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of International Association of Hydrogeologist

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To
Sri Gajendra Singh Shekhawat
The Hon'ble Minister
Ministry of JalShakti
Govt of India

Sub: National Aquifer Mapping and Management Programme- Some suggestions from International Association of Hydrogeologists- Indian National Chapter.

Respected sir,

The National Aquifer Mapping Programme (NAQUIM) presently being undertaken by Central Ground Water Board, under your able guidance and leadership, is the largest such programme undertaken by any country, ever. For the first time a scientific groundwater mapping (which otherwise merely delineates aquifers and ascertain cumulative yield from wells) focuses on sustainability measures, quantifying supply and demand-side interventions, keeping in view the available resources vis-a-vis extraction, quality of groundwater in an aquifer- specific environment etc.

During the XII Plan period (2012-17) an area of 6.31 lakh km² was covered under NAQUIM.As a continuing programme, during 2017-20 another 4.93 lakh km² has been covered till October 2019. Thus total 11.24 lakh km² has been covered spanning over entire India out of identified mappable area of ~25 lakh km².

Widespread overexploitation of groundwater resources and geogenic contamination has highlighted the need for holistic understanding of aquifers.Groundwater remains a key component of a number of Central Govt. Programmes/Schemes like, the massive activity on water conservation and artificial recharge under *MGNREGA*, *Pradhan Mantri Krishi Sinchai Yojana-Har Khetko Pani-Groundwater*(PMKSY-HKGP-GW), *National Plan for Conservation of Aquatic Ecosystems (NPCA)*,source-sustainability under *National Rural Drinking Water Programme*(NRDWP),alternate arsenic-free aquifer-based rural drinking supply in contaminated areas under Indo-Ganga-Brahmaputra Plains. A carefully crafted convergence of the NAQUIM output with such related schemeswould immensely help in optimizing and streamlining the benefits. Similarly, various State Government Schemes on water conservation and groundwater extraction, can alsotake the benefit of NAQUIM outputs. Say, *Mission Kakatiya* launched by the Telangana Government, where during cleaning of tanks,

minor tweaking with artificial recharge intervention, based on local aquifer conditions, may enhance groundwater resources considerably. The proposed inter-linking of Rivers can also be a boon in areas with depleted aquifers.

The success of recently launched ambitious Programme- *JalJeevan Mission* heavily depends upon sustainability of groundwater sources as the Programme will primarily tap groundwater resources. Similarly the intricacies of success of *Atal Bhujal Yojana* launched by the Hon'ble PM on 25th Dec 2019 also has an umbilical linkages with understanding and adopting demand-side interventions following the recommendations of NAQUIM study.

As Indian Chapter of the World's largest Association of Professional Hydrogeologists we humbly request you to kindly consider the following;

- 1. NAQUIM Programme- needs time:** NAQUIM is an exhaustive investigation which demands multidisciplinary approach, collation of data from several sources, integration of the data and their interpretation for a wholesome understanding of the aquifers and the ground water regime. The investigations need time. Considering the limited availability of the trained and experienced pool of personnel required for the programme (in CGWB), a minimum of another 5 years time is needed to complete the NAQUIM.
- 2. Aquifer Mapping Programme- A dynamic activity:**
Mapping of minerals or hydrocarbon resources is one time job as the resources are non-replenishable in nature. Similarly, merely mapping of aquifers is also one time job. However, the objectives of the NAQUIM transcend beyond just defining the physical contours of the aquifers into the domain of resource sustainability, making it an activity that requires continual refinement through optimization of a host of demand and supply side measures. Thus NAQUIM is a dynamic process and need continuous updating.
- 3. 2nd Phase of NAQUIM for detailed and deeper investigations:**
The present depth-wise NAQUIM target is 200 m for hard rock areas and 300 m for soft rock areas. With overexploitation of aquifers, the depths of the wells being constructed are also rapidly increasing. In second phase of mapping the targeted depth should be 500m for both the hard rock and soft rock areas in general, with provision of additional depth in selected areas as per need. There may be a need to map in detail like, 1:25,000 scale or more in critical areas
- 4. Wider reach through community involvement:**
One of the major objectives of NAQUIM is to promote participatory groundwater management. The major part of this objective is to be achieved by empowering the communities with understanding of the local aquifers and groundwater related information. This issue has found its due place in the Atal Bhujal Yojana. More efforts are needed to create link between NAQUIM outputs and community participation. Further,

the ambit of the Atal Bhujal Yojana may be increased to cover other water stressed areas under the Scheme.

5. Aquifer defense against climate change:

NAQUIM outputs should also recommend the artificial recharge and rainwater harvesting plans of an area to cope up with the increasingly frequent extreme events under climate change. The design modification and location tweaking (including traditional structures) to cope up with scale-dependent extreme events in various agro-climatic zones should be worked out.

6. Disseminating the information and outputs of NAQUIM

An exhaustive, user friendly and easily retrievable web-based system is urgently needed where all information, both maps and numerical, could be uploaded. The maps and information should be available in an interactive and user friendly mode on web based platform. The information to be disseminated are aquifer maps, resource availability, water level behavior, hydraulic character and chemical quality, in a user friendly and dynamic mode.

7. State should carry forward the detailed NAQUIM:

Ground water has proved its worth in ensuring the food and drinking water security, but most of the State Ground Water Departments are inadequately manned without appropriate domain specialists. There is an urgent need to strengthen the State Ground Water Directorates so as to carry forward the task of updating/detailing the NAQUIM outputs on finer scale incorporating new available sets of dynamic data as per the individual states requirements.

The NAQUIM Programme has created lot of interest and is being appreciated worldwide. We request your kind attention to this unique Programme of groundwater mapping so that it is continued with proper perspective. As Indian National Chapter of International Association of Hydrogeologists, we pledge our continued support to the Programme and available for any consultation.



Dipankar Saha
Secretary