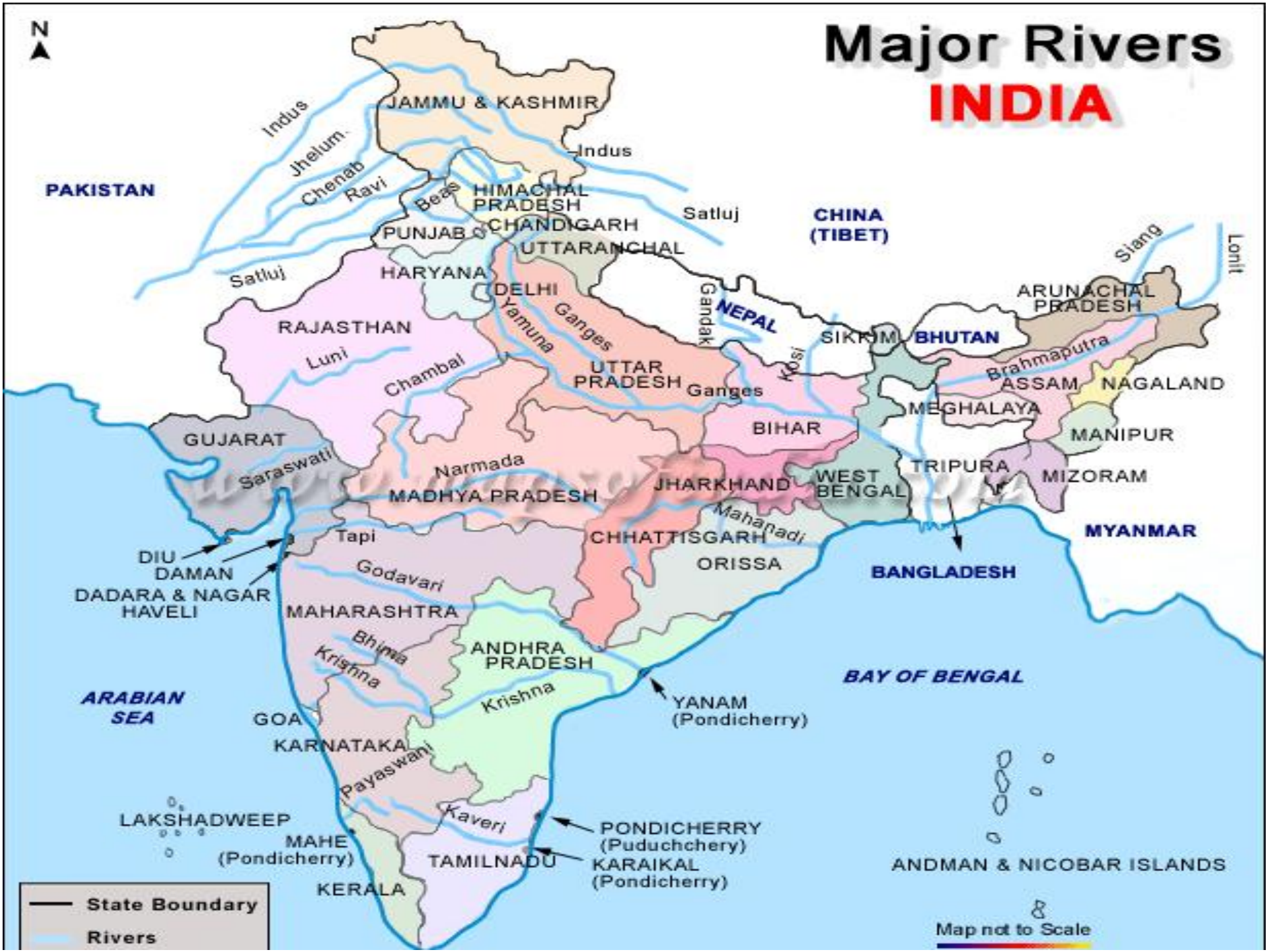
NATIONAL RIVER CONSERVATION PLAN

Ministry of Environment & Forests

March 15, 2010

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


Major Rivers
INDIA
N
JAMMU & KASHMIR
Indus
Jhelum
Chenab
Ravi
Beas
Satluj
PAKISTAN
HIMACHAL PRADESH
CHANDIGARH
PUNJAB
UTTARANCHAL
HARYANA
DELHI
Yamuna
Ganges
RAJASTHAN
Luni
Chambal
UTTAR PRADESH
Ganges
Gandak
NEPAL
Kosi
CHINA (TIBET)
Siang
Lohit
ARUNACHAL PRADESH
SIKKIM
BHUTAN
Brahmaputra
ASSAM
NAGALAND
MEGHALAYA
MANIPUR
BIHAR
TRIPURA
MIZORAM
WEST BENGAL
JHARKHAND
MYANMAR
GUJARAT
Saraswati
Narmada
MADHYA PRADESH
Mahanadi
CHHATTISGARH
ORISSA
BANGLADESH
Tapi
DIU
DAMAN
DADARA & NAGAR HAVELI
Godavari
MAHARASHTRA
Bhima
Krishna
ANDHRA PRADESH
Krishna
BAY OF BENGAL
ARABIAN SEA
GOA
KARNATAKA
YANAM (Pondicherry)
Payaswani
LAKSHADWEEP
Kaveri
PONDICHERRY (Puduchchery)
MAHE (Pondicherry)
TAMILNADU
KARAIKAL (Pondicherry)
KERALA
ANDMAN & NICOBAR ISLANDS
State Boundary
Rivers
Map not to Scale

Main Water Quality Threats

- Water Scarcity
  - Distribution of rainfall
  - Over-exploitation of water resources
- Pathogenic Pollution
- Oxygen depletion
- Salinity
- Toxicity

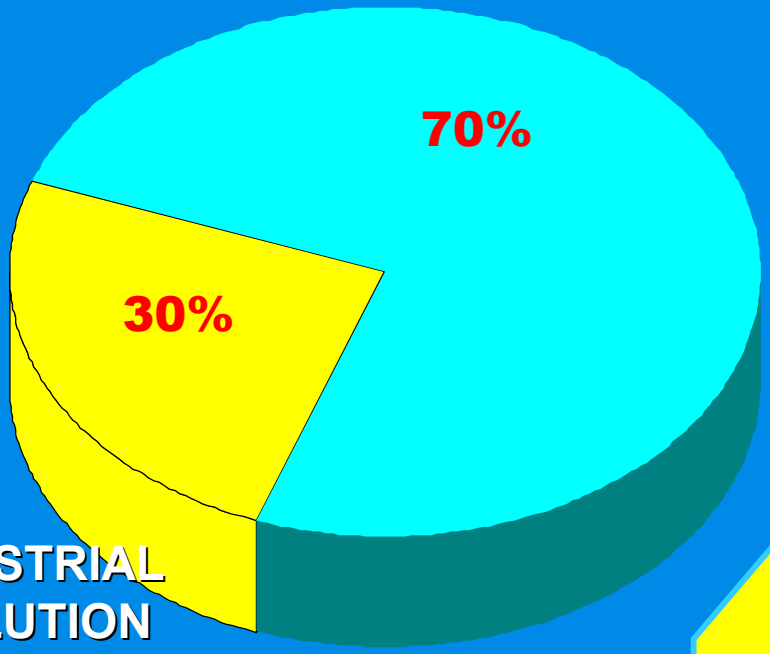
Major Cause for Water Quality Degradation

- **Point Sources of Pollution**
  - Domestic Wastewater
  - Industrial Wastewater

- **Non-Point Sources of Pollution**
  - Rural and Slum Population, open defecation, garbage etc
  - Agricultural Run-off
  - Half-burnt bodies
  - Storm water
  - Cattle wallowing
  - Deposition of Air pollutants

Main Sources of Pollution

MUNICIPAL SEWAGE



INDUSTRIAL POLLUTION

POINT SOURCES

RUNOFF FROM SOLID & MEDICAL WASTES & AGRICULTRAL FIELDS

NON POINT SOURCES

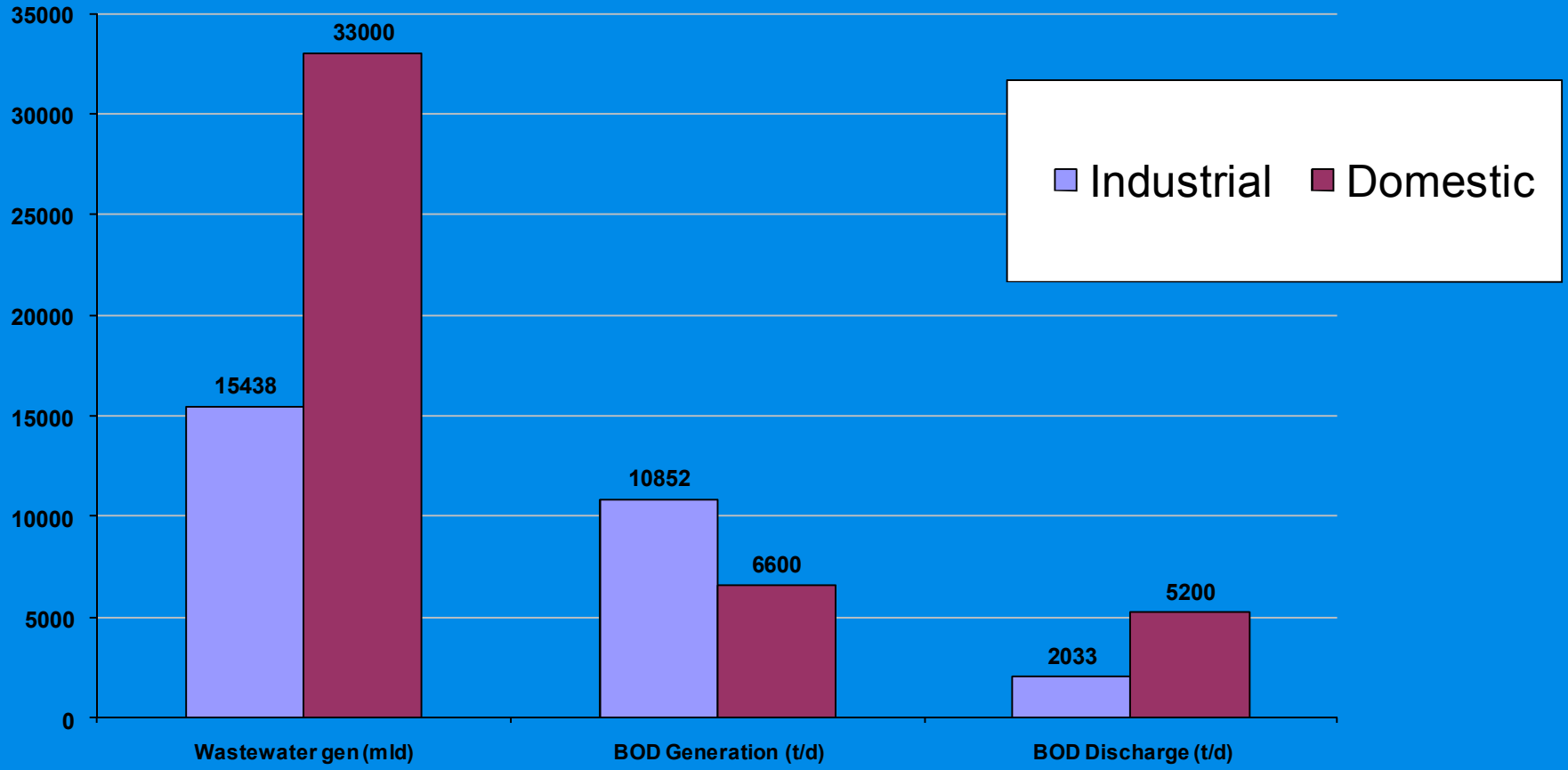
DISPOSAL OF DEAD BODIES & ANIMAL CARCASSES

OPEN DEFECATION & CATTLE WALLOWING

Magnitude of the Problem

- Around 33,000 mld domestic wastewater generated from class I & II towns
- Generation of sewage increasing rapidly with growth in urban population
- Sewage treatment capacity of only 7000 mld exists, of which 4000 mld created under NRCP
- Present sanctioned schemes of NRCP would add 2000 mld leaving a very large gap

Comparison of pollution load generation from domestic and industrial sources



Water Quality Status of Rivers

Analysis of 10 years data with respect to BOD values as indicator of organic pollution

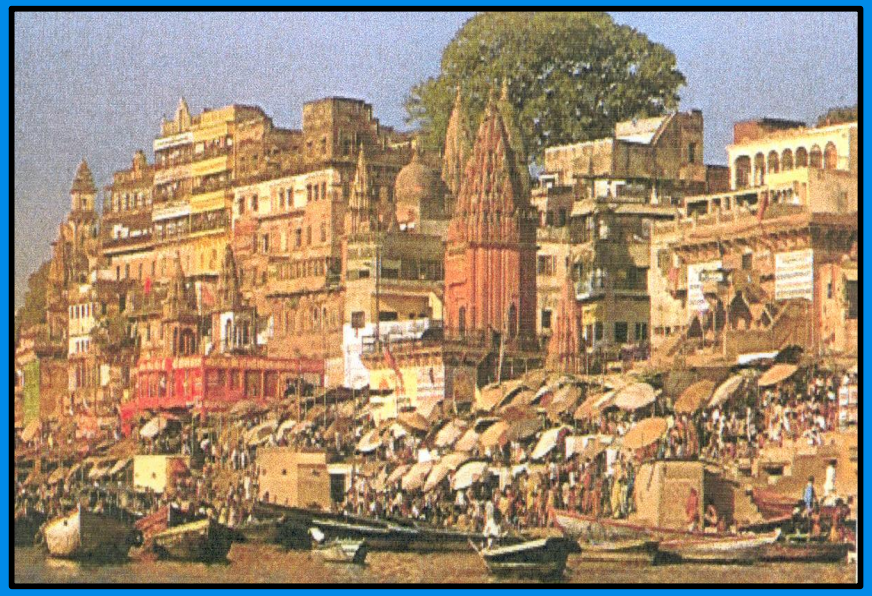
S. No	Level of Pollution	Pollution Criteria	Riverine length (Km.)	Riverine length (percentage)
1.	Severely polluted	BOD more than 6 mg/l	6086	14
2.	Moderately polluted	BOD 3-6 mg/l	8691	19
3.	Relatively clean	BOD less than 3 mg/l	30242	67

Diminishing flows

- Minimum ecological flows important for biodiversity, aquatic life, and water quality
- Competing demands for irrigation, drinking water, industries and power
- Large scale abstraction for
  - hydroelectric projects in upper reaches
  - canals in central plains for irrigation

National River Conservation Plan

- Pollution abatement works in major rivers in the country commenced with the launching of Ganga Action Plan Phase-I in 1985
- GAP-I extended as GAP-II in 1993 to cover shortfall and Gomti, Yamuna, Mahananda and Damodar rivers
- Programme broad based in 1995 to include other major rivers and renamed NRCP



National River Conservation Directorate

- Ganga Project Directorate (GPD) set up in MoEF in 1985 for coordinating implementation of Ganga Action Plan
- NRCD evolved out of Ganga Project Directorate in 1996 as more rivers taken up for conservation
- NRCD entrusted with implementation of NRCP & NLCP
- Organizational Structure of NRCD – headed by Project Director, and consists mostly of technical officers

River Action Plans

Objectives: Reduction of pollution load into river through schemes of:-

- interception & diversion of sewage
- sewage treatment
- crematoria (electric & improved wood)
- low cost sanitation
- river front development
- afforestation
- public participation

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
- projects approved after March 2001 are being funded on 70:30 cost sharing basis
- Operation and maintenance (O&M) of assets created is the responsibility of the State Government/ULB

Ganga Action Plan

- Town centric, focussed on interception, diversion and treatment schemes
- Investment of Rs 900 crore; treatment capacity of around 1000 mld created in 73 towns
- Despite industrial & urban growth, BOD and DO values at most locations improved

Ganga Action Plan Phase - I

- 25 towns of U.P., Bihar, West Bengal covered
- Amount spent- Rs. 452 crore.
- 869 million litres per day (mld) sewage treatment capacity created

Ganga Action Plan Phase - II

- Sanctioned cost - Rs. 2367.11 crore
- Schemes sanctioned - 701
- Schemes completed - 544
- Amount spent - Rs.1612.38 crore

Physical Progress

S. No.	Item	Target	Achievement
Ganga Action Plan Phase – I		Expenditure: - Rs. 452 crores	
1.	No of schemes	261	260
2.	Treatment capacity	882 mld (35 STPs)	869 mld (34 STPs)
3.	No. of Interception & Diversion schemes	88	88
4.	No. of Low Cost Sanitation schemes	43	43
5.	No. of Crematoria schemes	28	28
6.	No. of River Front Development schemes	35	35
Ganga Action Plan Phase – II		Expenditure: - Rs. 437.53 crores	
1.	No of schemes	322	218
2.	Treatment capacity	281 mld (38STPs)	156 mld (24STPs)
3.	No. of Interception & Diversion schemes	120	67
4.	No. of Low Cost Sanitation schemes	26	24
5.	No. of Crematoria schemes	19	9
6.	No. of River Front Development schemes	49	35

Present Coverage of NRCP

- States covered - 20
- Towns covered - 167
- Rivers covered - 38
- Sanctioned cost of schemes - Rs. 4691.55 crore
- Expenditure - Rs. 3521.85 crore

Cumulative Status of NRCP (Physical)

- Schemes sanctioned 1085 nos.
- Schemes completed 802 nos.
- STP capacity sanctioned 4246 mld
- STP capacity created 3095 mld*

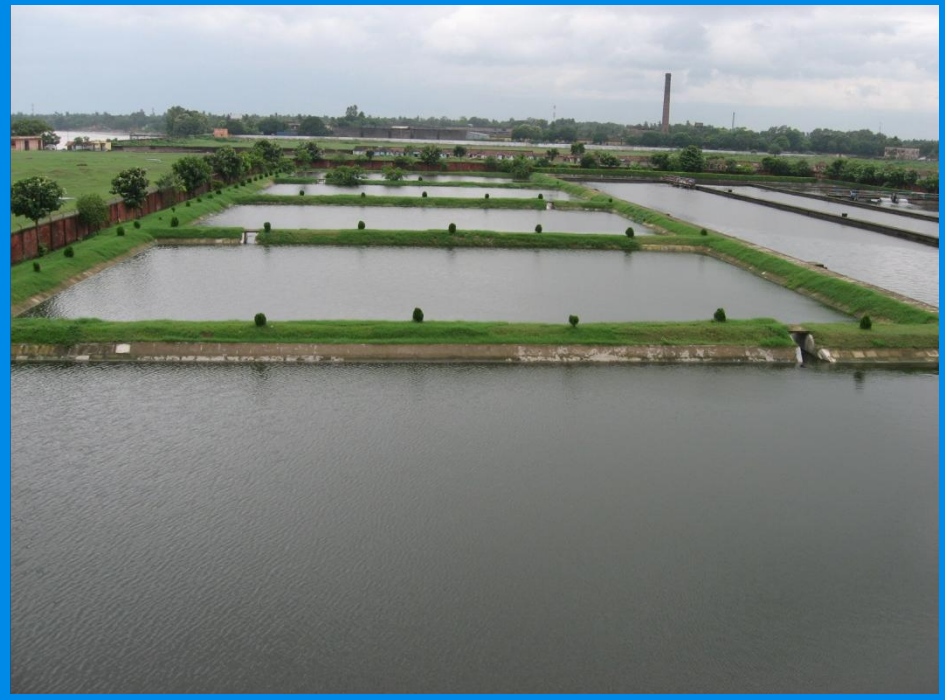
* Adding 869 mld capacity created under GAP-I, an aggregate treatment capacity of 3964 mld has been created so far

National River Conservation Plan

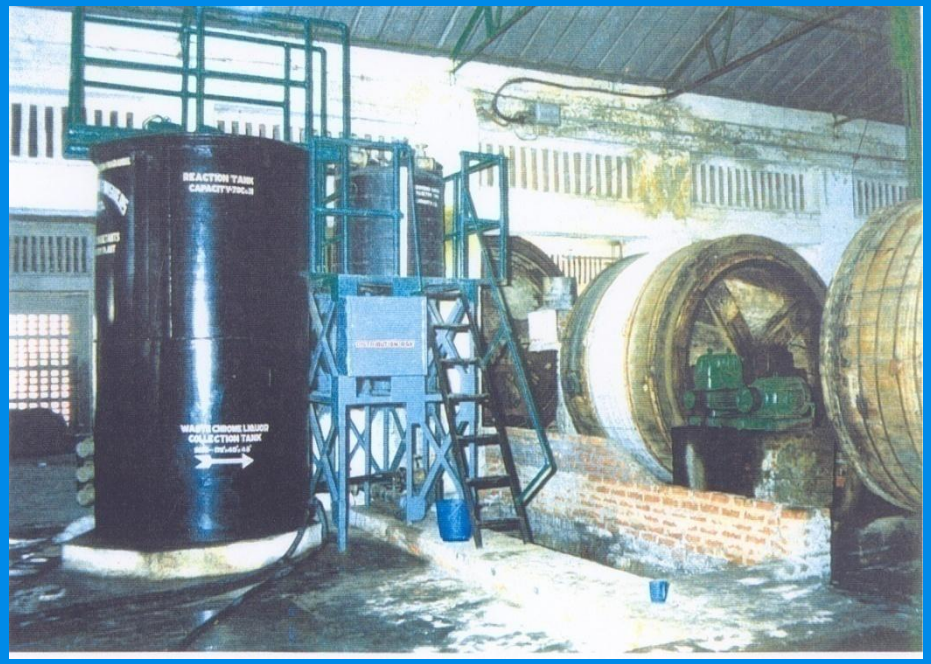
S.No.	Name of River	No. of towns covered	Sanctioned Cost (Crore)	Expenditure (Crore)	STP Capacity Created (mld)
1	Adyar	1	404.25	380.74	264.00
2	Cooum				
3	Beehar	1	19.44	1.69	--
4	Betwa	3	8.23	5.63	15.20
5	Bhadra	1	3.77	4.14	5.83
6	Brahmini	4	84.70	43.19	--
7	Cauvery	13	269.10	261.57	151.93
8	Chambal	3	154.06	3.58	9.00
9	Diphu and Dhansiri	1	31.74	--	--
10	Damodar	12	4.40	4.29	13.17
11	Ganga	59	635.66	404.40	155.95
12	Godavari	7	118.98	112.61	185.46
13	Gomti	3	318.79	276.57	47.00
14	Khan	1	40.19	39.56	90.00
15	Krishna	2	28.74	21.95	28.00
16	Kshipra	1	18.05	17.33	55.46
17	Mahanadi	1	8.04	8.04	33.00
18	Mandakini	1	6.20	--	--
19	Mandovi	1	14.10	10.92	12.50

National River Conservation Plan

S.No.	Name of River	No. of towns covered	Sanctioned Cost (Crore)	Expenditure (Crore)	STP Capacity Created (mld)
20	Mahananda	1	54.88	18.03	--
21	Musi	1	335.66	314.85	542.00
22	Narmada	2	14.33	3.31	--
23	Pamba	1	18.44	1.47	--
24	Panchganga	1	74.29	--	--
25	Pennar	1	46.27	35.94	--
26	Rani-chi	3	37.39	14.67	--
27	Sabarmati	1	101.96	95.08	232.00
28	Satluj	6	215.68	293.06	413.20
29	Subarnrekha	3	3.76	0.98	--
30	Tapti	1	4.81	3.88	6.00
31	Tapi	1	2.44	--	--
32	Tunga	1	3.70	2.60	--
33	Tungabhadra	2	7.16	6.22	28.29
34	Tamrabarani	1	54.93	54.27	24.20
35	Vennar	1	62.75	63.31	28.05
36	Vaigai	1	130.24	107.95	--
37	Wainganga	3	1.01	0.94	1.95
38	Yamuna	21	1353.37	909.08	753.25




Sludge Digestor (18 mld STP)


REACTION TANK
CAPACITY 700 lt

Experience with NRCP: Mixed Success

- Visible improvement lacking, coliform levels unacceptably high
- In critically polluted stretches, BOD values do not meet bathing water quality standards
- Counterfactual; but for NRCP, problem would have gotten worse; further deterioration arrested
- Step in right direction, inadequate investment, resources thinly spread

Shortcomings

- Town centric, focussed on interception, diversion and treatment schemes
- Implementation slow
- sub-optimal utilization of assets
- Weak enforcement by State Pollution Control Boards
- Lack of civil society involvement

Challenges

- Huge treatment capacity deficit
- Focused attention required on critically polluted stretches e.g. Kannauj to Varanasi on Ganga
- Tackling non-point sources (agricultural runoff, solid wastes, cattle-wallowing, idol immersions, etc.) and fecal coliform
- Restoring natural ecosystem of the rivers

Challenges

- Technical, managerial & financial constraints of ULBs & implementing organizations
- Strengthening capacity of SPCBs to address weak compliance & enforcement
- Community involvement for improved sanitation
- Augment flows through water conservation, reuse of treated wastewater, storage projects

Challenges

- Industrial hotspots along the rivers
- Concentration of polluting industries : Sugar, distilleries, paper, tanneries, chemical, etc
- 30% by volume, toxic and non-biodegradable
- Major problem with small scale industries; lack of common effluent treatment facilities

New Initiative: NGRBA

- Constituted on 20.02.2009. Joint Centre-State structure. Empowered under EPA. Chaired by PM. Includes CMs. Strong presence of experts and civil society

- Planning, financing, monitoring & coordinating body. implementation through States and SPVs

Functions of NGRBA

- Development of river basin management plan
- Planning, financing and execution of programme for abatement of pollution in the river Ganga
- Maintenance of minimum ecological flows
- Creation of special purpose vehicles, as appropriate
- Promotion of water conservation practices

How new approach is different

- Empowered Authority
- Shift from town centric to river basin approach
- Integrated approach, no standalone investment
- Sewerage infrastructure, catchment area treatment, tackling industrial effluents, river front development
- Dovetailing with JNNURM & UIDSSMT schemes
- Emphasis on minimum ecological flows

Institutional Redesign

- Apex Council chaired by PM
- Standing Committee under Finance Minister
- Empowered Steering Committee; fast track project approval mechanism
- State River Conservation Authorities
- Implementation by States, ULBs and SPVs

Action Program

- Development of river basin management plan
- Mission Clean Ganga
  - No untreated sewage or industrial effluents to flow into Ganga by 2020;
  - Estimated investment of Rs 15,000 crore over next 10 years required
- Identifying initial portfolio of projects
- State Governments preparing DPRs

Finance

- Centre and States committed to provide required resources for Mission Clean Ganga
- Rs 100 crore provided in the FY 2009-10, and Rs 500 crore for the FY 2010-11
- 13th Finance Commission approached to help meet O&M needs
- External finance – World Bank, JICA
- Private capital through PPP in SPVs

Engagement with World Bank

World Bank has in-principle agreed to

- support NGRBA as a priority project
- mobilize initial funds for creation of a world-class executive, knowledge base and Basin Management Plan
- mobilize substantial resources for a major investment program

Measures for Improving Outcomes

- Projects based on comprehensive approach
- PPP models proposed in States for better implementation
- Tripartite Memorandum of Agreement
- Project appraisal by reputed independent institutions

Measures for Improving Outcomes

- Empowered State River Conservation Authorities
- Third party evaluation by independent institutions
- City-level citizen committees
- Community mobilization

Measures for Improving Outcomes

- Water Quality Monitoring by reputed institutions like IITs
- Online data transmission, public access to WQM data, additional parameters & bio-indicators to be included
- Research Advisory Committee set up to encourage Innovative technologies

Vision

- Gaumukh to Ganga Sagar : a clean river

- Return of Gangetic Dolphins at Sangam

  (Gangetic Dolphins are facing extinction, only few hundreds survive, apex of the food chain of Ganga ecosystem)


Thank You