

# Frequently Asked Questions (FAQs)

## Webinar 2: Groundwater Recharge and Aquifer Management

15 July, 2020

Q1. Is there any data on loss/wastage/leakages of water over the water cycle from generation till use? NWM may throw some light on the issue and if any Mission is taken or planned resolve this?

**Reply:** National Commission for Integrated Water Resources Development Plan was constituted by the erstwhile Ministry of Water Resources vide Office Memorandum No. 2/11/96-BM/654 dated 13th September, 1996. Various working groups constituted as part of this initiative had provided an overview of the overall water availability in its various forms, namely precipitation, ground water (both static and dynamic storage) and surface water. The commission had also given an estimate of water demand for the year 2050, considering the trends on evolution of water use for various sectors. This provides an overall water balance for the country.

However, with respect to losses/wastage/leakages of water over the water cycle from generation till use, there is no comprehensive studies undertaken in India. NWM, on the other hand, has recognized this lacunae in availability of information with respect to water losses along water supply chain instead of water cycle. Therefore, NWM has proposed setting up of a National Bureau of Water Use Efficiency, whose presence will further the aims of increasing water use efficiency across the sectoral uses.

Q2. How can the aquifer recharge and ground water managed for safe drinking purpose in the scenario of Bihar state in southern part of Ganga?

**Reply:** As the southern portion of Ganga in Bihar state is dominantly hilly and is surrounded by gently sloping pediment surfaces, there is an ample scope to conserve ground water by water conservation structures like contour bunds, tanks and ponds. Construction of any water conservation structure is taken up after taking into consideration the local topography, slope and depth to ground water

level and public participation. Through these conservation structures, recharge of ground water is undertaken.

Q3. Is National Water Policy 2012 perfect for Indian scenario or may need improvement?

**Reply:** A national policy is prepared by considering extant trends and future requirements in a consultative process. The emerging trends in water availability, distribution and its uses, and evolution of scientific knowledge in the recent decade has created a need to review and redraft a Nation Water Policy in order to prepare the country for securing the water needs of all the sectors.

In this context, Ministry of Jal Shakti has already taken timely action in this direction and has constituted a national committee for looking into the aforesaid matter.

Q4. What are the methods to manage the aquifers in hilly regions? Geohydrology may be one of those which could be helpful to know the status of aquifers, but the agencies are few, what are the other methods apart from this?

**Reply:** Central Ground Water Board (CGWB) has prepared a document titled "Master Plan for aquifer recharge in India" which provides a plan for undertaking artificial recharge of groundwater, including hilly regions. CGWB has also prepared guidelines for recharging aquifers and rain water harvesting which suggests measures for artificially augmenting ground water resources, including hilly regions. These may be perused for reference purposes and are available online.

Through NWM's "Catch the Rain" initiative, it is proposed that each district will have a rain centre which will act as a nodal point for providing technical suggestions to anyone interested in recharging ground water artificially. CGWB also have regional presence, and accordingly they can be contacted by concerned stakeholders for necessary inputs.

Q5. How could Water Use Efficiency in Agriculture be managed when entire water governance in State and Centre is not with the major user?

**Reply:** It is true that states are the ultimate custodian of water resources and reforms will have to come from states reflecting their place specific needs and variations to ensure these reforms remain sustainable and effective. Many states such as Maharashtra, AP, Gujarat, etc. have taken lead in introducing number of reforms for overhauling the public sector irrigation. Some of these initiatives include participatory irrigation management, setting up of a water regulatory authority, preparation of integrated water resources plans at watershed scale, setting up irrigation cooperation (now getting converted into river basin organizations), pricing of water, volumetric supply of water to bulk irrigation users, setting aside adequate funds for dam rehabilitation and operation and maintenance of public infrastructure schemes, introduction of groundwater legislations for regulating ground water use, separate power feeder and promotion of solar power pumps through incentives such as Feed-in-Tariff, etc.

Moreover, Centre is also supporting states towards becoming progressive by providing financial incentives through various centrally sponsored schemes such as Pradhan Mantri Krishi Sinchayee Yojana (PMKSY). These schemes are designed in such a manner that they incentivize government authorities to promote participatory approaches, micro irrigation, integrated land and water management through integration of command area and watershed management. works, etc.

National Water Mission has also launched a campaign "Sahi Fasal" to nudge Indian agriculture in a direction that promotes water-efficient crops like corn, maize, etc., has the nutritional quality and is economically profitable to the farmers. Creating awareness among farmers on micro-irrigation, soil moisture conversation, and initiating dialogues among policymakers to improve procurement policies, effective pricing of inputs (water and electricity) are key steps towards promoting the concept of "Sahi Fasal". Besides that, bringing policymakers, programmers together in framing policy/ programs that promote water conservation in agriculture along with mainstream agricultural policies will aid the rapid uptake of the program among key stakeholders, improve procurement and market for these alternate crops; create appropriate storage for them, etc. ultimately leading to increase in the income of farmers.

Under Sahi Fasal, series of workshops NWM has organized workshops on 'Sahi Fasal' in Amritsar (on 14.11.2019), Aurangabad (on 13.01.2020), New Delhi (on 26-27.11.2019) and Kurukshetra (on 14.02.2020) where farmers participated enthusiastically. Punjab/Haryana has taken steps for crop diversification.

Q6. Is water quality data of rivers available in the database of NWM?

Reply: No, Water quality measurement and regulation is distributed across various ministries and departments of Government of India, and there is a need to pool them all together at a central station for formulating comprehensive policies, scientific collation, analysis and retrieval of data.

However, at present Central Water Commission (CWC) performs the water quality test of various river sites and the data is available with them.

Q7. Why we talk least for improving the system efficiency of irrigation which operates at about 35-40% of efficiency rather than pitching for more on on-farm efficiency when 65 litres of 100 litres is not reaching to farm?

Reply: National Water Mission (NWM) has funded WALMIs, & WALAMTARIs for the projects based on agriculture water use efficiency in which system efficiency of irrigation is taken care of. Moreover, Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) scheme and its component "More Crop, Per Drop" emphasize upon micro irrigation systems improvement to enhance water use efficiency.

Q8. Is there any quantification of improvement in groundwater?

Reply: CGWB undertakes periodic assessment of ground water through its network of piezometers installed across the nation. The reports showing 'dynamic ground water resources' are published on their website for each state. Ground Water Extraction Committee has also improved the scientific methodology in 2015 for assessing ground water related information in the country.

Q9. Jowar uses much lesser water than rice and wheat, jowar was one of the major crops of India before green revolution. Additionally, more consumption of Jowar will also improve malnutrition significantly. How do we nudge for more production of Jowar considering both water efficiency and nutrition?

**Reply:** There is a recognition for a necessary move towards production of crops that are less water intensive and to build market mechanisms around it to ensure retention of farmer incomes by stimulating demand. Incentivizing farmers to grow less water efficient crops will require assuaging the market risks of these crops by developing adequate markets for their procurements.

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States have started recognizing the necessity of using less water intensive crops in water stressed areas and also the usage of micro irrigation methods such as drip and sprinkler systems to improve water use efficiency in irrigation.

Q10. Gallons of water is wasted in order to get sand free water during initial operation of newly installed submersible water pumps. Is there any standard procedure/technology which helps to avoid this wastage of water?

**Reply:** National Water Mission (NWM) is not aware of usage of such technology that avoids wastage of muddy water during initial operation of newly installed submersible water pumps. However, NWM would support and encourage such research studies or product development technology which helps in avoiding wastage of water.

Q11. Does catching every drop of water will not hinder the natural flow of rainwater, leaving less water for rivers? Isn't it is going to have some negative impact on the ecosystems/environment?

**Reply:** Theoretically yes, but practically not possible as our motive is to catch the rain falling on roof tops and fenced compounds. Rainfall over large open areas, roads, forests, rivers, lakes, etc. are still available to provide sufficient water for rivers.

Augmenting storage capacity to harvest more of rainfall does not overlook the environment's need for water. E-flows are a common concept and many structural interventions such as large dams and weirs do take the environment's need for water in their water balance equation. Many of the interstate water cooperation arrangements over water sharing between states also incorporate these concerns to safeguard suitable amount of water flows for environmental needs.

Q12. Have the data on proportion of exploitation of ground water, etc. in India factored in the operational schemes under NRDWP, now JJM?

**Reply:** Data on water exploitation accounts for water uses by humans in general, which therefore includes extraction for various purposes and across the divides of geographies (rural and urban) and sectors (domestic, industrial, irrigation, power, etc.)

Yes, the data on proportion of exploitation of ground water in India factored in the operational schemes under NRDWP.

Q13. Is potential aquifer map available? If yes, then where?

**Reply:** Yes, aquifer mapping, along with estimation of potential for aquifer formation with artificial recharge is done by Central Ground Water Board.

In this context, Central Ground Water Board (CGWB) has been implementing a national scheme titled "National Aquifer Mapping and Management Program (NAQUIM) to map the aquifers, including assessing their characteristics and preparation of management plans for promoting their sustainable management. This exercise is part of Ground Water Management and Regulation Scheme, which is a central sector scheme of the Department of Water Resources, RD & GR,

Q14. What is your opinion on the policy of RWH for individual buildings?

**Reply:** The full potential of RWH in the country can only be realised if all possibilities of capturing rain water is considered, so as to minimise wastage of rainwater, that otherwise only become part of urban run-off. However, considering the financial aspects of RWH structures, conducting a cost-benefit analysis may be prudent for deciding on a case to case basis for inclusion of individual buildings under the mandate for RWH.

For Individual buildings, RWH should be mandatory to maintain the ground water level as well preventing Ground water over-exploitation. There are existing regulatory provisions for encouraging adoption of RWH in individual buildings. These form part of building bye-laws or other local municipal laws regulating the designing, construction, installation and maintenance of these structures for various types of land uses. These bye-laws refer to the technical specifications of National Building Code 2016, Model Building Bye Laws of TCPO 2016, IS 15797 (2008) and URDPFI Guidelines of M/o H&UA.

Focus should be on developing suitable incentives for encouraging their adoption of public, including measures to ensure stricter enforcements of these provisions. A campaign can also be launched to inform public's opinion in this regard. A policy can, therefore, be devised to operationalize provisions of above

stated regulations. The policy may also work to suggest suitable legal and institutional arrangements for enforcement of the same.

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