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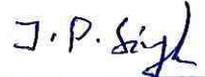
Government of India
Ministry of Water Resources,
River Development & Ganga Rejuvenation
National Water Mission

2nd Floor, Block No. III
CGO Complex, Lodhi Road
New Delhi-110003
Dated: 7th May, 2019

Subject: Proceeding of the Second Water Talk organized by National Water Mission on 1st May 2019.

Sir/Madam,

The undersigned is directed to forward the Report of the Second Water Talk held on 1st May 2019 at 3:00 PM in Dr. Ambedkar International Centre, New Delhi.



(J.P. Singh)

Deputy Secretary to the Government of India
Ph: 011-24368343

Enclosure: as above

To

1. Secretary, Ministry of Water Resources, River Development & Ganga Rejuvenation, Shram Shakti Bhawan, Rafi Marg, New Delhi – 110001
2. Sh. Shashi Shekhar, Former Secretary, Ministry of Water Resources, RD & GR
3. Smt. T Rajeshwari, Additional Secretary, Ministry of Water Resources, RD & GR, Shram Shakti Bhawan, Rafi Marg, New Delhi – 110001
4. Sh. Rajiv Ranjan Mishra, Director General, National Mission for Clean Ganga, National Mission for Clean Ganga (NMCG), 1st Floor, Major Dhyan Chand National Stadium, India Gate, New Delhi – 110002.
5. Shri Nitishwar Kumar, Joint Secretary (Administration), Ministry of Water Resources, RD & GR, Shram Shakti Bhawan, Rafi Marg, New Delhi – 110001

6. Shri Jagmohan Gupta, Joint Secretary (JS & FA), Ministry of Water Resources, RD & GR, Shram Shakti Bhawan, Rafi Marg, New Delhi – 110001
7. Shri Akhil Kumar, Joint Secretary (IC & Ground Water), Ministry of Water Resources, RD & GR, Shram Shakti Bhawan, Rafi Marg, New Delhi – 110001
8. Shri K C Naik, Chairman, CGWB, Central Ground Water Board, BhujalBhawan, NH-IV, Faridabad.
9. Sh. S Masood Husain, Chairman, Central Water Commission, R. K. Puram, Sector-1, New Delhi-110066.
10. Shri B.R.K Pillai, Commissioner, CADWM, Ministry of Water Resources, RD & GR, Krishi Bhawan, New Delhi – 110001
11. Shri J. Chandrashekhar Iyer, Commissioner, Flood Management, Ministry of Water Resources, RD & GR, B-11, CGO Complex, New Delhi – 110003
12. Shri Kushvinder Vohra, Commissioner, State Projects, Ministry of Water Resources, RD & GR, Shram Shakti Bhawan, Rafi Marg, New Delhi – 11000.
13. Shri P. K. Saxena, Commissioner, Indus, Ministry of Water Resources, RD & GR, Room No. 827, B-11 CGO Complex, New Delhi – 110003.
14. Shri T.S. Mehra, Commissioner, Brahmaputra & Barak, Ministry of Water Resources, RD & GR, Block-3,CGO Complex, New Delhi – 1100031
15. Shri B.B. Sharma, Adviser, Economic Advisory Wing, Ministry of Water Resources, RD & GR, Shastri Bhawan, New Delhi – 11000.

WATER TALK
(The 2ND IN THE SERIES)



On
“Ground Water Governance”
By
Shri Shashi Shekhar, IAS (Retd.)

Organized by
National Water Mission
On
01-May-2019

Venue
Dr. Ambedkar International Centre, New Delhi

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

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 stake-holders and to encourage people to become active participants in the conservation and saving of water. The 1st 'Water Talk' was held on 22nd March, 2019 as a part of World Water Day celebrations.

The 2nd Water Talk in this series was held on 1st May, 2019 on the theme "Ground Water Governance" and was delivered by Shri Shashi Shekhar, Former Secretary, MoWR. Shri U. P. Singh, Secretary, MoWR; Shri Rajiv Ranjan Mishra, DG, NMCG; Smt. T Rajeshwari, Addl Secretary; Officers from CWC, CGWB, NMCG and MoWR attended the programme.

At the start of his keynote address on "**Ground Water Governance-prospective, challenges and suggested interventions**", Shri Shashi Shekhar discussed about the water availability at present in the country, diverse utilization and its continuous increase in demand, necessitating the urgent need of reforms in water sector. He highlighted the drastic decline in per capita water availability. It is to be analyzed whether there is a need for paradigm shift to address the challenges in water sector.



He mentioned that Ground Water accounts for 60% of irrigation needs, 85% of rural drinking needs, 50% of urban water needs, contributes about 9% to GDP and is responsible for 80% increase in net irrigated area in last 40 years. Despite making surface water available by the construction of dams, canals and surface irrigation system, the dependency of net irrigated area on ground water is increasing and as of now approximately 64% area is irrigated through ground water. India abstracts ground water more than China & USA combined. Indian agriculture has emerged as world's largest user of ground water to grow food and fiber. Keeping in view of ever increasing demand of water, he said sustainability of the ground water for this scale of utilization is a major challenge.

Shri Shashi Shekhar discussed sustainability of ground water backed up by scientific data citing geological, hydro-geological & terrain information. He discussed various factors impacting the ground water. Though rainfall is an important factor affecting ground water, in order to make efficient ground water management plan, it is necessary to analyze other factors and data as well. The rainfall is well disturbed in the country. Most areas of India (except Rajasthan) on an average receives 900-1400 mm of rainfall. However, ground water availability is not uniformly distributed.

He discussed the situation of ground water in different zones of the country. Punjab, Haryana and Uttar Pradesh are considered as green belt and have good source of water due to flat and plain land and thick alluvium. Despite receiving good rainfall and favorable geomorphological conditions approximately 70-80% of Punjab and Haryana area is water stressed. Ground water availability and recharge potential is highly dependent on

geomorphology. Ground water aquifers recharge happens through mainly three sources (a) flowing rivers (b) rainfall percolation and (c) natural water holding body. The ground water recharge speed is very slow from source (b) & (c). Shri Shekhar presented the case study of Thanesar block, Kurukshetra, Haryana and stated that the area has witnessed fast depletion of ground water due to high extraction of ground water and unsuitable cropping pattern. Based on the CGWB data it was forecasted that first layer of aquifer may get completely exhausted in 15 years if the rate of water withdrawal remains same. He expressed concern that despite Punjab being well fed with river and canals, 70% of its irrigation is met by ground water.

Discussing the ground water situation in Maharashtra, Former Secretary stated that roughly 60 to 90 million years ago, the outpouring of basic lava through fissures formed horizontally bedded layer of basalt over large areas of Maharashtra. Due to hundreds of years of volcanic activity, large number of vertical cracks developed in basaltic region. Due to these crack formations, the water holding capacity of upper layer of aquifer has decreased. If water is excessively drawn from these cracks, then first layer may soon run out of water, as the 1st layer cannot be recharged easily. Deccan Plateau consisting of parts of Maharashtra, Gujarat and Madhya Pradesh do not have good water recharge zones.

In the Southern India, specifically in Karnataka the underlying rock is Granite. The rocks developed cracks over a period of time and ground water holding capacity of upper layers decreased which resulted in decrease in the water table. He mentioned that in 1985 water was available at a depth of 150 meters which has now gone down to a depth of over 450 meters. Due to morphological conditions also, Southern India is not a good source of ground water.

The rivers are shrinking; Ganga has shrunk by 49%, Narmada by 58% and Kaveri by 39%. Earlier Kaveri river used to recharge large part of the ground water in Southern part of India. However, due to its shrinking, ground water recharge potential has also decreased in these regions. Forest and Plantation is very much required to river to flow continuously and reduce the probability of floods. The tree covers and its roots in catchment area will facilitate the percolation of water through sub-soil system. The sub-soil system holds water for longer duration and reduces evaporation loss.

Commenting on the availability of water, he mentioned that source of water is 95% through rainfall and 5% through snowfall. On an average, India receives around 30 down pours spread over 90 days and this has to meet our need for the rest 275 days in the year.

Water can be managed in an efficient way through supply side intervention such as construction of rain water harvesting eg. earthen bunds, percolation tanks, stone bunds, check dams, trenches, afforestation and protection of recharge zones, revival of water bodies etc. He suggested demand side intervention through water budgeting, changing cropping pattern and efficient use of modern agricultural practices. As examples of best water management practices, he quoted the success stories of Hiware bazaar and Parambur village, Pudukottai district Tamil Nadu and emphasized on community participation in water management. In Parambur village, the community makes water budget and collectively decided which crop to be grown based on the water availability.

He emphasized the need to address the supply and demand side simultaneously, use of data mobilization & its analysis and suggested to follow river basin approach and promotion of conjunctive use of water. To manage water in sustainable way, there is need to understand

water ecology and stressed on inclusion of riverine ecosystem in our education. Upper catchment area should not be depleted, flood plains are natural water holding bodies which are lifeline for humans must be preserved and protected from any encroachment. Projects which only benefits one area causing damage to other areas should not be permitted. Policy should be such that the area benefited by projects must compensate the areas which suffer damages due to the project.

Former secretary discussed various strategies/intervention for supply and demand side management

(1) Supply side

- (a) Extensive recharge to augment GW sources- It may be done by water harvesting through rejuvenation of water bodies, construction of percolation tanks, check dams, farm ponds, preservation of natural forests, sacred groves etc to ensure sustainability and revival of water bodies under MNREGA & DoLR on scientific inputs.
- (b) Mandatory protection of ground water recharge zones in the foot hills of Bhabhar, Terai (UP), Bazadas (Maharashtra), Aravalis and Bhuds (Haryana), flood plains, marshes and wetlands etc., aquifer's recharge locations of the country. These areas may be declared as Environmental Sensitive Zones (ESZ) / GW sanctuaries
- (c) NAQUIM may provide required technical inputs in terms of site specific recharge areas & type of recharge interventions, aquifers' capacity, rate of transmission etc. Implementation of these intervention on Mission Mode with involvement of experts and civil societies.

(2) Demand Side:

Promotion of Demand side Management Measures

- (a) Extensive education in water budgeting based management to manage sustainable extraction of ground water.
- (b) Promotion of Drip / Sprinkler for efficient irrigation- Government is providing huge amount of subsidy for promoting drip/sprinkler system. However the performance of these system has not been up to the mark. Public Private Partnership (PPP) model may be implemented for better performance.
- (c) Change in cropping pattern suitable to the area- Adopt food diversity to include food like maze and millets which provides iron and micronutrients. Increased consumption of these crops will create market support and thus the increase in demand will lead to shift their cropping pattern. Change in coping pattern will happen only if our eating habits are modified.
- (d) To achieve this, communication from highest level is required. Citing the example of recent success of Ganga Rejuvenation and Swachh Bharat Mission, he suggested that close monitoring from the top level of administration can drive the necessary changes.
- (e) Risk mitigation strategy
- (f) Reducing water losses by laying of pipelines in place of open water courses in agricultural field

- (g) Introducing regulation for subsidized electricity and financing for new tube wells.
- (h) Institutionalize Water User Associations to embark in to community management of ground water. He suggested explore to create community level committee for each aquifer.

Speaking on Governance aspect of Water, he mentioned that water is presently a State subject, though the water is longitudinally connected from mountains in the north to sea in the South and passes through many states. Shri Shekhar highlighted that Supreme Court has suggested that ground water be made a Common Pool Resource (CRP) under public trust doctrine with State as Trustee. He emphasized on providing training & seamless access to information to Panchayat Raj Institutions.

Concluding his address, he stated that time has come to make paradigm shift in policies and way of tackling water issues. It is Ground water that will give climate resilience, fresh water source and adaptation of climate change. The limit defined by nature while abstracting ground water is to be kept in mind. There is urgent need to adopt a balanced supply and demand side interventions.

Shri U P Singh, Secretary, MoWR, RD & GR, while thanking Shri Shashi Shekhar for delivering the talk on Ground Water, stressed the need for conservation, preservation and rejuvenation of river and water bodies in the country. Serious efforts must be put to rejuvenate water bodies present in the 5000 villages on the banks of Ganga. He highlighted the importance of spring rejuvenation and added that in Bhagirathi River 60% of Water comes through springs. He expressed concern over present situation of springs and citing the report of Niti Ayog Shri Singh said that approx. 60% of springs have either died or became perennial to seasonal.



Sri U.P.Singh exhorted to focus on real situation and scientific studies rather than perceptions and involve all stakeholders in water management. Participatory ground water management is an efficient method to create awareness and address water management issues. He stated that the grave situation of water must be communicated to villagers/ farmers and every stakeholder and encourage them to take preventive steps to conserve water.

Secretary commented upon the excess use of the ground water in UP, Punjab and Haryana and said that though these States have 85-100% area irrigated, the ground water utilization for irrigation purpose is very high ranging from 60-77%. The excess utilization of GW should be reduced through effective water management plans. In these states, the ground water extraction is around 300% and is bound to create water exploration and water stress. He suggested that we should start factoring in the “water foot-print” for every good produced.

Earlier Shri G. Asok Kumar, Mission Director, NWM while welcoming the Chief guest, dignitaries, participants informed that NWM will be organizing “Water Talks” on every third Friday of a month on some topic related to water.

Naula Foundation exhibited posters on water to create awareness and importance of water. A demonstration of Smart Aerator was arranged by Kerro Kraft which draw huge public attention. Around 200 people attended the 2nd Water Talk.