



Chapter – 5

*Conservation
of
Water Bodies*

National River Conservation Directorate (NRCD)

The National River Conservation Directorate, functioning under the Ministry is engaged in implementing the River and Lake Action Plans under the National Lake Conservation Plan (NLCP) & National River Conservation Plan (NRCP) by providing assistance to the State Governments.

National River Conservation Plan

Introduction and Objectives

The objective of NRCP is to improve the water quality of the rivers, which are the major water sources in the country, through the implementation of pollution abatement works, to the level of designated best use. So far a total of 35 rivers have been covered under the programme. The rivers are:

- Construction of Low Cost sanitation toilets to prevent open defecation on river banks.
- Construction of Electric crematoria and Improved Wood Crematoria to conserve the use of wood.
- River Front Development works such as improvement of bathing ghats.
- Other activities like afforestation on the river banks, Public Participation & Awareness etc.
- The present approved cost of NRCP projects as a whole stands at Rs. 4793 crore covering 164 towns along polluted stretches of 35 rivers spread over 20 States. The river-wise details of all the 164 towns of NRCP are given at Annexure-V.

S.No	River	S.No	River	S.No	River	S.No	River
1	Adyar	10	Dhipu & Dhansiri	19	Mahananda	28	Tapti
2	Betwa	11	Ganga	20	Musi	29	Tunga
3	Beehar	12	Godavari	21	Narmada	30	Tungabadra
4	Bhadra	13	Gomati	22	Pennar	31	Tamrabarani
5.	Brahmani	14	Khan	23	Pamba	32	Vaigai
6	Cauvery	15	Krishna	24	Rani Chu	33	Vennar
7	Cooum	16	Kshipra	25	Sabarmati	34	Wainganga
8	Chambal	17	Mahanadi	26	Satluj	35	Yamuna
9	Damodar	18	Mandovi	27	Subarnarekha		

Important works being taken up under the NRCP include

- Interception and diversion works to capture the raw sewage flowing into the river through open drains and divert them for treatment.
- Setting up Sewage Treatment Plants for treating the diverted sewage.

Some of the important programmes are detailed as under.

Progress of Activities Undertaken

Ganga Action Plan (GAP)

The first River Action Plan to be taken up under the NRCD was the Ganga Action Plan. A sewage treatment capacity of 869 mld. (million litres per day) under Phase-I has been



Fig.45 Sewage treatment plant with attractive surroundings at Chandan Nagar, West Bengal

created under the programme and an amount of about Rs. 452 crore spent. This phase was declared completed in March 2000. Works under Ganga Action Plan Phase-II (presently part of National River Conservation Plan) are taken up in 59 towns along the main stem of river Ganga at an approved cost of Rs. 663 crore.

Yamuna Action Plan (YAP)

- Under Yamuna Action Plan Phase-I, a total of 753 mld. sewage treatment capacity was created and this Phase was declared completed in March, 2003. Government of India, Ministry of Environment and Forests have received financial assistance of Yen 13.33 billion from the Japan Bank for International Cooperation (JBIC) for implementation of Yamuna Action Plan (YAP) Phase II, which is part of the National River Conservation Plan (NRCP).
- The loan agreement between Government of Japan and Government of India had been signed on 31st March, 2003. The

project had been approved at an estimated cost of Rs. 624 crore for abatement of pollution of river Yamuna in Delhi, Uttar Pradesh (8 towns) and Haryana (6 towns) under YAP-II. The project commenced in December, 2004.

- The cost of works under YAP-II is to be shared between Government of India and State Governments in the ratio of 85:15 i.e. Rs. 530 crore Central share and Rs. 94 crore State's share.

The main components to be implemented under the project are:

- | | |
|---------|--|
| Delhi | — STP (135 mld capacity new and 324 mld capacity rehabilitation) Rehabilitation /replacement of trunk sewers (30.82 kms) |
| UP | — STP (54 mld capacity new) Sewer lines (70.57 kms) Rising Main (5.25 kms) |
| Haryana | — Sewer lines (73 kms). |

- YAP-II project also includes preparation of DPRs for projects in the three States which are proposed to be undertaken under YAP-III with JBIC assistance. Emphasis has also been given on public participation, capacity building etc. in order to ensure better utilisation of assets and long term sustainability of the project. Implementation of various works have been taken up by U.P and Haryana.

Gomti Action Plan

Gomti Action Plan (GoAP) Phase-I

The total approved cost of Gomti Action Plan-I is Rs. 64.01 crore for taking up river pollution abatement works in the towns of Lucknow, Sultanpur and Jaunpur, out of which the share of Lucknow is Rs.47.75 crore. Under this Plan, out of 31 sanctioned schemes, 26 schemes have been completed. A total of 42 mld STPs capacity had already been created under this Plan.

Gomti Action Plan (GoAP) Phase-II

The approved cost of Gomti Action Plan Phase-II at Lucknow is Rs.263.04 crore. The project cost is to be shared in the ratio of 70:30 between GOI and State Government. The works in this phase include two sewage treatment plants with a total capacity of 375 mld (over and above the 42 MLD capacity being set up in the first phase), interception & diversion works of sewage of the remaining drains and other miscellaneous items such as river front development, toilets, plantation, public awareness and participation, and acquisition of land. Out of 30 schemes, works on five schemes have been completed, so far.

Other River Action Plans

- Besides the river Ganga and its tributaries covered under GAP-I and GAP-II, the NRCD has taken up the pollution abatement projects of 14 other States covering 30 rivers and 68 towns.
- The schemes of GAP-II and other rivers of

the country have been merged under National River Conservation Plan based on 70:30 funding pattern and river water pollution abatement works under this head.

- Out of an approved outlay of Rs. 4793 crore for NRCP, an amount of Rs. 2368 crore has been released by the GOI so far. 968 projects have been approved under NRCP at a cost of Rs. 3851 crore of which 673 projects have been completed. Against a target of 5436 million litres per day (mld) of sewage treatment capacity approved under NRCP, 4123 mld has been sanctioned so far on the basis of DPRs within the approved cost of the respective projects and a capacity to treat 2093 mld of sewage has been created till the end of 2006-07 besides 869 mld already created under the Ganga Action Plan Phase-I

Details of Projects Approved/Completed

Details of projects completed between 01.04.2007 to 30.09.2007 are given in Annexure-IV. The list of projects sanctioned between 01.04.2007 to 31.10.2007 are given in Annexure-III. It was targeted to create 252.77 mld capacity through commissioning of Sewage Treatment Plants (STP) during the year 2007-08. Against this, a total 38 mld capacity has been completed till October 2007 and the remaining STP capacity are in different stages of completion.

Water Quality Management Plan for River Ganga

The water quality of river Ganga is being monitored at 27 locations from Rishikesh in Uttaranchal to Uluberia in West Bengal by institutions such as Pollution Control Research Institute (Hardwar), CPCB Zonal Office Lucknow, Indian Institute of Technology, Kanpur, Patna University and Bidhan Chandra Krishi Vishwavidyalaya, Kalyani. As a result of the projects completed under Ganga Action

Plan, the water quality of river Ganga has shown a general improvement despite tremendous population growth along the river banks. The summer average values of two important river water quality parameters viz. Dissolved Oxygen (DO) and Biochemical Oxygen Demand (BOD) recorded in some of the important monitoring stations on river

include 27 stations set up in the upper reaches of Ganga and 32 stations of Chennai Waterways.

National Lake Conservation Plan

Introduction

National Lake Conservation Plan (NLCP) is a Centrally Sponsored Scheme of Ministry for conservation/restoration of polluted and

Table-11. Summer Average Values for Water Quality on Main Stem of River Ganga under Ganga Action Plan

Monitoring Station	Distance in Km	Dissolved Oxygen* (mg/l)		Biochemical Oxygen Demand*	
		1986	2007	1986	2007
Rishikesh	0	8.1	8.2	1.7	1.2
Hardwar D/S	30	8.1	8.1	1.8	1.3
Garhmukteshwar	175	7.8	7.9	2.2	2.0
Kannauj U/S	430	7.2	6.8	5.5	1.8
Kannauj D/S	433	NA	6.4	NA	4.1
Kanpur U/S	530	7.2	5.8	7.2	2.9
Kanpur D/S	548	6.7	4.6	8.6	5.2
Allahabad U/S	733	6.4	8.0	11.4	7.5
Allahabad D/S	743	6.6	8.8	15.5	4.1
Varanasi U/S	908	5.6	8.1	10.1	2.3
Varanasi D/S	916	5.9	8.4	10.6	3.7
Patna U/S	1188	8.4	7.1	2.0	1.7
Patna D/S	1198	8.1	6.9	2.2	1.8
Rajmahal	1508	7.8	7.4	1.8	1.6
Palta	2050	NA	6.9	NA	2.6
Uluberia	2500	NA	6.8	NA	3.2

* Mean value for the months of March to June when the temperatures are high and flows are low. NA – Data not available, U/S – Upstream, D/S – Downstream, mg/l – milligram per litre

Ganga in Table-11.

- The water quality monitoring has also been undertaken for rivers namely, Yamuna, Western Yamuna Canal, Gomti, Hindon, Satluj (Punjab), Cauvery (Tamil Nadu), Tunga, Bhadra, Tungbhadra in Karnataka and Waterways of Chennai. The number of monitoring stations presently are 158 in 10 rivers which

degraded lakes. The scheme of National Lake Conservation Plan was initiated with the approval of conservation and management plans of three lakes namely, Powai (Maharashtra), Ooty and Kodaikanal (Tamil Nadu), in June, 2001.

Objectives

The objectives of the Scheme are to restore and conserve the polluted and degraded



Fig.4.6 Condition of Powai Lake before and after revival

lakes in urban and semi-urban areas of the country. NLCP proposes to cover those water bodies, especially which are not covered under the National Wetlands Conservation Programme of this Ministry.

The activities covered under NLCP include:-

- Prevention of pollution from point sources by intercepting, diverting and treating the pollution load entering the Lakes.
- In situ measures of Lake cleaning such as De-silting De-weeding, Bioremediation, constructed wetland approach etc. depending upon the site conditions.
- Catchments area treatment and Lake beautification which may include bunding, fencing, creation of facilities for public recreation and entertainment (children park, boating etc.) and public area.
- Public awareness and public participation
- Other activities depending upon location specific conditions including the interface with human population.

Progress of Activities Undertaken

- As of now, a total of 33 projects for conservation of 49 lakes have been sanctioned in 13 States at a total estimated

cost of Rs. 632.62 crore (Annexure-III). Conservation works for 11 lakes have been completed so far whereas in some cases the project implementation is in last stages of completion. Funding pattern under NLCP (w.e.f. February, 2002) is on a 70:30 cost sharing between the Central and the State Governments.

12th World Lake Conference - Jaipur declaration

- The 12th World Lake Conference (Taal 2007), a biennial event under the aegis of International Lake Environment Committee (ILEC) Foundation, was organized by the Ministry, at Jaipur, Rajasthan from 28th October to 2nd November, 2007. The State Govt of Rajasthan was the co-host for this mega event. The central theme of the Conference was 'Conserving Lakes & Wetlands for Future'. Other main objectives included identifying the issues concerning lakes and wetlands along with restoration approaches under different conditions adopted by different countries.
- The Conference was inaugurated by Hon'ble President of India, Smt Pratibha Patil on 29th October, 2007 in the presence of other dignitaries including



Fig.47 Hon'ble MOS, Secretary (E&F) and AS(RHK) of the Ministry in a Press Conference during 12th World Lake Conference

Hon'ble Governor and Chief Minister of Rajasthan. As many as 600 no. of delegates comprising of nearly 150 overseas delegates from different parts of the world, attended the Conference with their oral or poster presentations on their studies pertaining to the subject matter.

- The Jaipur Declaration was adopted at the valedictory session, to work upon as a follow up action of the Conference. The declaration includes the following:
 - Acknowledging the importance of lakes & wetlands for domestic, agricultural and recreational uses and for improving habitats for conserving biodiversity,
 - Considering the critical contribution of lakes & wetlands in providing host of ecosystem goods & services,
 - Stressing the wise use of lakes & wetlands in terms of their values & functions including those of social, cultural and spiritual significance,
- Expressing concern over the rapid deterioration of lakes & wetlands from developmental and anthropogenic pressures,
- Taking note of the potential impacts of climate change on lakes & wetlands,
- Noting that lakes and wetlands provide wide range of goods & services to human kind and that their economic value is not well-documented or understood,
- Having discussed at length the state of science and available technologies, sharing experiences and practices for managing lakes & wetlands,
- Appreciating the significant role of lake drainage basins in influencing the quantity and quality of water in lakes & wetlands and their ecological health, and taking note of the emerging

concept of Integrated Lake Basin Management (ILBM), and

- Realising the urgency of actions needed at national, regional and global level to prevent the degradation of lakes & wetlands;

The Conference calls upon the governments and international organisations that

- Appropriate research methods be applied and data banks be established to facilitate execution of Management Action Plans,
- Standards be developed for physical, chemical and biological parameters for lakes and wetlands,
- Guidelines/protocols be developed on priority to control invasive aquatic species,
- Innovative low-cost eco-friendly technologies be developed for enhancing the process of restoration of lakes & wetlands,
- Active participation of all stakeholders including women and youth in local

communities be encouraged through awareness programs for the conservation and wise use of water bodies, and traditional knowledge be blended with latest techniques for better results,

- Rational public private partnerships be promoted in conserving lakes & wetlands and maintaining their ecological services,
- Scientific studies be undertaken on priority and strategies for adaptation be developed to meet the challenges of climate change. Possibilities of linking Clean Development Mechanism (CDM) projects with lake sustainability be explored,
- Strong institutional and financial mechanisms be developed for regional and international cooperation in management and restoration of lakes & wetlands,
- An Asian Centre of Excellence be established with international assistance for promoting research, training &



Fig.48 A view of Dal Lake in Kashmir

education, and development of appropriate technologies for sustainable management and restoration of lakes and wetlands,

- Restoration and management of lakes & wetlands be promoted through twining arrangements with international support.

National Wetlands Conservation Programme

Introduction and Objective

- The scheme on conservation and management of wetlands was initiated in 1987 with the following objectives:-
 - To lay down policy guidelines for implementing programs of conservation and management of wetlands in the country,
 - To undertake priority wetlands for intensive conservation measures,
 - To monitor implementation of the Programme of conservation, management and research,
 - To prepare an inventory of Indian wetlands,
- Keeping in view of the above objectives, a National Committee on Wetlands was constituted. Based on the recommendations of the National Committee on Wetlands in different meetings, 94 wetlands have been identified so far for conservation under National Wetland Conservation Programme (Annexure-III).

Activities

- The main activities under the Programme are
- data collection and survey,
- identification of problems,
- mapping of wetlands,
- landscape planning, hydrology, control of encroachments,
- eutrophication and abatement,

- aquatic weed control,
- wildlife conservation,
- fisheries development,
- environmental awareness
- research on various aspects of wetland processes and
- functioning and organization of workshops and training programmes.

Progress of Activities Undertaken

Wetlands Conservation

- Number of wetlands under Wetland Conservation Programme increased from 27 in 2004 to 71 in 2005 and to 103 in January, 2008. (List of identified wetlands Annexure-VII A).
- A brochure on "National Wetland Conservation: An approach and Guidelines" was released on the eve of 2nd February, 2007 which has now been published and circulated to all the user agencies.
- Management Action Plans (MAPs) of 36 wetlands have been approved and financial assistance sanctioned. Cases of 10 more M.A.Ps. for newly identified wetlands are being taken up.
- One research project has been approved to supplement management action plans of identified wetlands in the country.
- Twelve regional workshops held in various parts of the country to sensitize people about values and functions of wetlands.
- Terms of Reference have been framed for independent evaluation of wetlands of national importance. Evaluation of work under management action plan of five wetlands viz Pong Dam (H.P.), Harike (Punjab), Deeper Beel (Assam), Chilka Lake (Orissa) and Tso Morari (J&K) where the scheme is under operation for more than five years has been awarded to WII, Dehradun



Fig.49 Chilka Lake – one of the destinations of migratory birds

- A national training programme for Integrated Water Resource Management & Wetland Conservation was organized from 7-11 August, 2006 by Chilika Development Authority with the financial support from the Ministry. Three regional training programmes at WII, Dehradun, GEER Foundation, Gandhi Nagar and Bhopal are being organized.
- Draft report on regulatory framework in the country for wetland conservation has been prepared
- The national level celebrations of the World Wetlands Day, 2008 (WWD-2008) were held at Fatehpur, near Pong Dam in Himachal Pradesh which is one of the identified wetlands under the National Wetlands Conservation Programme and also a 'Ramsar site'. The celebrations were inaugurated by Shri Namo Narain Meena, Hon'ble Minister of State (Environment), Ministry of the Environment and Forests. A brochure entitled "Project wetlands of Himachal Pradesh" with messages from various dignitaries, was also released on this day.

Ramsar Convention

The achievements include:

- India is also a member of Convention on Climate Change, Biodiversity, Migratory

Species, World Heritage and inter-linkages among these Conventions are frequently discussed in the inter-Ministerial and intra-Ministerial meetings to develop comprehensive plans on actions for their implementation.

- Twentyfive sites have already been designated as Ramsar sites in India till date. (Annexure-VII B)
- India has been nominated on Board of Directors of wetland International and on request from India, meeting of Board of Directors of Wetland International was held in New Delhi at Manesar during 19-20 October, 2005. About 23 countries participated. India chaired one of the sessions and efforts made by India in Wetland conservation were highly applauded by all the participating countries.
- India also participated in the panel discussions of CoP9 meeting, jointly organized by Wetland International, IUCN, Bird International, WWF, etc. During these panel discussions, India stressed the need to monitor Ramsar sites already declared and review their ecological status instead of adding more to the list. Stress was also laid on involving participation of the communities in the conservation process and find ways to upgrade livelihood of people living around wetlands. Role of environmental awareness was also stressed upon.
- India also chaired a session on Himalayan initiative jointly organized by Ramsar Secretariat and other Asian countries.
- India organized a capacity building workshop on High altitude wetlands in Himalayas at New Delhi during June, 2006.
- India participated in the meeting of Boards of Directors of Wetland International during November, 2006

Total number of identified wetlands at present is 103 covering 25 states and one UT. Budget allocation has also been increased from 9.60 crores in 2006-07 to Rs. 10 crores during 2007-08. Five more workshops/training programmes are being organized during the year. Total number of sanctioned MAPs has increased from 36 in 2006-07 to 46 during 2007-08.

Regulatory Acts/Rules governing the programme and promulgation of new Acts

Recognizing the value of Wetlands and taking cognizance of the fact that there does not yet exist a formal system of Wetland Regulation, the National Environment Policy (NEP), 2006 as approved by the Cabinet in May 2006

seeks to set up a legally enforceable regulatory mechanism for identified valuable Wetlands to prevent their degradation and enhance their conservation. It also undertakes to develop an inventory of such Wetlands. In pursuance of the policy resolution, a Multi Disciplinary Expert Group has held a series of meetings to formulate a regulatory framework for the Wetlands. The Expert Group has prepared its recommendations on the Categories of Wetlands for Regulation, Process & Procedure for Identification, Composition of Regulatory Authority, Functions of the Authority, and Activities to be regulated. A draft notification is proposed to be brought out under the provisions of the Environment Protection Act.