

# 15

## Water Management

*Water, water everywhere, but not a drop to drink. We have grossly misused this commodity which was in abundance but has become scarce.*

### 15.1 Water resources (some vital data)

Ocean - 97% of total water stocks including snow at poles.

(Ocean average depth 1200 metres to 4000 metres)

Rest - 3%, of which,

24% is sub-soil water = 0.72%,

\*75% is glaciers on mountains and icebergs= 2.25%, and

1% is in rivers, ponds, canals and lakes = 0.03%  
= 3.00%

\* Melting of just 10% of glaciers can raise the sea level by 15-20 feet, which is enough to submerge many coastal areas and also low lying islands (Bangladesh is one such low lying country).

Earth - 70.8 % in water

- 29.2 % actual land available

- We have 18 surface rivers.

- 40 % of our population inhabits on the river banks and coastlines

#### Note

A person consumes roughly 1000 litres of water per year (3 litres/day)

### 15.2 Causes of water scarcity

- Rapid, unplanned and excessive urbanization.
- Low storage capacity of our rivers, ponds, canals and lakes
- Silting of the above
- Denuding of forests depletes their retention capacity to absorb rain water and causes drying up of springs.

- Cities' untreated filth, sewage and industrial wastes are discharged into the rivers, ponds and canals, which gradually deplete their storage capacity besides generating filth. It also causes contamination and destroys flora and fauna.
- Ours is a tropical country. We have definite seasons of rains, mostly in summer and partly in winter, unlike the West where it usually rains round the year. There the rains are generally not excessive and the soil gets enough time to absorb and allow it to seep through the subsoil. But our situation is different. It often rains excessively within a short duration. Neither the subsoil gets enough time to absorb it nor the storage capacity of our rivers, ponds, canals, lakes or drainage systems is adequate to retain it during this short duration. It may therefore inundate the local areas and cause flash floods as we witnessed in 2005 in Gujarat, Maharashtra, Karnataka, Tamil Nadu and Andhra Pradesh. The torrential rains flood many cities for days destroying the belongings and uprooting the families for months. A catastrophe of this magnitude was rarely witnessed before. Perennial floods in some parts almost every year has been a regular feature in our country. The rivers overflow, flood and drain out the entire rain water quickly into the sea, without doing a "useful work." Similar is the story of draughts.

It is unfortunate that in our country even the renewable resources are shrinking because of our ignorance, callous attitude and their indiscriminate over-utilisation or misutilisation as noted above. Water scarcity could have been prevented if water was properly managed and conscientiously utilised and we had made enough reservoirs to conserve rain water. The discharge of sewage into our holy rivers and other reservoirs in the 21<sup>st</sup> century is a matter of shame for any country. Most of our ponds and lakes have dried up and canals have little water as a consequence of this. There has been not much effort to add more canal routes. Rivers and other reservoirs cannot be kept clean unless discharge of sewage into them is stopped. Our country has seen tens of thousands of crores of rupees going waste in the name of Ganga cleaning, Yamuna cleaning or other cleansing operations elsewhere but the rivers have remained as polluted as they were. **In fact we must cleanse our system before attempting to cleanse anything else!**

- It is astonishing that a renewable natural resource like water, available in plenty and so important for our lives has become a scarcity. When we failed to preserve surface water, we resorted to ground-water, depleting this reserve also.

- **Even now we are sinking hand pumps in our rural areas and in large numbers in urban areas indicating waste of rain water and depletion of ground water.** One can often witness long queues at all public hydrants. Ladies, children and gents spending their lifetime in just fetching water for their daily needs. It seems as if this was the only purpose of their lives. It should undermine any nation. Our system, however plays Nero<sup>1</sup> and is immune to feel so.

With the alarming rate of sinking of the ground-water table there is a threat that we may dry up even this source one day. The government is now proposing to levy a heavy cess on the consumers to discourage use of ground water. They may even propose a ban on sinking new private tube-wells. In some states they have already done so.

- Our polity and bureaucracy know only of relief-oriented work rather than fighting the causes on a long-term basis. The fortune of the rural poor and in turn of the whole nation has thus dried up or flowed out under droughts or floods respectively. There is little surprise in witnessing the imbroglio over sharing of Kaveri water between Karnataka and Tamil Nadu (2002). The two states, centre and the Supreme Court, all are involved but the people are agitating. **Whatever be the settlement against the resentment of many, the sharing of water will be yet another short-term relief, rather than a permanent solution.** The problem has been lingering for long but no one is able to suggest a lasting solution. Of the 119 major dams and canals, 24 are still incomplete after 22-27 years (a UN report). Projects in our country are seldom executed while the project money is swindled by all connected with the system. Many projects are announced and widely publicised just for the sake of votes as discussed in Section 8.5 and remain ribboned.

### 15.3 Spectre of floods, droughts and famines

These are recurring features in our country for which no tangible solution has ever been conceived in the past 60 years, neither sincere efforts made to exorcise the same. These calamities render our peasants, labourers, and workers homeless. Whatever they construct over the years straw by straw through their labour and sweat is swept away in

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1. Nero was an emperor of Rome (CE 37-68). According to historians he burnt Rome himself to build a massive Golden Palace for himself and therefore the famous phrase, "when Rome was burning Nero was fiddling".

a stroke by the floods or dried up by the droughts, besides loss to their livestock. **This calamity is under human control but no concerted human efforts are made to control the same in the post-independence era.** The scars left after every drought or flood are yet more harrowing. People are forced to live in sub-human conditions or commit suicide. But we have become thick-skinned and it hardly causes us a flutter. Recurring phenomena of such calamities have started showing up in the form of famines and epidemics inflicting further sufferings on our rural populace (also see Chapter 11).

Now even the usually water deficit states — Karnataka and Tamil Nadu particularly, also Gujarat, Maharashtra and Andhra Pradesh as noted before, are afflicted with flash floods. **The recent floods (2005) and consequent large-scale catastrophe has taken the whole country by surprise. It is feared that such instances may rise in future due to depleting storage capacity, grossly inadequate and usually choked drainage system, over population, rising haphazard urbanization and unmindful deforestation etc. And surely so, the situation worsened in 2006 flooding even Kolkata, Delhi, Mumbai, Vadodara, Ahmedabad, Surat and Bhopal to name a few cosmopolises, despite state governments' utmost measures. Not the villages, cosmopolies now hit the headlines!**

#### 15.4 Water cycle

- Science has taught us that nothing can be created neither destroyed. The shape and form may change. Like the human body is made of sunlight, water, air, earth and fire – when a body is burnt what remains is just bones and ashes which also perish in the soil. Similarly, water. The quantity of it on earth remains the same irrespective of how much we use or waste. It comes back to us in the form of rains carried by winds from the snow-clad mountains and poles. If we remember this natural phenomenon, the problem of water can be solved for ever. But we have never cared to respect this natural phenomenon. In our ignorance we allow it to go waste. We have not learnt to conserve water. Water wasted means droughts, shortages, lowering of ground water table and evaporation of moisture from the upper layer of soil, eroding its fertility. It may also cause inundation or flash floods where it rains heavily for short durations. If we can manage water meticulously, it can become a boon for us. **We have shown below ways and means how we can have plenty of water for all throughout the year and also save our crops from**

**droughts, floods, prevent depletion of ground water and even help the soil save its natural fertile moisture.**

- The vaporisation of sea water provides us natural water through rains. The oceans are spread over approx. 70.8% of the total land area as noted before (less the area under rivers, canals and other reservoirs). Everyday because of atmospheric heat (more during summers) the surface water gets evaporated and rises into the atmosphere. These vapours travel through large distances depending upon the direction and intensity of the wind. They get cooled as they rise and condense into small droplets in the shape of clouds. The more they rise, more they cool and denser become the clouds. When they are not able to hold the water droplets, they release them in the form of rain. The cold vaporised winds are also known as monsoon. At higher altitudes, the water droplets may also condense in the form of hails or pellets and rain on earth in this form. **The science of water management starts from here.** While most of the rain water once again goes back to the seas where it rains directly over them (70.8% of total area), whatever rains on the surface is our share and is usable in one way or the other. Part of it goes as subsoil water and balance through drainage system to rivers, ponds, lakes and canals and if not conserved, back to the seas. If we can conserve and recycle this small portion of rain on the land surface, it will be adequate to meet our total needs. And if we fail, we shall face all kinds of water related problems/calamities that we are facing. Sea water is saline and can be recycled only at exorbitant cost. Even if we are able to do so, it will be available near the sea only and cannot be transported over long distances because of the cost of pumping and shortage of power hence cannot be made available for human needs. Moreover if we are not able to conserve it at source, we shall be grossly incapable to recycle it.
- **Water management therefore means conserving the rain water as it falls.** How can it be conserved, is a simple task. In our plans part of it will go as subsoil water and rest will be conserved in ponds, canals, lakes, rivers and forests. All these reservoirs will be made of adequate capacity and will be kept clean and free from pollution. Wherever these are not available or are of inadequate capacity, more will be constructed, to avoid scarcity of water in future. Similarly the water deficit or rain deficit regions shall be interconnected with the existing nearby reservoirs (rivers, canals, lakes etc.) which would feed them on a continuous basis. While storage of water shall overcome floods,

the same water during dry spells or scanty rains, shall overcome droughts. We shall also be able to regain and retain our water table. **One would notice that water is one commodity, which if managed with prudence and care, can solve many of our problems, even sickening of industries besides improving quality of life.**

- All water storage areas are our sacred places and have to be cherished with love and dedication, rather than be destroyed due to our ignorance. All reservoirs conserving water will be desilted periodically to keep them clean and lively and retain their storage capacity (see also Section 18.7(vi)). Awareness amongst the masses is essential. To maintain their (reservoirs) sacredness and cleanliness we will ensure that,
  - No sewage or industrial waste is discharged into rivers, ponds or canals. Whatever the cost, setting up of sewage treatment and waste treatment plants is a must.
  - Similarly no household waste is thrown into our sacred rivers or ponds. **It is the duty of the State to provide proper storage facilities and means to dispose of the garbage and filth from all households. We envisage to take special care for the disposal of household wastes, pooja ashes and food left-overs and scientific treatment of all sewage and industrial wastes as a routine practice, before discharging them anywhere (see Section 18.7 (ii)).**
  - The 40% of our rural populace who inhabit along the river banks or coastlines and so also many urban dwellings that have sprung up along the river banks, throw their filth and garbage into these sacred rivers, wash utensils and clothes, even discharge their excreta into the rivers. If this be so, these rivers can never be a boon for us? Fury of such rivers will give us only curses and sorrows. We will cultivate respect for our holy rivers and keep them clean by religiously practising;
    - No *pooja* ashes, flowers, incense or deities are immersed in seas, rivers, ponds, canals or lakes.
    - No human body is immersed in the rivers as is the custom in some religions.
    - We are also not in favour of burning bodies on the river banks or immersing their ashes into the river. We must overcome this age-old ignorant custom and adopt more scientific ways to fulfil the rituals. **Water is our lifeline, we cannot displease our rain god or water god at any cost (also see section 12.2(v))**

The unmindful over-urbanization and reclaiming of arable lands for habitation and civic amenities, denuding of forests and excessive mining also pose threat to water resources and are proving to be another curse on mankind. All this is depleting our natural means at an alarming rate. Water is a great natural gift of God to mankind. We must treasure it with care, discipline and dedication. If managed properly, it can generate enough electricity for the 5.85 lacs villages of our country, and industries that limp because of irregular and inadequate power supply; also provide a quality life to the urban people who linger in the hope of a better life some day. All this is possible with just a high level of discipline and dedication to conserve water.

**If we want to improve our lives, we ought to be more aware, conscientious and disciplined and listen carefully to what has been said. We must think it over and over again until we are able to comprehend the message it carries. Therefore, *we* insist that the country be run only through professionals, philosophers and experts, who alone can understand these implications and educate the people of the complexities of nature, their long-term repercussions, influence and threat to mankind and their remedies.**