

GOVERNMENT OF INDIA
MINISTRY OF JAL SHAKTI

DEPARTMENT OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION

RAJYA SABHA

STARRED QUESTION NO. *3

ANSWERED ON 03.02.2025

WATER AND RAINWATER MANAGEMENT

*3 SHRI SANJAY RAUT

Will the Minister of JAL SHAKTI be pleased to state:

- (a) the manner in which AI will be used to improve water resource management and rainwater harvesting in drought-prone regions;
- (b) the systems which are in place to leverage AI for precision irrigation and reducing water wastage in agriculture;
- (c) the manner in which AI technologies, like those developed by DHI GRAS will help in reducing water wastage in Indian agriculture and improve water resource management; and
- (d) the initiatives which are in place to promote the use of precision irrigation systems across the country, especially in regions with limited water resources?

ANSWER

THE MINISTER OF JAL SHAKTI

(SHRI C R PAATIL)

(a) to (d) : A statement is laid on the Table of the House.

STATEMENT REFERRED TO IN REPLY TO PARTS (a) TO (d) OF STARRED QUESTION NO. *3 TO BE ANSWERED ON 03.02.2025 IN RAJYA SABHA REGARDING “WATER AND RAINWATER MANAGEMENT”

(a) In order to improve water resource management and rainwater harvesting in drought-prone regions, the AI-based tools can be used for AI-Enabled Irrigation Scheduling, Remote Sensing and AI-Based Crop Monitoring, Automated Smart Irrigation Systems, Predictive Maintenance for Irrigation Infrastructure and Decision Support Systems. Advanced AI enhanced models can provide improved predictions of groundwater behaviour, identify vulnerable areas prone to pollution and depletion and enables proactive interventions.

(b) The Internet of Things (IoT) based pressure and flow control valves are being used in irrigation for precision and measured irrigation. This ensures the optimum required quantity of supply of water to the crops and reduces over irrigation. The crop water use is being monitored by AI-based remote sensing applications. The AI-based maintenance system intends to measure water supply to an irrigation outlet, keeping in view factors like, seasonal variation history, availability of water, cropping pattern and the concurrent weather condition. This may ensure metering of the supplied water, accounting of the use of water by the farmer over a period of time, control of volume of water supply during excess or short rainfall.

(c) The AI technologies (like those developed by DHI GRAS) utilizing satellite images and data processing for hydrology, water quality, environmental assessment, land cover mapping etc. can be used for analytics and software development for efficiently integrating scientific data and methods into models and decision support systems. These will facilitate reducing water wastage in Indian agriculture and improve water resource management.

(d) The Ministry of Jal Shakti provides technical and financial assistance to State Governments to encourage sustainable development and efficient management of water resources through various schemes/programmes such as Accelerated Irrigation Benefits Programme (AIBP), Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) etc. The Ministry has been supporting the States to adopt the advanced technologies including AI in the effective implementation and monitoring of irrigation. The Department of Agriculture & Farmers Welfare (DA&FW) is also implementing Centrally Sponsored Scheme PM Rashtriya Krishi Vikas Yojana (PM-RKVY) / Per Drop More Crop (PDMC) in which it also encourages IT based solutions, use of advanced technologies of Micro Irrigation such as solar energy, Automation, use of AI, IoT etc. at the farmer level.
