

Chapter 5: Monitoring of programmes for control of pollution of rivers, lakes and ground water

The targeted impact of schemes or programs can be achieved only with the proper and effective implementation. In turn, effective monitoring can aid effective implementation. For the monitoring to be effective, an organisation develops the system which covers the micro monitoring at the ground level of implementation i.e. at the implementing agency level. On the other hand, macro monitoring at the apex level will ensure that such monitoring system is working effectively. The different levels and agencies involved in monitoring projects under NRCP and NLCP are depicted in the table below.

5.1 Monitoring of projects for control of pollution in rivers and lakes

5.1.1 At the Centre

Table 12: Monitoring of projects under NRCP/NLCP at central level

National River Conservation Authority	<ul style="list-style-type: none"> • Headed by Prime Minister • Task: Six-monthly review of progress • Last meeting: June 2003
Monitoring Committee	<ul style="list-style-type: none"> • Headed by Member, Planning Commission • Task: Quarterly review of progress • Last meeting: April 2002
Standing Committee	<ul style="list-style-type: none"> • Headed by Union Minister, Environment & Forests • Task: Quarterly review of progress • Last meeting: March 2003
Steering Committee	<ul style="list-style-type: none"> • Headed by Secretary, MoEF • Task: Quarterly review of progress • Last meeting: December 2007

- The National River Conservation Authority (NRCA), headed by Prime Minister, was to conduct a six-monthly review of progress. The Chief Ministers concerned, among others, are the members of this Committee. However the last meeting of NRCA was held on 16th June 2003. Thereafter, no meeting of NRCA was convened.
- Monitoring Committee headed by Member Environment, Planning Commission was to conduct a quarterly review of the progress of scientific and technical aspects of the programme as well as the impact of works on the river water quality. However, we observed that the 31st meeting of the Committee was held in December 2001 and the last meeting the 32nd one of the Committee was held in April 2002.
- A Standing Committee headed by the Union Minister of Environment & Forests was to review performance of the projects on a quarterly basis. The fourth and last meeting of the committee was held in March 2003.

- A Steering Committee headed by Secretary of the Ministry was to carry out quarterly review of the progress of various programmes/projects and give necessary directions to the implementing agencies. This Committee also has Chief Secretaries of the States concerned and experts in the Public Health Engineering Department and other related areas as its members. Between 2002 and 2010 only six meetings of the Steering Committee of the NRCP were held and the last meeting took place in December 2007.

The four Committees listed above do not exist in a hierarchy and operate independently of each other. There is no functional connect between the Committees. It was therefore difficult for Audit to assess whether the findings and recommendations of the different committees were being shared with the next higher level, and whether any action was being taken on the same. There was no evidence of sharing in the other direction to the Implementing Agencies.

5.1.2 In the States

Table 13: Monitoring of projects under NRCP/NLCP at State level

High Powered Committee	<ul style="list-style-type: none"> • Headed by Chief Minister of the State • Task: *Periodical review
State Steering Committee	<ul style="list-style-type: none"> • Headed by the Chief Secretary of the State • Task: *Periodical review
Inter -departmental Committee	<ul style="list-style-type: none"> • Headed by the Chief Secretary with Principal Secretaries of the Departments concerned • Task : to ensure timely implementation & effective monitoring of programme even after its execution.
Review by nodal implementing agency	<ul style="list-style-type: none"> • Monthly review of progress by Chief Executive
Divisional Project Monitoring Cell (DPMC)	<ul style="list-style-type: none"> • Task: *Periodical review
Lake-Specific Coordination Committee	<ul style="list-style-type: none"> • This was proposed as an alternative mechanism at the district level.**

[*Note: the periodicity of review varied from State to State.

** As seen in "Guidelines for NLCP"]

With regards to monitoring, it was observed at the State level that:

- Out of 140 projects under NRCP which were test checked for monitoring, monthly review of progress was conducted at the Chief Executive level of the nodal implementing agency only in 40 per cent of the projects.
- Out of 140 projects under NRCP test checked for monitoring, only 13 per cent of the projects were periodically reviewed by Divisional Project Monitoring Cells.

- Periodical review of progress was conducted by the State Steering Committee chaired by the concerned Chief Secretaries only in *19 per cent* of the test checked NRCP projects.
- Only *14 per cent* of the test checked NRCP projects were reviewed by a High Powered Committee under the Chairmanship of Chief Minister.
- Inter-Departmental coordination committee was constituted at the State level to ensure effective monitoring of NLCP only in *36 per cent* of the test checked projects.
- Only four out of test checked 14 States constituted Steering Committee at the district level to ensure effective monitoring of NLCP.
- Lake specific Monitoring Committee was constituted at the local level by the State government to ensure effective monitoring of the programme in only *36 per cent* of the test checked projects.
- Water quality monitoring plans were prepared by the State governments only for *three* of the 22 test checked lakes.
- Pesticides monitoring was not included by Lake Development Authority of the State/implementing agency in any of the projects.
- For only *two* out of the test checked 22 lakes, a conservation plan was prepared by the Lake Development Authority of the State/implementing agency to ensure that the water quality after implementation of the project was restored to the criteria for Designated Best Use classification for B class waters.

The project-wise detailed break-up of monitoring of rivers and lakes by different agencies in test checked projects are given in Annexure 4.

In June 2011, MoEF stated that Monitoring Committees at the State level have been constituted by most of the States, whereas the Committees at local levels viz. City Level Monitoring Committees (CLMCs) have been constituted in some States to directly monitor implementation of lake conservation works.

Further, at the Central level, regular review of NLCP as a scheme and also with the individual States, have been conducted at various levels. Also, site visits to the lakes, both before and during implementation, have been carried out by NRCD officers from time to time.

The reply of MoEF needs to be viewed in light of the fact that regular meetings of National River Conservation Authority, Steering Committee, Standing Committee and Monitoring Committee headed by Member Environment, Planning Commission were not held. Further, MoEF was also silent about the names of States which had constituted Monitoring committees at the State level and at the City Level. Constitution of local level committees would have helped solve problems raised by locals living in and around the river/lakes and would have made them stakeholders in the conservation efforts. Poor monitoring is an example of weak internal control and inevitably reflects on overall atmosphere of accountability within the organisation.

5.2 Paucity of network for tracking pollution of rivers, lakes and ground water

5.2.1 Insufficient number of monitoring stations

Under NRCP, water quality monitoring locations on **rivers** had been identified for manual monitoring and a total of 158 locations were being monitored for 10 rivers by different Universities & Research Institutes in the country.

Further, CPCB also monitored river water quality through 980 monitoring locations on 353 rivers for the assessment of river water quality all across the country. It was observed that the average distance between monitoring locations was 49 kilometres for major rivers and was 45 kilometres for tributary streams and medium & minor rivers. CPCB stated that the existing stations cannot achieve the objective as desired and CPCB had presented the requirement of expansion of monitoring network to MoEF for reducing the distance to 10-20 kilometres.

With respect to **lakes**, CPCB had established 117 monitoring locations on 107 lakes till 2010 all across the country for the assessment of water quality of lakes in terms of chemical parameters. It was observed that the average area covered by monitoring locations was 40,000 hectares.

CPCB stated that the existing stations cannot achieve the objective as desired and CPCB had presented the requirement of expansion of monitoring network to MoEF for reducing the area covered to 10,000 hectares.

With respect to **ground water**, CPCB had established a network of 490 groundwater locations under National Water Quality Monitoring Programme (NWQMP). Further, CGWB had 15640 observation wells all across the country from which samples are collected once a year.

5.2.2 Lack of classification of locations

According to UNEP and the Hydrology Project of Ministry of Water Resources, all monitoring stations have to be classified as baseline, trend and flux stations.

- Baseline stations are established in areas away from human influence, these give data for comparison purposes.
- The purpose of trend stations is to test for long-term changes in water quality and identify trends of pollution.
- Flux stations determine fluctuations of critical pollutants from river basin to ocean or regional sea.

It was observed that MoEF/CPCB had classified 475 locations on **rivers** and 108 locations on **lakes** as baseline stations. Another 499 locations on rivers and 9 stations on **lakes** were classified as trend stations and CPCB stated that these also functioned as flux stations.

But this contention of CPCB was not correct as trend stations could be set up anywhere on the **river/lakes** whereas flux stations needed to be established on mouth of major rivers. Also, the purpose of both the stations was different. As such, MoEF/CPCB had not clearly distinguished between the three kinds of stations which would have an effect on the reliability and validity of data generated from these stations.

- No monitoring of pollution from agricultural non-point sources was being done.
- With respect to **ground water** also it was observed that monitoring locations had not been classified as baseline or trend stations by CGWB as required under the monitoring guidelines.

5.2.3 Lack of real-time monitoring of water pollution

CPCB/CGWB do not carry out real-time monitoring of water pollution in **rivers, lakes** and **ground water**. According to CGWB, the required set up for real-time monitoring is not available at present (January 2011).

MoEF in its reply in June 2011 stated that automatic water quality monitoring stations are being established on river Ganga and Yamuna under a World Bank-assisted project by Ministry of Water Resources.

5.2.4 Lack of assessment of trophic status of rivers and assessment of ecological/biological indices of rivers/lakes

Trophic status is a measure of biological productivity of lakes/streams, which simply is a measure of how many plants and animals are in the lake/river. Thus, it is an indicator of health of a river. MoEF had not assessed whether there was improvement in trophic status of rivers during implementation/completion of projects under NRCP. It had also not assessed whether there was measurable improvement in ecological and biological indices of rivers during implementation/completion of projects under NRCP.

In its reply in June 2011, MoEF stated that water quality monitoring for rivers has presently been restricted to physio-chemical & bacterial parameters and that biological parameters including biological indices & trophic status can supplement the existing monitoring in providing a more comprehensive status of the river. While endorsing the audit observation, MoEF stated that it required more finances and technical expertise to do this and it proposed to revamp the monitoring protocol for river Ganga to include bio-monitoring along with other physio-chemical parameters. While revising the monitoring protocol for river Ganga by including bio-monitoring is a good first step, MoEF needs to take this process forward and devise measurements of trophic status for all major rivers and lakes in India.

5.2.5 Lack of revision and updating parameters of water quality

Regular updating and revision of parameters of water quality being monitored by MoEF/CPCB is essential to identify the new and emerging sources of pollution, especially those which have an industrial base. As new manufacturing methods and new technological advances are being made, the nature and kinds of pollutants entering our water bodies are also changing. It was observed that MoEF/CPCB did not carry out regular updating and revision of its standards for water quality.

MoEF in its reply in June 2011 stated that CPCB had been monitoring 64 parameters in river/ lake/ ground water samples taken from rivers, lakes, ponds, creeks etc and station specific parameter is selected on the basis of source in the vicinity of monitoring station. It further stated that for inclusion of new parameters, toxicity study is carried out in the laboratory before taking it up for regular monitoring.

However, the fact remains that no actual updating and revision of parameters of water quality has taken place and revised parameters should be based on identification of new toxins entering water bodies.

5.2.6 Poor quality of data on water

With regard to dissemination of data on Water Quality Monitoring, we observed that besides CPCB and NRCB, CWC, CGWB, State government departments of irrigation and ground water were involved in monitoring of water quality. As per the Uniform Protocol on Water Quality Monitoring Order, 2005, *“Each monitoring agency shall process the analytical data and report the data after validation to the Data Centre at the Central Pollution Control Board. The Central Pollution Control Board shall store the data and disseminate through website or electronic mail to various users on demand”*. However, it was observed in audit that:

- CPCB had established Environmental Data Bank but CPCB had not received any data from Water Quality Monitoring agencies other than SPCBs as yet.
- The data received in Environmental Data Bank was in public domain and anyone can access the data by accessing the website of CPCB (<http://cpcbodb.nic.in/>). Since March 2010, the link to Environment Data Bank has not been working as the system was hacked.

The data collected by CPCB is thus not accessible to any agency at present.

5.2.7 Inspection of the projects by MoEF

Projects being implemented by the States under NRCP were to be regularly inspected by MoEF; however, these projects were not inspected by MoEF. As such, MoEF would not be in a good position to be aware of the difficulties faced during implementation and the opportunity to make mid-course corrections was lost.

Out of 140 river projects test checked, MOEF submitted information only in respect of 99 projects. Of these, 25 per cent of the projects were not inspected by MoEF even once during implementation. Out of 105 projects completed, MOEF submitted information in respect of 77 projects. MoEF had not inspected 43 per cent of these projects after completion.

In June 2011, MoEF stated that projects under execution were being monitored by the officers of the MoEF at regular intervals and observations were communicated to the implementing agency/ State Government for appropriate action. The reply was not acceptable in audit as substantial number of projects were either not inspected by MoEF even once during implementation or after completion.

5.2.8 Availability of Completion Reports

Once the project was complete, the State government has to send a completion report to MoEF to certify that the project was complete. However, it was observed that completion reports of projects being implemented under NRCP were not available for all the projects. Out of 105 completed river projects test checked, MOEF did not provide information for 15 projects. Out of the remaining, completion reports were not received by MoEF for 67 projects. As such, MoEF was not able to insist on timely submission of project completion

report by State Government /implementing agency and could not ensure whether the projects had met the timelines and objectives of the projects.

In its reply of June 2011, MoEF was silent about this issue.

Conclusions

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. It was observed that the data for monitoring the schemes as available in MoEF provides a user-friendly means of understanding the current status of the relevant policy and is reasonably cost-effective to operate. However, it did not describe in detail the stages or events used for rating progress (when this method was used). It also did not provide a rationale for how future performance targets were being set in the Ministry.

Poor monitoring of network to track pollution of water in rivers and lakes, failure to update and revise water quality parameters, absence of database, poor dissemination of data: these are all indicators of the system of internal controls which frame such a vital activity. In turn, poor internal controls reveal the low level of transparency in the activities of the Ministry and their impact on its overall accountability.

Recommendation 20

The Water Quality Assessment Authority at the central level and the Water Quality Review Committee at the level of the States should be revitalized and strengthened so that it can act as a cross-sectoral nodal body for water pollution issues.

Recommendation 21

States should involve citizens and other stakeholders 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.

Recommendation 22

Monitoring network should be strengthened by converting all monitoring locations into stations and reclassifying them as baseline, trend and flux stations for achieving better quality data. MoEF should also start real time monitoring so that red flags are raised immediately when pollution levels rise alarmingly and remedial action can be taken in time.

Recommendation 23

MoEF should immediately take steps to increase the frequency of inspections carried out by it and by the States so as to assess the efficiency of the implementation of its programmes.