



Central Pollution Control Board

(Ministry of Environment, Forest & Climate Change, Govt. of India)

Parivesh Bhawan, East Arjun Nagar,

Delhi – 110032

Proceedings of One Day Workshop on “Restoration of Polluted Water Bodies” held on 30.01.2020 at ‘India Habitat Centre, Delhi’

A One-day workshop on “Restoration of Polluted Water Bodies” was organized on 30th January, 2020 at Gulmohar Hall, Indian Habitat Centre, Delhi with an aim to facilitate the stakeholder organizations for preparation and execution of action plans for restoration of water. Shri U. P. Singh, Secretary, Ministry of Jal Shakti presided as Chief Guest for inaugural session. Experts from organizations such as National Remote Sensing Centre, Delhi; Energy & Wetlands Research Group, Indian Institute of Science, (IISc), Bengaluru, Centre of Environmental Management of Degraded Ecosystems, Delhi University, BITS-Pilani, Hyderabad Campus, Wetland Conservation Programme, Tata Projects Limited as well as CPCB. The workshop was attended by the dignitaries from various stakeholder organizations viz., National Mission for Clean Ganga (NMCG), Central Water Commission (CWC), Central Ground Water Board (CGWB), EPCO, Bhopal, officials of State Pollution Control Boards (SPCBs), Pollution Control Committees (PCCs), States Environment Department, State Urban Development & Housing Department, State Water Resources Department, Wild Life Management & Biodiversity Management, Chhattisgarh, Haryana Pond and Waste Water Authority, Chilka Lake Development Authority, State Irrigation & Water Resources Department, Delhi Jal Board and Department of Science and Technology, Puducherry. List of participants is annexed as **Annexure-I**.

The workshop proceeded in three sessions i.e., Inaugural Session followed by two Technical Sessions (Pre and Post lunch) . Inaugural Session was chaired by the Chief Guest Shri U.P. Singh, Secretary Ministry of Jal Shakti (MoJS), Sh. S. P. Singh Parihar, Chairman, CPCB, Dr. Prashant Gargava, MS, CPCB and Sh. A. Sudhakar, Division Head, WQM-I, CPCB.

The inaugural session began by welcome address from Dr. Prashant Gargava. He stated that drastic changes in water consumption and natural resources available pattern due to rapid utilization and industrialization. He stressed the need to minimize water consumption, wastage, reuse/recycling of treated water, judicious use of fresh water and adoption of holistic approach for water conservation to meet demand and supply of water in effective manner. He reiterated that today's workshop will help States to achieve the desired target of restoration and rejuvenation of polluted water bodies.

Sh. S.P.Singh Parihar, Chairman, CPCB in his inaugural address welcomed all the signatories on the dais, technical experts, all the delegates from the Central and State Governments and requested all to come forward on the common platform to share success stories to design governance framework for rejuvenation of polluted water bodies.

Sh. U.P. Singh, Secretary, Ministry of Jal Shakti (MoJS) was delighted to be a part of the workshop wherein he appealed to all the participants to learn the subject in depth before proposing policy implementation and emphasized that mere statistical numbers should not be the sole criteria for identification of polluted water bodies or restored river bodies.

He is of the view that the rivers in India are mainly seasonal and rain fed, therefore, the concepts implemented by western or developed countries to restore those rivers may not be suitable to rejuvenate rivers in India because of various reasons which includes different set of monsoon and rain fall patterns. Also, action is needed for protection of flood plain zones.

He further stated that water resources in the country are not increasing i.e., water availability per capita is very decreasing and water use efficiency is very poor. There will be increase in demand for the water over the years due to rapid urbanization and industrialization. He stressed the need for water use in efficient manner. Reliable statistics with regard to the water quality apart from bio-monitoring results should be taken into account for defining polluted river body. Also, he is of the view that mere creating treatment facilities in urban areas will not alleviate the problem of pollution in water bodies, the focus should be on Operation and Maintenance of the existing facilities, as well as interception and diversion of

sewage from drains to nearby existing STPs or upcoming STPs. In rural areas where wastewater generation is very less as compared to urban areas and in place of conventional treatment technologies, adoption of non-conventional treatment techniques such as constructed wetlands and waste stabilization ponds shall be explored. He further added that as seen in case of urban areas along river Ganga, the concept of one city one operator is under implementation. This concept should also be largely adopted by other cities to ensure proper operation of existing STPs apart from focus should also be given to upgrade the existing facilities rather than creating new one. Ensure long term sustenance of the developed infrastructure for optimal utilization of country's financial resources as it also helps to maintain the Nirmalta and Aviralta (Purity and continuous flow) of our water bodies. Also, aspects such as O & M of the new STPs should be an integral part of any proposed project and should be reflected in the DPR before grant of financial approval by the State Governments/UT Administrations.

Finally, Sh. Sudhakar, Divisional Head, WQM-I Division in CPCB gave vote of thanks to all the dignitaries on the dais for sparing valuable time and for providing valuable guidance and suggestions. He thanked Secretary, MoJS for insight into the matter and for flagging all key issues related to the water pollution and suggesting the remedial actions required. He said science and administration have to converge at some point for successful implementation of the policies. He also thanked Chairman, CPCB, MS, CPCB, Resource Persons, Officials of National Mission for Clean Ganga (NMCG), Central Water Commission (CWC), Central Ground Water Board (CGWB), SPCBs/PCCs as well as officials of State Government Departments for their participation. He also thanked all the officials specially Shri J.C.Babu, AD and Dr.Puja Tripathi, Research Associate, for putting sincere efforts in organizing this workshop.

Technical Session –I (11 am to 1.30 pm) Chaired by: Sh. R.K. Sinha (River Management), CWC, Delhi

Resource Persons: Sh. A Sudhakar, DH, WQM-I, CPCB; Sh. J. C. Babu, Scientist 'E', WQM-I; Dr. V. M. Choudhary, NRSC, Delhi; Dr. N.C. Durgapal, Scientist 'E', Water & Waste water Laboratory, CPCB, Prof. Suman Kapur, Pits-Pilani, Hyderabad Campus.

Shri R.K.Sinha (River Management), CWC, Delhi welcomed all the experts of technical session-I and requested to deliver their presentations as per the time slot given to each speaker strictly.

Sh. Sudhakar, DH, WQM-I briefly highlighted about the Hon'ble NGT Orders related to rejuvenation of polluted river stretches and restoration of water bodies, NWMP network, timelines and action required to be taken by the State Governments/UT Administrations for ensuring compliance to the directions of Hon'ble NGT.

Sh. J.C.Babu, AD, WQM-I presented indicative guidelines for restoration of water bodies prepared by CPCB in compliance to Hon'ble NGT order dated 10.05.2019. In his brief presentation, he highlighted that action plans for rejuvenation of polluted rivers or stagnant water bodies to be prepared based on the detailed gap analysis w.r.t existing infrastructure for management of sewage industrial effluent and waste management apart from other aspects such as E-Flows, flood plain zone protection, removal of encroachments, development of Bio-diversity parks and greenery, rain water harvesting, rain water harvesting measures etc. He also stated that the action plans for restoration of stagnant water bodies will be case specific and will be same as that of rivers however additional provisions such as desiltation, de-weeding by physical/mechanical means, chemical/biological treatment of stagnant water, catchment/drainage basin management, recreational facilities, buffer zone etc., included as a part of action plans for restoration of stagnant water bodies.

Dr. V. M. Chaudhary through his presentation shared use of GIS and remote sensing technology for Inventorisation of water bodies. The data generated through remote sensing gives synoptic view, cost efficient, and archives data in compact manner for future reference. However, in-situ physical verification is required for confidence index of the generated data through remote sensing techniques.

Dr. N.C. Durgapal, presented detailed methodology of monitoring various physico-chemical, biological and microbiological parameters of water sample. He comprehensively discussed the cause and effect parameters affecting the assessment of water quality.

Prof. Suman Kapur, discussed in detail about link between environment and health and how the antibiotic resistant pathogenic bacteria enter our system through contaminated water. She also briefed about the potable platform called Right Biotic System developed indigenously in BITS-Pilani Hyderabad, which was also utilized in study entitled “Quick hygienic survey of river Musi and Krishna” as per Hon’ble NGT directions. She informed that this system isolates and identify the major pathogenic profile of microorganism present in water bodies besides describing its antibiotic sensitivity pattern in a short duration i.e., about 4 to 5 hours, which otherwise takes 24-48 hours to confirm as per the conventional analysis procedures.

Sh. R.K Sinha, Chairman of the Technical Session-I thanked all the speakers for delivering insight presentations on the respective topics. He also informed that CWC has its own water quality monitoring network which includes measurement of flow. CWC has identified 33 hydrological hotspots for rejuvenation. He stressed the need to achieve time targeted result, planning and skilled manpower is the pre-requisite and gaps in existing infrastructure must be evaluated before implementing an action plan. He also informed that E-flow for upper reaches of river Ganga has been notified and for other rivers execution is under way.

Technical Session –II; time: 2.30 to 4.40 pm, Chaired by:, Dr. Prashant Gargava , MS CPCB, Delhi

Resource Persons:- Prof. Brij Gopal, Advisor, Conservation Programme, Prof. C.R Babu, Delhi University, Dr, T. V. Ramachandra, IISC Bengaluru, Sh. Manish Tripathi, Tata Project Ltd.

Dr. Prashant Gargava , MS CPCB, Delhi welcomed all the experts of technical session-II and requested to deliver their presentations. He also stated that in technical session-II, we

have learned experts and their experience definitely help the participants in understanding the issues and to bring the solutions.

Technical Session-II started with the presentation from **Dr. Brij Gopal** Advisor, Wetlands Conservation Programme. He mentioned in his presentation that before preparing an action plan for restoration of water body, the idea of water body to be restored should be clear in everybody's mind by referring to the historical data of water bodies through survey of India topo sheets, remote sensing, revenue records, WRIS records. The action plan should be water body specific. However, the level up to what state it is to be restored is the matter of feasibility and availability of financial resources. He also gave clear idea about the identification of percentage of degradation that has taken place by reduction in size, water spread, depth, vegetation, changes in flora and fauna, water quality changes and visible discharges. Identification of causative factors and linking with hydrology will provide the reference to restoration of water bodies. He added that restoration plan should also include the nodal agency to execute the implementation of action plan in a time bound manner.

Prof. C.R. Babu defined stagnant water bodies and presented a model plan created at Neela Haus lake Delhi. Through videos, he also depicted how degraded water body at Neela Haus lake has revamped completely into beautiful biodiversity park at present having rich aquatic flora and fauna using constructed wetland technology, as it helps to achieve the desired discharge standards for sewage.

Prof. T.V.Ramachandra through his presentation and data, briefed that how over the years buffer zones of aquatic resources of Bengaluru city have been replaced by a concrete structure and depriving the city of drinking water resources. Presently, 53% of aquatic resources of Bengaluru city falls under the poor water quality and only 13% of existing water resources qualifies for various use. He also informed that Jakkur Lake in Bengaluru city has been rejuvenated during 2008 by funding through NLCP. Through remote sensing data, he presented how urbanization has leached out interconnecting aquifers. He summed up the conversation by giving few remedial steps, which includes estimations of desiltation and dredging of the lakes, ban on use of phosphates in manufacturing detergents, sensible policy and its implementation, cost-benefit analysis of the action plan. He is also of the view

that one custodian agency for all the static water bodies at regional level will also help in taking administrative decisions or policies in effective manner.

Sh. Manish Tripathi showed a small video on rejuvenation of Dravyavati river in Jaipur. He briefed about the steps being taken by Tata Projects Ltd., for rejuvenating the water body which had been converted into a drain for carrying sewage because of excessive urbanization. He also shared their learning through this assignment which is first of its kind in India and invited suggestions and opinion from experts and participating organizations for further improvement.

Panel Discussions (4.30 – 5.00pm): Recommendations

After detailed presentations, a panel comprising Dr. P. Gargava MS CPCB, Sh. A. Sudhakar DH, WQM-I, Sh. B. Sikka, Senior Consultant, NMCG and Sh. Vijay Kumar Gogi, Karnataka Principal Secretary, deliberated the issues. Upon detailed deliberations following recommendations were made during the panel discussion.

1. Wetland (Conservation and Management) Rules 2017 and the guidelines expected to be issued by MoEF & CC as well as Document on 'Conservation and Restoration of Water Bodies in Urban Areas' published by CPHEEO also be referred and synchronized suitably while finalizing indicative guidelines for restoration of water bodies prepared and circulated by CPCB.
2. All the States/UTs have to carry out inventorisation of all the water bodies by referring to Topo sheets of Survey of India, GIS Maps by taking the base reference for the purpose of identification of water bodies.
3. The water bodies which used to be in past and at present no more existence, such water bodies to be restored wherever feasible.

4. Categorization of water bodies based on purpose should be classified and each category of water body to be identified for restoration based on prioritization. The Designated Best Use (DBU) for stagnated water bodies may be defined by CPCB.
5. Nodal agency (not more than two) in each State/UT to be identified and all identified water bodies to be kept under such identified agency for the purpose of taking actions for restoration in compliance to Hon'ble NGT orders rather than under the jurisdiction of different departments in the States/UTs.
6. Success stories to be documented and shared for reference in public domain as well as in the indicative guidelines for restoration of water bodies circulated by CPCB.
7. Issue of ban on use of phosphates for manufacture of detergents to be taken up with the manufacturers and BIS for standardization and certification by MoEF & CC.
8. Indicative guideline on restoration of water bodies prepared by CPCB to be re-circulated once again to the experts seeking feedback or comments or views and specific suggestions prior to its finalization.

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