice versa.

Helps in weight loss- According to Scientists, drinking two eight ounce glasses of water before having meals can help in suppressing appetite ultimately supporting in weight loss efforts. Drinking water prior to meals fills your stomach, thus reducing the tendency to eat more. Also, it increases the rate at which the body burns fat and helps in the breakdown and elimination of fat cells.

Maintains normal bowel functions - Drinking plenty of water keeps the bowel function normal. It also boosts digestion ultimately preventing constipation. Constipation occurs as a result of drinking inadequate amounts of water in body.

Promotes healthy skin- Apart from keeping the body hydrated, water improves capillary blood flow, which results in healthier and younger looking skin. It restores the skin tissues, moisturizes skin and lastly increases the elasticity of the skin. When the body gets enough water, this ultimately results in a fresh soft glowing skin. Scars and wrinkles are also prevented by drinking lots of water.

Relieves hangover - Drinking water helps effectively to get rid of hangovers. Alcohol makes one's body to pee much more than you taken in. Thus, water helps to rehydrate the body and speed up the recovery.

Beats bad breath- Bad breath is one of the sign that the person is not drinking enough of water. Drinking water at regular intervals helps the mouth to remain moist and in removing the food particles and bacteria. The smelly compounds created by the oral bacteria are also diluted.

Thus, one should drink plenty of water and also rinse the mouth with water, just after having the meals so as to prevent any prevelance of bacteria. To conclude, it is important for everyone to take necessary efforts to drink adequate amount of water daily. ◗

THE WATER

WATER CYCLE IS defined in four stages that are-

1. **Evaporation**
2. **Condensation**
3. **Precipitation**
4. **Collection**

The water cycle has no starting point, but we'll begin with the oceans, since that is where most of Earth's water exists. The sun heats up water in rivers and lakes and turn it into water vapor or steam.

The water vapor or steam leaves the river, lake or ocean and goes into the air. This is called Evaporation. Rising air currents take the vapor up into the atmosphere, along with water from evapotranspiration, which is water transpired from plants and evaporated from the soil.

Water vapor in the air gets cold and changes back into liquid to form clouds, this is called Condensation. The vapor rises into the air where cooler temperatures cause it to condense into clouds.

When the clouds get heavy and big with water, they fall back to earth in the form of rain, hail snow or sleet. These are all known as Precipitation. Some precipitation which falls as snow and can accumulate as ice caps and glaciers, can store frozen water for thousands of years. Snow packs in warmer climates often melt when spring arrives, and the melted water then flows overland as snowmelt. Most precipitation falls back into the oceans or onto land, where, due to gravity, the precipitation flows over the ground as surface runoff. A portion of runoff then enters rivers in valleys in the landscape.

Runoff, and groundwater seepage, accumulate and are stored as freshwater in lakes.

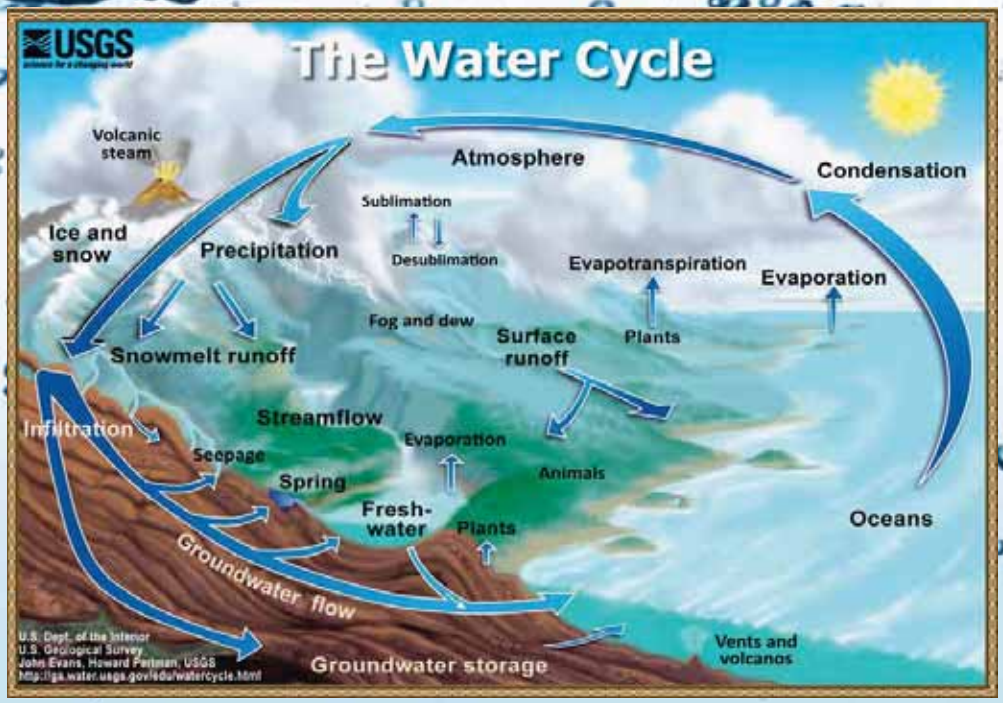
It is important to note that not all runoff flows into rivers, though. Much of it soaks into the ground as

Continued from page 7

water. This is in the shape of ponds, wells and other sources. Rural population depends on these sources for quite some ages. In the cities development has taken a front seat. It is the need of hour to take timely steps in the field of water harvesting and conservation. This will help availability of water in absence of sufficient rainfall. City authorities have now chalked upon strategies to pass building plans and construction activities only on the condition of taking steps for water harvesting.

Water thus plays an important role in the world economy. About 70% of the freshwater used by humans goes to agriculture. Fishing in salt and fresh water bodies is a major source of food for many parts of the world. Much of long-

CYCLE



The cycle of processes by which water circulates between the earth's oceans, atmosphere, and land, involving precipitation as rain and snow, drainage in streams and rivers, and return to the atmosphere by evaporation and transpiration.

infiltration. Some of the water infiltrates into the ground and restores aquifers, which store huge amounts of freshwater for long periods of time.

The last stage which is the Collection stage, is precipitation collected in oceans, rivers, lakes and streams. All these stages thus together form the Water Cycle. The water cycle takes the water and moves it up and down and all around the earth. It also describes how water evaporates from the surface of the earth, and then rises into the atmosphere, cools and condenses into rain or snow in clouds, and falls again to the surface as precipitation. The water falling on land collects in rivers and lakes, soil, and layers of rock, and much of it flows back into the oceans, where it will evaporate again. The cycling of water in and out of the atmosphere is a significant aspect of the weather patterns on Earth.

Evaporation from the oceans is the primary mechanism supporting the surface to atmosphere portion of the water cycle. After all, the large surface area of the oceans (over 70 percent of the Earth's surface is covered by the oceans) provides the opportunity for such large scale evaporation to occur. If we consider this on a global scale, the amount of water evaporating is about the same as the amount of water delivered to the Earth as precipitation. Evaporation is more prevalent over the oceans than precipitation, while over the land, precipitation routinely exceeds evaporation. Most of the water that evaporates from the oceans falls back into the oceans as precipitation. Only about 10 percent of the water evaporated from the oceans is transported over land and falls as precipitation. Once evaporated, a water molecule spends about 10 days in the air.

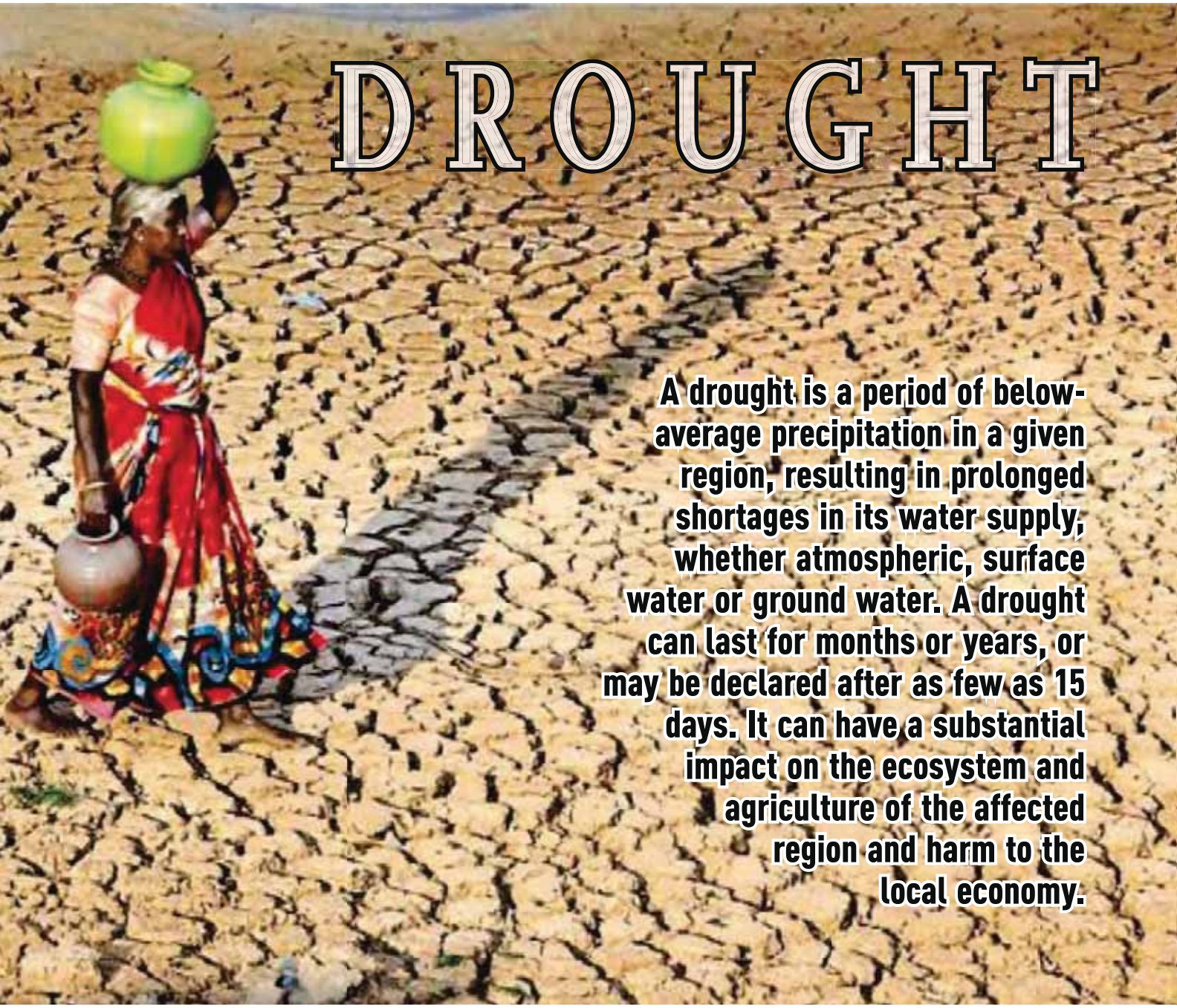
Changes in climate has always been linked to the emission of greenhouse gases like Carbon Dioxide, which is disrupting the patterns of weather. No rain or more rain i.e. the falling of more rain in some places, and less in others. In an industrialized world, water in plentiful amount may even get strained due to demands of agriculture, industries and other people living in the same area.

Water is an important resource for a living and that everybody should learn to preserve it. More ways should be implemented to use water in a judicious way.

Summing up, **to save water takes a little effort and makes a big difference for the environment.**

distance trade of commodities and manufactured products is transported by boats through seas, rivers, lakes, and canals. Large quantities of water such as, ice, and steam are used for cooling and heating, in industry and homes. Water is an excellent solvent for various purposes & in a wide variety of chemical substances; as such it is widely used in industrial processes, and in cooking and washing. Water is also central to many sports and other forms of entertainment, such as swimming, pleasure boating, boat racing, surfing, sport fishing, and diving.

It is essential not only for one's survival but also contributes immeasurably to the quality of our lives. In the passing times, human beings have harnessed water to improve their lives. In some ways, the history of civilization is the story of how we have made water work for us in ever more ingenious ways.



DROUGHT

A drought is a period of below-average precipitation in a given region, resulting in prolonged shortages in its water supply, whether atmospheric, surface water or ground water. A drought can last for months or years, or may be declared after as few as 15 days. It can have a substantial impact on the ecosystem and agriculture of the affected region and harm to the local economy.

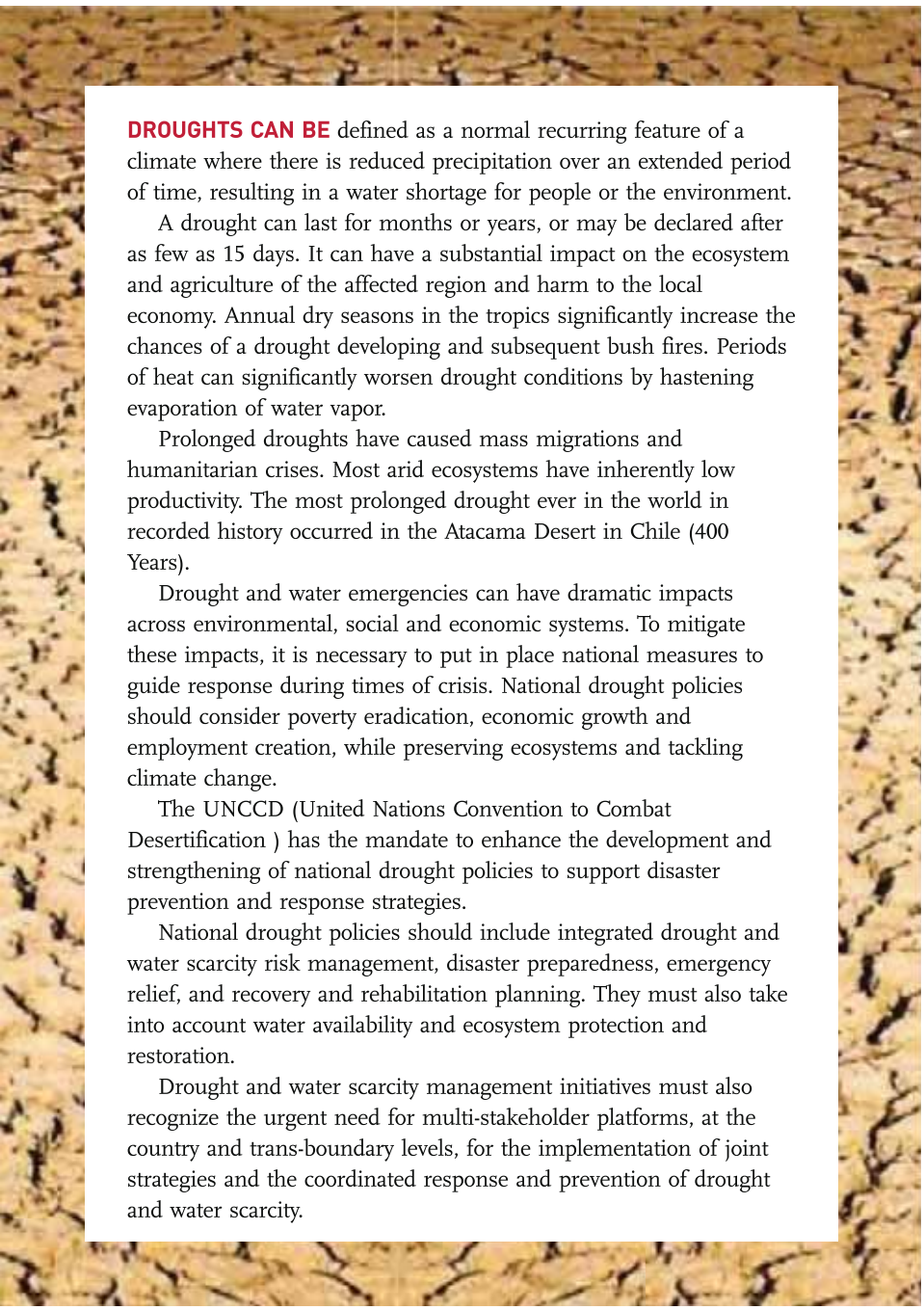
How can you save water?

SAVING WATER AT home, in the garden or at work takes very little effort, but makes a big difference. We should try to save each drop.

At home:

In the home and English person use on average 160 liters of water per day for cooking, washing, drinking. Some tips that help to reduce the domestic water consumption follows:

- We should not clean or peel vegetables under a running tap. Instead we should use a bowl and use



DROUGHTS CAN BE defined as a normal recurring feature of a climate where there is reduced precipitation over an extended period of time, resulting in a water shortage for people or the environment.

A drought can last for months or years, or may be declared after as few as 15 days. It can have a substantial impact on the ecosystem and agriculture of the affected region and harm to the local economy. Annual dry seasons in the tropics significantly increase the chances of a drought developing and subsequent bush fires. Periods of heat can significantly worsen drought conditions by hastening evaporation of water vapor.

Prolonged droughts have caused mass migrations and humanitarian crises. Most arid ecosystems have inherently low productivity. The most prolonged drought ever in the world in recorded history occurred in the Atacama Desert in Chile (400 Years).

Drought and water emergencies can have dramatic impacts across environmental, social and economic systems. To mitigate these impacts, it is necessary to put in place national measures to guide response during times of crisis. National drought policies should consider poverty eradication, economic growth and employment creation, while preserving ecosystems and tackling climate change.

The UNCCD (United Nations Convention to Combat Desertification) has the mandate to enhance the development and strengthening of national drought policies to support disaster prevention and response strategies.

National drought policies should include integrated drought and water scarcity risk management, disaster preparedness, emergency relief, and recovery and rehabilitation planning. They must also take into account water availability and ecosystem protection and restoration.

Drought and water scarcity management initiatives must also recognize the urgent need for multi-stakeholder platforms, at the country and trans-boundary levels, for the implementation of joint strategies and the coordinated response and prevention of drought and water scarcity.

PER CAPITA WATER CONSUMPTION IN INDIA

IN INDIA, THE design of water supply systems has been done using certain standards. Currently the standard being used is BIS 1172: 1993, reaffirmed in 1998. This specifies a consideration of use of the following:

For communities with a population of between 20,000 to 100,000 — 100 to 150 litres per head per day

For communities with a population of over 100,000 — 150 to 200 litres per head per day.

In its previous avatar there was also an attempt made in IS 1172 to understand the break-up of this demand which was then put as 135 litres per person per day. The break-up was as follows:

Bathing: 55 litres
Toilet flushing: 30 litres
Washing of clothes: 20 litres
Washing the house: 10 litres
Washing utensils: 10 litres
Cooking: 5 litres
Drinking: 5 litres.

It is up to each one of us to say whether these numbers ring true. However, a detailed indulgence has to emerge for 'true water demand' to be understood and thus for systems to be designed with a desired outcome which can be of two kinds:

(a) Ensuring that standards are met so that public and individual health and hygiene is maintained

(b) Outcome could be to drive water efficiency when the actual demand exceeds this standard.

the leftover water for watering house plants.

- We should not fill the kettle, but only boil as much water needed. This will help in reducing the electricity bills too.
- We should use the washing machine only when there is a full load. Half-load programs use more than half the water and energy of a full load.
- Taking a shower rather than a bath. This can save over 300 liters of waters in a week. Be careful though because a power shower can use more water than a bath.
- Closing the water when we brush our teeth and using a glass of water to rinse them after brushing. We should also try not to leave the tap running also when we shave or wash our hands.
- Lagging our pipes and leaving heating on a low setting when we are out to avoid bursts in cold weather.

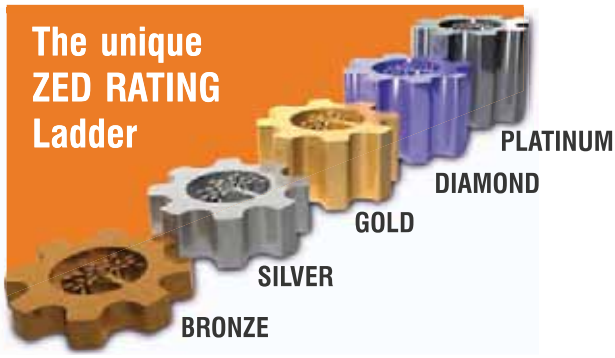
MAKE IN INDIA

QCI
Quality Council of India

ZED™
ZERO DEFECT • ZERO EFFECT

Certification Scheme

A roadmap to World-class manufacturing



HIGHLIGHTS

- A scheme by Ministry of MSME, Govt. of India
- Certification on the systems and processes of MSMEs
- Handholding MSMEs towards world class manufacturing
- Special emphasis on MSMEs supplying to Defence Sector
- Direct subsidy to participating MSMEs
- Creating a credible database of MSMEs for OEMS/CPSUs/Foreign Investors under "Make in India initiative"
- Quality Council of India (QCI) to function as the NMIU (National Monitoring and Implementing Unit) of the scheme

"Let's think about making our product which has 'Zero Defect'; so that it does not come back (get rejected) from the world market and 'Zero Effect' so that the manufacturing does not have an adverse effect on our environment"

SHRI NARENDRA MODI
Hon'ble Prime Minister

Free Registration at www.zed.org.in

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CONSUMER BEWARE

Misleading Ads : Nestled in Bottles

A coalition of environmental groups has filed a complaint against Nestlé, alleging its advertisement claiming that bottled water is "environmentally responsible" is misleading.

Friends of the Earth Canada, the Polaris Institute, the Council of Canadians, Wellington Water Watchers and Ecojustice filed a complaint against Nestlé Waters North America with the Canadian Code of Advertising Standards on Monday.

The complaint was filed after Nestlé published an advertisement in the Globe and Mail in October that included the such statements as:

· "Most water bottles avoid landfill sites and are recycled."

· "Bottled water is the most environmentally responsible consumer product in the world."

· "Nestlé Pure Life is a healthy, eco-friendly choice."

Meera Karunananthan, a spokeswoman for the Council of Canadians, said the ad violates standards of honesty and accuracy.

"For Nestlé to claim that its bottled water product is environmentally superior to any other consumer product in the world is not supportable," Karunananthan said in a release.

Nestlé Waters Canada defended its ads, saying they will show they have been truthful in their campaign.

"We welcome the opportunity to show that we have, in fact, been honest in our conversation with Canadians, with the media and with government of the environmental stewardship exercised by our industry," Nestlé spokesman John Challinor said.

Meanwhile, Toronto city council on Monday debates a ban on bottled water in civic centres.

The bottled water backlash has forced Nestle to defend its largely indefensible practices in increasingly aggressive terms, but even we're surprised at the latest.

Threats of legal action (Miami-Dade) and an aggressive, misleading PR campaign are considered de rigueur for the world's largest food & beverage company, but claiming “Bottled water is the most environmentally responsible consumer product in the world” makes even the most cynical jaws drop here at StopNestleWaters.org.

Fortunately, it's not just us – a coalition of Canadian groups has filed a

complaint against Nestle for its recent ad, which clearly takes greenwash to dizzying new heights.

Advertising claims by Nestlé that suggest bottled water is "the most environmentally responsible consumer product in the world" are prompting an official complaint just as the biggest city in Canada debates a ban on sales of it.

A number of groups, including the citizens group Council of Canadians, are to file a complaint today under the Canadian Code of Advertising Standards, accusing Nestlé of trying to mislead the public.

The controversy comes as Toronto City Council deliberates whether to ban the sale of bottled water at municipal sites.

If the ban is approved, possibly as early as this afternoon, Toronto would be the largest city in the world to take such action against a ubiquitous product that for some is rapidly going from chic to taboo because of environmental concerns.

Nestlé Waters Canada stands by its advertisement, which also says "most" water bottles are recycled.

"All the claims we make are supported by research that we've done," said John Challinor, director of corporate affairs at the company, the country's largest seller of bottled water.

To date, 12 municipalities and a school board have placed restrictions on bottled water, according to a tally being kept by Nestlé.

Seventeen have rejected such measures.

Some cities are banning disposable water bottles from civic buildings because of concerns that plastic containers are adding to garbage disposal woes.

Municipalities are also being lobbied to institute such measures by the Council of Canadians. The council's head, Maude Barlow, was recently appointed a United Nations adviser on water issues.

The Council of Canadians has raised environmental and political objections over bottled water, saying it undermines municipal drinking-water systems.

"In Canada, we have one of the best public drinking-water systems in the world" and bottled water use should be limited to emergency situations, said Meera Karunananthan, a council spokesperson.

Nestlé also has written to municipalities, complaining that the Council of Canadians and other groups aren't being truthful in their criticism of the product.

Mr. Challinor said the company based its claim that bottled water is the world's most responsible consumer product partly on figures from Environment Canada on the amount of water needed to produce typical food and beverages.

A litre of bottled water requires about 1.5 litres to produce. A litre of soft drink needs about three litres of water; a slice of bread 28 litres; and a can of vegetables about 35 litres. The high figures for bread and vegetables are partly attributable to the manufacturing processes.

Mr. Challinor said the company's contention that most plastic beverage bottles are recycled is based on the experience in Ontario, where about 60 per cent are diverted from landfill.

The complaint also is being supported by the Polaris Institute, a left-leaning activist group, and several environmental organizations, including Friends of the Earth Canada and Ecojustice.

For Nestlé to claim that its bottled water product is environmentally superior to any other consumer product in the world is not supportable," said Meera Karunananthan of the Council of Canadians in a release. "With this ad., we believe Nestlé has infringed the Canadian Code of Advertising Standards requirements of honesty, truth, accuracy, fairness and propriety in advertising."

"Based on our review of the representations made by Nestlé Waters in this advertisement, it is clear that they are not based on fact," added Beatrice Olivastri, chief executive officer, Friends of the Earth. "The truth is that many water bottles are not being recycled, a phenomena that Nestlé Waters itself in direct contradiction to its own advertisement admits in its 2008 Corporate Citizenship Report."

"All the claims we make are supported by research that we've done," John Challinor, Nestle's director of corporate affairs told The Globe and Mail. Calls to

If the ban is approved, Toronto will join 16 Canadian cities that have already banned bottled water.

Supporters of the ban argue large amounts of carbon-emitting fossil fuel is used to produce and transport the plastic bottles, which then end up in landfills. Environmentalists also say tap water is just as good as bottled water in most Canadian municipalities-and much cheaper.

COMPREHENSIVE STUDY

THE DRIVING FORCE OF ALL NATURE

When you think of water, what images come to your mind? You think of rivers, the waterfalls, the pitter patter of raindrops, and water in your taps... Children love to float paper boats in rain puddles. By noon the puddles vanish. Where does the water go? The sun's heat causes evaporation of water vapor. When the water vapor cools down, it condenses and forms clouds. From there it may fall on the land or sea in the form of rain, snow or sleet. The process by which water continually changes its form and circulates between oceans, atmosphere and land is known as the water cycle.

Our earth is like a terrarium. The same water that existed centuries ago still exists today. The water used to irrigate a field in Haryana may have flowed down the Amazon River a hundred years ago. The major sources of fresh water are the rivers, ponds, springs and glaciers. The ocean bodies and the seas contain salty water. The water of the oceans is salty or saline as it contains large amount of dissolved salts. Most of the salt is sodium chloride or the common table salt that you eat.

DISTRIBUTION OF WATER BODIES

We all know that three-fourth of the earth surface is covered by water. If there is more water than land on this earth, why do so many countries face water scarcity? Is all the water on earth available to us? The following table gives the distribution of water in percentage.

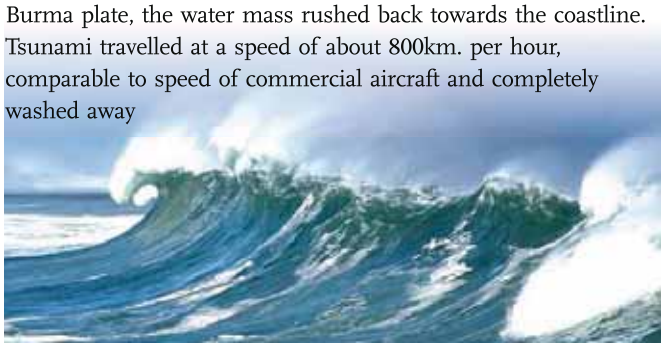
- Oceans: 97.3 – SALINE WATER
- Ice-caps: 02.0 -FRESH WATER
- Ground water: 0.68- FRESH WATER
- Fresh water lakes: 0.009- FRESH WATER
- Inland seas and Salt lakes: 0.009 -FRESH WATER
- Atmosphere: 0.0019 -FRESH WATER
- Rivers: 0.0001 -FRESH WATER
- Equals to 100.00

March 22 is celebrated as World Water Day when the need to conserve water is reinforced in different ways.

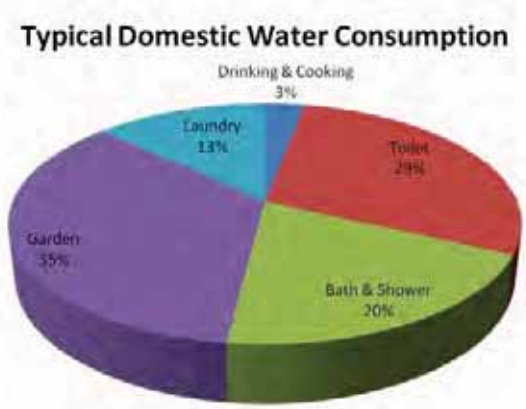
During a storm, the winds blowing at very high speed form huge waves. These may cause tremendous destruction. An earthquake, a volcanic eruption or underwater landslides can shift large amounts of ocean water. As a result a huge tidal wave called tsunami, that may be as high as 15m., is formed. The largest tsunami ever measured was 150m high. These waves travel at a speed of more than 700 km. per hour. The tsunami of 2004 caused wide spread damage in the coastal areas of India. The Indira point in the Andaman and Nicobar islands got submerged after the tsunami.

TSUNAMI – THE EARTH'S PANDEMONIUM

Tsunami or the harbor wave struck havoc in the Indian Ocean on the 26 December 2004. The wave was the result of the earthquake that had its epicenter close to the western boundary of Sumatra. The magnitude of the earthquake was 9.0 on the Richter scale. As the Indian plate went under the Burma plate, there was a sudden movement of the sea floor, causing the earthquake. The ocean floor was displaced by about 10 – 20m and tilted in a downwardly direction. A huge mass of ocean water flowed to fill in the gap that was being created by the displacement. This marked the withdrawal of the water mass from the coastlines of the landmasses in the south and Southeast Asia. After thrusting of the Indian plate below the Burma plate, the water mass rushed back towards the coastline.



Tsunami travelled at a speed of about 800km. per hour, comparable to speed of commercial aircraft and completely washed away



Waves are formed when winds scrape across the ocean surface. The stronger the wind blows, the bigger the wave becomes.

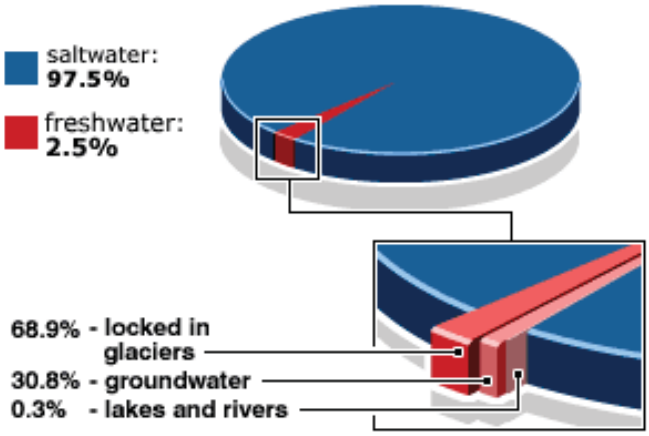
During a storm, the winds blowing at very high speed form huge waves. These may cause tremendous destruction. An earthquake, a volcanic eruption or underwater landslides can shift large amounts of ocean water. As a result a huge tidal wave called tsunami, that may be as high as 15m., is formed. The largest tsunami ever measured was 150m high. These waves travel at a speed of more than 700 km. per hour. The tsunami of 2004 caused wide spread damage in the coastal areas of India. The Indira point in the Andaman and Nicobar islands got submerged after the tsunami.

The Indira point in the Andaman and Nicobar islands that marked the southernmost point of India got completely submerged. As the wave moved from earthquake epicenter from Sumatra towards the Andaman Islands and Sri Lanka the wave length decreased with decreasing depth of water. The travel speed also declined from 700-900km. per hour to less than 70km. per hour. Tsunami waves travelled up to a depth of 3 km. from the coast killing more than 10,000 people and affected more than lakh of houses. In India, the worst affected were the coastal areas of Andhra Pradesh, Tamil Nadu, Kerala, Pondicherry and the Andaman and Nicobar Islands.

While the earthquake cannot be predicted in advance, it is possible to give a three-hour notice of a potential tsunami. Such early warning systems are in place across the Pacific Ocean, but not in the Indian Ocean. Tsunamis are rare in the Indian Ocean as the seismic activity is less as compared to the Pacific.

TIDES

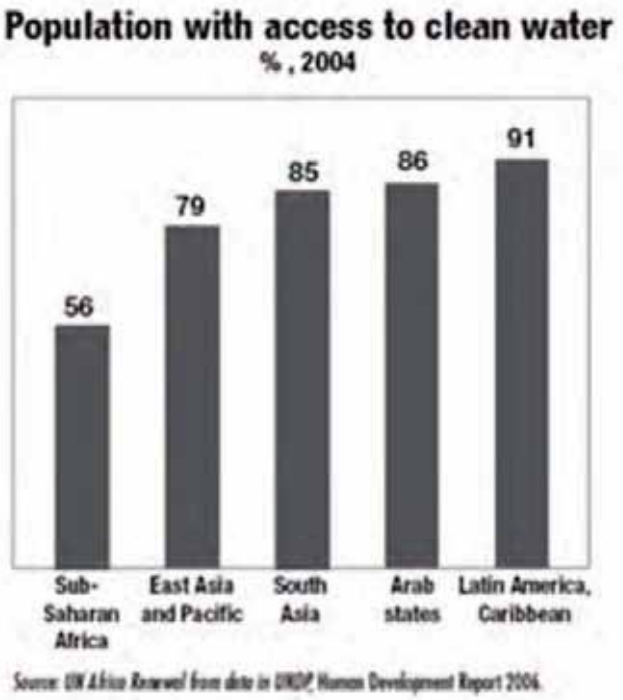
The rhythmic rise and fall of ocean water twice in a day is called a tide. It is high tide when water covers much of the shore by rising to its highest level. It is low tide when water falls to its lowest level and recedes from the shore. The strong gravitational pull exerted by the sun and the moon on the earth's surface causes the tides. The water of the earth closer to the moon gets pulled under the influence of the moon's gravitational force and causes high tide. During the full moon and new moon days, the sun, the moon and the earth are in the same line and the tides



are highest. These tides are called spring tides. But when the moon is in its first and last quarter, the ocean waters get drawn in diagonally opposite directions by the gravitational pull of sun and earth resulting in low tides. These tides are called neap tides. High tides help in navigation. They raise the water level close to the shores. This helps the ships to arrive at the harbor more easily. The high tides also help in fishing. Many more fish come closer to the shore during the high tide. This enables fishermen to get a plentiful catch. The rise and fall of water due to tides is being used to generate electricity in some places.

OCEAN CURRENTS

Ocean currents are streams of water flowing constantly on the ocean surface in definite directions. The ocean currents may be warm or cold.Generally the warm ocean currents originate near the equator and move towards the poles. The cold currents carry water from polar or higher latitudes to tropical or lower latitudes. The Labrador Ocean current is cold current while the Gulf Stream is a warm current. The ocean current influence the temperature conditions of the area. Warm currents bring about warm temperature over land surface. The areas where the warm and cold currents meet provide the best fishing grounds of the world. Seas around Japan and the eastern coast of North America are such examples. The areas where a warm and cold current meet also experience foggy weather making it difficult for navigation.



The question here lies that do you think that what exists today will continue to be so, or the future is going to be different in some respects? It can be said with some certainty that the societies will witness demographic transition, geographical shift of population, technological advancement, degradation of environment and water scarcity. Water scarcity is possibly to pose the greatest challenge on account of its increased demand coupled with shrinking supplies due to over utilization and pollution. Water is a cyclic resource with abundant supplies on the globe. Approximately, 71 per cent of the earth's surface is covered with it but fresh water constitutes only about 3 per cent of the total water. In fact, a very small proportion of fresh water is effectively available for human use. The availability of fresh water varies over space and time. The tensions and disputes on sharing and control of this scare resource are becoming contested issues among communities, regions, and states. The assessment, efficient use and conservation of water, therefore, become necessary to ensure development.

Water Resources of India

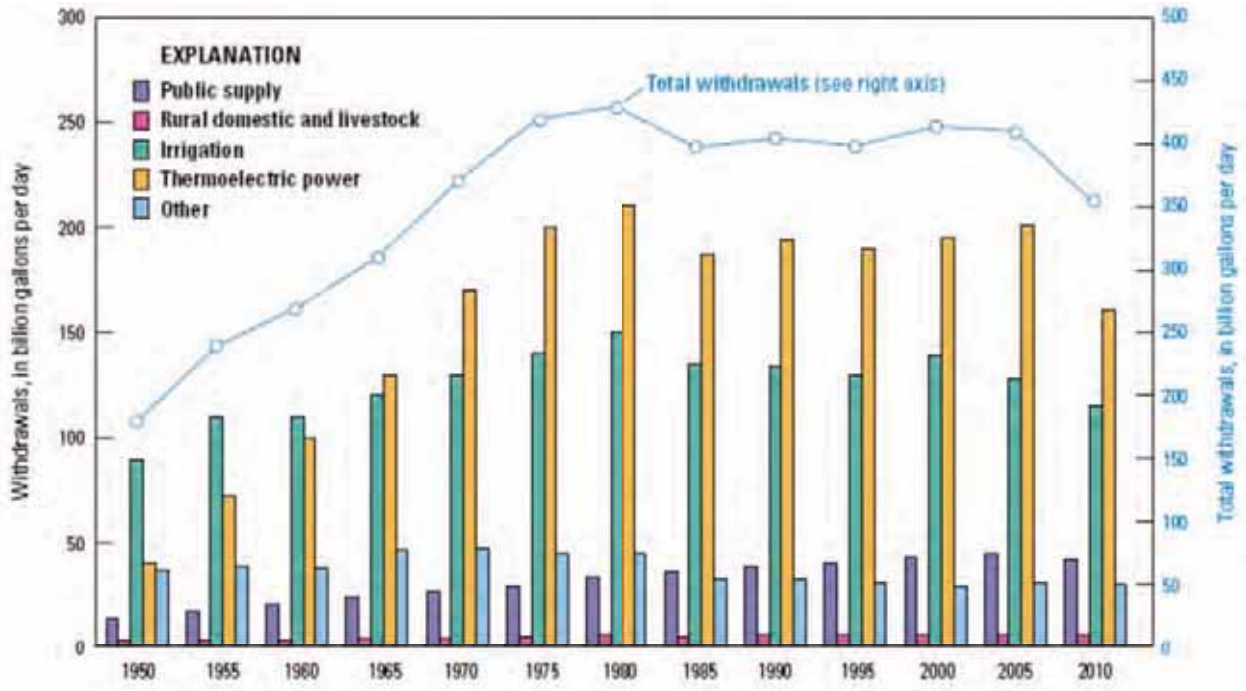
India accounts for about 2.45 per cent of world's surface area, 4 per cent of the world's water resources and about 16 per cent of world's population. The total water available from precipitation in the country in a year is about 4,000 cubic km. The availability from surface water and replenish able groundwater is 1,869 cubic km. Out of this only 60 per cent can be put to beneficial uses. Thus, the total utilizable water resource in the country is only 1,122 cubic km.

Surface Water Resources

There are four major sources of surface water. These are rivers, lakes, ponds, and tanks. In the country, there are about 10,360 rivers and their tributaries longer than 1.6 km each. The mean annual flow in all the river basins in India is estimated to be 1,869 cubic km.

Deterioration of Water Quality

Water quality refers to purity of water, or water without unwanted foreign substances. Water gets polluted by foreign matters such as micro-organisms, chemicals, industrial and other wastes. Such matters deteriorate the quality of water and



Trends in total water withdrawals by water-use category, 1950–2010.

render it unfit for human use. When toxic substances enter lakes, streams, rivers, ocean and other water bodies, they get dissolved or lie suspended in water which results in pollution of water whereby quality of water deteriorates affecting aquatic systems. Sometimes, these pollutants also seep down and pollute groundwater. The Ganga and the Yamuna are the two highly polluted rivers in the country.

Water Conservation and Management

Since there is a declining availability of fresh water and increasing demand, the need has arisen to conserve and effectively manage this precious life giving resource for sustainable development. Given that water availability from sea/ocean, due to high cost of desalinization, is considered negligible, India has to take quick steps and make effective policies and laws, and adopt effective measures for its conservation. Besides developing water saving technologies and methods, attempts are also to be made to prevent the pollution. There is need to encourage watershed development, rainwater harvesting, water recycling and reuse, and conjunctive use of water for sustaining water supply in long run.

Water Pollution

To control water pollution and put a curb on it, the Water (Prevention and Control of Pollution) Act of 1974 represented one of India's first attempts to deal with an environmental issue. It is a social welfare legislation, enacted for the purpose of prevention of pollution of water and for maintaining or restoring wholesomeness of water. Water is a subject in the State List, thus, Water Act, a central law, was enacted under Article 252(1) of the Constitution which empowers the Union Government to legislate in a field reserved for the States with consent of two or more state legislatures. All the states have now approved the Act. The Water Act is comprehensive in its coverage, applying to streams, inland waters, subterranean waters, and sea or tidal waters. It defines the term 'pollution' in quite elaborate manner- covering any contamination of water or alteration of properties (physical, chemical or biological) of water, discharge of sewage or trade effluents or any other substance into water, whether directly or indirectly, as may or is likely to create nuisance or injurious to life or health of human beings, animals, plants, aquatic organisms or legitimate uses of water.

Although the Act is to be applicable on the whole of India, Section 19(1) of the Act empowers the State Government to restrict the application of the Act to certain areas.

1988 Amendments to the Water Act

Parliament revised the Act in 1988 to more closely conform to the provisions of the Environment Act of 1986. The 1988 Amendments introduced a new Sec 33A which empowers Boards to issue directions to any person, officer or authority. The amendments also increased the power of the Central Board relative to the State Boards, by making changes in Sec 18. The 1988 amendments modified Sec 49 to allow citizens to bring actions under the Water Act. Now a State Board must make relevant reports available to complaining citizens, unless the

Board determines that the disclosures would harm "public interest". Previously, the Act allowed courts to recognize only those actions brought by a Board, or with a previous written sanction of a Board. The 1988 amendments have provided for more stringent penalties under Sec 41, for failing to comply with a court order under Sec 33 or a direction from a Board under Sec 33A. The penalties range from a minimum imprisonment of three months to a maximum of seven years, and a fine from Rs 1,000 to Rs. 10,000. The Act also extends the liability for violations committed by companies to certain corporate employees and officials and to heads of government departments.

Thus, these amendments have strengthened the Water Act implementation provisions. For example, the addition of a citizens' suit provision to the Water Act may result in a more diligent enforcement of the Act.

Recycle and Reuse of Water

Another way through which we can improve fresh water availability is by recycle and reuse. Use of water of lesser quality such as reclaimed waste-water would be an attractive option for industries for cooling and fire fighting to reduce their water cost. Similarly, in urban areas water after bathing and washing utensils can be used for gardening. Water used for washing vehicle can also be used for gardening. This would conserve better quality of water for drinking purposes. Currently, recycling of water is practiced on a limited scale. However, there is enormous scope for replenishing water through recycling.

Watershed Management

Watershed management basically refers to efficient management and conservation of surface and groundwater resources. It involves prevention of runoff and storage and recharge of groundwater through various methods like percolation tanks recharge wells, etc. However, in broad sense watershed management includes conservation, regeneration and judicious use of all resources – natural (like land, water, plants and animals) and human with in a watershed. Watershed management aims at bringing about balance between natural resources on the one hand and society on the other. The success of watershed development largely depends upon community participation.

Rainwater Harvesting

Rain water harvesting is a method to capture and store rainwater for various uses. It is also used to recharge groundwater aquifers. It is a low cost and eco-friendly technique for preserving every drop of water by guiding the rain water to bore well, pits and wells. Rainwater harvesting increases water availability, checks the declining ground water table, improves the quality of groundwater through dilution of contaminants like fluoride and nitrates, prevents soil erosion, and flooding and arrests salt water intrusion in coastal areas if used to recharge aquifers.

Rainwater harvesting has been practiced through various methods by different communities in the country for a long time.

Marking the Right Level
Quality and Standard

World health organization is a monitoring authority in the world which maintains the study of health conditions of human beings all over the globe. The nutrition quality of food and water, the standard levels of their permissible quantity as befitting the perfect human health is governed by World Health Organization

Numerous teams have been formed at different levels taking this cause of correct water standard to the country's spread all over the world. The governing bodies ensure that the water reaching the people whether in rural areas or in metro cities of, is of right quality and permissible standards. The organization restricts the industrial effluents from mixing with the groundwater. The chemical waste from factories is discouraged and brought down considerably by the untiring efforts of WHO. People in villages drink water through hand pumps and well constructed at different places from time to time. There is sole dependency of village on these sources of potable water. Awareness campaign about the quality and standard of drinking water is conducted by WHO at all local and international forums. Emphasis is laid very specially to the urban areas where poverty and illiteracy looms large making people caught unaware of these rightful facts. Gram samitees and panchayats are called over to explain the justified cause of quality drinking water according to standards for formulated by WHO.

On the other hand, cities are more prone to water borne diseases. This is mainly due to the unmonitored water usage and dumping of sewage into the water sources. The running life and the industries are a big health hazard in the lives of people living in cities as they solely depend on water supplied by the Municipal Corporations. The water pipes carrying the water are so old and rusted that the water gets mixes with sewage bringing to taps in households. In such conditions, the city population is forced to buy water from open market which is over exploited by the black mailing society of water mafia. Being supplied by nature as breathing air is free and common for all living life on earth, same way the clean safe water is also provided by Mother Nature should be carried in the homes in safe form.

Water companies' selling water in small bottles and big containers have the major responsibility of providing standard water to the consumers. Many companies claim to be getting water right from the originating point like Gomukh and mountain glaciers. Their processing units are located right there in the mountain areas. These water factories substantiate their claim of water to be of perfect quality and standard levels as permitted by WHO. Consumers are Innocent and unsuspecting. They cannot verify the quality and standard with naked eyes. Only reliability available is the tags fixed on such bottles and containers. They are placed to brief the customers about standards of quality. Again anything comes from a price. These bottled waters and containers are highly priced only affordable by the city population. The villages cannot afford these bottled water and containers so they are completely dependent on wells and lakes.

The source of water where these water bottles are filled up cannot be physically verified by the customers. Exercise of proper hygiene is required to be necessitated. The demand of such water is so huge that water mafia has spread its unscrupulous us intentions supplying such water without thinking of the general public. Big industrial houses, market associations and residential areas are responsible for boost of sales as regards to these bottled water. The water lobby has taken full advantage of such scarcity of water that many a times the taste and the quality cannot be found authentic. Playing with the health of unsuspecting customers has become a

regular feature at the hands of water mafia. The general public is a kind of puppet in the hands of such water dealers. Social boycott of such unscrupulous water suppliers must be encouraged and the Government must formulate policies in regulation of such water supply. Most of times the exorbitant rates of packaged water, makes it beyond the reach of a common man. Students who migrate to cities for higher education are the soft target of these water suppliers. On our part, the general public must be cautious and be aware to buy only standard water with permissible quality as given in the policy of health organizations. Water is the main content for drinking as well as cooking of food. Minerals present in drinking water also add value to our nutrition. Hence the intake of quality water helps us in maintaining a good health enabling us to function for a better tomorrow.

Water Management: Industrial and Residential

Residential

Management of water takes a front seat in its quality and conservation. Industries and residential areas play vital role in the water management. Residential units should be careful of not consuming the water from unknown sources. The usage of water must be in restricted quantity. The taps should be turned off when not in use. This enables the prevention of water wastage at all times. Children should be educated by parents, school authorities and mohalla sametees describing the importance and functions of water. Principle of co-existence and saving the water for tomorrow should be explained well to all. The booster pumps in cities keep running on the constant pace resulting in huge loss of water and electricity. Restricted use of such gadgets will cut down on the wastage of water. The water must not be allowed to go unutilized. The GI Pipes through which the water is supplied to households must be checked from time to time finding any cause of rusting, malfunctioning or breakup in the service line. This is most important because there is a great danger of water in old pipes getting mixed with dirty water if supplied in the households is contaminated giving rise to the danger of epidemics like cholera and dehydration. Timely action taken by the authorities is envisaged on the part of government and medical teams. Washing of courtyards and automobiles in residential areas consumes large amount of water, which would otherwise be saved and used for drinking and household course for days together. City reporters should be empowered to identify such places and intimating menace to the Municipal Authorities. We have also come across the shortage of water in cities for quite some time long. People have to go without water three to four

consecutive days in metro cities. This takes a huge toll on all. Students are the most affected as they are required to reach their educational institutions on time. The children need to take bath in the morning, mothers have to arrange for the morning breakfast and lunch packets. All this gets affected badly in view of no supply of water for days together. The garbage keeps accumulating which attracts the stray dogs, cats, flies and mosquitoes endangering the life of city population. Swacch Bharat Mission of Modi ji's dream needs to be executed on war footing. Thus the Municipal authorities should be strictly ordered to work twenty four hours so that people do not face such problems. Hospitals are the temples of service to mankind. It is a noble job that patients are treated for various ailments by doctors working round the clock. These medical aid institutions cannot work in the absence of proper water supply. The quality and standard are the foremost essence of water supply.

Industries

Industries are the nation building institutions consisting of huge infrastructure and a large work force. Such organizations have a huge moral role to save the mankind from any kind of chemical discharge from the factories. Groundwater is more prone to be contaminated by such poisonous substances emitted by the industries. Automobile industry involved in washing and servicing of cars and other vehicles are supposed to be more cautious discharging their duties. They draw the water with pressure pipes which tends to waste the water in large quantity. Proper supervision must be exercised so that this water is again rooted through a treatment plant recycling it for the repeated use. Factory inspectors from time to time need to pay surprise visits in order to control and prevent this wastage of water. Water supply to industrial area is also covered through Municipal pipes and hand pumps. There is a big exposure of such facilities to come in contact with harmful contents of poisonous chemicals making the water undrinkable. Such water is not fit for drinking and if used may cause numerous diseases in human beings. Aftereffects of such diseases bear a long impact on human lives. Thus the pollution board, the factory inspectors, and other civil authorities should work in a team discouraging such illegal activities to provide safe and healthy water for general public.

The compliance of water conservation and water harvesting should be the prerequisite formalities for setting up of any new industrial houses. This will deter the managements not abiding by such provisions. Stricter laws must be enacted with punitive actions. Combining all the factors if effective measures are taken, there is no reason that the generations to come will be forced to feed on untreated, polluted or contaminated water. The results will be amazing that the human race will survive on standard quality drinking water in face of such policy and regulations.

5 million preventable deaths occur every year

Helpline
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Reach out to us before you are one of them

TECHNOLOGICAL SPURTS

Around 663 million people across the world do not have access to clean drinking water. The water is contaminated and unfit for human use and purpose.

If thus situation continues, we will have 40 percent less potable water than what we will need in 2030.

With growing populations relying on shrinking freshwater sources, it's necessary that we, as a species, get serious about sustainability and prudent use of our diminishing water reserves. The efforts should be collective and not by a single person. The burden for conserving of water lies on all.

While we'll need to do whatever we can to stretch existing sources, recycling the abundant amounts of wastewater we are producing right now could go a long way toward addressing our growing demand for clean water.

Several countries across the world are doing more than just immersing in wastewater recycling right now. Singapore, Israel, Spain, a few Scandinavian countries, as well as the United States recycle a significant portion of the wastewater they generate. Recycled wastewater is generally disposed of in larger bodies of water (seas, rivers, ponds, etc.) or used for gardening, cleaning, as well as for industrial applications. Israel is a world leader in wastewater treatment; with around 85 percent of their wastewater is treated and recycled for use in sectors like agriculture.

Singapore, Australia and the US (especially California) generate significant amounts of portable water though wastewater recycling.

Still, very little, probably less than two percent of recycled wastewater is used as potable water.

Is recycled water safe to drink?

While a scarcity of potable water sources across the globe is certainly urging efforts for its conservation, recycling initiatives in play right now aren't able to treat wastewater to an extent which can be termed as fit for direct human consumption.

Low cost water treatment technologies have several inefficiencies which need attention and need to be addressed soon, while advanced technologies are not viable right now due to the high upfront investment and costs of operation associated with them.

Current research is trying its best to address these issues by modifying existing wastewater technologies to make them more efficient. While they have been reasonably successful, the stress and hunt is on for new and improved technologies that could surpass existing processes that are still somewhat inefficient.

Future technologies

Besides modifications to existing inefficient technologies, a series of other new wastewater technologies have also been developed as practical alternatives to older, less feasible options.

These new wastewater recycling technologies are not just improving the quality of recycled water significantly but also are doing it at lower costs.

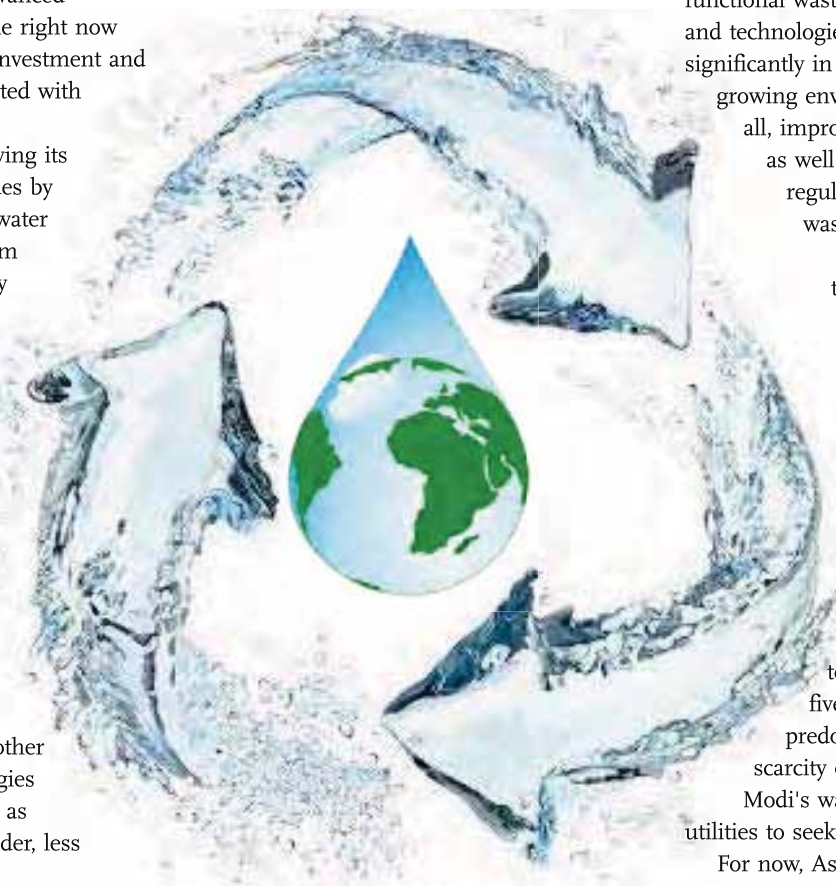
Besides reducing initial setup costs, upcoming wastewater technologies are focusing on lowering their operational costs by lowering their energy consumption.

On the other hand, there is also growing interest in generating electricity from sludge that is waste materials generated during the treatment process in order to reduce operational cost further, besides reducing the amount of leftover or unusable sludge byproducts.

Most new and advanced wastewater treatment and recycling technologies are still in their trial phase, and could take another four to five years before they are anywhere close to being commercialized or implemented.

Future adoption

Sadly, the adoption of advanced wastewater treatment and recycling technologies is limited to a few countries for now, principally due to limited government initiatives supporting wastewater treatment and recycling.



Most new and advanced wastewater treatment and recycling technologies are still in their trial phase, and could take another four to five years before they are anywhere close to being commercialized or implemented.

While plenty of countries across the world have policies in place that focus on the quality of discharged effluents (wastewater) in order to protect the environment, few, if any, have one in place governing the reuse of recycled wastewater.

Adoption of more holistic and functional wastewater treatment policies and technologies is expected to increase significantly in the future, driven by growing environmental awareness by all, improvement in technologies, as well as policies and regulations focused on wastewater reuse.

An imminent rise in the demand for potable water as well as diminishing fresh water resources will also urge aggressive adoption of such technologies in the long run. Developing countries are likely to record continuous growth in the adoption of wastewater treatment technologies over the next five years, driven predominantly by a growing scarcity of fresh water.

Modi's water deficit spurs French utilities to seek India growth.

For now, Asia's third-largest economy is a small part of the companies' global water businesses. Veolia's Indian revenues of euro 50 million ($55 million) compare with global sales of about euro 24 billion in 2014. Suez's $100 million from India contrasts with overall revenue of euro 14 billion last year.

Yet the small market size shows the potential for growth, according to G V Giri, an IIFL CapitalLtd. analyst in Mumbai. Modi's push to curb pollution in the river Ganges also boosts the

"With government announcements about shutting polluting industries along the Ganges, we'll see more industrial demand for water recycling in the coming decade."

outlook for Veolia, India's VA Tech WabagLtd. and Singapore's Hyflux Ltd, Giri said.

"More corporates will be forced to spend on water self-sufficiency," he said. "With government announcements about shutting polluting industries along the Ganges, we'll see more industrial demand for water recycling in the coming decade."

Untreated waste

Focusing on industry involves "high-value" technology with better profit margins, Veolia's Rousseau said in the March 17 interview. The company currently has municipal treatment plants in India's Karnataka, Maharashtra and Delhi states.

India only has the capacity to treat about a third of the wastewater it generates, data from consultancy TechSci Research shows. Its market for wastewater treatment plants will reach $2.1 billion next year from $1.4 billion in 2013, TechSci said.

Scaling up the industry faces a perennial Indian problem: money. Modi set aside $671 million for water resources in the year ending March 2016. In contrast, China plans more than $79 billion investment in water-conservation projects this year.

Apart from funds, other obstacles in India are the pace of municipal contracts, which slowed last year during the general election Modi won, and the lack of water regulators that enforce standards.

Modi's agenda includes reviving a 30-year-old plan to link Himalayan and peninsular rivers to channel water to deficient basins. He also wants to curb toxic discharges into the Ganges.

The World Resources Institute estimates more than half of India faces high water stress, and Rousseau sees an expanding local opportunity for water management technology.

Patterns of Water Consumption in Urban and Rural Areas

If per capita water availability is any indication, 'water stress' is only just beginning to show. This index is based on the minimum per capita level of water required to maintain an adequate quality of life in a moderately developed arid zone country.

A region whose renewable fresh water availability is below 1700 cubic meters/capita/annum is a 'water stress' region, and one whose availability falls below 1000 cubic meters/capita/annum experiences chronic 'water scarcity'. The annual per capita availability of renewable freshwater in the country has fallen from around 5,277 cubic meters in 1955 to 2,464 cubic meters in 1990. Given the projected increase in population by the year 2025, the per capita availability is likely to drop to below 1,000 cubic meters i.e., to levels of water scarcity.

According to Professor Malin Falkenmark of the Swedish International Water Institute,3 100 liters a day (36.5 cubic meters a year) is the minimum per capita water requirement for our basic domestic needs. In India, of the urban population, 84.9 percent had access to clean drinking water in 1993 as compared to 69 percent in 1985, but for rural population the figures fell from 82 percent in 1985 to 78.4 percent in 1993.4 Agriculture, industry and energy usage are roughly 5-20 times of domestic usage. Even within a particular industry, the quantity of water used is different for different players. For instance, the water consumed by a landless laborer is far less than that consumed by a rich farmer growing a water-intensive crop.

Similar patterns of inequality in consumption hold in industries as well. Water Resources Rainfall: With an average annual rainfall of 1,170 mm, India is one of the wettest countries in the world. At one extreme are areas like Cherrapunji, in the northeast, which is drenched each year with 11,000 mm of rainfall, and at the other extreme are places like Jaisalmer, in the west, which receives barely 200 mm of annual rainfall. Though the average rainfall is adequate, nearly three-quarters of the rain pours down in less than 120 days, from June to September. Groundwater: India's groundwater resources are almost ten times its annual rainfall. According to the Central

Nearly 85% of currently exploited groundwater is used only for irrigation. While groundwater accounts for as much as 70-80% of the value of farm produce attributable to irrigation. Besides, groundwater is now the source of four-fifths of the domestic water supply in rural areas, and around half that of urban and industrial areas. However, according to the International Irrigation Management Institute (IIMI), the water table almost everywhere in India is falling at between one to three meters every year. Already, excessive ground water mining has caused land subsidence in several regions of Central Uttar Pradesh. Surface water: There are 14 major, 44 medium and 55 minor river basins in the country. The major river basins constitute about 83-84% of the total drainage area. This, along with the medium river basins, accounts for 91% of the country's total drainage. India has the largest irrigation infrastructure in the world, but the irrigation efficiencies are low, at around 35%.

Water availability on the Indian subcontinent is strongly influenced by a number of climatic and geographic factors. Together these combine to provide India with enough freshwater

Nearly 85% of currently exploited groundwater is used only for irrigation. While groundwater accounts for as much as 70-80% of the value of farm produce attributable to irrigation.

to meet the various demands arising from the agricultural, industrial and domestic sectors. However, the actual distribution of water resources over space and time limits access to certain geographic regions and a few months of the year. Government policies and economic incentives have also influenced the water distribution and consumption across India.

Water harvesting structures used in India are based on ancient models and are therefore highly adapted to the prevailing climatic and hydrologic conditions of the area. The potential of these systems to supply adequate freshwater to all areas and sectors is high. However, since colonial times – and especially after independence in 1947 - these systems have been increasingly abandoned and neglected in favor of large dam and canal irrigation projects. So far, these 'modern' structures have been successful in providing water to portions of rural and urban India; yet high economic, social and environmental costs have reduced their overall benefit. The highly variable nature of the climate makes groundwater the most popular alternative for irrigation and domestic water use across India and accounts for over 400 km of the annual utilizable resource in the country. This dependence on groundwater resources is particularly critical where dry season surface water levels are low or where wet season flows are too disruptive to be easily tapped. In addition to being accessible, groundwater quality is generally excellent in most areas and presents a relatively safe source of drinking water for Indians in rural and urban centers. Agriculture remains central to the Indian economy and it therefore receives a greater share of the annual water allocation. According to the World Resources Institute (2000), 92% of India's utilizable water is devoted to this sector, mostly in the form of irrigation. Groundwater alone accounts for 39% of the water used in agriculture and surface water use often comes at the expense of other sectors such as the industrial and domestic supply.Demand from the domestic sector has remained low and accounts for only 5% of the annual freshwater withdrawals in India. The demand from domestic sector over the next twenty years will increase from 25 billion m3 to 52 billion m3. However, this increase in the demand from the domestic sector will not be as much as that from other sectors over the next several years.Currently, only 85% of the urban and 79% of the rural population has access to safe drinking water and fewer still have access to adequate sanitation facilities. Recognizing that the growing demand for water in agriculture and industries sets a pattern of water scarcity even in areas where there is sufficient water for domestic purpose, the national water policy has rightly prioritized drinking water over other uses. However, in giving subsidies to the industrial and agriculture sectors where the water consumption is highest and allowing these sectors to use more water at negligible prices, the government has effectively contradicted its own water policy. This has resulted in mining of ground water leading to a rapidly falling water table. For example, the bottling companies of Pepsi and Coca-cola in different parts of India pay very little towards water mining and have practiced unsustainable water mining in these areas to the detriment of villagers and small farmers in the area.

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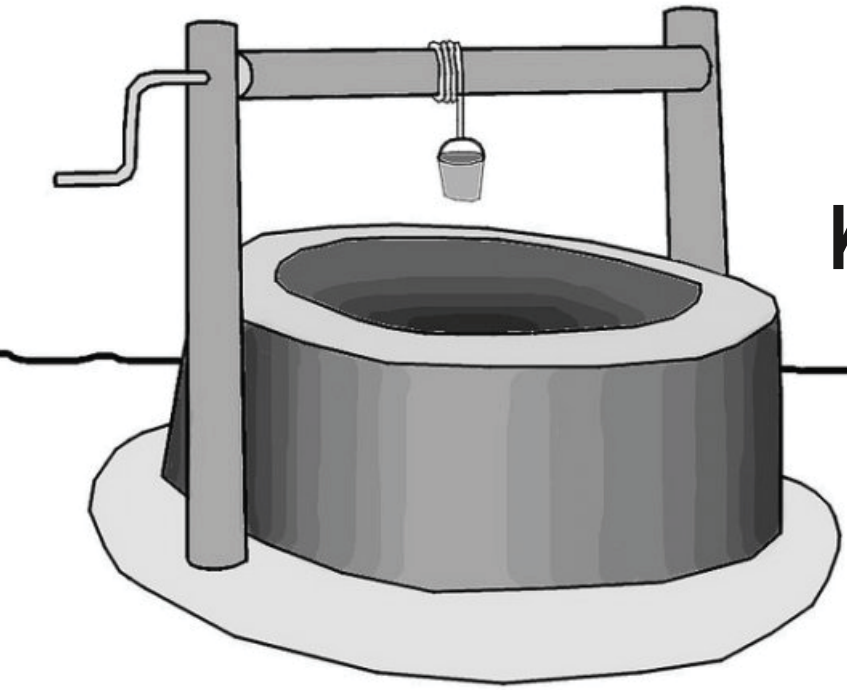


KNOW THE WORTH BEFORE THE WELL IS DRY

Water Crisis: A Case Study of Jabalpur

THIS CASE STUDY was conducted in Jabalpur concerning towards its shrinking lakes which required sincere planning with equal participation by the community members.

Sources which were at time considered renewable are diminishing rapidly. Water which is the most vital element is declining in the face of human rush. India's historic has not led the government to take concrete measures to control this rapidly over growing population.

Jabalpur is located in the heart of Madhya Pradesh surrounding 15 kilometers from river Narmada. Its present population is 2 million. While, two decades back it was 700,000. Increasing population is making summers seem like a nightmare. Though, this is the cause of water scarcity in some areas of the city. The water supply remains irregular throughout the year.

Water shortage leads to long queues and street scattered with people's patience running out. People travel and cover long miles for water. Once known as the city of lakes, the water bodies have today lost their thrust. Built by our forefathers for serving daily needs of human and other purpose, also for recharging groundwater, the lakes are dying day by day. Concrete buildings and waste material from industries have taken the place of the shrinking water bodies. Sports and business complexes are being planned in place of the retreating water bodies, without giving a second thought to the consequences on environment.

This scarcity of water has led to the digging of tube wells in every plot of the newly constructed colonies. This has further aggravated the problem with the fall of the water table. There is an urgent need of lakes to be cleaned regularly. Narmada, rain and groundwater are the three major sources of water for Jabalpur. The water flow in Narmada is because of rains in the upper reaches of Jabalpur. Due to this rainwater being tapped can make every household end the water crisis. If people are willing to build large underground water storage tanks, to harvest rainwater it could also recharge groundwater. However, if someone using groundwater does not recharge it regularly, he must be made liable to be punished by the municipality or water board.

Other than the Narmada, the other water supplied is from by two reservoirs. Earlier most of the rain that fell recharged groundwater aquifers because of dense green cover which,

acted as a barrier for surface runoff. But now the situation is different with 70 per cent of the forest cover in Khandari and 30 per cent of forest cover in Pariyat catchment removed the available reservoirs are getting silted up. Sadly, there is no official policy to respond to the crisis.

Water management and Conservation demands sincere planning and coordinated efforts not only by a single person; but by all!

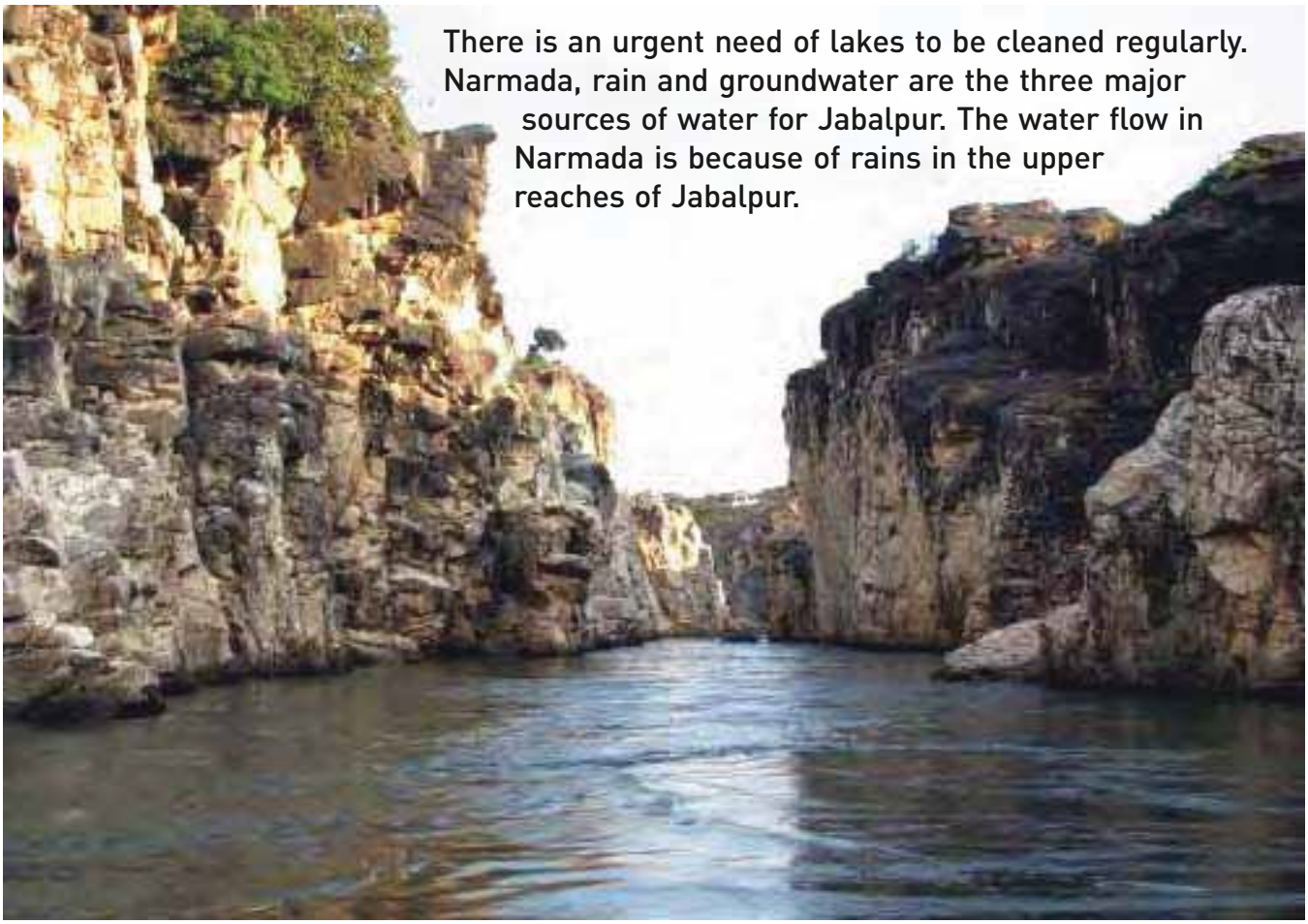
There is an urgent need for creation of separate water bodies independent of government interventions, manned by professionals appointed for a contractual basis and paid according to work efficiency. A ban on tube wells can make a vital difference to groundwater recharge.

Also, the Licenses need to be made compulsory for every well digger. The imposition of high water charges could be a feasible solution for discouraging the misuse of water. During the monsoons, Narmada water pipeline could be used for recharging ponds in the city.

Lastly, Rooftop water harvesting should be made essential, registration of colonies should not occur without the water harvesting system, high water consuming trees like the Eucalyptus should be avoided and polluted water from industrial areas should be safely disposed in such a way that it may not pollute the river downstream.

GOVERNMENT PERSPECTIVE

Of late the government has realized the blatant misuse of ground water. The chemical effluents unmindfully discharged into the rivers making lives of millions of people miserable. Nevertheless, public policy to make common man aware of the quality drinking water. Drinking water must not be used for gardening, washing utensils clothes lying. Proper focus must be laid for recycling of water while washing utensils which can be again collected to water the plants and make the planet livable. Oxygen that we get is only through plants, vegetation and forests. The forest policy needs to be devised in a planned manner enabling strict laws, saving green areas for future generations to come. Forests have known to be lungs of the city life. Amidst concrete buildings, infrastructures and commercial sections of societies, plants, vegetations and forest cannot be ignored. We must add here that forests prevent floods. It is the green areas that gives us clean air to breathe. And nonetheless, the evaporation process from forests invokes rainfall. Rainfall is the biggest source of irrigation and drinking water for cities and rural areas as well. In the times when rainfall is scanty, artificial water resources like tube wells, ponds and so many other options are available only if governments encourage the water harvesting and its conservation. Farmers are required to be



There is an urgent need of lakes to be cleaned regularly. Narmada, rain and groundwater are the three major sources of water for Jabalpur. The water flow in Narmada is because of rains in the upper reaches of Jabalpur.

educated in using new tools of farming and artificial methods of irrigation in the time of scarce or no rainfall. Financial institutions can play an important role to bring about the awareness amongst the people. Eminent role be ringing about prosperity in the rural areas providing cheaper financial assistance for farming sector. Any economy looking for development has to first proceed to the progress of agriculture. Urban areas must connect themselves with responsibility of not wasting the drinking water in useless household chores. It is observed that people unjustifiably use drinking water in car wash and other various actions. The authorities must educate the masses to distinguish between raw water and drinking water. Social media, Television ads , holdings, and seminars are conducted. The relevance of water should be detained well and the utility must be described. In spite of panic for tomorrow, the general public should be explained about the benefits of water harvesting and conservation. In absence of the same, the demerits must be elucidated.

Separate ministry and departments from ground level to "Mohalla Samities"and area bifurcation must be the focus to initiate the clean drinking water for all. Factories discharging toxins into the rivers must be forced to shut down. Periodical review of drinking water must be made in quality labs of the country. The poisonous particles should be eradicated with the help of our scientists. Today we find that Ganges originates from gomukh moves down to plains from Rishikesh, Haridwar taking a long distance to Bay of Bengal. Dumping of garbage, throwing of waste material onto the river, emersion of Diety idols into the rivers has aggravated the menace to alarming proportions, Stricter laws should be enforced through Constitution preventing people from throwing wastes or dumping sewage into the rivers enabling a cleaner tomorrow for all. No activity on earth can take place without water. Food and thirst requirement of man, vegetation, construction and so many other processes in industries cannot exist without water. We find that in the name of religion and festivals, water is wasted without giving a thought for a minute. On the contrary, there are few places on earth which are parched. There are droughts like conditions and people are found walking miles to carry back the potable drinking water. The uniform policy must be complied with the Government's intervention to provide free flowing sweet drinking water to each household. It must be ensured that it being a basic right of every human being, he cannot be deprived of such facility. Apart from these, we need to grow more plants and increase the vegetation spread for forests in our own interest. We have earlier elaborated that water is equally important to human race, animals, birds, plants and any other living form of life on earth. In the recent times, the Government has taken effective steps punishing the offenders, polluting our water resources. Ganga action plan is initiated under the able leadership of ministers to ensure that offenders do not escape their responsibility to help in keeping the rivers clean. Stricter punishments must be awarded to the errant polluting our natural resources. Religious and spiritual; beliefs of millions should be protected having their faith reposed in the divine powers of Ganges , Yamuna and so many other rivers across the country. Rivers for ages have been the sources of livelihood for people living near the banks. The water life should be protected at all cost. The architects of modern India, the first Prime Minster of our country envisaged the need of water for today's generations and many others to come. Tremendous action was taken to build up big and small dams all over the country. These were huge sources of irrigation and hydroelectric power. The ever rising demand of electricity for various industries could only be matched with increased production of hydroelectric power. Across the globe, it is witnessed that developed as well as developing economies have stood up the challenge of time gaining much from construction of dams enabling irrigation and the generation of hydroelectric power. International forums from time to time have accepted and passed resolutions in this direction. India is seen as one of the pioneers of noble cause to the mankind. At various levels, the Government has taken necessary steps monitory such development for our countrymen. Most importantly with the advent of progress, the groundwater is found to be contaminated with so many poisonous contents. This gives the rise to disease of bones deformity in humans and animals too.

Illegal excavation of sand from rivers

Construction lobby in the country has taken front seat in luring the customers with unprecedented dreams. Innocent homebuyers are easily trapped into the promises laid down in brochures. Strict provisions turned by the government preventing the misuse of groundwater have prompted the construction industry going for illegal methods in the form of sand excavation from the river beds. Money power, muscle power and political power have combined in the form of sand mafia who have no fear of the law enforcing agencies in their minds. Many a times sand mafia in collision with unscrupulous persons have found to even committing murders and taking lives of honest officers in charge of preventing such sand excavation.

Government has taken serious view of such conditions, and has come out with effective plans stopping all such illegal

measures adopted by the construction mafia.

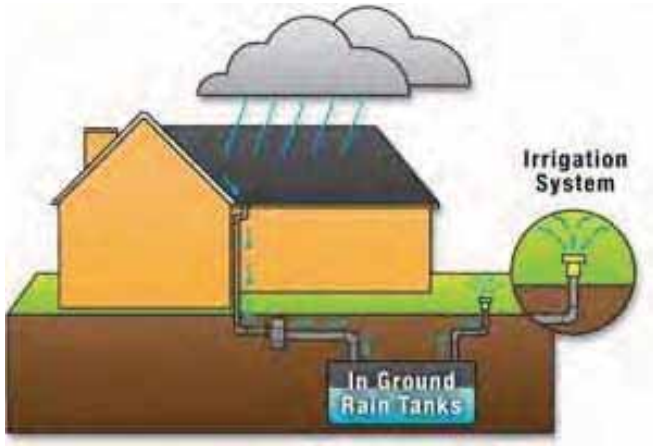
We suggest that saving our ecological system, the government should be very willing to maintain the balance of nature improving trees and rivers. Methodical plantation of trees along the rivers and its maintenance will enable invoking good monsoons. Resultantly, this will reduce the risk of drought and floods as well. The trees planted along the river and in the forests shall retain the fertile spoil coming from the mountains through rivers and getting deposited in the land around. Thus will endure the heavy crop production with increased quality of food. Lakhs of pilgrims who thrown to Haridwar, Varanasi and Allahabad for spiritual dips expecting to wash their sins will not confront any kind of filth or sewage in the rivers. Recently, Government has termed the rivers to be Mother Godess as it has been the age old perception of our religion calling Ganges and Yamuna as our Mother. (Mata) Going by thus tradition, it is the duty of all from the common man to the law enforcing authorities to ensure our rivers to be free from any kind of dirt. The chemical effluents been thrown unmindfully into these rivers should be stopped at any cost. Periodical review of such executed plans should be regular feature monitoring the prevailing situations. Water front walkways must be constructed along the rivers to bring about a healthy habit amongst the citizens. Big example was set up by our Prime Minister Mr Modi, welcoming the China's premiere to India hosting him on the Sabarmati's waterfront in Gujarat. The government has come out with a master plan envisaging construction of artificial recharge and rainwater.

Harvesting structure in rural areas

The Minister for drinking water and sanitation has instructed the CCENTRAL Ground Water Board preparing a conceptual document towards master plan in direction of artificial recharge of groundwater in India. Under these schemes, the structures proposed in rural areas include percolation tanks, check dams, Nala Bundhs, gully plugs and sub surfaced techniques of recharge shaft have been recommended as top priority for providing water to countrymen.

Ministry of drinking water and sanitation has conducted research and development projects for improving the quality of drinking water in urban as well as rural areas of the country. The improvement of drinking water quality include, reduction of removal of fluoride, arsenic, nitrate, iron and chromium like poisonous substances present in water.

All have the same view now promoted by the Government for preserving the drinking water quality. Clean and safe drinking water is an absolute necessity. It must be clean and safe, containing no harmful substances and microorganisms other than legally permitted. The Government has initiated measures to set along the standards on drinking water quality. These are based on the European drinking water directives. The drinking water companies use various techniques to purify ground water and surface water in order to produce clean and safe drinking water. It has become a trending systems of metro



cities being supplied by water in small and big containers to the demanding customers. The Government must regulate these companies asking their plumbers for using approved products such as pipes and taps for drinking water systems. Proper restraint must be exercised in such a manner that drinking water does not become contaminated. The Government has come to realize that public health is at a large risk due to chemical contaminants in drinking water resulting in serious health consequences. The water sources are exposed to pollutants depending on geological conditions and agricultural, industrial and many other man-made activities. Thus, it has to be ensured the quality of drinking water comes true on the parameters with aim to provide good health to public. Growing problem of contaminated water can effectively be treated in the laboratories certifying the quality of drinking standards. Higher values of iron, manganese and arsenic reduce the quality of drinking water. Awareness raising on chemical contents in drinking water at household level is required to improve public health.

It has become a common practice with all inhabitants of rural and urban areas to install RO water purifiers. The World Health organization is a reliable authority monitoring safety and health for all in the world. Ensuring availability and sustainable management of good quality water is a challenge for policy makers today. Water sanitation and hygiene preachers and practitioners attribute the facts to the changing climatic conditions, increasing population and negative effects of human development. WHO has come out with programs selecting intervention areas on the basis of some criteria such as poverty rate, poor sanitation, lack of access to safe water arsenic and other contaminants. WHO has adopted a holistic approach integrating water, sanitation and hygiene components. The water component promotes use of safe water through deep tube well installation in arsenic affected areas. Loans to construct tube well platform in order to protect groundwater from pollutants. Besides water quality testings and awareness building along with behavioral change is deciding factor to improve health and hygiene of rural and urban areas. The interventions vary according to household's economic status.

The relevance of the present studies lie in program implications providing evidence based and useful information on drinking water quality in a simple understanding way. We all expect the interventions to ensure drinking safe water is successful at all levels.

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Ending Water Scarcity

What does it take to get clean water to those who need it? According to the cofounders of Water.org, actor Matt Damon and Gary White, less than you may think—and the payback is tremendous.

Millions of children die every year from water-related illnesses. Women collectively spend around more than 200 million hours a day collecting water. In this interview with McKinsey's Rik Kirkland, the cofounders of the nonprofit organization Water.org, Matt Damon and Gary White, discuss practical ways to solve the global water and sanitation crisis.

Gary White and Matt Damon

Cofounders – Water.org

An edited transcript of Damon's and White's remarks follows.

Matt Damon: Every 20 seconds, a child dies somewhere on the planet because of lack of access to clean water and sanitation. Millions of children are dying every year from completely preventable diseases.

Gary White: Women spend 200 million hours every day walking to collect water. And kids miss 443 million school days every year because of this. So it's a huge toll on people's lives and health, but overall it stagnates the economic development that so many people need to climb out of poverty.

Matt Damon: It would take actually less than 1 percent of the drinkable water to give every single person—the 800 million or so who currently lack access—to get them 40 to 50 liters of water a day. I think there's the misunderstanding that there's just not going to be enough for everybody to survive, because that certainly is not true.

Gary White: If you just look at increasing the efficiency of agricultural use of water by only 2 percent, again, that would be enough to give people basic water, all 800 million that lack it right now. So it's not a matter of, "Is there enough water to go around for the poor," because the poor are coming to the table with a sipping straw relative to what everybody else is taking out.

Matt Damon: It's not a supply problem; it's a distribution problem. And I think there's this sense that, because we're going to go from 7 billion to 8 billion to 9 billion, and everybody's agitating about water scarcity and water security, we need to dispel the notion that there's not going to be enough water for the poor—because it's simply not true.

Matt Damon: In fact, when we were in India and talking to our micro finance partners, we said, "What's the biggest bottleneck to these loan programs? What's the big choke point for you guys?" And they said, "Access to affordable capital." And we said, "Are you kidding me?"

And they said, "No, no. The demand is absolutely there. We could be doing many, many more of these loans." The problem is, they get these wholesale loans from the commercial banks at, say, 15 percent. Once they add on their percentage to keep their

lights on, these loans are going out at 22 to 24 percent—it's very expensive to be poor.

So there is a market there, there's a real market there. But our challenge now is to look at that 22 to 24 percent and try to drive it down. And we know all of these people who want their money to do good things. There's got to be a way to marry these two up. And so that's what our latest idea is—to essentially try to engage those social capital markets.

Our partners have disbursed a quarter of a million loans, and the repayment rate is 98 percent; 94 percent of the recipients are women. WaterCredit is a remarkable program. It's been successful beyond anything we could have really hoped. And so, as we keep running these numbers up, and keep proving and reproving the model, that's really our best argument going forward to engage the social capital markets.

In a wide-ranging interview ahead of NDA's third anniversary, Bharti had a talk with DNA and was loud as ever. Bharti claimed that it requires more patience on the results from Namami Gange.

She emphasized that although there were no differences with either the PMO or environment ministry on Ganga and Uttarakhand hydel projects, she firmly believes that projects should not kill the river and stem its ecological flow.

Sushri Uma Bharati
Minister, Water Resources,
River Development & Ganga Rejuvenation

Excerpts:

Q What have been your ministry's achievements in the last three years and what is the single biggest achievement?

We have achieved in all fields like water resources, river development and Ganga rejuvenation. In PMKSY (Pradhan Mantri Krishi Sinchai Yojana), we have done exceedingly well. We are on the way to complete 99 projects worth Rs.77,000 crore, funded by NABARD, ahead of timeline, by 2018 December... this, I feel, is the biggest leap irrigation sector has taken in 72 years.

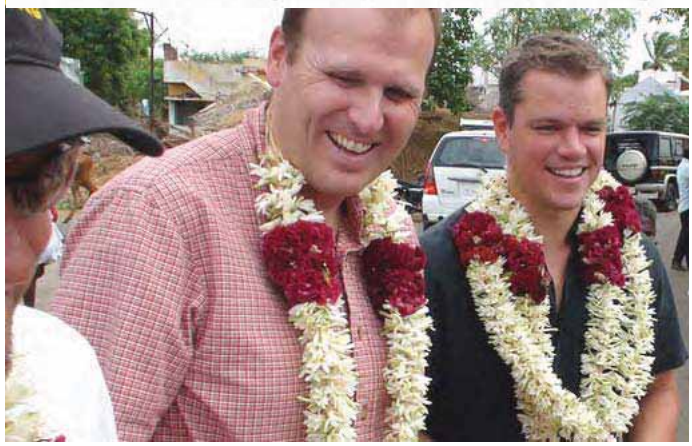
Q What about your single biggest achievement?

If I have to single out an achievement, then it is Ganga, the planning on Ganga. I am more satisfied with the planning on Ganga (cleaning).

Q Can you elaborate?

Yes. The planning part was indeed very difficult and after the planning, the packaging part was more difficult. Ganga crosses 5 states and each state has a different problem. In Himalayas, the drying up, in Uttar Pradesh there is the pollution issue, you cannot even release it after treatment. In Bihar, there is silt and in Jharkhand, there is arsenic. In Bengal, it is the vastness and incursion of saline water from the sea. Water is also a state subject and we were entering that domain. Thus, initially, we took care that nothing is left behind in planning. Even the World Bank head complimented us and said that no river project has been planned with such wholesomeness. Hence, planning was an achievement in itself.

Matt Damon and Gary White, Co-Founders, Water.org



But, it was still falling short as National Mission for Clean Ganga was registered as a society and it was later converted into an authority. If someone is wielding a spade, his hands should be strong enough to use it. A society could not have done what an authority can do. Converting it into an authority took six-seven months. This created a perception that there is a delay.

Q The approach and plans to clean Ganga were changed a couple of times, did this affect pace of work? And why is there little visible change in the river?

On this, I will say that yes, this has happened, it is a process. Earlier, EPC (Engineering, procurement, construction) mode was adopted and then hybrid annuity model was adopted. It did affect pace of work. If we had adopted the EPC, it would have happened through state governments, the tendering process would have compromised the quality. We could have brought visible changes through artificial means, but that would have been unsustainable. I would request patience from critics. If you want Ganga for years to come, you would need to be patient.

Q Can you elaborate on this dispute?

This (dispute) is with everyone. How much water does a river need to sustain and survive? How much blood do you need to survive? Have any project, irrigation or power, but how can you kill a river for a project. The river is created by the process of millions of years and the life of a project is maximum 100 years, maximum! So, how can you kill a million year process just for 100 years? ... So, there is a dispute, a difference. The collective opinion will take time. It is a universal dispute on ecological flow for sustaining a river, because you cannot kill a river for a project.

Q Since you spoke about e-flow, what is your stand on hundreds of dams planned on Bhagirathi and Alaknanda, will it not hamper Ganga?

I will take care that no dam, which will hamper Ganga, is allowed. I have the support of the environment ministry and PMO on it. I never believe in stopping a project, I myself commissioned the Indira Sagar project. I am not fundamentalist about it. If you can use a river for power generation, you must do it. But, care must be taken to see, that when you are creating the project, are you also destroying the qualities of the river?

Q Will BJP's recent victories in Uttarakhand and Uttar Pradesh help expedite work on Ganga cleaning?

It will help. In Uttar Pradesh, work had stopped. They were not issuing NOC's for projects on Namami Gange. The problem with Akhilesh Yadav was, work on Ganga was divided; half with Azam Khan and half with Shivpal Yadav. For many reasons, he was scared of Azam Khan and he could not communicate with Shivpal. Their family dispute has damaged Ganga (project).

Q What about Bengal?

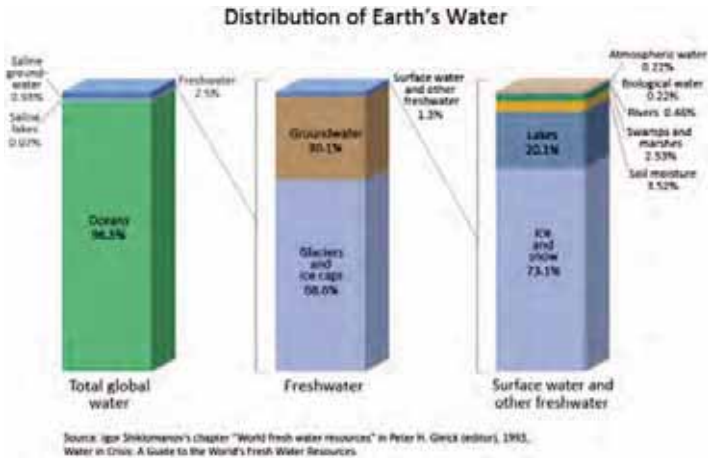
Ganga does not figure in the priorities of Mamata at all. I was in Kolkata, and nobody came from the state government to meet me or my officials. There is total non co-operation from Bengal and I think it is not a priority for Mamata Didi. I have written a letter to her, seeking a personal meeting over Ganga and I am waiting for her reply.

ACT BEFORE IT REACTS
Scarcity and Demand

WITH DEMAND FOR water increasing which is likely to double in the next two decades, water conservation is to be top priority for all countries across the globe.

Demand is high, whereas availability is low. So, water should be used in a judicious manner.

- The scarce availability of water and its higher demand is caused by one supply side threat which arises from occasions in which we withdraw freshwater from surface water sources and groundwater aquifers at rates faster than replenishment or recharge.
- Another supply-side problem is that even if after the availability of adequate water, the water available is not good enough to meet human needs. Much of the world's fresh water is being degraded.
- Still another supply-side problem is the fact that apart from physical water scarcity, there is economic scarcity for the global poor as well.
- One demand-side concern arises due to ever increasing population on the planet.
- High-demand users sometimes are geographically concentrated in regions which cannot sustain demand levels, this is another demand-side problem.



- Yet another demand-side problem arises from technologies that waste more water than alternative technologies.
- A fourth set of demand-side problems arises because demand is often insufficiently restrained due to inadequate price mechanisms and outmoded legal rules which sets only few limits on excessive use.

Some Basics of Water Availability: Saltwater, Freshwater, Groundwater, and Surface Water

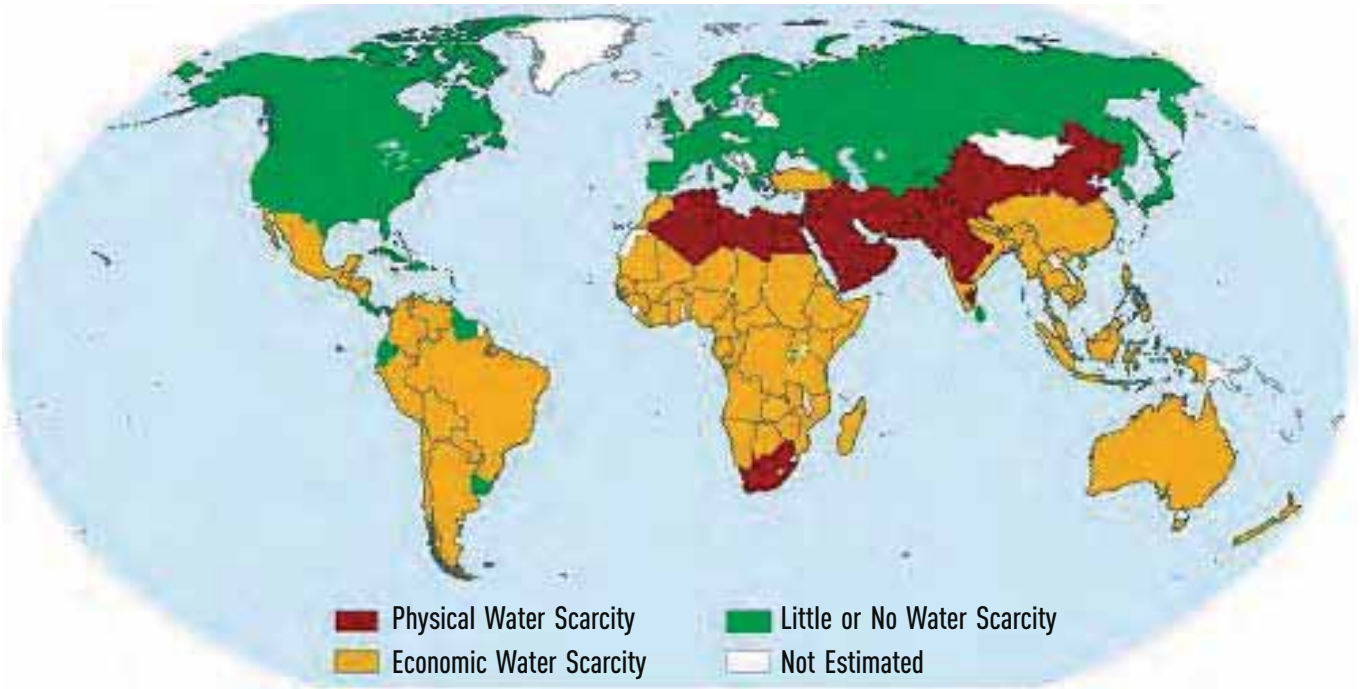
One of the more frequently cited statistics which comes in mind when we talk of water availability is the fact that only around 2.5% of the Earth's water is covered with freshwater. The amount of water present is saline or salt water, which is mostly found in the oceans.

Of the 2.5% of freshwater available for the support of human life, agriculture, and most forms of non-ocean life, 30.1% is groundwater. Groundwater is the water stored deep beneath the Earth's surface in underground aquifers. Another 68.6% of all freshwater is stored in glaciers and polar caps which leaves only 1.3% of the total freshwater on Earth is in surface water sources such as lakes, rivers, and streams.

The bulk of surface water on Earth is now found in even snow and ice - approximately 73.1%. Surface water found in lakes, rivers and streams accounts for just over another 20%.

Still, when we, the human beings think about our needs for water, we spend most of our time thinking about the surface water found in lakes and rivers and the vast watersheds within which they and their tributaries are found. It is on the basis of a consideration of such a narrow set of all freshwater resources that we plan the location of our cities, derive most of our drinking water, build waterways for transporting people and goods, pipe vast quantities very long distances for agricultural purposes (e.g., from Lake Mead to the California Central Valley), and worry most focally about whenever we do pause to worry about water pollution and water-related environmental degradation.

Projected Water Scarcity in 2025



Where Does All the Water Go?

Our modern industrial system of agriculture poses still further challenges both because of its impact on our ability to meet our needs for freshwater and because it is in itself an increasingly carbon-intensive enterprise. The use of fertilizers and pesticides that has been largely responsible for the massive increase in yield per acre since WWII, but it requires far more water per acre than traditional forms of agriculture.

The FAO estimates that 70% of the world's water is used for agricultural purposes. The graph shows that it takes approximately 15,000 litres of water to produce one kilogram of meat which compares to approximately 1,500 litres to produce a kilogram of wheat. Around 3,000 litres per day are needed to satisfy a person's daily nutritional needs - that estimate, of course, depends on the foods that are used to meet those needs.

WATER HARVESTING

We must not forget to add here, that centuries have witnessed the advent of civilizations settling around the river banks. Right from the primitive age, till the modern man, Water has been the decisive factor of settlement of human inhabitation.

Ganging the eminence of water, it has stood to be lifeline of any race or century round the world. Shocking levels of pollutions, the diminishing water resources have today forced in the scientists & autonomous looking out for new plants exploring life existing possibilities.

Exploring water on new earth like planets, still a distant dream; we need to focus on the availability as of now with best utility of rain. International forums at various levels have now from time to time emphasized the eminence of water harvesting. Thereafter comes the Water Conservation.

Concept of Water Harvesting coordinates different factors following uniform path of accumulation of Natural Water.

World Community has accepted to understand that new methodology needs to be devised for accumulate and store the Rain Water. Encouragement is laid upon to build such enormous water storing places which automatically and naturally save the rain water. Call it harvesting and not letting the precious liquid go down the drain. Prevention of wastage of rain water and retaining it for future use is Water Harvesting.

Observations reveal, the level of ground water is constantly going down owing to pollutants emitted from chemical wastes. The toxins and arsenic present in water level is in shocking state.

Indian states like Orissa, Madhya Pradesh, U.P, Jharkhand and Bihar are bearing the brunt of laxity on the part of respective Governments. Arsenic level mixed with ground water has forced the villages in many states to have no other option other than relying on the poisonous harmful chemicals present in the consumption of drinking water. Lack of awareness campaigns and illiteracy has accelerated the process in new emerging diseases in human beings forcing deformation of limbs in the population consuming such water.

Not limiting just to India, the disease has crossed borders and has been reported from Bangladesh, Pakistan and African continents too. Proportion of disease are distressing leaving humans in lurch. Unable to work, the patients have no employment and means of livelihood. Malnourishment adds to the miseries galore.

Remarkably, the Governments have taken notice of the dark chapter waiting to eat away the planet's life. Highly threatening state has caused the countries to seriously rethink overcoming the issue of depleting water sources.

Water Harvesting have only found to be dynamic option available with us enabling us to retain excess rain water, despite losing it beyond means.

Sanitation and Water

Our Prime Minister Narendra Modi has provided us with many opportunities for maintaining sanitation to obtain clean water.

"SWACHH BHARAT MISSION" is one of the main programmes and step taken towards Clean India. He proposed to provide clean toilets in villages so that they do not suffer from uncleanliness.

No doubt clean water, basic toilets and good and proper hygiene practices are essential for the survival and overall development of children. Today, there are about 2.4 billion people who do not have access to improved sanitation, and 663 million who do not have access to improved water sources.

The lives of millions of children are at risk without these basic needs. For children under the age of five, diseases related to water and sanitation are one of the leading causes of death. Every day, an about of 800 children die from preventable diseases caused by poor water, and a lack of sanitation and hygiene.

UNICEF's Water, Sanitation and Hygiene (WASH) team works in over 100 countries worldwide for providing improved water and sanitation services to all, as well as basic hygiene practices. In the previous year, the efforts laid by UNICEF provided nearly 14 million people with clean water and over 11 million with basic toilets. Thus the situation has improved a bit.

Washing hands with soap, specially after contact with excreta, can help in reducing diarrhoeal diseases by around 40 per cent and respiratory infections by 30 per cent. Diarrhoea and respiratory infections are the major cause due to which children lose their life in India.

With 594 million people passing human waste in the open and 44 per cent mothers disposing their children's faeces in the open, there is a higher risk of microbial contamination of water which causes diarrhea and other bacteria and viruses in children.

Children who already have a history of diarrhea are more vulnerable to malnutrition infections like pneumonia.

About 48 per cent of children in India are suffering from some form of malnutrition. The learning abilities of school going children are also affected due to Diarrhoea and worm infection which are two major health conditions.

Sufficient and proper well maintained water supply and sanitation facilities in schools helps in encouraging children to attend school regularly and help them to achieve their educational goals. Inadequate water supply and sanitation in schools are health hazards and affect their presence in schools and also their overall performance in schools.

Mostly adolescent girls are vulnerable to dropping out, as many are unwilling to continue their schooling because toilet facilities are not private, unsafe or unavailable.

Women and girls feel embarrassed and have a sense of loss of personal dignity and safety risk if there are no facility of toilet at home. They have to keep waiting for the night to relieve themselves to avoid being seen by others.

Sanitation

It is estimated that:

- Improved sanitation are used only by 31 per cent of India's population (2008)
- An about 21 per cent use improved sanitation facilities in rural India (2008)
- Between 1990-2008, One Hundred Forty Five million people in rural India gained access to improved sanitation.
- Around Two hundred and Eleven Million people gained access to improved sanitation in whole of India between 1990-2008.
- India is considered as a home to 594 million people who pass human waste in the open; an about of 50 per cent of the population.
- In Bangladesh and Brazil, only seven per cent of the population defecate in the open. In China, only four per cent of the population defecate in the open.

Water

- In comparison to 1990, 88 per cent of the population of 1.2 billion has access to drinking water from improved sources in 2008. Which earlier was 68.
- In India, only a quarter of the total population has drinking water on their premise.
- Women, who have to cover miles to collect the drinking water, are vulnerable to a number of unsafe practices.

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Water is deceptive. For while it pours freely from the heavens and seems to flow endlessly in rivers, it's a finite resource; we only have what we have. And although there is about 332,500,000 cubic miles of it on earth – only one-hundredth of one percent of the world's water is readily available for human use. We really need to learn how to show it some respect.

We already know that three-fourth of our earth's surface is covered with water, but only a small proportion of its accounts for freshwater which can be used. The freshwater is mainly obtained from surface run off and ground water that is continually being renewed and recharged through the hydrological cycle. All water moves within the hydrological cycle ensuring that water is a renewable source.

Water is scarce due to the overgrowing population. Many of the cities are example to this. A large population means more water not only for domestic use but also to produce more food. Hence, to facilitate higher food grain production of food, water resources are being over exploited to expand irrigated areas and dry season agriculture.

The question here lies that how do we manage and conserve water? The past records of archaeologists and historians show that from ancient times, we are involved in constructing sophisticated hydraulic structures like dams which are built of stone, reservoirs or lakes, embankments and canals for irrigation purpose. It's not at all overwhelming that we have continued this tradition of building dams and canals in the modern India too. Dams help in the preservation of water in many forms. They were purposely built to impound rivers and rainwater which could be used later for irrigation in agricultural fields. But, today dams are built not only for irrigation purpose, but also for generating electricity, water supply for domestic and industrial uses, in controlling of floods, navigation for inland and fish breeding. Thus, dams are now considered as multipurpose projects, as they can be used in many forms and for many purposes. A major example for this is that, in the Satluj - Beas river basin, the renowned Bhakra Nangal project water is being used for Hydel power production as well as irrigation purpose. Thus this reflects the multipurpose use of dams in ongoing projects. Likewise, the Hirakund project in the Mahanadi basin generates conservation of water with flood control.

Multipurpose projects launched after Independence with methods of conserving water were thought as a vehicle which will give boost to the overall development and progress of the country. Pandit Jawaharlal Nehru proudly justified the dams as the “temples of modern India”. The major reason behind this proclamation was that it would integrate development of agriculture and the urban economy with rapid industrialization and similarly growth of the urban economy.

These multipurpose projects and large dams have also been the cause of beginning of movements like **“Narmada Bachao Andolan”** and the famous **“Tehri Dam Andolan”.**

Post Independent India witnessed intensive matters worse by exerting pressure on existing freshwater resources, Industrialization and urbanization, creating vast opportunities for us. Today, large industrial houses are as commonplace as the industrial units of many MNC'S. The ever increasing number of industries has made matters worse by exerting pressure on existing freshwater resources. Industries, apart from being heavy users of water, also require power to run them. Much of this energy comes from hydroelectric power. Today, in India hydroelectric power contributes approximately 22 percent of the total electricity produced. Moreover, multiplying urban centres with large and

dense population and urban lifestyles have not only added to water and energy requirements, but have further aggravated the problem. If we look into the housing societies or colonies in the cities, we would find that most of these have their own groundwater pumping devices to meet their water needs. Not surprisingly, we find that fragile water resources are being over exploited and have caused their depletion in several of these cities. So far we have focused on the quantitative aspects of water scarcity. Let's consider another situation where water is sufficiently available to meet the needs of the people, but, the area still suffers from water scarcity. The cause of this scarcity may be due to the bad quality of water. There has been a growing concern that even if there is ample of water to meet the needs of the people, much of it may be polluted by domestic and industrial wastes, chemicals, pesticides, and fertilizers used in agriculture, thus making it hazardous for human use & purpose.

Thus considering the given situation, the need of the hour is to conserve and manage our water resources by using water carefully & judiciously. The conserved water will be used by the coming generations, and they will be protected from health hazards. Also, for ensuring food security to them, for the continuation of the livelihoods and other productive activities. Not to forget, this will ultimately protect our ecosystems from degrading.

Water is the basic necessity of life and sadly it's depleting day by day at an alarming rate. The need of the hour is to save water and use it precisely as possible. 22nd March is celebrated as World's Water Day. The day lays emphasis on saving water by all and not just by a single person. Even a little effort counts. It's truly said, a little goes a long way.

Water is the necessity of our lives.Withoutwater lifeis completely non existent. A few days back, we had celebrated a day that was dedicated to the most precious & rarest gift of the nature, and most importantly, to draw attention towards the significance of water in our lives- World Water Day. Let's continue the celebrations by taking a pledge of conserving & recycling water for ourselves and the next generation!

With demand for water increasing which is likely to double in the next two decades, water conservation is to be top priority for all countries across the globe.

Water has tremendous value—people, crops, industry, and the environment all rely on this limited resource, which is at considerable risk due to climate change. In 2005, power plants in six Western states consumed an estimated 395,000 acre-feet (AF) of water. These plants impact our region's rivers and aquifers, and tie up water that could meet growing urban, agricultural, or environmental needs. Most electric utilities and regulators do not recognize or incorporate these needs when considering future resource plans. Most state public utility commissions already have the authority to consider water impacts, but, to date, many have not exercised this authority.

Save the Silver Drops

Save water as it will save you later! The first thing that is taught by our parents and teachers, while growing up, is to save water for a better future. These days, there are many water saving technologies that have been introduced to the market, however, many of you might not have opened to such innovations. Don't worry; this blog would reveal some great water-saving technologies and products that could conserve the silver drops for us!

Save the World

In a nutshell, more than a personal choice, it is a necessity to conserve our resources that are rapidly depleting and water is one of the resources. Jaquar believes that conservation is the second nature and through our eco-friendly design ethos, we are contributing in saving a precious resource. Jaquar Green Products will help you to cut down the wastage of most precious resource. As a global manufacturers of bathroom products, we are well aware of our responsibilities and preservation of water as a natural resource. Go Green is a philosophy embraced by us as a tenet of its design and production process to save water.

This year, don't just preach or teach people about saving water but do something to save your planet and future generations because each drop counts!

Conserve Water Outside

The average American uses 100 gallons of water a day, and about 30 gallons of that goes to outdoor activities like watering the lawn. When it comes to saving water outdoors, there are quite a few easy ways to conserve. Cutting down water use in the garden is easy, using simple techniques like drip irrigation.

Conserve Water Inside

As for indoor use, the ways to conserve are too many to count. But we can certainly get you started with a few dozen ideas. Start by asking yourself these 7 important questions. Then, take a look at your water use. Bath time might be a necessity, but there are ways to cut down on water use and make what you do use go much farther.

There are also basics like learning how to check for leaks, and fixing the faucets and pipes that are drip, drip, dripping. Also, daily chores like laundry and dish washing are ripe with ways to conserve. If you're feeling the bug for fixing up your home, check out installing a greywater system, which is easier than you might think. Even the somewhat more interesting ideas like peeing in the garden rather than the toilet can help.

And there is looking at how much water we drink and eat. Even when we travel, we can conserve more water

Learning about Water Scarcity

When we look at all the ways we use water, we could save as much as 60 gallons a day with just a few simple steps. It pays to get educated about water issues, from catching the latest documentaries to testing our knowledge to getting familiar with what water scarcity looks like.

No Water-No Life; No Blue-No Green!

Water Water Everywhere, but not a drop to drink.

THIS IS A harsh reality when nation's population is faced with flood situation in areas which experience heavy rainfall.

Assam, Bengal, Maharashtra, Bihar and recently Jammu & Kashmir are the states which experience heavy floods causing great loss of lives of human and animals. Beside three storied concrete houses are seen submerged in flood waters. The houses are full of slush and muck when flood waters recede. The furniture household items, utensils and electronic items like refrigerator, Tv's, Ac's are all destroyed in submerged houses. There is a tremendous loss of lives and property. Ready crops are destroyed. Fields are submerged/ sweeping away the fertile soil. Land becomes barren, not fit for cultivation. People have no-where to go. Many die and animals are swept away. No food, no water for sustenance. In such condition, Government Army and military forces are the only ray of hope engaged in rescue operations. It is not just restricted to rescuing but the rehabilitation of standard homeless into temporary shelters till normalcy. The biggest challenge before Government is food supplies to the flood affected areas.

Here we can visualize the Price of Water. When water is available in sufficient quantity, we tend to be careless and waste it without giving a second thought. In face of drought we then only realize the price of water. Price of water is the utility of water. Judicious usage of water with the available sources is the responsibility of mankind.

Grow more trees, plant new species is the call of time in order to generate, preserve, conserve and harvest the precious life saving liquid. Today's generation should understand the significance of planting more trees. It must not be limited to planting only. Proper care should be taken just as we take care of our toddles. Education system in the counting should encourage children in various schools and students in different universities about going green contributing to plant more trees. Trees are the source of oxygen. They bring rainfall prevent famine, and restrict the floods.

Evaporation process from forests bring rainfall in the form of life. It is amply clear that what is the importance of water as relating to all living bodies.

Apart from oxygen and water availability, forests provide fodder to our cattle. Wild life in forests helps to maintain ecological balance. Forests are home to various animals and unexplored species of birds.

Sandal Wood comes from Forests. Our residential houses and commercial activity have huge demand of wood that again is obtained from forests.

In earlier times, forests were the only source of fuel wood for cooking in villages & hilly areas. Although with the changing times, Government Ban is invoked to discourage the practice of processing fuel wood from forests. Dependency on forests for fuel wood for cooking forcing forests vanish fast.

There have been current reports of illegal felling of trees for smuggling. Sandalwood smuggler Veerapan was shot dead for his dreaded illegal activities in South.

Our Planet Mother Earth must be saved by all means, or else we should be prepared for extinction.

One must not underestimate the price of water, importance of plants, forests, and vegetations as they are the only source of existence of life on our Earth.

Without Water there is No Life on any planet in the universe. Scientists from all over the world are busy today, finding the possibility of water on mars and other planets as well. Astronomers are trying to see an opportunity tracing earth like planet where life is possible. But, a single fact we must not forget that without water, there is no life. In other words, without Blue, there is No Green. It refers to the water helping increase the forest areas which again recycles water through evaporation in the form of rainfall. Green cover cannot exist without blue referred to as water. Both seemingly are interdependent and both have their relevance in the life of earth. As explained earlier, water is necessary for agriculture, man gets food from crops. Farming needs water for our food requirements. Similarly, fodder from animal again comes from agriculture. Without water, there is no sustainability for human beings, animals and plants. The slogan NO BLUE NO GREEN stands for its authentication. Astronauts from their spacecrafts and rockets view earth as blue planet because it is covered by 70% of water in the form of oceans and seas. Human colonies tend to settle along the water bodies and river banks for their daily requirements. The foremost activity from primitive times is dependency on agriculture. Food grains like wheat, rice, sugarcane and fruits all depend on water to be grown in the quality proportion. Rice and sugarcane are the crops which demand more water for harvest. Indian farmers depend mainly upon natural resources in the form of rainfall and accumulated water in the ponds and lakes.

But, the true theory is that rainfall tends to be unpredictable at all times. The farmer community in the dismayed villages sits staring towards the sky invoking the rain gods. Similar kind of story has already been depicted in cinemas as it goes in one movie named Lagaan. The parched areas see dangerous famines and droughts forcing people to stay in hunger causing malnutrition or death. In the times of 21st century, we cannot digest such thing as people starving beyond normal levels. One grain of rice in such areas has immense value, thus we living in the cities must visualize the importance of food. We must take that quantity in our plates which we can consume comfortably; the food should not be wasted by all means.

In spite of wasting food or throwing it to animals, it should be distributed amongst the unprivileged and the poor sections of society who sleep on footpaths and sleep hungry many a times. No government organizations have today taken up this humane task of providing nutrition to poor and unprivileged. Small children are facing starvation and malnutrition. NGO'S have come a long way comforting these sections to quite an extent. Thus, now we come to know the importance of Food to stay in good health. Concluding which we can now can visualize the significance of water and food in our lives accurately supporting the fact that No Blue No Green means No Water No Life!

Filthy Water Bodies:

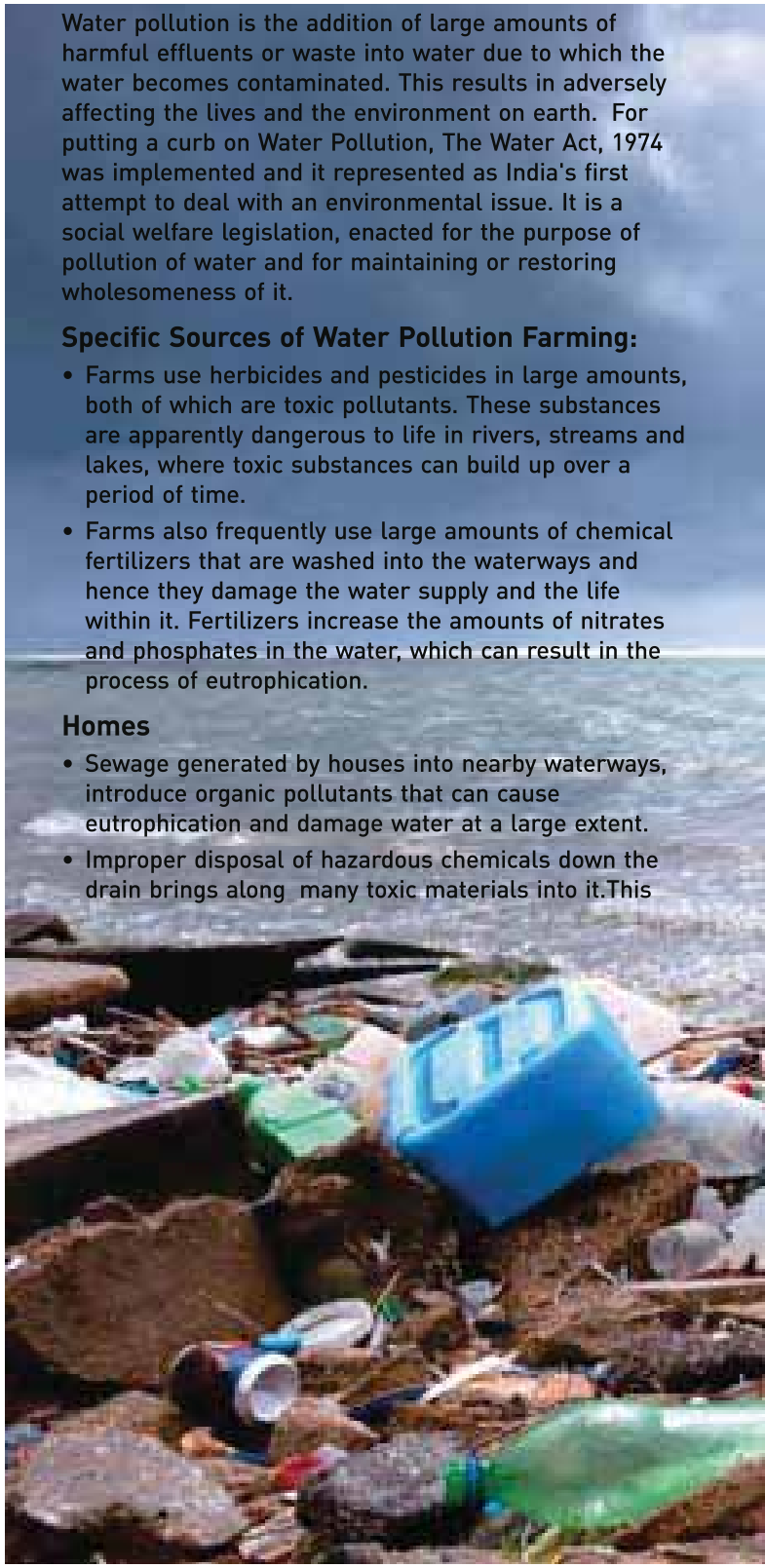
Water pollution is the addition of large amounts of harmful effluents or waste into water due to which the water becomes contaminated. This results in adversely affecting the lives and the environment on earth. For putting a curb on Water Pollution, The Water Act, 1974 was implemented and it represented as India's first attempt to deal with an environmental issue. It is a social welfare legislation, enacted for the purpose of pollution of water and for maintaining or restoring wholesomeness of it.

Specific Sources of Water Pollution Farming:

- Farms use herbicides and pesticides in large amounts, both of which are toxic pollutants. These substances are apparently dangerous to life in rivers, streams and lakes, where toxic substances can build up over a period of time.
- Farms also frequently use large amounts of chemical fertilizers that are washed into the waterways and hence they damage the water supply and the life within it. Fertilizers increase the amounts of nitrates and phosphates in the water, which can result in the process of eutrophication.

Homes

- Sewage generated by houses into nearby waterways, introduce organic pollutants that can cause eutrophication and damage water at a large extent.
- Improper disposal of hazardous chemicals down the drain brings along many toxic materials into it.This



Growing Water Pollution

results in contamination of water supplies which ultimately damages the ecosystem harming the aquatic organisms.

Types of Water Pollution

Toxic Substance -- A toxic substance is generally a chemical pollutant which is not a naturally occurring substance in aquatic ecosystems. The greatest contributors to toxic pollution are mainly herbicides, pesticides and industrial compounds.

Organic Substance -- Organic pollution occurs when toxins such as manure or sewage, enters the water in large amounts. When organic matter increases in a pond, it increases the number of decomposers in water. This leads to a depletion of oxygen as it gives rise to the process of decomposition. A lack of oxygen harms aquatic organisms and can even kill them. As the aquatic organisms die, they are broken down by decomposers which leads to further depletion of the oxygen levels.

Steps for Minimizing Water Pollution

In order to keep our waters clean and uncontaminated there are a number of measure that can be taken or implemented ensuring that the water on our earth remains clean. Also, if contaminated, it can be filtered for removing the poisonous substances.

Importantly, the factories and other large buildings should take care of the proper disposal of their waste. They should also try to use less amount of toxins.

Proper disposal of toxic chemicals or materials before they begin to reach our oceans and lakes would help in a larger way and ultimately contribute towards improving the current condition of our water.

Second, the government should implement steps for making renewable energy sources to run these large operations companies which can obtain their energy from eco-friendly sources that do not harm or pollute the atmosphere.

For example: Solar energy, wind turbines and hydro power are all known as pollution free methods of obtaining power from the earth's natural resources without causing any harm to the existing natural resources.

Third, the factories and other large buildings should try to use eco friendly chemicals replacing toxic cleaning chemicals and sprays as much as possible.

These chemicals are proven as extremely helpful as they do not contaminate the water. They have a very little or no negative consequence.

Fourth, The three R's. That are Reduce, Recycle & Reuse. Companies should adopt the agenda of these 3 R's by Reducing the amount of materials they use in creating their products, and Recycle left over materials.Lastly, should try their level best to Reuse or re-purpose materials.

Above mentioned are some of the steps companies and organizations should take for reducing water pollution. They should stop using materials that produce toxic waste and pollutants which hits the purity of water.

After all, A little effort by each individual definitely counts!

TANDARUST BHARAT

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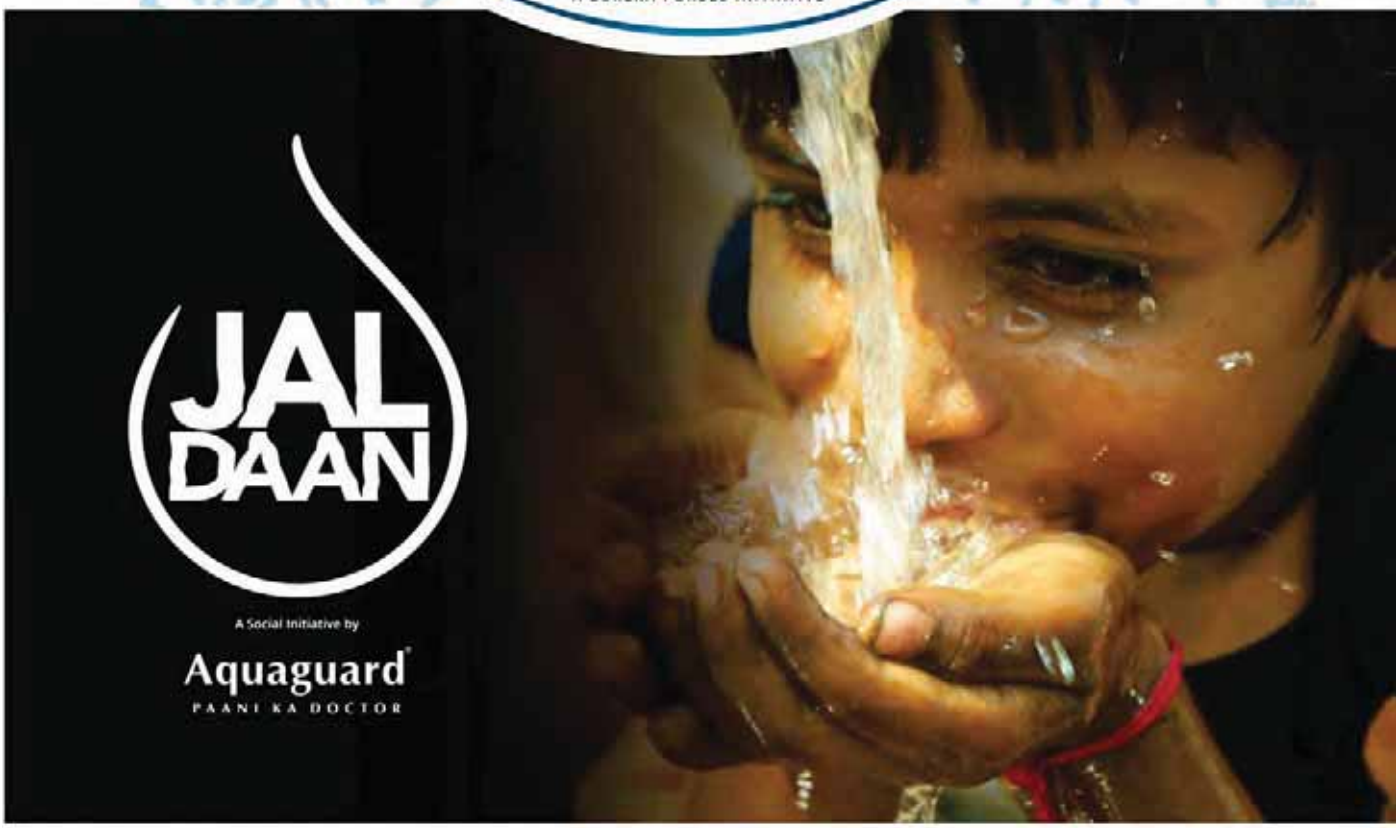

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WATER IS LIFE
USE IT WELL

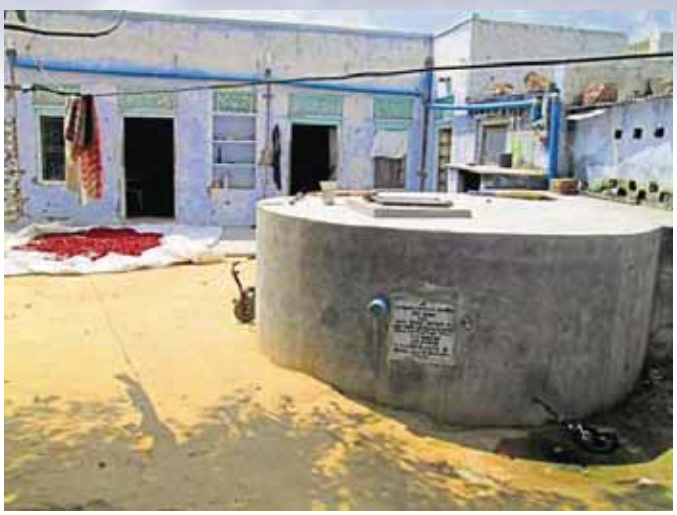
AS WE HAVE already mentioned, Water is Life. It is a fact that three-fourth of the earth's surface is covered with water, but only a small proportion of it accounts for freshwater which can be obtained for human purpose. The water is depleting day by day and it is not going to live forever. We should try to save as much water as we can for generations to come. Steps should be taken not by just a single person but by all. The burden and responsibility of saving water should be carried out by all. Government should also take measures for preventing wastage of water.

It is a fact that 96.5 per cent of the total volume of world's water is estimated to exist as oceans and only 2.5 percent as freshwater. Nearly 70 percent of this freshwater occurs as ice sheets and glaciers in Antarctica, Greenland and the mountainous regions of the world, while a little less than 30 percent is stored as groundwater in the world's aquifers.

India receives nearly 4percent of the global precipitation and ranks 133 in the world in terms of water availability per person per annum.

Thus the need of the hour is to save water. Multipurpose projects like construction of dams, river canals are helpful in the conservation of water. Water being the basic necessity of life, there is an immense need to manage and conserve water by all. Multipurpose projects launched just after the Independence with their integrated water resources management approach were thought of as the vehicle that will boost and lead to the overall development and progress of the nation. The dams has been well described as the “temples of modern India”.

Today in the semi arid and arid regions of Rajasthan, particularly in Bikaner. Almost all the houses traditionally had underground tanks or tanka for storing drinking water. The tanks could be as large as a big room consisting of one household in Phalodi. The tankas were part of the well



developed roof top rain water harvesting system and were built inside the main house or the courtyard. Thus all these helped in the preservation of water. The rain water can be stored in the tankas till the next rainfall making it an extremely reliable source of drinking water when all other sources are dried up. (particularly in summers). Fortunately, in many parts of India, rooftop rain water harvesting is being successfully adopted to store and conserve water.

Sadly, the barrier which comes in way of conserving water is Water Pollution.

Water Act was formed in order to check any contaminants, or effluents in water and prevention for the same.

Water, an easily available and free commodity which is essential for survival, is soon going to become the most difficult to obtain. This fact alone was the centre-point of discussion at the Water Conservation session of PBD 2012. Not only was the problem discussed but feasible solutions water conservation methods were also suggested.

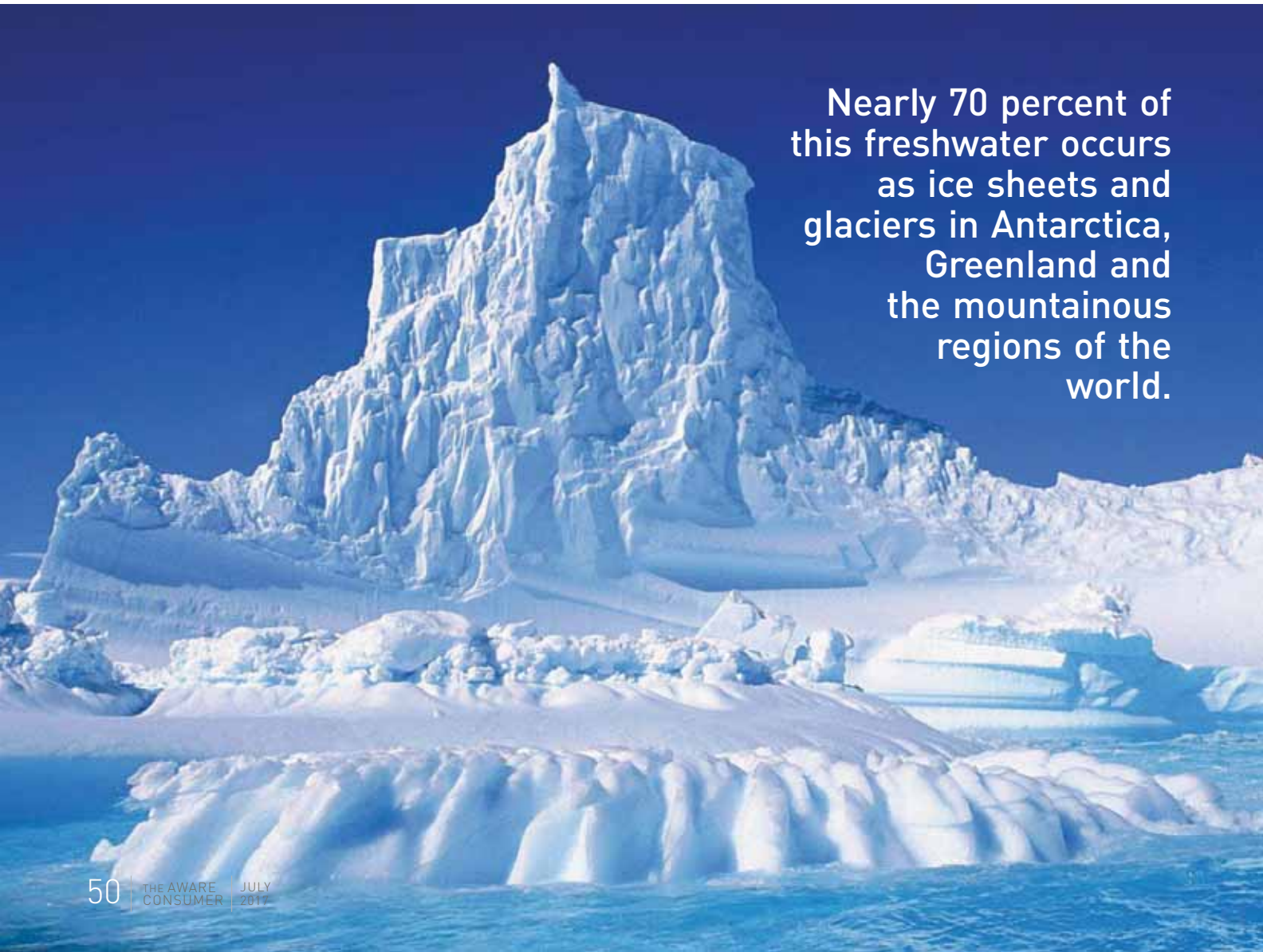
Facts related to Water Conservation

1. A word of caution: India will become water stressed soon! It is therefore vitally important to think on the importance of water conservation.
2. Water is more costly than oil. So it is more important to think about water conservation and find different ways to conserve water & using it judiciously.
3. 50% of spending under the NREGA scheme is for the purpose of Water Conservation.
4. Satellites are searching on other planets for the existence of water.
5. Australia is turning brown!
6. A single drop of water leaking from a tap amounts to 10,000 litres of water loss annually. So people should be educated on various water conservation methods and ways to conserve water as much as we can.
7. Nostradamus said that the third world war will happen because of Water!

> A single drop of water leaking from a tap amounts to 10,000 litres of water loss annually.

A two hundred and fifty member audience was all ears to know about the importance of water conservation.These striking statements and many other unknown facts about Water and importance of water conservation were presented by the esteemed members of the dais; Shri Subodh Kant Sahay (Honorable Minister of Tourism, Govt. of India), Shri Jitendra Singh (Cabinet Minister of Energy and PHE, Govt. of Rajasthan), Shri Atul Jain (Additional Chief Secretary of Water, Govt. of Rajasthan) and Shri Atul Jain (CEO of TIKO)..

India due to its diverse geography suffers from several varied water related problems. Rajasthan's problem is to fight the desert while Kerala's problem is sea erosion. Ironically, there is water shortage at Cherrapunji too, which incidentally records the highest rainfall in the country.The reason being lack of



water conservation and water storage mechanisms. Hence the only solution is - CONSERVE WATER.

The problem was deeply discussed but the focus was majorly on the solutions that came out of the deliberation:

- We need to inculcate renewed interest in the traditional methods of water conservation.
- Roof Water: Using the roofs of old houses to store rain water which can be utilized for drinking and cooking purposes, it being pure and clean. This is one of the ways to conserve water.
- Extensive exploitation of ground water.
- NGOs along with Government support need to work on Social Entrepreneurship in Water Conservation.
- Developing water conservation methods by which Rain water can directly enter the earth. Also, natural recycling of water.
- Conversion of saline water into drinking water
- Discovery of other sources of water
- 20 – 30 % water saving on daily basis as a part of an individual agenda

Overseas Indian Development Fund. Indians staying overseas, can associate with the same and get involved in 'Save Water' campaigns.

Innovative and Exemplary case study GRAM VIKAS in Odisha has managed to fulfill requirements of thousands in the remote tribal areas of the state. A three tap connection has been provided for every tribal house, that is, one tap each in the toilet, bathroom and kitchen. This is done by utilizing gravity with no use of electricity whatsoever.

Lastly, there is a huge need for SOCIAL INNOVATIONS in water conversation as opposed to only TECHNOLOGICAL INNOVATIONS.

In my personal opinion, Pollution is really horrible. But undoubtedly, fact remains the same, that we ourselves are the ones creating it. We throw garbage on the ground thinking 'one piece of trash won't harm the world' but really, it does. One piece leads to another, and another to even another. People take what we have for granted thinking things won't harm it, but it does. It's going to keep getting worse, and nobody can fix it if we keep doing it. It's like taking a plate, and breaking it into hundreds of pieces, and continue throwing the pieces. You can't just keep doing that and expect everything to be fine, because it won't get better until you stop.

Achieving better water management on a global scale will require dedicated investment in research to develop more accurate prediction models that will drive action, as well as improved communication between policy makers and researchers, who need to provide clear recommendations on how to implement solutions. As a 2012 UN report on global water management stated, "Even when the appropriate knowledge is available, it does not always get readily disseminated and shared—and translated into proper planning or effective action."

Think of water as a nutrient your body needs that is present in liquids, plain water, and foods

Water conservation

The most important step in the direction of finding solutions to issues of water and environmental conservation is to change people's attitudes and habits which includes each one of us collectively and not by a single person. Conserve water because it is the right thing to do earlier as possible.

We can follow some of the simple things that have been listed below and contribute to water conservation.

- Try to do one habit or activity each day that will result in saving water. Even if it amounts to minimal savings. Every drop counts! One can make a big difference by little efforts.
- Remember to use only the amount of water actually needed. Form a group of water conscious people and also encouraging your friends and neighbors to be part of this group. Promote water conservation in community newsletters and on bulletin boards.
- Encourage your friends, neighbors and co-workers to also contribute. Campaigns could also be made for continuation of this practice.
- Encourage your family to keep looking for new ways to conserve water in and around your home.

For me, Water Pollution is a curse which gets into water and makes it unfit for drinking and for any human purpose and even for animal consumption. Pollutants include various things such as mercury and many other harmful chemicals. Some of this pollution is sewage, trash or oil from boats. Water Pollution thus is extremely bad for our environment as the entire food web depends on safe and clean drinking water for living.

Contaminated water causes many diseases like cancer and large algae blooms which results in the killing of aquatic life.

If every human neglects his/her responsibility towards the environment, it will ultimately lead to the complete degradation of ecosystem and the environment. The environment will be hence damaged for a daily living. Water Pollution thus is a major problem which urgently needs to be put a curb upon.

The people should stop dumping of garbage and waste into our water source to protect further damage to our environment.

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AFTERWORD

Pyush Misra
Director
Consumer Online Foundation

The Key to Survival SUSTAINABILITY

Water is Life.

WATER ON EARTH is continuously changing. This is due to continuous growing pressure on water resources as a cause of overpopulation.

Various other challenges have largely impacted our social, cultural and economic well-being. The aquifers are over pumped ultimately causing decline in groundwater levels. Major rivers including the Colorado River in the western United States and the Yellow River in China no longer reach the sea in most years.

The California drought is worsening the large and growing gap between the state's water use and the actual available water supply. Sadly, half of the world's wetlands have been lost to development. The world's water is increasingly becoming degraded in quality, which is threatening the health of people and ecosystems and increasing the cost of treatment. An around of 780 million people around the globe do not have access to clean water. In the coming years, for water to be available to all, one should devise natural ways to sustain water.

The world's water problems has its stem from our failure to meet basic human needs, ineffective and inappropriate institutions, poor management, and our inability to balance human needs with the needs of the natural world. The demands are high and the resources are less which ultimately creates an imbalance in the nature. These toxins are rooted in a wasteful use of water, characterized by poor management systems, improper economic incentives, underinvestment, the failure to apply existing technologies, and an outdated mindset.

Since our founding in 1987, the Pacific Institute has worked to identify challenges facing our water resources and find solutions – solutions that promote the sustainable management of water resources, in California and around the world. Our research brings attention to key issues that have often been overlooked: the impact of climate change on water, water as a basic human right, the importance of conservation and efficiency, the role of water in conflict, the globalization and privatization of water, threats to the world's water, and more.

Underlying all of the Pacific Institute's work is the belief that a new approach to the way we plan, manage, and use water is urgently needed. The good news is that we are making progress. We have focused water policymakers at all levels to look at the risks of climate change on water supply. Our push toward a reevaluation of the importance of water-use conservation and efficiency is leading to fundamental changes in water policy in the western United States and around the world. The work continues, because more needs to be done – much more. The most important change we can make is in the way we think about, value, and manage our water.

Those like us who believe in and spread the gospel of planned wastewater reclamation and reuse usually emphasize that this is a step towards sustainability in water resource management,

Water is at the core of sustainable development and is critical for socio-economic development, healthy ecosystems and for human survival itself. It is vital for reducing the global burden of disease and improving the health, welfare and productivity of populations.

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BE THE SOLUTION

WHY IT'S IMPORTANT TO USE WATER CAREFULLY?

Water Conservation is a big step but every little step taken towards it, matters a lot. We should all take steps for conserving water by making certain changes in our lives which will change the course and quality of water. Water conservation should be a way of life. The more we save it today, the more it will be available for the future generations. By making certain changes we can wholly contribute something to the environment.

There is an utmost need to use water carefully and conserve it as much as we can. The importance of water lies in the fact that it is the most important substance for preservation of life.

Water should be used carefully as it is important for the proper functioning of our lives. It is known that we individuals can live without food for days, but we cannot survive without water. It's not just about the human beings; the plants as well as the animals cannot survive without water. The plants require water to grow. The increasing population consumes food in a larger amount which requires additional water. Sadly, the natural water is getting disturbed by unplanned ever increasing population. On the other hand, the underground water resources are not being charged regularly.

We should learn to use water carefully. The used water should be recycled and the rain water should be pooled to protect the environment. Water should thus be wisely used. Everyone's life is dependent on life solely on water i.e. without water there is no life on earth.

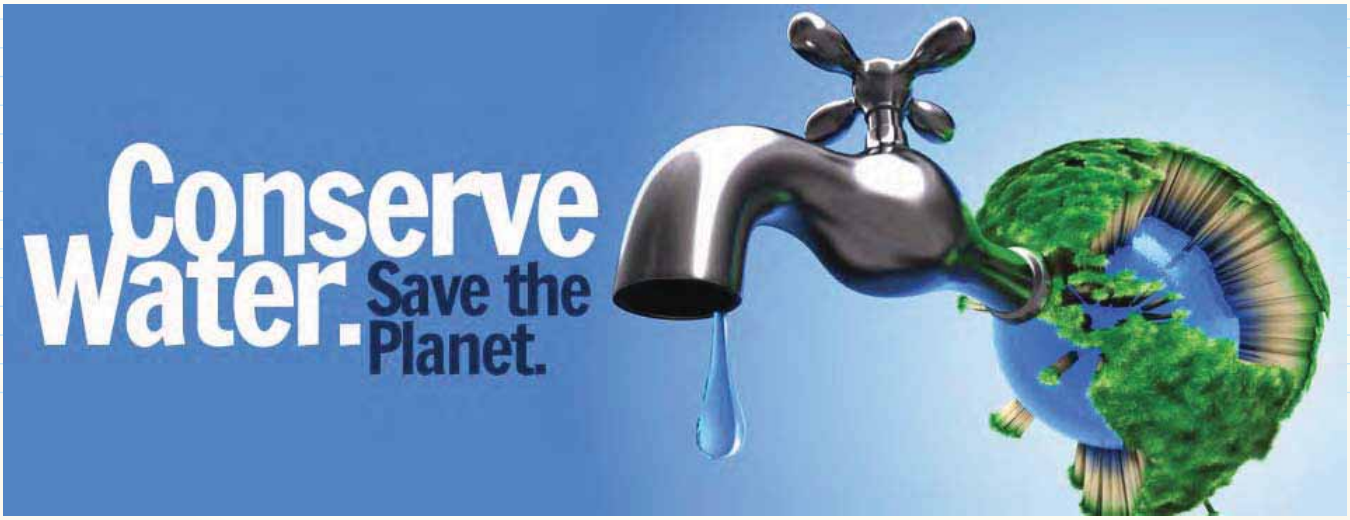
Conserving water and using it carefully should be the responsibility of every citizen. We should not leave this responsibility on others. Water should be kept pure, for generations to come, to make them enjoy the benefits of clean and safe water. As water is finite, that is, we do not have an endless water supply of it. Supply of water is limited but the demands are infinite. So to maintain a balance, we should try to use water carefully & judiciously as much as we can.

Major reasons why water should be used carefully-

1. **Useful in many aspects** - Water is used for many purposes like in the making of electricity, cleaning, in cooking and irrigation etc. It takes about 30-40 gallons for one bath. Washing machines use an average of about 25 gallons per load. The kitchen sink takes about 20 gallons per day. Hydroelectric plants are the largest users of water. Water for drinking is the most important thing for which water is needed. Without water, one cannot survive.

2. **Nature** - Plants are the source from where we get our food. Plants receive their energy from sunlight and store it in the food they produce. This process is known as Photosynthesis. Just because plants are the main source of all of our food and most of our oxygen too, we need to make sure that plants have enough water to carry out the process of making food and oxygen for all.

Thus, we ourselves have the responsibility to the future. We must protect, conserve and carefully use our state's natural resource of water!



POINTSTONOTE

- **WATER IS LIFE.** We cannot imagine our lives without water. But it is not going to last forever. We already know that three-fourth of our earth's surface is covered with water, but only a small proportion of its accounts for freshwater which can be used. The freshwater is mainly obtained from surface run off and ground water that is continually being renewed and recharged through the hydrological cycle. All water moves within the hydrological cycle ensuring that water is a renewable source.
- Water is scarce due to the overgrowing population. Many of the cities are example to this. A large population means more water not only for domestic use but also to produce more food. Hence, to facilitate higher food grain production of food, water resources are being over exploited to expand irrigated areas and dry season agriculture.
- Life of humans depends solely on crops, vegetations , forests and above all the water. Water comes second after oxygen which provides us breath every moment. Oxygen comes from plants without which one cannot breathe. Thus is applicable to humans and animals too. Oxygen if not present has power to seize any kind of life of earth in few seconds. Whereas, without water one cannot sustain for 8-12 hours at a stretch. Beyond that body tends to dehydrate giving rise to stroke leading to death. Drinking water is must for keeping our bodies hydrated.
- Science has repeatedly emphasized on drinking clean water. We all know that water is not going to last long; still we are careless towards our own needs. Wastage of water is rampant. Whereas on the contrary,we must use the water judiciously and save it for tomorrow. The first need of water is drinking and later come the other requirements of water.
- Now comes the question of how to save water?
- It needs to be realized that water can be saved through many sources like building big dams, rivers canals, lakes, ponds and wells. As we find them in abundant in rural areas. Bhakra Nangal dam in Punjab constructed in sixties is a new beginning for water conservation giving new meaning to life. Accumulation of water can be diverted to the areas of need. Tankers can be made readily available transporting the precious liquid called Water in the areas which are deficient in water. Government plays its own relevant role in construction of dams, lakes, ponds, canals and wells in order to save the precious liquid for tomorrow's generation.
- On our front we should exercise restraint on unmindful wastage of water going down drain. Water should be stored in households in big water tanks and containers. Drinking water must always be pure free from all pollutants because it is also necessary for cooking food. Any kind of contamination in drinking water can pass on negative effect on health of human beings.
- Children can be taught the importance of water right from their homes. In the education centres like schools and colleges, teachers play an eminent role in educating the students to save drinking water. Clean and drinking water is the first right of any human being to exist on earth. In this direction, the necessary steps and measures must not be overlooked to build a better tomorrow.
- Working in kitchens, cooking food and washing utensils, the residual water must not be left to go down in waste. This water can be used for our plants at home and in the vicinity. Washing clothes is another activity found associated with any household. This can again be recycled washing other material and floors at home.
- Big industrial houses on their part have a major responsibility supervising and taking precautionary measures that discharged water is utilized and recycled for other activities. It should be free from any kind of pollutants, so as to provide drinking water to the workforce.
- The compliance of water conservation and water harvesting should be the prerequisite formalities for setting up of any=7 new industrial houses. This will deter the managements not abiding by such provisions. Stricter laws must be enacted with punitive actions. Combining all the factors if effective measures are taken, there is no reason that the generations to come will be forced to feed on untreated, polluted or contaminated water. The results will be amazing that the human race will survive on standard quality drinking water in face of such policy and regulations.

Water conservation

The most important step in the direction of finding solutions to issues of water and environmental conservation is to change people's attitudes and habits which includes each one of us collectively and not by a single person. Conserve water because it is the right thing to do earlier as possible.

We can follow some of the simple things that have been listed below and contribute to water conservation.

POOJA KHAITAN

PURE WATER: World's First and Foremost Medicine

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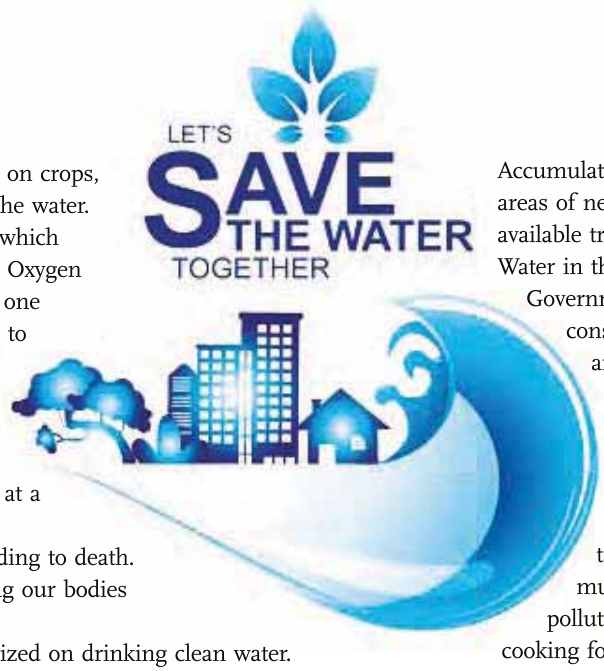

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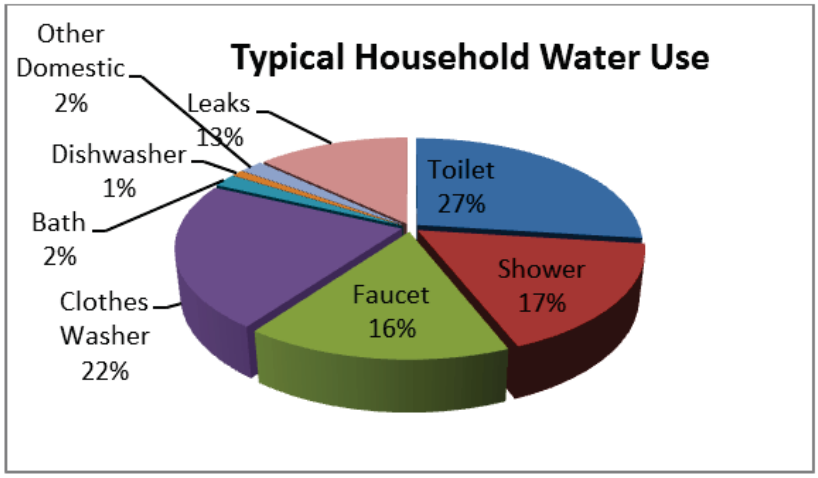

Water: Diet and Nutrition

We all are well aware that water is the essence of life. Man can live without food for couple of days, but without water, it is not feasible to sustain for long. Again oxygen is the breathing power received from plants and green cover spread over the area of habitation. Water called blue is necessary for green plants. In the form of plants or green we derive crops, cultivated by farmers in the fields. Farmers toil hard for producing food grains, wheat, rice, pulses and sugarcane etc.

Foremost duty is to see that the agricultural produce does not go waste or is not left to be rotten. It is food after clean air to breathe, which is the basic necessity of life to exist.

Agricultural products are transported to Mandi which has organized structure present from Government agencies. Procurement of food grains is made by FOOD CORPORATION OF INDIA. FCI in turn arranges for proper transportation of the agricultural produce for even distribution all over the country. It is FCI which methodically takes necessary measures for safe warehouse and good facilities to store the food grains in cold storage as per their nature of being perishable items. Many a times it is reported that wheat is rotting at Railwayyards for want of insufficient warehouses.

Such situations sometimes create unhygienic circumstances where such agricultural products are spotted under rotten conditions infected by flies and parasites. These food grains are not fit even for the animals to consume.

Government must take a serious note of such wastage, where instead of taking care of hunger, the food grains are left to rot.

Description given above can caution us the importance of food. Our diet contains multiple sets of nutrition value present in the food that we consume.

Human body gets multi vitamins carbohydrates proteins, iron and many other beneficial derivatives present in the vegetables and fruits apart from cereals and pulses. These have immense nutrition value needed for a healthy body and mind.

To ensure such levels of nutrition value in diet, the Government controls and regulates PUBLIC DISTRIBUTION SYSTEM for needy poor and BPL (BELOW POVERTY LINE POPULATION). Distinctive Ration Cards are issued to public for ever distribution & supply not only to well to do, but to the needy and poor and underprivileged.

Despite Governments best adopted measures, there are reports about food grains not reaching the far flung remote areas. With the result our states like Orissa, Bengal, U.P, Madhya Pradesh have reported such cases of malnutrition in inaccessible areas. The population is suffering for want of food. Inappropriate quantity and quality has forced many poor to starve beyond proportion.

Concluding, we assent that standard quality water and quality diet is the first basic right of any individual in the country. This needs to be provided at all costs. Justice demands right to live in a dignified and healthy manner.

FOOD SAFETY AND STANDARDS AUTHORITY OF INDIA

Inspiring Trust, Assuring Safe & Nutritious Food

Safe & Nutritious Food- A shared responsibility

A Bouquet of Initiatives for Citizens Guidance and Behaviourial Change

Food plays a central role in all parts of our lives - community, social, cultural and religious. We eat when we socialize with friends, we eat prasad at temples, celebrate weddings and birthdays with elaborate feasts.

Food, which is both a necessity and a pleasure can often become the source of many problems. If we consume unhygienic food, we can get infections. If don't eat enough or healthy food, we may become deficient in important nutrients and fall prey to many disorders. If we eat too much, we become obese, which leads to another set of lifestyle disorders.

Eating safe and wholesome food is not just essential; it has to be a way of life. Keeping this in mind, FSSAI launched a bouquet of initiatives to promote safe and nutritious food-at home, at the work, at school and eat out in restaurants, street, places of worship and railways.

HOME

@Home

Most people in India, prefer to eat food that is cooked at home but do not have access to food safety experts and nutritionists. Thus, most of the homemakers are either on their own or at the mercy of often conflicting sources of information around food safety and nutrition.

SNF@home is aimed at disseminating knowledge on Safe and Nutritious Food to enable the citizens to make informed choices for their families. This is done through community outreach, training and developing educational resources like Pink Book.

@School

Children are powerful change agents. The messages delivered to, and through children, have the potential to usher a behavior change and a culture of safe and wholesome food. Students are open to experimenting with food and diet while at school making them more susceptible to food-borne diseases. SNF@School involves a continuous engagement with students, teachers & parents to make them aware about the importance of Safe & Nutritious Food.

This is being done through curricular or co-curricular activities, through Health and Wellness Coordinators and Health Teams.

SCHOOL

WORKPLACE

@Work

A majority of people eat at least one meal at the workplace on a regular basis. However, lack of safe and nutritious food at the workplace leads to illness, absenteeism and eventually loss of productivity. Productive employees are key to the success of any organisation. Therefore, the initiative aims to create employee awareness through training and ensuring regulatory compliance at cafeterias.

@ Eat Out

Clean Street Food

India's rich food culture often reflects its diverse local culture, the easy availability, wide variety and delicacy have popularised it across sections of the society. However, street food is often perceived as unhygienic and a major health risk. Project Clean Street Food involves training and capacity building of the street food vendors and ensure proper regulatory oversight over them under the Food Safety and Standards Act, 2006.

The project aims to ensure health, hygiene and safety standard of street food for all consumers. This will further help in enhancing the popularity of Street food by transforming it into a global brand by itself.

STREET FOOD

Safe Food on Track

- It is important to educate the food handlers about hygiene/service, hand hygiene, proper food cooking and holding temperatures, and cross contamination. The initiative focuses on training and certification of Food Handlers in order to ensure food safety in the Indian Railway.
- The initiative involves creating resources on Safe and Nutritious Food and disseminating knowledge through community outreach and training.

RAILWAYS

Restaurants

In today fast moving life, eating out has become inevitable because of lack of time, more social gatherings and availability of world class delicacies. Serve Safe seeks to ensure that safe and nutritious food is being served when people eat out at restaurants, dhabas, canteens or at any other catering establishments including event catering.

Serve safe is being ensured through 3 major activities namely, Food Safety Supervisor (FSS) Training, Food Safety Display Boards (FSDB) and Safe and Hygiene Food (SAFH) Rating of Restaurants.

RESTAURANT

BHOG (Blissful Hygienic Offering to God)

Cleanliness is next to godliness. The Places of worship including temples, gurudwaras have a tradition of offering food to the devotees as Prasad and many of these places also serve food in large numbers to the pilgrims. Food served in these places of worship is regarded as pure and sacred. Hence, food should be prepared in a clean and proper manner giving utmost importance to hygiene. FSSAI is engaging with the managements of Places of Worship to help them implement Food Safety Management Systems (FSMS).

BHOG

HOSPITAL

@Hospital

Hospitals have been identified as high food safety risk institutions because they serve food to vulnerable people. These people are more susceptible to food-borne illnesses than the general population and consequently food contamination by pathogens could be particularly harmful. This initiative aims to train food handlers about food hygiene and Hazard Analysis and Critical Control Points (HACCP).

These initiatives have been planned and developed in collaboration with various organisations, institutions, agencies and the community at large. With a vision of "Food safety as a shared responsibility", collaboration towards 'Safe and Nutritious Food' initiatives will help in building a New India, a healthy and happy India.

Safe & Nutritious Food
A Shared Responsibility

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