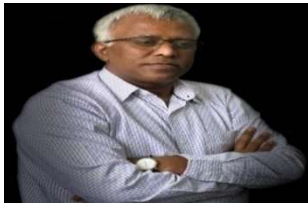


Water Transition to Commodity from Resource in Rapid Metamorphosis of Climate Change



“Water, although essential to any form of existence, seems to have a direct impact of climate change, as evidenced by the fact that seven of the eleven indicators of climate change relate to it while the other four are cause indicators”

Water Shakti is fundamental to Jeevan Shakti, which is a reality in the modern era of radically shifting the paradigm from resource to commodity. The credit to this phenomenon goes to anthropogenic aspect of human. The thrive to survive and continuously evolve with ecology depends on the sustainability and well organised efficient mix of various water resources. The water availability per capita in India gets narrow down since 1947 from 6,042 M³ which expects to reach less than 1/5th by 2051 to be read around 1,140 M³. This funnel of continuously tapering down brings alarming message to explore predictable, sustainable water resources for survival. Transitioning over the funnel is key, as one may get extinct or win the race on the way, depending on how one traverses the funnel. At same time, water usage in India may up by 70% in 3 decades necessitating more scientific and rapid exploration for efficient & sustenance resource of water.

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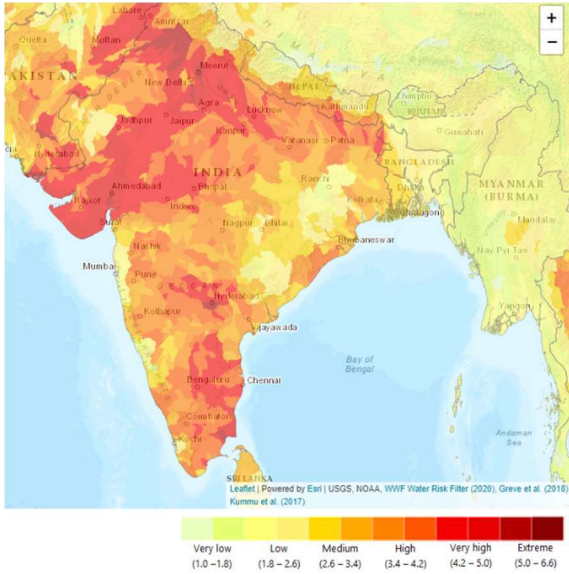
Water stress is well evident that gets highlighted by dis-proportionate distribution of resources and consumption – India has 2% of Earth’s landmass, 4% of fresh water resources but 18% of human population & 15% of livestock. India’s ambition and aspiration to climb the leadership in economic power by becoming an advanced economy by 2047 attracts massive urbanisation and industrialisation, invites substantial usage of water to this objective. Apart, alarming climate change only accelerates more concern for water negative in the country in the short span of time. This momentary pause reflects us to refract in correct rationale of water sustenance with exploration of expeditious scientific new source & look of water resources. Alongside this, disciplined behaviour in treating water as a commodity with inattentive approach must be eliminated by responding to a significant in non-revenue water (NRW) and g at least a 20% increase in water use

Our inundation act to earth brought aggravated exposure being termed as climate change indicators as global mean surface temperature, land surface temperature, global CO₂ emissions, global precipitation which we called here Cause Indicators. Its outcome impacted worst to 71% of earth’s surface covered with water bodies whom we described through climate indicators as Arctic Sea ice content, Antarctic Sea ice content, Snow cover, Glacier mass balance, Sea level rise, Sea surface temperature mean & Ocean heat content. These outcome ingredients here, we called Affect Indicators. Journey onwards is full of invention, innovation, exploration, discipline, regulation, policy in imparting resilience environment. Bringing back the planet through stabilising water bodies and minimisation to sensation of earth’s surface is paramount to have some distinct degradation in Climate Change Indicators.

There are 5 million springs across India which contribute to unique ecosystem by supporting a diverse range of plant and animal species adapted to these habitats. Springs are groundwater discharge points in mountains and more than 15% of India’s population depends on spring water. There is increasing evidence throughout Indian Himalayan region that springs are either drying up or their discharge is reducing. Springs are social, economic, cultural, ecological pillars of sustainable mountain development and vital sources of freshwater. There is pressing need for effective and scale up Springshed development programmes in the mountainous regions. Systematic deployment, implementation of Springshed Management is essence of time and as well key to response National Mission for Sustaining Himalayan Ecosystem. Also, water scarcity observed in dominant way in shallow aquifers which are usually scarce, intermittent, overexploited and/or contaminated.



अज्ञाना मृतमश्नुते



Water Risk Filter, Map showing water scarcity

Red and dark red areas reflect highly or extremely highly stressed either because of geological or environmental factors for low to medium rain. It has been observed that up to 80% of annually available surface water is used every year in water stressed areas in India. Groundwater levels are declining across India where 54% of groundwater wells dropped over the past seven years. Above analysis depicts that all earmarked water resources as surface water, shallow aquifer, springs with disruption in global precipitation seek today much scientific approach, application, regulation, policy and much diversified & integrated analytics of various disciplines to find a way out to provide sustenance need & want of water to human & ecology.

Against the above constraints along 7 number of Affect Indicators, today's water consumption pattern for already exploited stage is as:

2025 BCM	Usage	2050 BCM
611	Irrigation	807
062	Domestic	111
067	Industries	081
033	Power	070
070	Others	111
843	Total	1180

Now the time has arrived when India has to anchor its water stewardship policies by mapping its water risk filter as above with water regions with heightened water risk.

Water stress increases risk for communities and businesses. Through proactive individual and collective action, businesses can combat the water crisis. We are at threshold of inflexion necessitating asset flows into water sustainable investing strategies as part of a tectonic shift that could last decades. Higher water stress levels indicate greater competition among users. This increases the costs of sourcing, and forces conservation measures. We may need to spend more to mitigate the effects of water stress, such as investments in efficiency, pollution abatement, re-use, recycling and conservation measures. As World Bank estimates, Global water infrastructure costs are expected to rise fourfold to \$150 billion annually from current levels by 2030.

Although most of planet is covered with water, more than 97% is salt water, fresh water accounts for rest where frozen glaciers constitute majority which leaves less than 1% of world water available to support human & ecological processes. In the 20th century, the world's population quadrupled but water use increased sixfold. By 2050, according to UN estimates, one in four people may live in a country affected by chronic shortages of fresh water. Quote of UNICEF is self-explanatory "2/3rd of India's 718 districts are affected by extreme water depletion, and the current lack of water safety and security planning is a significant concern". The listed concern & extreme repels the logic of paradigm shift in our approach to face tomorrow.

Intensive to extensive studies, analysis, modelling, stimulation, estimation, improved ground water & predictions, combination of disseminated as well integrated water resource management and new fundamental principle & application is key to find out some sort of solution mode. Diversity is a symbol of robustness and sustenance to retain water always as resource. Thus, amplified and correct rationale of amplitude of various key approaches are imperative such as regulated shallow aquifer, reduction in NRW, effective Springshed management, desalination (comprising onshore, subsea, floating offshore), Wastewater Treatment Plant to transcend waste to resource to drive circular economy & embarking upon Deep Ground Water for domestic usage.

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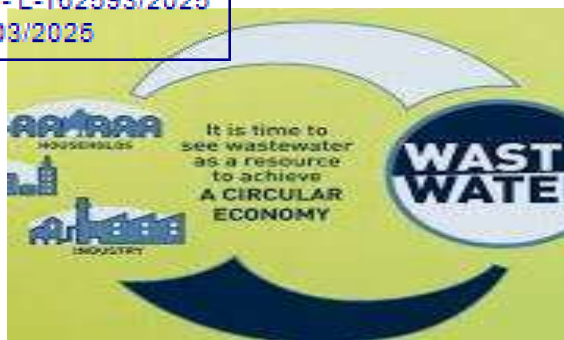


अज्ञानं मृत्योर्मुखा
अज्ञानं मृत्योर्मुखा

Water Stress Tends to make it as Commodity

The misalignment between supply and demand of fresh water accelerates risk to our reliable delicate environment, social and financial ecosystems. As water stress grows, we will experience that risk in forms as physical, regulatory, reputational, and stakeholder. A water survey found that 73 percent of customers would change their purchasing habits to reduce environmental impact. BlackRock stated, "What happens to inflation, and in turn interest rates, if the cost of food climbs from drought and flooding?" Implementing effective operational capabilities as water measurement and reporting practices, even including water use in relevant company key performance indicators (KPIs). We can aggressively identify and eliminate water leaks in their operations and introduce new technologies that reduce water stress.

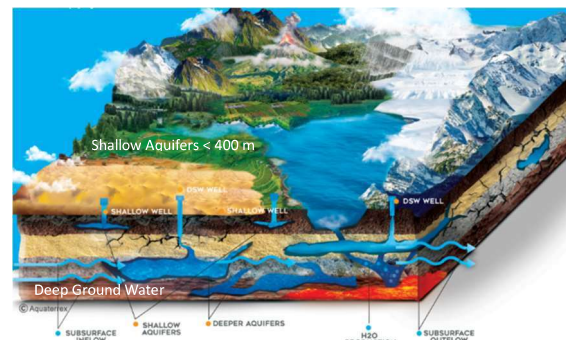
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Above acuteness signals of commodification of water with fears over scarcity and environmental degradation which increased significantly during 20th century. Water joined in list of commodities along gold, oil that are traded on Wall Street for uncertainty of its availability in future. US's water trade market being first of its kind, was launched on the Chicago Mercantile Exchange with \$1.10 Billion in contracts tied to California water prices. This has allowed farmers, hedge funds and municipalities to hedge against future water availability in California for regions severe heat, wildfire and droughts. Thereby, treating water as a tradeable commodity puts basic human rights in hands of financial institutions and investors. A future agreement like this is a tool to buy or sell asset, like water, at specific time at an agreed upon price. It invites more perils for incompatible in protecting environment and ensuring universal quality service by depriving society and its reason and purpose of existence.

Water as Resource - Actions in Inactions

The production and use of fossil fuels requires up to 4 times more water than the production of renewables. If the future energy mix of the planet remains the same as it is now, withdrawals from water basins for energy can grow by 25% by 2040. On the other hand, switching 75% of fossil-fuel consumption to renewables by that time, per individual countries' Paris Agreement targets, can reduce the water footprint of energy by 47 percent. A 'Minimum Water Program' for recycle & reuse compliance program, which requires that each industry meet certain limits; use a blend of at least 15% recycled water in its facility processing, landscaping, cooling, and plumbing; and provide flow-meter data that tracks the amount of recycled water used. Introducing 'Water Sensible Policies' to raise price of water by government to support water positive in case usage goes beyond a specified limit.



A method of resource that promises economic development and environmental objectives can be met in tandem and above-described innovation, technology, scaling, policy and regulation are centric in retaining water as resource. National Action Plan on Climate Change is wholistic window in regulating various climate change indicators. A fruitful exercise may be carried out with some reduction in usage of shallow water and focussing on its recharge perfected by exploration of deep ground water to complement & supplement other missions as Sustainable Agriculture, Green India, Sustaining Himalayan Ecosystem and Sustainable Habitat in promoting Green Sovereign Assets of Ecology. Panch-Tattva is interwoven with each other to meet numerous needs & wants of life and ecology, taking actions in inaction is key for water as resource to leave tab of inactions of actions by environment for forever green paths of coexistence of us and nature.



अज्ञानो ज्ञानं भङ्गति



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- कृति का शीर्षक
Title of the work : **WATER TRANSITION TO COMMODITY FROM RESOURCE IN RAPID METAMORPHOSIS OF CLIMATE CHANGE**
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Language of the work : **ENGLISH,**
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आवेदन की तिथि/Date of Application: 08/01/2025

प्राप्ति की तिथि/Date of Receipt: 08/01/2025



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