



NATIONAL RIVER CONSERVATION PLAN

**Presentation to Hon'ble Minister of Environment,
Forests & Climate Change**

14th July, 2016

Officers handling NRCP

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Rivers in India

- 45,000 km of riverine length
- 12 major river basins, 46 medium river basins, 14 minor and desert river basins
- Ganga Basin: largest, lies in 11 States
- Lifeline of the people
- Closely linked with culture and tradition

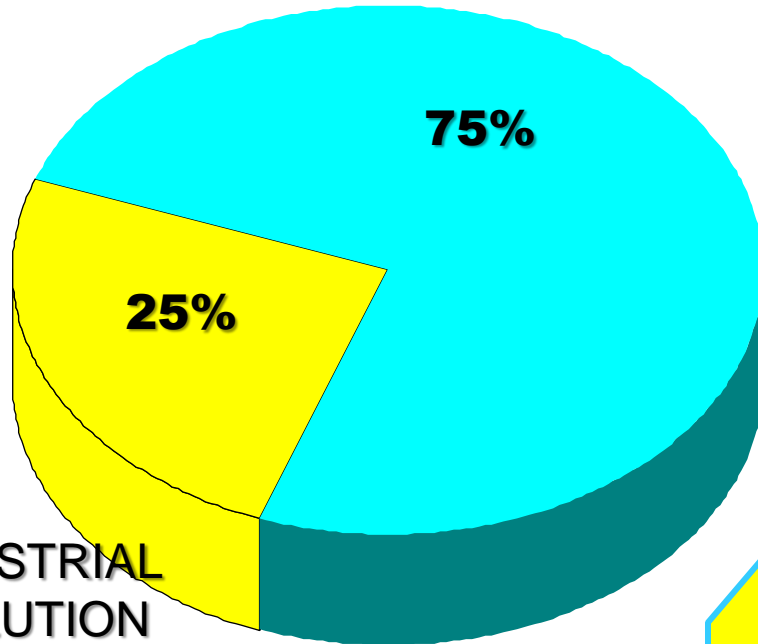


Main Water Quality Threats

- **Municipal Sewage:** *Against estimated 62,000 mld sewage generated from urban areas, sewage treatment capacity of 23,277 mld existing (37% of generation) as per CPCB report of March, 2015*
- **Industrial Effluents**
- **Non-point sources**
- **Over-exploitation of water resources**

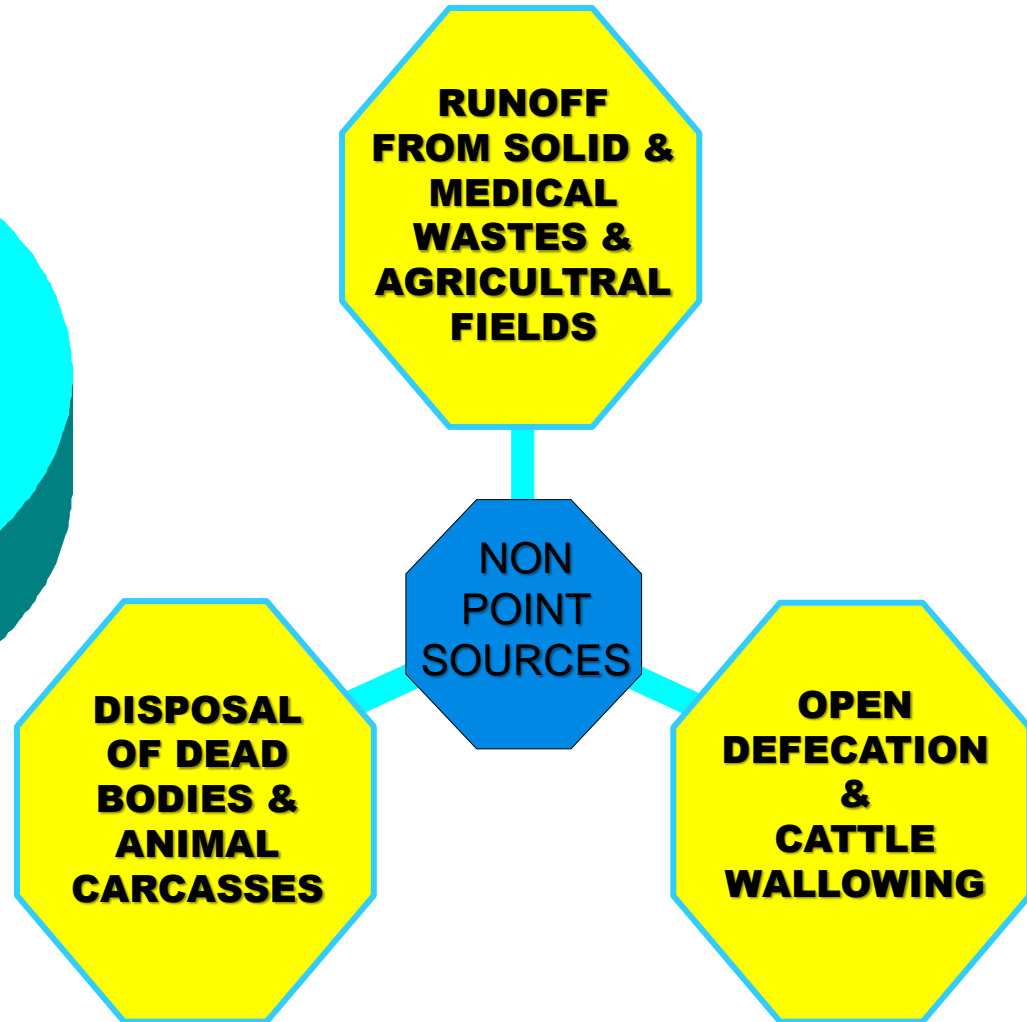
Main Sources of Pollution

MUNICIPAL SEWAGE



INDUSTRIAL POLLUTION

POINT SOURCES



RUNOFF FROM SOLID & MEDICAL WASTES & AGRICULTURAL FIELDS

NON POINT SOURCES

DISPOSAL OF DEAD BODIES & ANIMAL CARCASSES

OPEN DEFECATION & CATTLE WALLOWING

Polluted River Stretches

- **302 polluted river stretches on 275 rivers identified by CPCB in 2015 (*650 towns located along these stretches*)**
- **River stretches categorised in 5 priority classes based on BoD levels: Priority I- BoD > 30 mg/l, Priority II- BoD between 20-30 mg/l, Priority III- BoD between 10-20 mg/l, Priority IV- BoD between 6-10 mg/l, Priority V- BoD between 3-6 mg/l**
- **34 river stretches classified in Priority-I, 17 in Priority-II, 36 in Priority-III, 57 in Priority-IV & 158 in Priority-V**

Polluted River Stretches

- **Total length of polluted river stretches is 12,363 kms. or 27% of total length (Priority I – 2726 kms., Priority II – 1145 kms., Priority III – 1834 kms., Priority IV – 2492 kms. & Priority V- 4166 kms.)**
- **Maharashtra has largest (49) nos. of polluted river stretches followed by Assam with 28, Madhya Pradesh with 21 & Gujarat with 20**
- **52 polluted river stretches covered so far under NRCP & NGRBA/Namami Gange programmes, including 18 stretches on river Ganga and its tributaries**

Classification of Water Quality of Indian Rivers

- A. DRINKING WATER SOURCE WITHOUT CONVENTIONAL TREATMENT BUT AFTER DISINFECTION**
- B. OUTDOOR BATHING**
- C. DRINKING WATER SOURCE WITH CONVENTIONAL TREATMENT FOLLOWED BY DISINFECTION**
- D. PROPOGATION OF WILD LIFE**
- E. IRRIGATION, INDUSTRIAL COOLING AND WATER DISPOSAL**

Bathing Quality (B Class) Standard for Indian Rivers

PARAMETERS

PERMISSIBLE LIMIT

✉ BOD	3 mg/l (MAXIMUM)	
✉ DO	5 mg/l (MINIMUM)	
✉ COLIFORM (FAECAL)	500 (DESIRABLE) 2500 (MAX. PERMISSIBLE)	<u>MPN</u> 100ml

BOD - BIO-CHEMICAL OXYGEN DEMAND

DO - DISSOLVED OXYGEN

MPN - MOST PROBABLE NUMBER

National River Conservation Plan

- **Commenced with Ganga Action Plan (GAP) in 1985**
- **Extended as GAP-II in 1993 to cover the tributaries Gomti, Yamuna, Mahananda and Damodar**
- **Enlarged in 1995 as National River Conservation Plan (NRCP) to include other major rivers of the country**
- **Implementation of NRCP overseen by NRCD (National River Conservation Directorate)**
- **National River Conservation Authority (NRCA) chaired by the Prime Minister to provide the policy framework and oversee implementation of NRCP. 11 meetings of NRCA held so far. Last meeting of NRCA held in June, 2003**
- **NGRBA constituted in February, 2009 to exclusively take up works for conservation of Ganga in a comprehensive manner**
- **Work of rejuvenation of river Ganga and its tributaries allotted to MoWR, RD & GR on 31.7.2014**

National River Conservation Plan

- **Reduction of pollution load into river through:**
 - interception, diversion & treatment of sewage
 - some non-core schemes also implemented
 - crematoria
 - low cost sanitation
 - river front development
 - public participation & awareness

- **Project proposals submitted by the State Governments are considered for financial assistance under NRCP depending on degree of pollution in the river and priority, State's commitment to bear matching share, conformity with the NRCP guidelines and availability of funds under the programme**

Funding Pattern

- **Initially 100% funding by Centre**
- **From 1993, equal sharing of funds between Centre and States**
- **100% by the Centre with effect from 1.4.1997**
- **Funding pattern changed to 70:30 from April, 2001 and is presently on 50:50 basis from April, 2015 onwards**
- **Operation and maintenance (O&M) of assets created is the responsibility of the State Government/ULB**

Present Coverage of NRCP

(excluding Ganga & its tributaries)

- **States covered - 14**
- **Towns covered - 75**
- **Rivers covered - 31**
- **Sanctioned cost of works - Rs. 4517.83 crore**
- **Expenditure incurred - Rs. 2800.34 crore**
- **Funds released by Gol - Rs. 1969.58 crore**
- **STP capacity created - 2373 mld**

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S. No.	River	No. of towns covered	Sanctioned Cost (Rs. Crore)	Expenditure (Rs. Crore)	STP Capacity Created (mld)
1	Andhra Pradesh	1	21.79	19.59	30.00
2	Goa	1	14.10	13.50	12.50
3	Gujarat	2	808.53	348.55	232.00
4	Jharkhand	3	3.14	0.98	--
5	Karnataka	9	66.25	53.59	41.64
6	Kerala	1	18.45	1.47	--
7	Madhya Pradesh	6	20.16	9.67	7.95
8	Maharashtra	8	1182.86	179.59	260.00
9	Nagaland	1	82.80	12.84	--
10	Odisha	5	92.74	70.38	48.00
11	Punjab	18	774.430	731.15	634.20
12	Sikkim	3	181.09	126.95	8.00
13	Tamil Nadu	13	905.78	885.27	477.66
14	Telangana	4	345.72	346.83	621.46
GRAND TOTAL		75	4517.84	2800.36	2373.41

National River Conservation Plan

S. No.	River	No. of towns covered	Sanctioned Cost (Rs. Crore)	Expenditure (Rs. Crore)	STP capacity created (mld)
1	Adyar	1	404.26	398.15	264.00
2	Cooum				
3,4	Beas & Satluj	14	717.32	706.50	634.20
5	Bhadra	1	3.77	4.14	5.83
6	Brahmini	3	4.25	2.70	--
7	Cauvery	13	269.10	262.39	168.93
8	Diphu & Dhansiri	1	82.80	12.84	--
9	Ghaggar	4	57.11	24.66	
10	Godavari	7	118.98	114.76	185.46
11	Krishna	2	28.74	38.04	55.00
12	Mahanadi	1	8.04	8.04	33.00

National River Conservation Plan

S. No.	River	No. of towns covered	Sanctioned Cost (Rs. Crore)	Expenditure (Rs. Crore)	STP capacity created (mld)
13	Mandovi	1	14.10	13.50	12.50
14	Mindhola	1	262.13	253.47	-
15	Musi	1	335.66	336.85	593.00
16	Mula Mutha	1	990.26	0.00	0.00
17	Narmada	2	14.33	4.85	--
18	Pamba	1	18.45	1.47	--
19	Panchganga	1	74.29	55.37	78.00
20	Pennar	1	46.27	35.94	--
21	Rani-chi	3	181.09	126.95	8.00
22	Sabarmati	1	546.40	95.08	232.00
23	Subarnrekha	3	3.14	0.98	--
24	Tapti	1	4.81	3.88	6.00

National River Conservation Plan

S. No.	River	No. of towns covered	Sanctioned Cost (Rs. Crore)	Expenditure (Rs. Crore)	STP capacity created (mld)
25	Tapi	1	2.44	0.96	--
26	Tunga	1	3.70	2.60	--
27	Tungabhadra	2	7.16	6.22	28.29
28	Tamrabarani	1	54.93	54.27	24.20
29	Vennar	1	62.75	63.31	28.05
30	Vaigai	1	120.09	111.84	--
31	Wainganga	3	1.01	0.94	1.95
	Puri Town (Coastal Area)	1	80.45	59.64	15.00
GRAND TOTAL		75	4517.83	2800.34	2373.41

STANDARDS FOR TREATED SEWAGE UNDER NRCP

FOR DISCHARGE

INTO WATER BODY

ON LAND

BOD (mg/l)

30

100

TSS (mg/l)

50

200

FAECAL (MPN/100 ml)

1000 (Desirable)

COLIFORMS

10000 (Maximum)

Sewage Treatment Technology

Treatment technologies considered

- Conventional Activated Sludge Process (ASP)
- Up-flow Anaerobic Sludge Blanket (UASB) + Polishing Pond (+ aeration)
- Moving Bed Bio-Reactor (MBBR)
- Sequential Batch Reactor(SBR)
- Aerated Lagoon
- Waste Stabilization Pond (WSP)
- Karnal Technology/Sewage fed Agro-forestry

Life cycle cost comparison of various treatment options

- O & M aspects
- Cost (Construction and O&M)
- Land Requirement
- Resource recovery and reuse (gas, sludge and treated water)

Comparison of Various Treatment Technologies

Technology	Land required (Ha./mld)	Capital costs (Rs. lakhs/mld)	O&M costs (Rs. lakhs/mld/year)
Activated Sludge Process	0.2	110-140	3.0-4.0
Aerated Lagoons	0.6	40-60	2.25 - 2.75
UASB + Polishing Unit	0.25-0.3	60-80	1.5 - 2.0
Waste Stabilization Ponds	1.0 - 2.0	30-40	0.5-0.75
MBBR/SBR	0.05	100-130	2.5 – 3.5

Selection of treatment technology for a particular location should be based on life cycle cost comparison of various feasible options

Measures for Improving Outcomes

- **Revised Guidelines for preparation of project proposals under NRCP & NGRBA issued in December, 2010**
- **Projects based on comprehensive approach**
- **Tripartite Memorandum of Agreement**
- **Project appraisal by independent institutions**
- **Third party inspection**
- **City-level citizen committees**

Challenges

- **Large treatment capacity deficit**
- **Huge quantum of funds required to bridge treatment capacity gap. Resources available are much less**
- **Tackling non-point sources (agricultural runoff, solid wastes, cattle-wallowing, idol immersions, etc.) and fecal coliforms**
- **Technical, managerial & financial constraints of ULBs & implementing organizations leading to delays in implementation and improper O&M of STPs**
- **Strengthening capacity of SPCBs to address weak compliance & enforcement**
- **Community involvement**
- **Augmentation of flows in rivers**

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- **State Governments/local bodies responsible for proper treatment and disposal of sewage. Central Government at best supplementing efforts of State Governments through NRCP scheme of MoEF&CC, NGRBA/Namami Gange scheme of MoWR, RD&GR and AMRUT/Smart Cities schemes of MoUD**
- **For bridging gap in STP capacity for the present, around Rs. 2-3 lakh crore required for laying of sewer network and installation of STPs (@ Rs.5-8 crore/mld). However, only Rs. 1500 crore provided for NRCP in XII Five Year Plan for creation of 615 mld capacity**
- **Against the requested budget allocation of Rs. 300 crore/annum, total funds made available for NRCP in the 1st 4 years of the Plan are only Rs. 471.47 crore**
- **Little funds available under NRCP for taking up new projects as the annual budget allocation is not even sufficient for ongoing sanctioned works**

LIABILITY OF ONGOING PROJECTS UNDER NRCP

(Rs. in crore)

S. No.	State	Towns/Rivers	Sanctioned cost	Gol liability	Total funds released till 31.3.2016	Balance funds to be released
1.	Gujarat	Surat- Mindhola	262.13	152.48	102.44	50.04
		Ahmedabad -Sabarmati (Phase-II)	444.44	232.00	7.39	224.61
2.	Sikkim	3 projects in Gangtok-Rani Chu	151.69	130.93	85.41	45.52
3.	Nagaland	Dimapur - Diphu & Dhansiri	82.80	57.96	14.50	43.46
4.	Madhya Pradesh	Hoshangabad - Narmada	12.99	7.22	5.30	1.92
5.	Kerala	Pamba - Pamba	18.45	12.89	7.78	5.11
6.	Punjab	12 Towns - Satluj	501.63	312.67	265.48	47.19
		4 towns - Ghaggar	57.10	32.04	17.61	14.43
7.	Maharashtra	Kolhapur - Panchganga	74.29	48.07	42.94	5.13
		Pune –Mula Mutha	990.26	841.72	4.99	836.73
8.	Odisha	Puri – Coastal Area	80.45	53.64	51.98	1.66
9.	CPCB	Insitu bio-remediation of Budha Nala, Ludhiana	15.28	15.28	11.63	3.65
		Total	2691.51	1896.90	617.45	1279.45

Sustainable Development Goals (SDGs)

- **Targets 6.3 & 6.6 of SDG Goal 6 (ensure availability and sustainable management of water & sanitation for all) are related to NRCP**
 - **Halving the proportion of untreated wastewater by 2030**
 - **Increasing recycling and safe reuse by [X] percent globally by 2030 *[we have suggested 10% recycle & re-use]***
 - **Protect and restore water-related ecosystem with respect to wetlands, rivers and lakes by 2020**
- **Works taken-up under NRCP will help address these targets**

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Priorities/targets for FY 2016-17 & Important Issues

- STP capacity of 75 mld envisaged to be created (*RFD target*)
- Against projected requirement of Rs. 246 crore, only Rs. 95 crore provided in FY 2016-17, which is not even sufficient for already sanctioned ongoing works, and is hampering implementation
- Efforts would be made to get allocation increased at RE stage (*as has been done in FY 2015-16, where budget provision was increased from Rs. 40 crore at BE stage to Rs. 66.73 crore at RE stage & fully utilized*)
- Department related Parliamentary Standing Committee in its 254th report of 27.4.2015 & 283rd report of 9.5.2016 has strongly recommended for increase in budget allocation for NRCP
- States expressing difficulty to contribute their increased matching share for ongoing sanctioned works due to revision in funding pattern from 70:30 to 50:50 w.e.f. 1.4.2015
- Shortage of manpower in NRCD. Number of officers & staff working in other Divisions of the Ministry. Need at least 1 Director/AD level technical officer and 1 US & SO each

National River Conservation Plan

Priorities/targets for FY 2016-17 & Important Issues

- Issue of transfer of NRCD and NRCP to MoWR, RD&GR under consideration of Cabinet Secretariat. Comments of the Ministry forwarded to Cabinet Secretariat in February, 2016 after approval of MEF&CC
- Appointment of PMC (Project Management Consultant) for JICA assisted Mula-Mutha project at Pune in current FY
- Following new projects, which are under consideration, can be taken up only if sufficient allocation is available :
 - Pollution abatement of Nag river at Nagpur – estimated cost around Rs. 1300 crore
 - Pollution abatement of Sal river at Navelim, Goa – estimated cost Rs. 61.74 crore (*appraisal process complete*)
- Against projected requirement of Rs. 9 crore, only Rs. 7 crore provided for NRCD (establishment) in FY 2016-17. May require increase at RE stage



Thank You

Major Recommendations of Independent Evaluation of NRCP & NLCP

- Adequate funding to be provided for NRCP to undertake the mammoth task of cleaning polluted rivers. Dovetailing with other programmes to be done
- Comprehensive sewerage system be laid for the entire town, instead of I&D works
- Funds should be released directly to implementing agencies
- NRCD to be strengthened
- Consider creating a revolving fund for providing financial assistance to ULBs for O&M, which can be recovered later
- Training and capacity building programmes to be carried out, especially for the ULBs and maintaining agencies
- Encourage recycle and re-use of treated waste water and resource recovery from STPs
- Projects to be appraised by independent institutions/experts

Major Recommendations of Independent Evaluation of NRCP & NLCP

- **Third party inspection to be adopted at construction stage**
- **Appropriate technologies for sewage treatment may be adopted, which suit local site conditions and have low O&M cost**
- **BOT model could be followed to ensure efficient O&M. Alternatively 5 years O&M to be included in the project at the time of award of work for the STP**
- **ULBs to encourage introduction of more private sector participation and PPP models in the river & lake conservation programmes**
- **Holistic approach be taken to conserve lakes, including laying of sewerage system, proper solid wastes disposal and groundwater monitoring**
- **Public participation & awareness programmes to be taken up**
- **Strict enforcement of environmental laws by SPCBs to control industrial pollution**

National River Conservation Plan

Suggestions/Observations

- Budget allocation for NRCP needs to be substantially enhanced so that implementation of ongoing sanctioned works is not hampered and new projects can be taken up
- Department related Parliamentary Standing Committee in its 254th report of 27.4.2015 & 283rd report of 9.5.2016 has strongly recommended for increase in budget allocation for NRCP
- GoI funds released to State Governments are transferred to the implementing agencies after substantial delay. Need to directly release funds to the implementing agencies, as done earlier
- States expressing difficulty to contribute their increased matching share for ongoing sanctioned works due to revision in funding pattern from 70:30 to 50:50 w.e.f. 1.4.2015
- ULBs need to collect appropriate charges to enable proper O&M of assets created. They also need to take up sewerage and STP projects in PPP mode

Outlays versus utilization of funds (DBS) under NRCP

(Rs. in crore)

Year	Allocation	Expenditure	% Utilization	Reasons for variation
2012-13	168.25	159.39	94.73	Budget provision of Rs. 5.0 crore for SCSP could not be utilized as no proposals were received from the States under the same. In addition, there were savings under the EAP project (YAP-III) in Delhi due to slow progress by DJB at the start of the project
2013-14	158.69	150.99	95.15	Major surrender of Rs. 6.0 crore was in the SCSP component as no proposals were received from the States under the same
2014-15	77.80	77.58	99.72	
2015-16	66.73	66.72	99.99	
2016-17*	95.00	-		
Total	566.47	454.68		

**upto 31.5.2016*

Outlays versus utilization of funds (EAP) under NRCP

(Rs. in crore)

Year	Allocation	Expenditure	Reasons for variation
2012-13	5.00	2.69	Savings under the EAP project (YAP-III) in Delhi due to slow progress by DJB at the start of the project.
2013-14	--	--	
2014-15	--	--	
2015-16	4.99	4.99	
2016-17*	25.00	--	
Total	29.99	7.68	

**upto 31.5.2016*

National River Conservation Plan

Details of funds released under NRCP during XII Five Year Plan

S. No.	State	Funds Released (Rs. in crore)			
		2012-13	2013-14	2014-15	2015-16
1	Gujarat	41.71	0.00	44.00	24.12
2	Maharashtra	5.07	22.42	0.00	4.99
3	Punjab	45.36	98.04	28.80	17.61
4	Kerala	0.00	0.00	0.00	5.00
5	Sikkim	21.65	15.00	0.00	1.00
6	Nagaland	0.00	0.00	0.00	10.00
GRAND TOTAL		113.79	135.46	72.80	62.72

Target versus Achievement

Year	Physical Target (STP capacity to be created) (mld)	Outputs (STP capacity created) (mld)	Shortfall/ Excess (mld)	Reasons for variation
2012-13	118	119	(+) 1	--
2013-14	188	170	(-) 18	Lesser allocation of funds against requirement
2014-15	134	134	--	--
2015-16	117	77	(-) 40	Lesser allocation of funds against requirement