

Executive Summary

Why did we decide to examine this issue?

In July 2009, various stakeholders working in the field of environment flagged water pollution as the most important environmental issue that concerns us. We also held a detailed two-day International Conference on Environment Audit - Concerns about Water Pollution in March 2010. This conference was attended by various civil society organisations, government agencies, international agencies and regulatory bodies. The heads of Supreme Audit Institutions from Austria, Bhutan, Maldives and Bangladesh also shared their concerns about water pollution. The Conference flagged many important areas of concern with regard to river, lake and ground water pollution. Further, we put out advertisements in various national and local newspapers all across India, inviting suggestions from the general public regarding the water pollution problems faced by them. Based on feedback from these consultations, we decided to take up a Performance Audit of Water Pollution in India during 2010-11.

What were our audit objectives?

The review was undertaken to ascertain whether:

- *Inventory of water sources has been prepared and whether the overall status of quality of water in rivers, lakes and groundwater has been adequately assessed in India;*
- *Risks of polluted water to health of living organisms and the impact on environment have been adequately assessed;*
- *Adequate policies, legislations and programmes have been formulated and effective institutions been put into place for pollution prevention, treatment and restoration of polluted water in rivers, lakes and ground water;*
- *Programmes for pollution prevention, treatment and restoration of polluted water in rivers, lakes and ground water have been planned, implemented and monitored efficiently and effectively;*
- *Funds were utilised in an efficient and economic manner to further the aim of reduction of water pollution;*
- *Adequate mechanisms have been put in place by the government to sustain measures to tackle water pollution; and*
- *Programmes for the control of pollution had succeeded in reducing pollution levels in ground water and surface water and restoring water quality.*

What did our performance audit reveal?

Our Performance Audit revealed that:

Legislative and Policy framework

Water pollution has not been adequately addressed in any policy in India, both at the central and the State level. In the absence of a specific water pollution policy which would also incorporate prevention of pollution, treatment of polluted water and ecological restoration of polluted water bodies, government efforts in these areas would not get the required emphasis and thrust.

(Paragraph 2.1, 2.3)

Planning for control of pollution of rivers, lakes and ground water

It was observed that MoEF and a number of States:

- *did not undertake complete inventurisation of rivers/lakes and keystone species associated with them.*
(Paragraph 3.1)
- *did not carry out identification of existing pollution levels in rivers and lakes in terms of biological indicators.*
(Paragraph 3.2)
- *had not identified and quantified contaminants in rivers, lakes and ground water.*
(Paragraph 3.3)
- *were yet to identify and quantify human activities that impact water quality.*
(Paragraph 3.4)
- *had not assessed the risks of polluted water to health and environment.*
(Paragraph 3.5)
- *had not adopted the basin level approach for control of pollution.*
(Paragraph 3.6)
- *had not developed water quality goals, corresponding parameters for each river/lake and failed to enforce these.*
(Paragraph 3.7)

As such, overall planning for the control of pollution on part of MoEF and the States falls short of an ideal situation. This would have repercussions on implementation of programmes for control of pollution and their outcomes as discussed later in the report.

Implementation of programmes for control of pollution of rivers, lakes and ground water

With regard to implementation of programmes for control of pollution of rivers, lakes and ground water, it was observed that:

- *Current programmes for control of pollution of rivers, lakes and ground water were insufficient.*
(Paragraph 4.1)
- *Institutional set-up to manage programmes for control of pollution in rivers, lakes and ground water was inadequate.*
(Paragraph 4.2)

Monitoring of programmes for control of pollution of rivers, lakes and ground water

- *Inclusion of rivers and lakes into National River Conservation Plan and National Lake Conservation Plan, respectively, was flawed.*

(Paragraph 4.2 & 4.3)

- *Performance of projects undertaken under NRCP was unsatisfactory. 82 per cent of the projects were completed after the scheduled date of completion. 28 projects costing ₹ 251.27 crore were constructed but not utilised as yet. States implementing the projects faced problems in land acquisition, getting requisite permissions, especially forest clearances, technical problems, problems from contractors etc.*

(Paragraph 4.4)

- *NLCP as a programme has been ineffective in achieving the objective of conservation and restoration of lakes in India. Only two of the sampled 22 projects had been completed and the rest were either continuing beyond the sanction date of completion or had been abandoned. Problems like resistance from locals over proposed construction of STPs etc., dispute over site, inability to arrest sewage flow, non-availability of land etc., have contributed to non-completion of the projects.*

(Paragraph 4.5)

Thus, programmes to control pollution of rivers and lakes in India have not had the desired results.

Inspection and monitoring of projects being implemented under NRCP and NLCP was inadequate at all three levels, i.e., local level, State level and Central level.

(Paragraph 5.1)

There was paucity of network for tracking pollution of rivers, lakes and ground water as there were inadequate number of monitoring stations, no real-time monitoring of water quality was taking place and the data on water quality had not been disseminated adequately.

(Paragraph 5.2)

As such, monitoring of programmes was inadequate which points to weak internal controls existing at all levels of government.

Results of programmes for control of pollution in India

River cleaning and control of pollution programmes for our polluted rivers are being implemented since 1985. The programmes seek to address pollution from point and non-point sources through construction of Sewage Treatment Plants, low cost sanitation, electric crematoria etc. However, the data on the results of these programmes are not very encouraging.

Ganga in certain stretches, Yamuna, Gomti, Godavari, Musi, Cauvery, Cooum, Mahananda, Khan, Kshipra, Vaigai, Chambal, Rani Chu, Mandovi, Sabarmati, Subarnarekha, Bhadra/Tungabhadra, Pennar, Pamba, Betwa, Krishna, Sutlej etc., continue to be plagued by high levels of organic pollution, low level of oxygen availability for aquatic organisms and bacteria, protozoa and viruses which have faecal-origin and which cause illnesses.

(Paragraph 6.1)

Most lakes in India are under threat from nutrient overloading which is causing their eutrophication and their eventual choking up from the weeds proliferating in the nutrient-rich water. Implementation of NLCP in conserving these lakes has had no discernible effect.

Pichola, Pushkar, Dimsagar, Banjara, Kotekere, Bellandur, Veli Akkulam, Shivpuri, Powai, Rankala, Twin lakes, Bindusagar, Mansagar, Mansiganga, Rabindra Sarovar, Mirik, Kodaikanal lake, Dal lake, Durgabari lake, Laxminarayanbari Lake, Dimsagar Lake etc., have shown poor water quality. However, there have been some success stories like Nainital lake, Kotekere lake, Sharanabasaveshwara lake and Mansagar where water quality has improved after completion of conservation programmes.

(Paragraph 6.2)

Resources and Utilisation of Funds

Funds available for control and prevention of water pollution and restoration of wholesomeness of water were not adequate.

(Paragraph 7.1)

Overall conclusion

We began the audit of Water Pollution in India with certain audit objectives (in Page 5) which sought to examine the broad contours of policy, programmes, institutions and initiatives taken by MoEF to address water pollution in India. We also sought to examine availability of data regarding water pollution, assessment of risks to health and environment and sustainability of measures to address water pollution in India. Finally, we also examined whether the efforts to clean up rivers and lakes in India have lead to any improvements in water quality. Our audit examination extended to 140 projects across 24 polluted stretches of rivers, 22 lakes and 116 blocks across 25 States of India. All the findings, discussed in Chapter 2 to 8, lead us to conclude the following against the objectives set out for the study:

- *Inventory of water sources has not been prepared and the overall status of quality of water in rivers, lakes and groundwater has not been adequately assessed in India;*
- *Risks of polluted water to health of living organisms and the impact on environment have been not been adequately assessed;*

- *Adequate policies, legislations and programmes have not been formulated and effective institutions have not been put into place for pollution prevention, treatment and restoration of polluted water in rivers, lakes and ground water;*
- *Programmes for pollution prevention, treatment and restoration of polluted water in rivers, lakes and ground water have not been planned, implemented and monitored efficiently and effectively;*
- *Funds were not utilised in an efficient and economic manner to further the aim of reduction of water pollution;*
- *Adequate mechanisms have not been put in place by the government to sustain measures to tackle water pollution; and*
- *Programmes for the control of pollution have not succeeded in reducing pollution levels in ground water and surface water and restoring water quality.*

What do we recommend?

- MoEF/States, in the policy on water pollution, need to specifically take into account prevention and control of water pollution as well as ecological restoration of degraded water bodies.
- MoEF/CPCB should initiate steps, along with Ministry of Water Resources and all the States to draw up a comprehensive inventory of all rivers, lakes and ground water sources in India. It should also undertake a survey to list all the keystone species associated with each river and lake in India. This should also be placed in the public domain.
- MoEF/CPCB should intensify its efforts in developing biological indicators which would shed light on whether the functional integrity of aquatic ecosystems are safeguarded.
- MoEF should take into account the basin approach while planning for reduction of pollution of all rivers and lakes in the country.
- With respect to lakes, all three attributes of the lake, i.e., the basin, the water body and the command area need to be conserved instead of the present focus of NLCP on the water body only.
- MoEF needs to establish enforceable water quality standards for lakes, rivers and ground water that would help protect human and ecosystem health. Penalties need to be levied for violations of water quality standards. Further, MoEF, in conjunction with Ministry of Agriculture, needs to develop standards for pollutants like nitrogen, phosphorus etc., which arise from agricultural practices, use of pesticides and fertilisers as pollution from agricultural sources is one of the biggest non-point source of pollution.
- The Jawaharlal Nehru National Urban Renewal Mission is already funding sewerage projects in some of the same States where funds are being provided by MoEF for the same purpose. It needs to focus on projects which seek to regenerate and conserve the river instead of those which focus largely on treatment of sewage. MoEF/States should conceive programmes which address different sources of pollution flowing into rivers, lakes and ground water with focus being not only on prevention of pollution but also conservation and ecological restoration of our water bodies.
- Right now, there are multiple agencies involved in river and lake conservation, right from

planning to implementation and monitoring. There is a need to consolidate all these functions under an umbrella agency for better coordination and accountability.

- In conjunction with the Ministry of Urban Development (MoUD), MoEF and the State should plan drainage for the city as a whole instead of piecemeal approval of random STPs and I&Ds. Further, funding for these projects should come from MoUD as the implementing agencies work under the control of MoUD. MoEF should be involved in the design stage and in monitoring the treated effluents if they are being discharged into the river.
- MoEF/States need to ensure that projects for source control of all kind of pollutants entering the lakes is included in projects for conservation and restoration of lakes, especially sewage and agriculture runoff which leads to nutrient over-loading of the lake.
- MoEF should ensure that all lakes facing encroachment and resultant filling up are included in NLCP. Further, all State governments should declare bio-conservation zones around lakes so that encroachment of shoreline is prevented.
- The Water Quality Assessment Authority at the central level and the Water Quality Review Committee in the States should be revitalized and strengthened so that it can act as a cross-sectoral nodal body for water pollution issues.
- States should involve citizens in proposing and monitoring programmes to control pollution of rivers and lakes. This will help in mobilizing support in civil society for the proposed projects and thus the projects will face less resistance from local people. Citizens Monitoring Committee and Local level lake monitoring committees need to be constituted to provide feedback for more effective implementation.
- MoEF/CPCB, in conjunction with the States, should conduct a city-wise assessment of the levels of pollution in our rivers and lakes. They should also evaluate the success of projects undertaken under NRCP in terms of pre-defined indicators developed by MoEF/CPCB. Such impact assessment should be done in a continuous manner so that data is generated to judge whether the programme is meeting its stated objectives.

What was the response of Ministry of Environment and Forests to our recommendations?

MoEF in May 2011 constituted a Committee to consider the recommendations/observations made in the report by Audit and prepared a roadmap for implementation of recommendations/observations accepted. The Committee consists of representatives of CPCB and representatives from Ministry of Water Resources, Ministry of Urban Development and a representative of CAG. The Committee proposed, *inter alia*, a time-bound action plan to address capacity issues related to sewage treatment, an amendment to the Environment (Protection) Act, 1986 to link penalties for contravention of the Act, strengthening of Water Quality Assessment Authority and constitution of a State-level Monitoring Committee.