

Government of India  
Ministry of Jal Shakti  
Department of Water Resources, River Development & Ganga Rejuvenation  
(National Water Mission)

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National Water Mission (NWM) has initiated a seminar series- 'Water Talk' - to promote dialogue and information sharing among participants on variety of water related topics. The 'Water Talk' is intended to create awareness, build capacities of stakeholders and to encourage people to become active participants in conservation and saving of water. NWM had already organized eight 'Water-Talks' on the topics - "Water for All", "Groundwater", "Water Conservation", "Ecology Inclusive Economy", "Agriculture, Groundwater and Energy nexus", "Water Conservation on Hiware Bazaar in Maharashtra and Dewas in Madhya Pradesh", " Innovation and Water " and "Water Conservation in Banda District, UP" on 22<sup>nd</sup> March 2019; 1<sup>st</sup> May 2019; 24<sup>th</sup> May 2019; 21<sup>st</sup> June 2019; 19<sup>th</sup> July 2019; 23<sup>rd</sup> August 2019; 20<sup>th</sup> September 2019 and 18<sup>th</sup> October 2019 respectively.

2. Ninth Water Talk in this series was held on 15<sup>th</sup> November, 2019. Dr. Himanshu Kulkarni, Founder Trustee and Executive Director, ACWADAM delivered the Water Talk. Shri U. P. Singh, Secretary (DoWR, RD & GR) MoJS; officers from CWC, CGWB, NMCG, CSMRS, NWDA and D/oWR, RD & GR attended the programme.

3. Shri G. Asok Kumar, Additional Secretary & Mission Director, National Water Mission, DoWR, RD & GR, Ministry of Jal Shakti introduced the speaker and welcomed the audience in his opening speech. He also elaborated on one of NWM's latest initiatives, "**Sahi Fasal**" campaign, launched in a workshop in Amritsar on 14<sup>th</sup> November 2019. The workshop on "Increasing water use efficiency in Agriculture" was organised with the intent of creating awareness among farmers on sustainable crops, micro-irrigation, soil moisture conservation etc; weaning them away from water intensive crops like paddy, sugar cane, etc to crops like corn, maize etc which require less water.

4. Dr. Himanshu Kulkarni began his talk by highlighting the need for a more organised system for ground water management in India. Dr. Kulkarni introduced his organisation, ACWADAM, which works on the subject of ground water. He explained that their primary goal is to bring communities closer to aquifers by training, capacity building and generating research data. He insisted that there is a pressing need to change perception about the concept of water resource management and contextualise water and agriculture in terms of ground water availability. According to data, nearly 1000 km<sup>3</sup> of water is extracted across the world annually. Nearly 70% of the annual global groundwater extraction is used in agriculture, of which more than 50% is in Asia alone and over 200 km<sup>3</sup> of groundwater is extracted for domestic water provisions, including drinking water. He stated that India contributes to 25% of global groundwater extraction making it largest extractor of ground water since 1980s. As per one of the CAG report, 98% of rural drinking water comes from ground water, 70% of water used in agriculture is ground water whereas 48% of water supply share is groundwater in the urban space. The above data makes India the most groundwater dependant country in the world.

5. With the help of data, he deliberated that the number of individual dug-wells drawing water has increased in comparison to group dug-wells. Nasik has the highest number of dug wells in India. He concluded that the trend of individualisation of ground water resources is going deeper which is a matter of concern. Water crisis exaggerates the competition between demand and supply of the dwindling availability of water.

6. Some of broad impacts of India's ground water crisis include:

- Increasing vulnerability to the combination of aquifer depletion and contamination.
- Unhealthy competition and potential conflict.
- Endangered basic water security at all scales and levels.
- Health hazards from contamination.
- Ecosystem impact, mainly depleting base flows.
- A diverse and variable socio-ecological environment.

7. He further stressed on the need to bring in perspective change and talk about the water source than the resource itself. By stating this, he intended to move the discussion to aquifers. He stated that groundwater presents itself as a paradox wherein an increase in the number of sources would create a division in the resource, in turn further decreasing the yield. The consequences of common pool resources are increasing dependency and decreasing availability.

8. Shri Kulkarni analysed river basins and aquifer typology in India as groundwater depends on geology. He explicated that ground water can be given identity through aquifers. Elaborating further, Dr. Kulkarni discussed aquifer profiling and its protection-management strategies. Aquifers are diverse in nature and wells in a single aquifer show different yield behaviour due to variability in storage and transmission character. It means that fragmentation of land leads to unequal access to the same resource. 70% of India's available ground water is vulnerable to depletion and contamination. Aquifers can be studied through many dimensions including its recharge and abstraction quality.

9. Throwing light on the subject of water security, Dr. Kulkarni stated that the annual domestic demand of water in a typical Indian village is less in comparison to the agricultural requirement. The agriculture sector demands 528 mm of water per year and with current changing trends in agro economy, the demand for water has further increased. There is an emergence of irrigated crops that demand large amount of water at the expense of nutri-cereals.

10. Moving onto the subject of mountain aquifers, Dr. Kulkarni emphasised that the source of a river is acknowledged by springs. 60-70% of population of Himalayan region depends on springs and spring depletion symbolises depletion in the resource of the aquifer. He reiterated that spring discharge depletion would mean depletion of the most reliable climate buffer in the mountain regions.

11. Competition and conflict over groundwater can be inter-sectoral and intra-sectoral. Dr. Kulkarni explained that aquifer properties and socio-economic factors determine the nature of competition. Individuals adapting to groundwater depletion or contamination often drive competition. Competition & conflict are often related with issues of equity, fairness and justice can be extenuated with formal regulations and better governance. However, one solution could be that we treat the entire community as a resource. Community based participatory management has

the capacity to change competition into participation. The legislation must complement participatory social norms. Participatory ground water management will comprise of the required scientific knowledge, community and community level engagement and will have the capacity to influence rural government systems like Panchayats.

12. According to Dr. Kulkarni, across a diverse aquifer typology, groundwater can be perceived in two ways; Groundwater as ecosystem in which the aquifers are themselves the ecosystems & Groundwater in ecosystems wherein the aquifers lie within the layer of systems of ecosystems.

13. Dr. Kulkarni's recommendations included moving towards a system of community-based groundwater management. He suggested a new mission statement be created which focuses on capacity building, partnerships, generating awareness, knowledge, skills and engages communities on ground. He stressed that improving community engagement would help improve overall efficiency.

14. Shri U. P. Singh, Secretary, DoWR, RD &GR, while extending gratitude to Dr. Himanshu Kulkarni for delivering the talk, showed concern over the alarming decrease in the ground water tables in the country. Talking about the water crisis in Punjab, he stated 70% of water consumed is sourced from ground water and the water extracted is more than what is being recharged, making the cycle unsustainable. He admitted that is high time we move talks around ground water and look for sustainable solutions in the future.

15. Shri Singh ended his talk by appreciating the work done by the speaker and presented him a book named "**Water Catchers**". The event ended with the audience posing questions to the panelists on the critical areas of groundwater.

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