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Anything that goes in circles, can get into an infinite loop to go on and on and on. Or "it is sustainable"- if jargonized. Water Circularity is fundamental for sustainable life on earth.

Water is essential for all living being-plants, animals, humans, even microorganisms. It is needed to produce food. For industries water could be a raw material or an effective coolant or a universal solvent or a conveyor of pollutants. Water washes away dirt—hence used to clean our body & surroundings for good hygiene.

When 70% of earth is water, then what is the problem? Oh, it's just that 96.5% water is in the oceans, 1% is salt groundwater, and only 2.5% is fresh water. Of this 2.5% fresh water, almost 69% is in ice-caps and snow, 30% is groundwater, the rest 1% distributed in lakes, rivers, swamps, soil and atmosphere. Only 0.03% of this available water is used by human beings for their needs. Moreover, this limited accessible water is also getting reduced due to steep increase in demand/consumption and its unabated pollution due to influx of sewage, effluents and solid wastes!

We were fooled to believe that water is an unlimited bounty of nature. Hence, water was taken for granted! As Benjamin Franklin said, one knows the value of water only when wells dry up (or taps run dry). The linear approach of take-make-consume-throw away pattern of resources usage is not sustainable as the resources like water are finite. Though water is known to be

Circularity of Water

a 104.5-degree bonding of an Oxygen and 2 Hydrogen atoms, it has not yet been synthesized inexpensively. All we have achieved is limited success in extracting water by desalination, condensation etc. Thanks to nature's conservation of water for millenniums of years, its shortage did not hit us badly, till now. It is looming large now with increasing population and increasing consumption/demand. To prevent water crisis, water circularity is inevitable. Need to fall back on the 3Rs of water conservation—Reduce, Reuse, Recycle. To these Rs, we at NWM (National Water Mission) added 2 more Rs—Recharge & Respect while pushing our Catch-The-Rain campaign. These 5Rs are the pillars of water circularity.

Reducing water requirement by process re-engineering to increase Water Use Efficiency (WUE) can save a lot of water. NWM/NMCG funded projects by IITs, TERI and concerned industry associations succeeded in innovatively re-engineering processes to reduce water consumption in power, paper pulp, textiles and steel industries. Multiple use, Reusing and Recycling of water can also reduce the need of abstraction of fresh water.

The reuse of treated water—particularly from sewage and effluents—can be a game changer, reducing significantly the requirement of fresh water extraction, particularly for non-potable usages in agriculture, horticulture, industries, car washing, watering lawns etc. Since 80% of drinking water supplied returns as sewage, there is large quantity of water available to be recycled for different purposes after proper treatment to appropriate standards. Sewage Treatment Plants (STPs) constructed in cities/towns under schemes like Namami Gange, AMRUT etc have increased manifold the scope of water circularity.

Namami-Ganga's "Arth-Ganga" concept to make "river-people connect by an economic bridge" as espoused by PM Modi has pushed the reuse of treated sewage. Under Arth-Ganga, MoUs were signed by National Mission for Clean Ganga (NMCG) with IOCL monetizing the supply of 20 MLD treated water from nearby STP to Mathura refinery; and with Ministry of Power & NTPC in December 2022 to use treated water from STPs within 50 kms radius of identified 63 NTPC power projects on Ganga basin. Apart from water, recovery of costly resources from ZLD (Zero-Liquid-Discharge) effluent treatment plants built by NMCG for industries like tanneries in Kanpur has helped circularity of these resources also. In 2022, NMCG came out with a Framework for "National Policy for Safe Reuse of Treated Water". It was circulated to all state governments, as water is a state subject. States like Gujarat, Haryana and Tamil Nadu have come out with policies for reuse of treated water which has aided cities like Surat to earn over Rs 140 Crores annually from the sale of its treated water.

For sustainability of life on this planet, we need to ensure circularity of water. Independent, strong, institutional frame-works have to be setup to mandate, meter and monitor the use of treated water in industries and irrigation. Circularity of water has to be incentivized with financial and non-financial soaps like appropriate water pricing, tax reductions etc. Need to totally ban the use of potable water for all non-potable purposes.

If we go in circles to water—down water-circularity, future generations will not pardon us.

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