

**REPORT ON UTILISATION OF FUNDS
AND ASSETS CREATED THROUGH
GANGA ACTION PLAN IN STATES UNDER
GAP**

**A Report Prepared for the Supreme Court
by
Member (Water Resources)
Planning Commission**

**Environment & Forests Division
and
Water Resources Division
Planning Commission
Government of India**

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REPORT ON UTILISATION OF FUNDS AND ASSETS CREATED IN GANGA ACTION PLAN STATES UNDER GAP

1. Introduction:

The Hon'ble Supreme Court of India in its directives dated 5th December, 2007 stated that “**If further funds are allocated by the Union of India, the Planning Commission Member In-Charge of Water Resources may verify whether those funds are duly utilized for the States effectively**”. Subsequently, the Ministry of Environment and Forests (MOEF), in its letter dated 25th January, 2008, requested Secretary, Planning Commission to take necessary action in the light of the observations of the Hon'ble Supreme Court. A copy of the Ministry's letter and the Hon'ble Supreme Court's order is at **Annexure I**.

As per the above directions of the Supreme Court Dr. Kirit S. Parikh, Member (Water Resources), Planning Commission reviewed the utilization of fund under GAP and has prepared this report with the help of following officials:

1. Dr. Indrani Chandrasekharan, Adviser (E&F), Planning Commission
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4. Shri B. Sikka, Director, NRCD, MOEF- for Uttar Pradesh
5. Shri Rajiv Sinha, Additional Director, NRCD, MOEF – for Bihar and Jharkhand
6. Shri Lalit Kapur, Additional Director, NRCD, MOEF - for West Bengal
7. Shri A. Murlidharan, SRO (WR), Planning Commission

The report is based on data obtained from CPCB and MOEF and field visits made to plant sites in Uttarakhand, Bihar and U.P. The questions addressed in this report are the following:

- (i) What were the objectives and approach of the Ganga Action Plan?
- (ii) What has been the outcome in terms of water quality of Ganga?
- (iii) What is the status of waste water treatment?
- (iv) How effectively were the allocations spent?
- (v) What are recent initiatives?
- (vi) What needs to be done?

These are addressed in turn.

2. Ganga Action Plan - Objectives and Approach:

The Ganga Action Plan (GAP) was launched by the Government of India in the year 1985 with the objective of abatement of pollution in the River Ganga due to discharge of sewage into the river from point as well as non-point sources. The Plan was renamed the National River Conservation Plan (NRCP) in the year 1995 and was broad-based to tackle pollution levels in other identified polluted stretches of major rivers, for improving their water quality to the bathing quality standards.

GAP I was launched in June 1985 and declared closed on 31st March, 2000, GAP II was approved in April, 1993 for pollution abatement of remaining works on river Ganga with 3 other rivers Yamuna, Damodar and Gomti. River Mahananda was included in the year 2005-06. NRCP was extended to other Major rivers of the country in 1995. In December, 1996, GAP - II was merged with NRCP. At present, NRCP covers 35 stretches of polluted rivers in 164 towns spread in 20 States. Action Plans for different rivers are being drawn up on the basis of surveys by Central pollution Control Board (CPCB) and State Pollution Control Boards (SPCB).

The approach of GAP was to create sewage treatment plants in the cities along the Ganga so that no untreated sewage is discharged into the river. This was expected to bring the quality of the river water to a desired level.

3. Change in Water Quality:

Though a considerable sum of money has been spent on the programme and the impact of GAP and NRCP has been positive, it has been less than desired. Water quality monitoring done by reputed independent institutions indicates some improvement in the water quality over pre-GAP period. The water quality analysis of samples collected at 16 stations on River Ganga during 1986 and 2008 shows improvement in Dissolved Oxygen (DO) levels at 4 locations namely up and down streams of Allahabad and Varanasi. All the 16 stations except Patna downstream and Rajmahal show reduction in Biological Oxygen Demand (BOD) values. The BOD level show marked reduction in Allahabad and Varanasi indicating improvement in the water quality over pre-GAP period (*Table 1*). However, at 7 of these 16 sites, BOD level does not meet standard for bathing water. The situation is much better for DO for which at only one site the bathing standard is not met. On the other hand in terms of total coliform count only at one place the bathing standard is met. The count exceeds by many times the bathing standard.

Table 1: Water Quality Data for River Ganga (Summer Average i.e. March to June)

Stations	DO (MG/L)		BOD (MG/L)		Total Coliform	
	1986	2008	1986	2008	2002/2003	2008
Rishikesh	8.1	8.1	1.7	1.2	115	23
Haridwar D/S	8.1	7.9	1.8	1.4	400	1600*
Garmukteshwar	7.8	7.8	2.2	1.9	851	7500*
Kannauj U/S	7.2	6.5	5.5*	2.9	919**	75000*
Kannauj D/S	NA	6.2	NA	3.1*	1478**	75000*
Kanpur U/S	7.2	4.9*	7.2*	3.4*	1089*	93000*
Kanpur D/S	6.7	6.0	8.6*	4.1*	4911**	240000*
Allahabad U/S	6.4	8.4	11.4*	4.8*	1202	9000*
Allahabad D/S	6.6	7.7	15.5*	3.2*	1607	17000*
Varanasi U/S	5.6	7.5	10.1*	2.2	12417	NA
Varanasi D/S	5.9	7.3	10.6*	3.0*	148333	NA
Patna U/S	8.4	6.0	2.0	1.7	1589	30000*
Patna D/S	8.1	5.9	2.2	2.4	3019	90000*
Rajmahal	7.8	6.2	1.8	2.0	1480	NA
Palta	NA	6.9	NA	2.2	99545	220000*
Uluberia	NA	5.3	NA	3.6*	50333	500000*

* Quality not suitable for bathing; ** For 2003

Source: NRCD – MOEF

	Water Quality Standard for	
	Bathing	Drinking
BOD (mg/litre)	< 3	<2
DO (mg/litre)	>5	>6
Total Coliform (MPN/100 ml)	<500	<50

Water quality data for one year may be misleading as the quality depends on the water in the river which, in turn, depends on the rains and snow melt and varies from year to year. Thus, the BOD levels measured at 16 stations along the river for the last five years (summer average – March to June) is shown in *Table 2*. In the 16 stations where BOD levels were monitored during the period 2004-08 eight stations showed increase and 8 showed decrease in BOD levels. Up and down streams of Allahabad and Varanasi showed considerable reduction in BOD levels compared to pre-GAP 1985.

Table 2: BOD (mg/l) Data for River Ganga (Summer Average i.e. March to June)

Stations	2004	2005	2006	2007	2008
Rishikesh	1.1	1.0	1.1	1.2	1.2
Haridwar D/S	1.5	1.4	1.3	1.3	1.4
Garhmukteshwar	1.9	2.0	2.1	2.0	1.9
Kannauj U/S	1.73	1.7	1.11	1.7	2.9
Kannauj D/S	3.18	4.5	4.2	4.1	3.1
Kanpur U/S	3.20	4.3	6.8	2.9	3.4
Kanpur D/S	5.73	5.4	6.8	5.2	4.1
Allahabad U/S	7.38	5.5	4.9	7.5	4.8
Allahabad D/S	3.58	3.1	3.2	4.1	3.2
Varanasi U/S	2.60	2.0	2.1	2.3	2.2
Varanasi D/S	2.65	2.3	2.25	3.7	3.0
Patna U/S	1.63	2.0	2.0	1.7	1.7
Patna D/S	1.65	2.2	2.3	1.8	2.4
Rajmahal	2.10	1.8	1.95	1.6	2.0
Palta	2.03	3.1	2.58	2.6	2.2
Uluberia	2.43	2.6	2.64	3.2	3.6

These data are plotted in *Figures 1* and *2* along the river and across time. *Figure 1* shows that the BOD level keeps worsening as one goes downstream along the river from Rishikesh and is worst at Allahabad. It is only when other rivers join the Ganga and dilution takes place that BOD level improves. *Figure 2* shows how BOD level has changed over the last five years at different sites. The fluctuations indicate the impact of rains and inflows in the river.

Fig. 1
BOD Values for River Ganga (Summer Average – March to June)

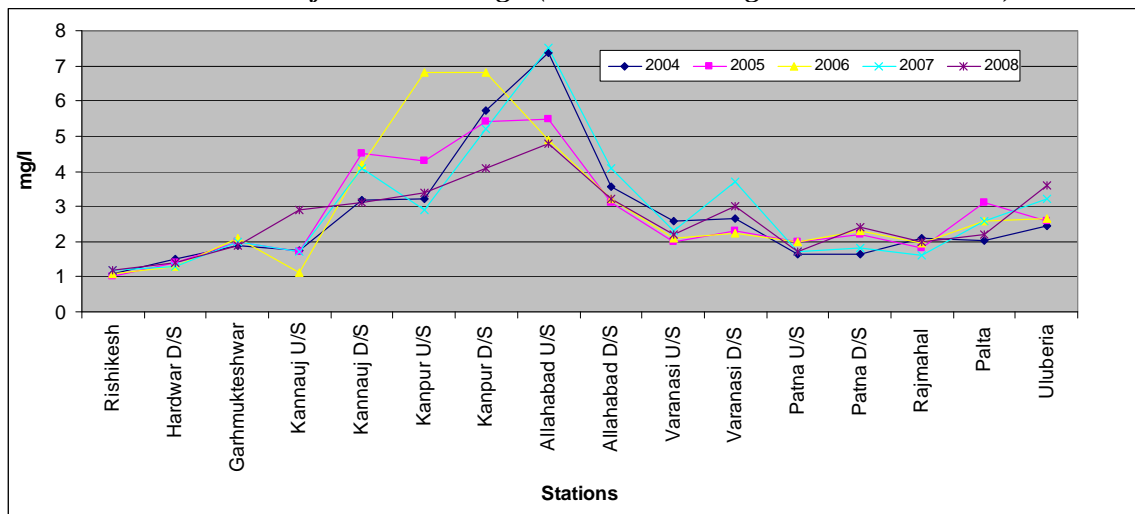
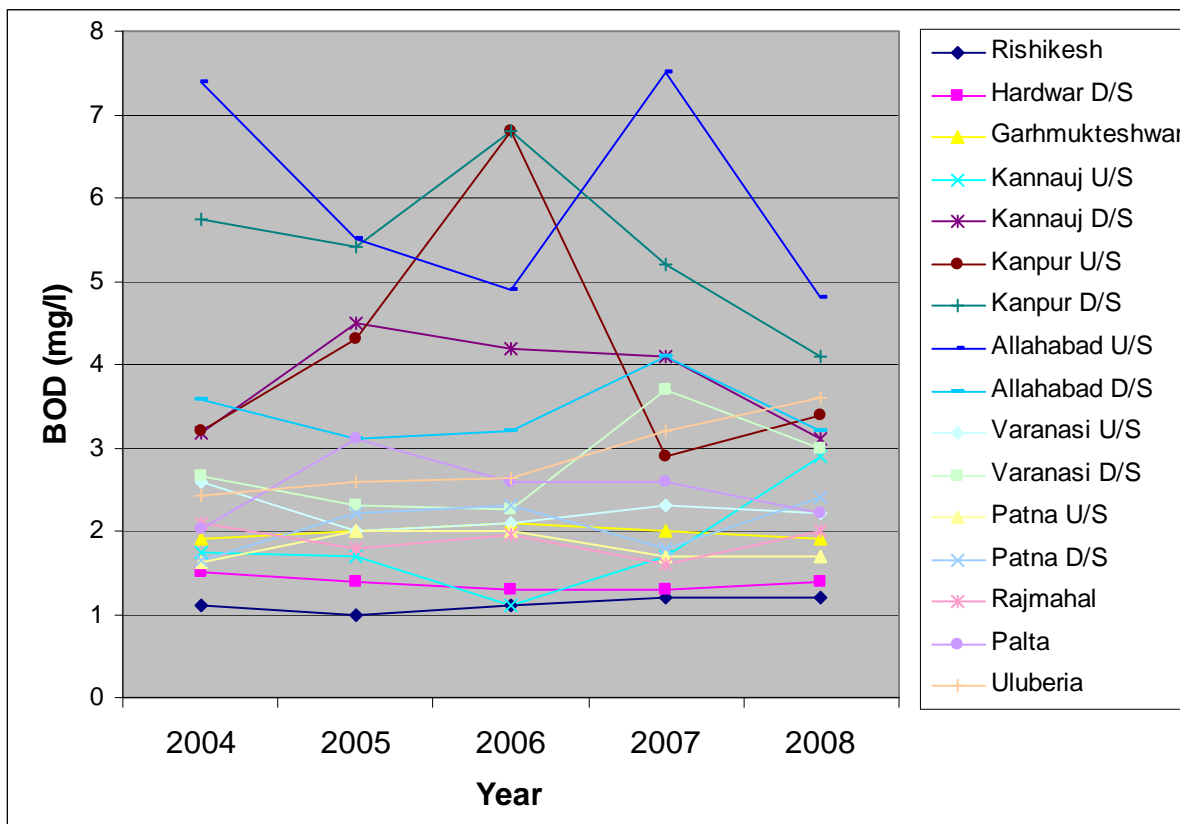


Fig. 2
BOD at Various Sites Over Time



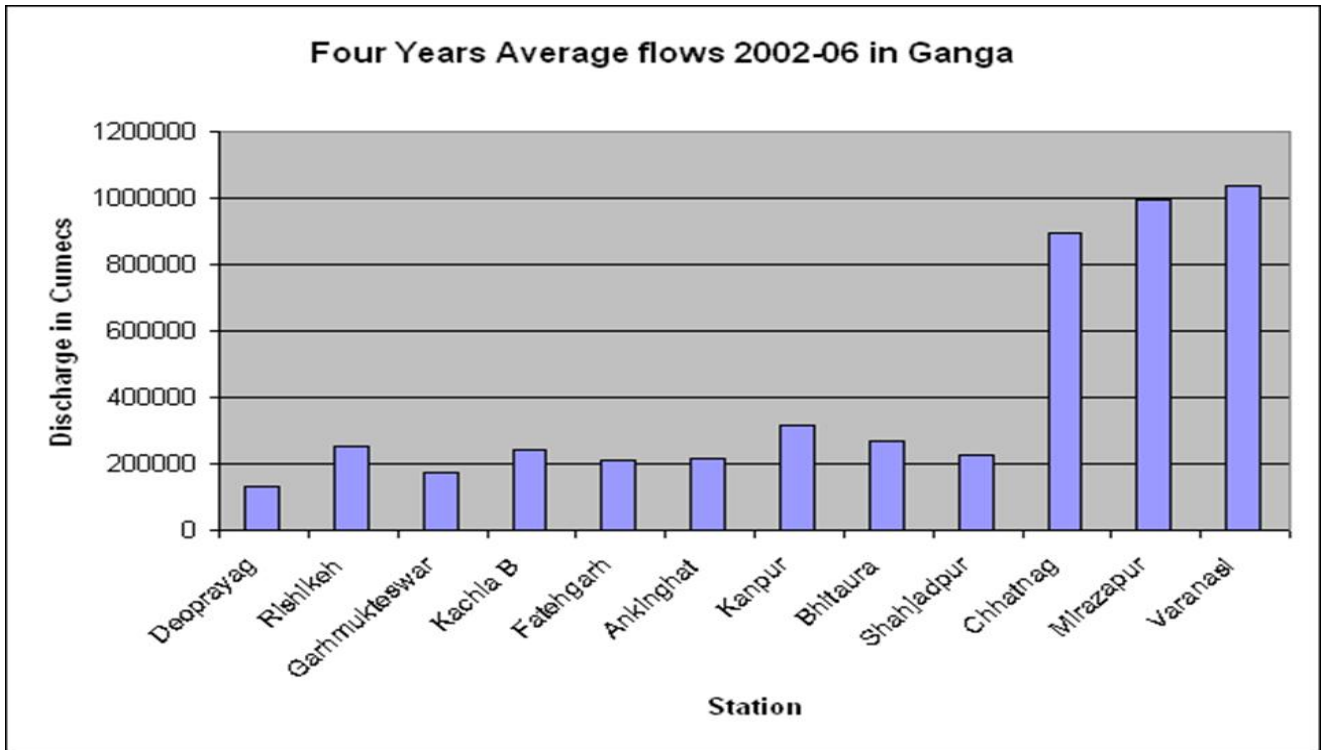
As can be seen from *Table 3*, the faecal coliform (FC) count at Varanasi downstream (Malvia bridge) UP reported a high count of 148333 MPN/100 ml in 2002 and a count of 81714 MPN/100ml in 2007, though it shows a decreasing trend it is very high compared to laid down standards of <500 MPN/100ml for bathing. Data on FC count for seven years from 2002 for 39 stations are given in *Table 3*. Among the 12 stations sampled in UP, all stations showed increased count of FC in 2007/2008 over 2002. Of the 10 stations in Uttarakhand, only at Rishikesh and Haridwar FC count has consistently been at acceptable level for bathing. Other sites it has fluctuated and accepting at Devprayag exceeded bathing standard. In Bihar minimum and maximum count of FC taken in 2008 ranges from 4000 MPN/100ml to 14545 MPN/100ml respectively. In West Bengal the FC count shows higher values in all the stations with a minimum of 11250 MPN/100ml and a maximum of 283333 MPN/100ml in 2008 in 8 stations sampled. However, FC count exceeds acceptable standards at major locations (*Table 3*). Without GAP, the situation would have been worse. An important factor is the inadequate flow in the river due to water extraction for various purposes including irrigation, drinking water supply and industrial use. A large portion of Ganga water is diverted into the Upper and Lower Ganga canals resulting in meagre flows, especially, the Haridwar-Allahabad stretch which is very sensitive.

Table 3: Fecal Coliform in River Ganga (Year 2002-2008)

LOCATION	FECAL COLIFORM (MPN/100 ML)						
	2002	2003	2004	2005	2006	2007	2008
<u>UTTARAKHAND</u>							
BHAGIRATHI AT GANGOTRI (BGR-GT)	40	40	120	84	NA	NA	NA
MANDAKINI B/C ALKALNADA AT RUDRAPRAYAG (MDK)	35	1050	1933	2800	980	8757	NA
ALKANANDA A/C MANDAKINI AT RUDRAPRAYAG (ALK-A/C)	79	620	3007	1600	90	3168	NA
ALKANANDA B/C MANDAKINI AT RUDRA PRAYAG (ALK-B/C)	61	1040	4053	6100	410	7993	NA
BHAGIRATHI B/C WITH ALAKNANDA AT DEVPRAYAG (BRG B/C)	149	4855	1287	4000	160	93	NA
ALKANANDA A/C WITH BHAGIRATHI AT DEVPRAYAG (ALK-AC-BGR)	210	5500	1813	2050	140	453	NA
ALKANANDA B/C TO BHAGIRATHI AT DEVPRAYAG (ALK-BC-BGR)	468	1012	2207	3000	45000	2403	NA
RISHIKESH U/S (RK-U/S)	115	108	11	NA	23	NA	1
HARIDWAR D/S (HDR-D/S)	400	260	18	19	19	23	3
GARHMUKTESHWAR (GMW)	851	1062	14718	6011	5256	1724	1608
<u>UTTAR PRADESH</u>							
NARORA (BULANSAHAR) (NRR)	373	757	NA	1852	217	872	NA
KANNAUJ U/S (RAJGHAT) (KNJ-RG)	NA	919	994	4300	6243	2033	3490
KANNAUJ D/S (KNJ-D/S)	NA	1478	1191	5471	7314	3389	3267
BITHOOR (KANPUR) (BTR-KN)	NA	1022	950	3611	4000	2150	3889
KANPUR U/S (RANIGHAT) (KN-U/S)	NA	1089	939	2813	3543	2633	3825
KANPUR D/S (JAJMAU PUMPING STATION) (KN-D/S)	NA	4911	3464	26167	22857	32889	17333
DALMAU (RAI BAREILLY) (DLU-RB)	4036	4589	4433	5117	3800	4833	4744
ALLAHABAD (RASOOLABAD) (ALB-RLD)	1202	1291	974	1417	2363	2950	2600
ALLAHABAD D/S (SANGAM) (ALB-SG)	1607	1626	1269	2292	7900	5150	5330
VARANASI U/S (ASSIGHAT) (VRS-U/S)	12417	9340	9333	10200	8977	10000	NA
VARANASI D/S (MALVIYA BRIDGE) (VRS-D/S)	148333	106300	103667	99333	89385	81714	NA
TRIGHAT (GHAZIPUR) (TGT-GZ)	22583	17200	19750	22500	19500	20143	NA
<u>BIHAR</u>							
BUXAR (BX)	2425	1263	3025	13356	18529	2933	4000
KHURJI, PATNA U/S (KRJ-P)	1589	882	1378	9322	11413	7000	4992
PATNA D/S (GANGA BRIDGE) (PAT)	3019	1033	5056	13500	20171	10500	14545
MOKAMA (U/S) (MKA-U/S)	NA	NA	NA	15250	2980	6000	5245
MOKAMA (D/S) (MKA-D/S)	NA	NA	1533	9000	15200	9000	13917
MUNGER (MGR)	NA	NA	NA	13000	11233	5000	4225
BHAGALPUR (BGR)	NA	NA	NA	17000	9800	5000	5800
KAHALGAON (KGN)	NA	NA	1167	16460	14500	9000	6100
GANGA AT RAJMAHAL (RJM)	1480	1172	1696	NA	NA	NA	NA
<u>WEST BENGAL</u>							
BAHARAMPORE (BRP)	30917	7667	7917	17004	23833	33667	29000
SERAMPORE (SRP)	471250	170000	243333	53003	38000	76750	63000
DAKSHINESHWAR (DSW 1)	230417	406667	260417	351667	123571	237917	283333
HOWRAH-SHIVPUR (HWH SP)	48750	91667	187500	96250	231667	140000	100000
GARDEN REACH (GRWB)	101250	271667	295000	86250	406667	382500	176250
ULUBERIA (UWB)	50333	84250	106167	62083	45571	37917	37000
PALTA (PTWB)	99545	35250	40917	52333	63333	75455	67500
DIAMOND HARBOUR (DHWB)	2200	5400	30333	7000	11667	23000	11250

A chart showing discharge in cumecs at various stations on Ganga during 2002-06 is given below:

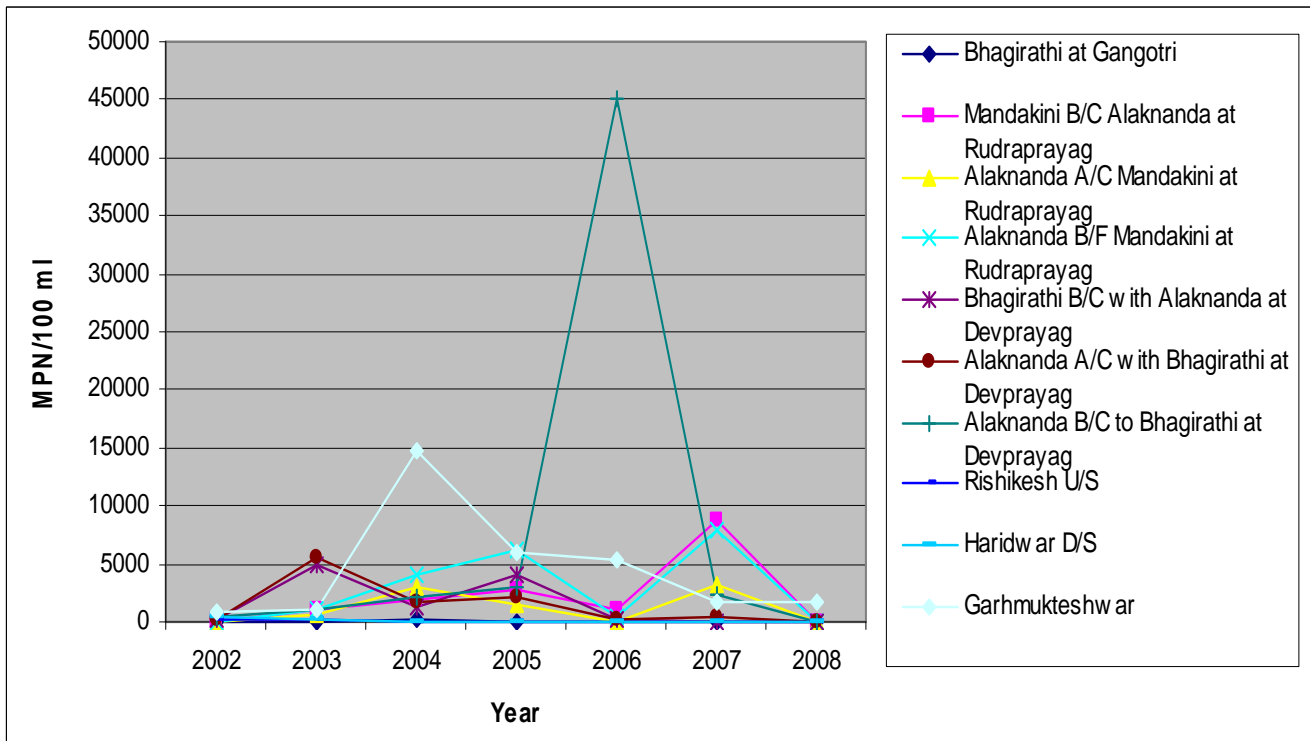
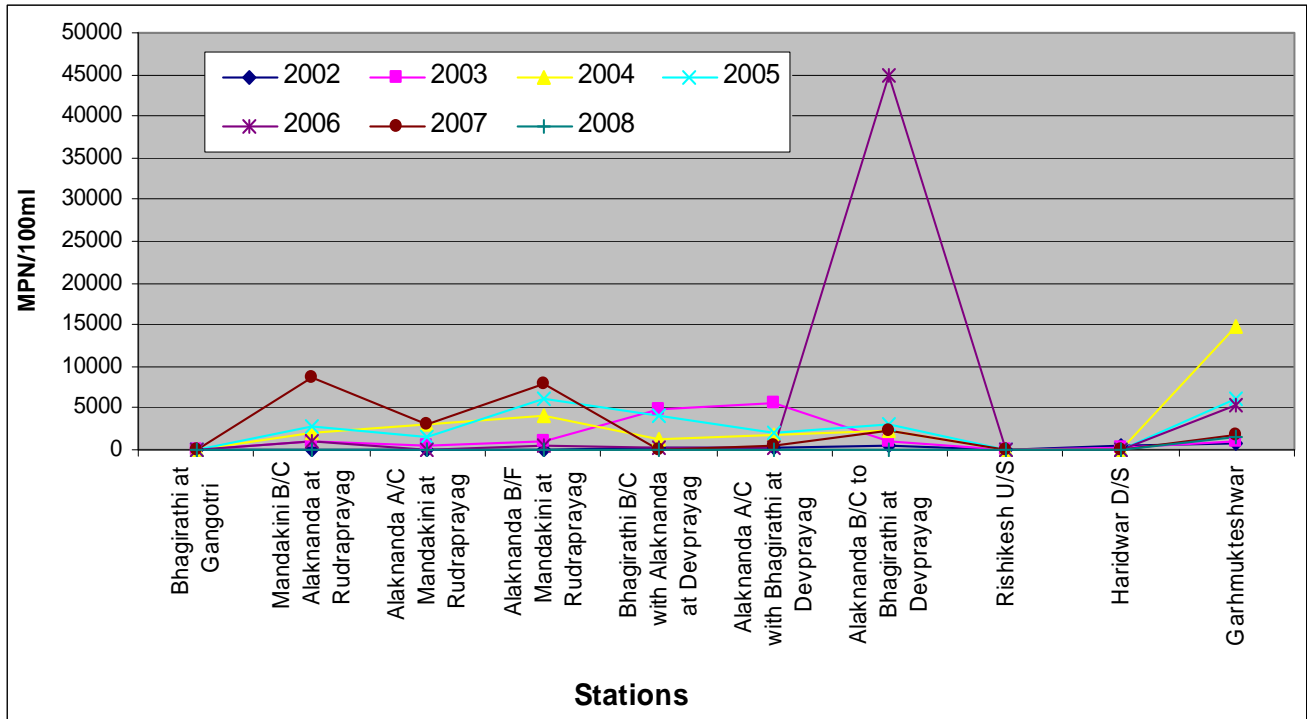
Fig. 3: Water Abstraction from River Ganga



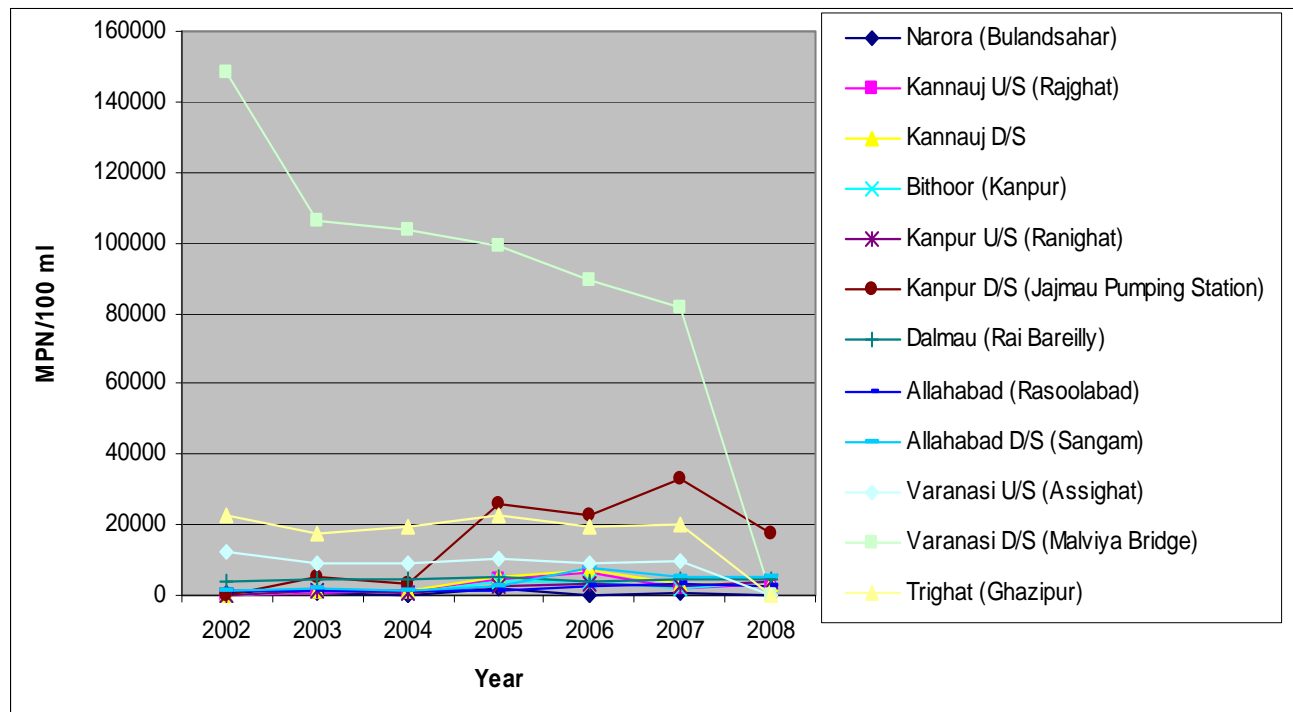
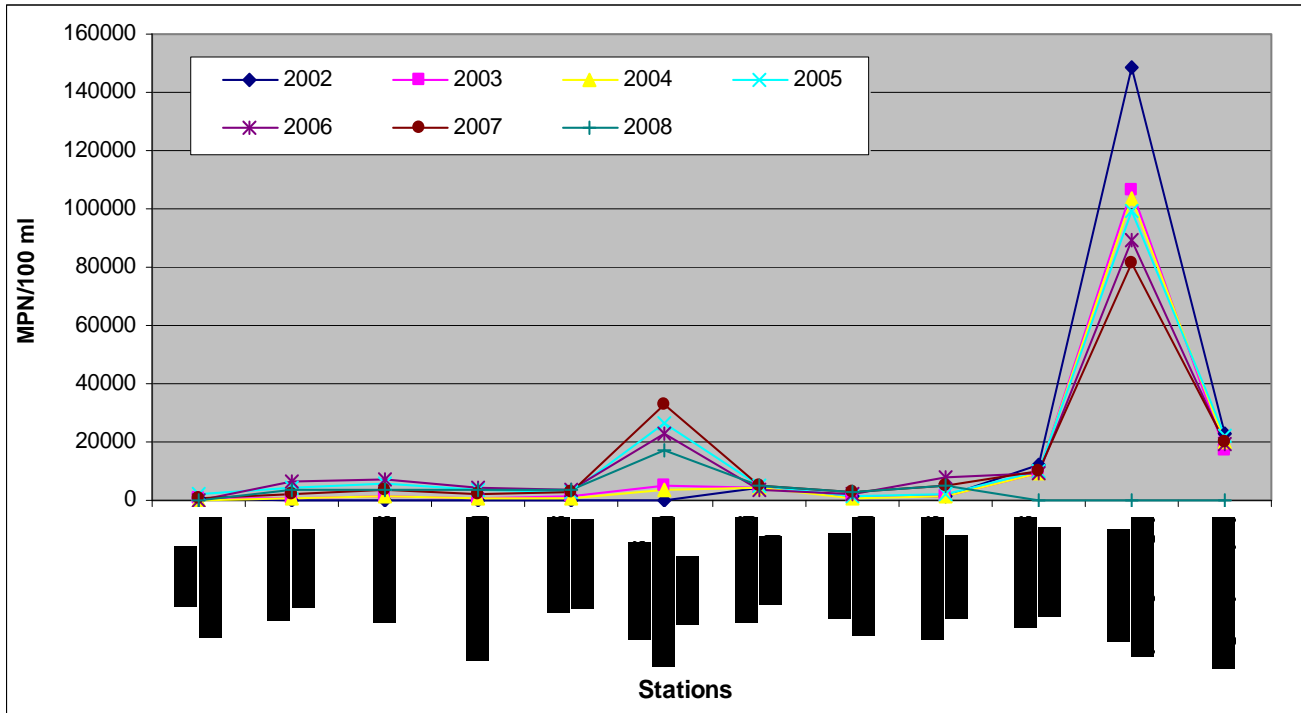
It may be seen from the above chart that where water is withdrawn the inflow falls and where rivers join, there is increase in inflow. Thus, for example, the chart shows that water is withdrawn between Rishikesh and Garhmukteswar and between Shahjampur and Chhatnag, water is added in the river.

While GAP has had some impact on water quality, Ganga water still remain polluted. Is it due to poor utilisation of allocated funds, inadequate maintenance of created assets, insufficient funds or improper planning?

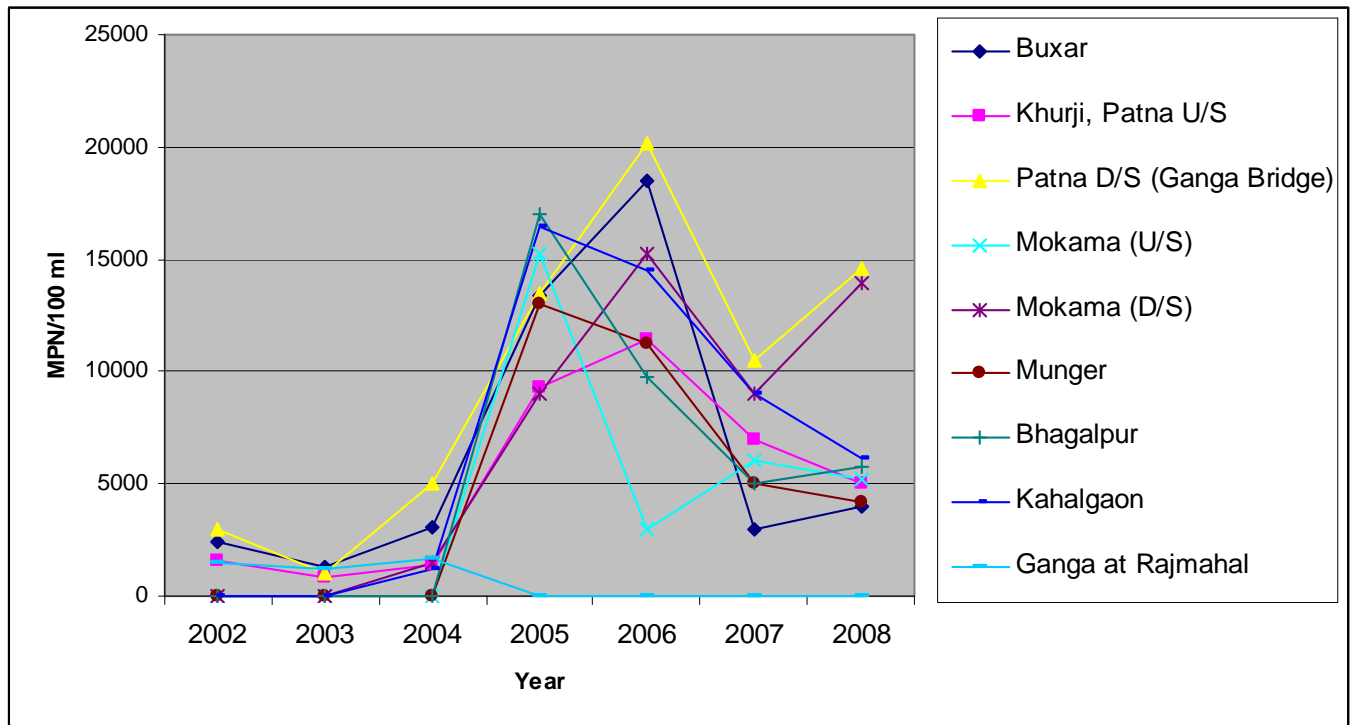
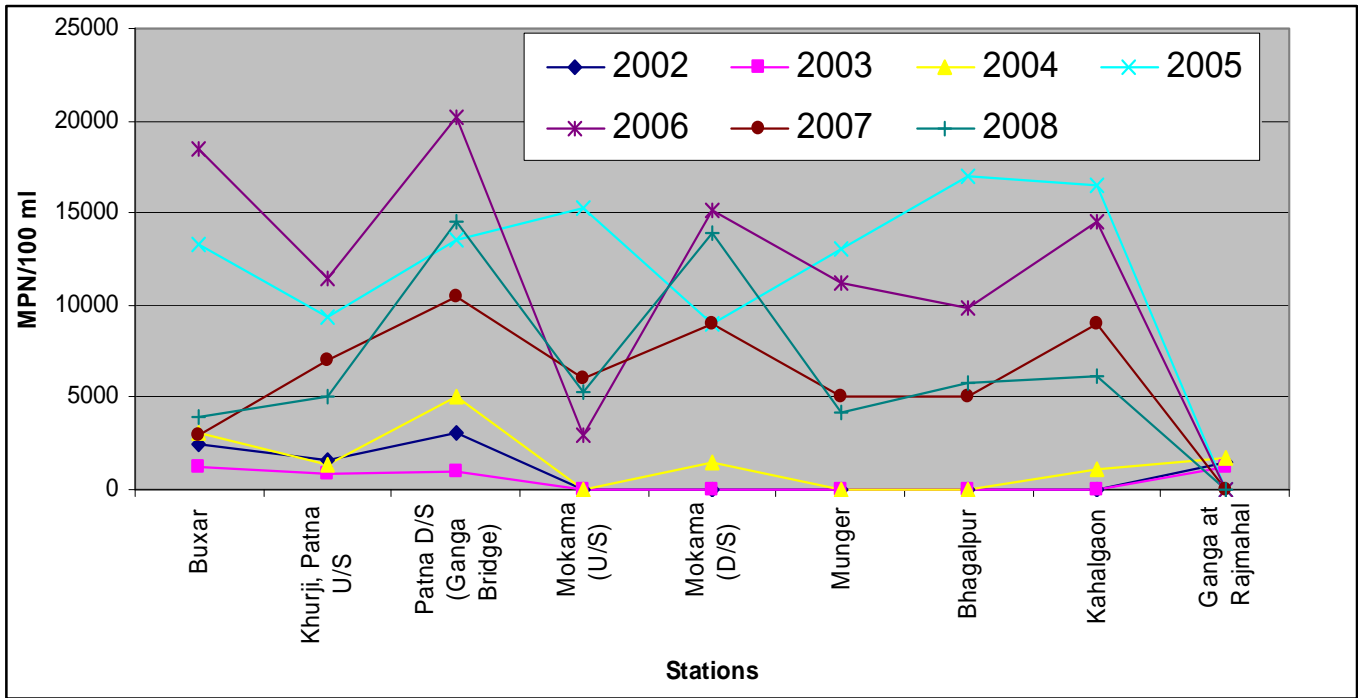
**Fig. 4: Fecal Coliform Trend
Uttarakhand**



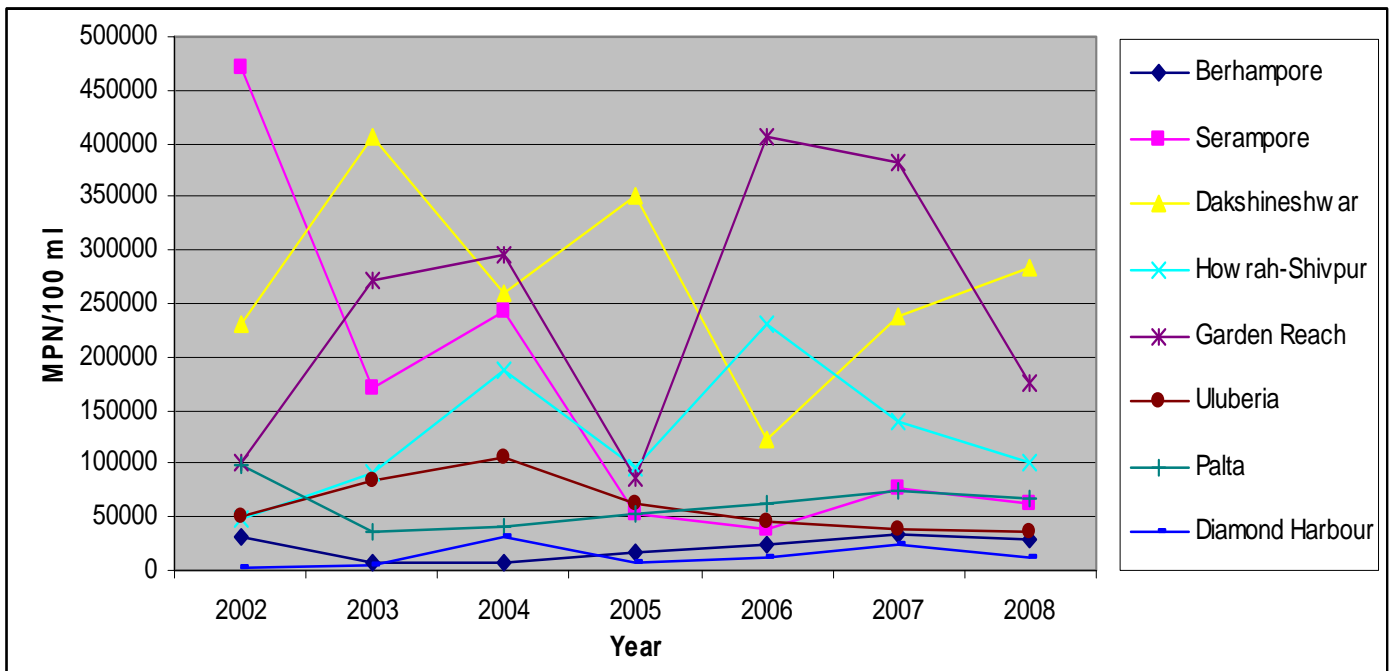
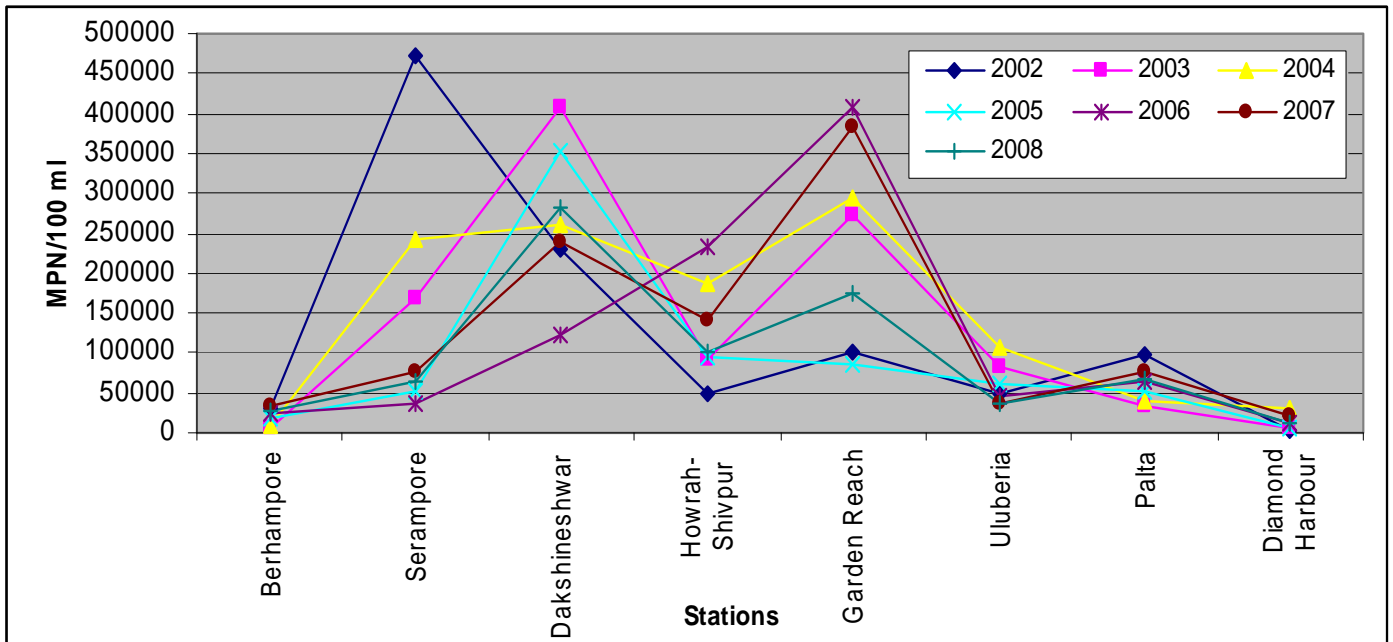
Uttar Pradesh



Bihar



West Bengal



4. Status of Allocation and Utilization of Funds Under Ganga Action Plan by GAP States:

Allocation and utilization of funds by GAP States are shown in *Table 4*. It also gives target and actual created capacity of Sewage Treatment Plants (STPs). It is seen that Rs.247.5 crores were sanctioned to create 1097.9 MLD of STP capacity out of which Rs.228.3 crores were spent and STPs of 1016.6 MLD capacity were created. As can be seen from *Table 4*, the states of Bihar, UP, WB and Uttarakhand had set a target of 135.50 MLD, 430.17 MLD, 493.94 MLD and 38.25 MLD and achieved 122.0 MLD, 385.06 MLD, 481.07 MLD and 28.50 MLD respectively. So far Rs. 247.52 cr. has been released for the 4 GAP states excluding Jharkhand for construction of STPs of which Rs. 228.33 cr. has been utilized and 92.6% of the STP capacity target set has been achieved.

The Eleventh Plan outlay for NRCP is Rs.2100 crore for all the rivers of the country, during the years 2007-08, 2008-09 and 2009-10, the actual expenditure/approved outlay has been Rs.252.93 cr., Rs.254 cr. and Rs.276 cr. (BE). Thus, during the first 3 years of the Eleventh Plan, the expenditure on NRCP has been only of the order of Rs.782.93 cr. leaving about Rs.1317 cr. to be spent during the remaining 2 yrs. (2009-10 and 2010-11) of the current 5 Year Plan. Also MOEF has stated that NRCP allocations are made State-wise and not Town-wise. *Table 5* indicates the financial allocations for 2007-08 and 2008-09 for the GAP states.

Based on the data collected from the states, during visits and the data made available by MOEF, during 2007-08, a sum of Rs. 374.73 cr. was released by the Central government to the five GAP states which includes Rs. 13.40 cr. of Jharkhand (sanctioned but not released) by the Centre of which Rs. 324.24 cr. was utilized. A sum of Rs.149.57 cr. so far has been released by the centre for the current financial year to 3 states i.e. UP, WB and Uttarakhand of which Rs.41.47 cr. was utilized.

Apart from NRCP, Central funds are also available to states under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM). A number of STP projects in some of the cities on the Ganga are under preparation. No funds have been released as of March 2009 under JNNURM for these projects.

Table 4: Allocation and Utilization of Funds under Ganga Action Plan by GAP States for STP Construction

State	Phase	STP created (MLD)		Cost (Rs. lakh)	
		Target	Actuals	Actual	Completion Cost
Bihar	(GAP I)	111	111	1467.18	1420.38
	(GAP II)	24.5	11	434.44	184.70
Jharkhand	(GAP I)	-	-	-	-
	(GAP II)	-	-	-	-
Uttar Pradesh	(GAP I)	349.5	349.5	9367.6	9701.35
	(GAP II)	80.67	35.56	2536.28	2079.7
West Bengal	(GAP I)	376.6	372.6	7179.99	6913.79
	(GAP II)	117.34	108.47	2435.25	1584.36
Uttarakhand	(GAP I)	24.33	24.33	857.6	921.88
	(GAP II)	13.95	4.17	473.49	27.06
TOTAL		1097.89	1016.63	24751.83	22833.22

Table 5: Central Funds Allocation and Utilisation Under NRCP – GAP States

State	2007-08			2008-09		
	BE	Central Funds Released	Total Funds (GOI+State) Utilised	BE	Central Funds Released	Total Funds (GOI+State) Utilised
Bihar	50.00	-	-	-	-	-
Jharkhand	-	-	13.40	-	-	-
U.P.	19.00	20.97	21.47	15.00	21.57	16.51
West Bengal	16.00	16.34	20.00	28.00	28.00	18.24
Uttarakhand	-	337.42	270.37	-	100.00	10.72
Total	85.00	374.73	324.24	43.00	149.57	41.47

While there has been some slack in recent years in utilization of funds, the allocations made during GAP I and GAP II have been largely utilized.

5. Sewage Treatment Capacity Created and Its Adequacy:

The improvement noticed in water quality is because of the creation of sewage treatment capacity (*in the Ganga Basin*) of about 3,750 million litres per day (MLD) including the 1017 MLD capacity created under GAP I and II, and projects executed for the interception and diversion of sewage and promotion of low cost sanitation. A substantial increase in sewage generation in 6 stations monitored (*Table 6*) from 1985 to 2008 is discernible. The sewage generation data in selected towns of GAP show a total sewage generation of 761.33 MLD in 1985 and 1288 MLD in 2008.

The STP capacity in these six cities is grossly inadequate to treat the sewage generated. The 664 MLD of STP capacity is only 52 percent of the needed capacity in 2008. If all the projects considered under JNNURM become operational by 2010 which is very unlikely the STP capacity created would be adequate to meet the needs in 2010 of Patna and Kanpur. Rishikesh-Haridwar, Allahabad, Varanasi and Howrah will still put lot of untreated sewage in Ganga.

Table 6: Sewage Generation for Various Years, Treatment Capacity Created/Proposed to be Created in Six Selected Towns of GAP

Town	Sewage Generation				Treatment Capacity Created so far Under GAP I & II	Treatment Capacity Being Created Under GAP II	Treatment Capacity under JNNURM
	1985	2008	2010*	2020*			
Rishikesh-Haridwar	24.33	65	75	94	28.5	43	-
Kanpur	205	400	411	555	171	-	268 (Sanctioned)
Allahabad	110	210	213	242	89	-	60 (Projects under consideration of MoUD)
Varanasi	147	292	317	350	101.8	37	120 (sanctioned)
Patna	100	210	236	316	109	-	246 (Project under preparation)
Howrah	75	111	121	142	85	-	-
Total	761.33	1288	1373	1699	584.3	80	694
* Projected							

From the field visits the following was noticed:

- The generation of domestic sewage in Allahabad is about 215 MLD whereas the STP capacity is only 89 MLD (40% of sewage generation).
- So far Rs. 247.52 cr. has been released to Bihar, UP, WB and Uttarakhand of which Rs. 228.33 cr. has been utilized and 92.6% of the STP capacity target set has been achieved.
- In Uttarakhand STP capacity of 28.50 MLD has been created so far at a cost of Rs.30.68 cr. under GAP. At Haridwar in the state, the original STP at Jagjeetpur was designed for 18 MLD. However due to rapid urbanisation of Haridwar, the present discharge is 32 MLD sewage. NRCDC has therefore sanctioned, in September, 2006 a proposal to increase the treatment capacity of the STP to 45 MLD to overcome the existing shortfall of STP capacity. All effluents from this plant are discharged into the river downstream of the Haridwar city.
- In Bihar, STP capacity of 122 MLD has been created so far at a cost of Rs.50.83 cr. under GAP. The STP at Munger with 13.5 MLD capacity with aerated lagoon system was awarded at a cost of Rs. 1.29 cr. with dates of start and completion as August, 1994 and May, 1995 respectively. However, there was delay in submission of design and drawings by the contractor and in land acquisition. The work started in June, 1995 and contractor allowed a time extension up to December, 1995. After completing about 38% of the work, the contractor abandoned the work due to some dispute. The contractor filed a writ petition in 2004 against the State Government (Bihar Rajya Jal Parishad) and the court appointed an Arbitrator in April, 2006. The Arbitrator's decision favoured the contractor and the State was asked to pay Rs. 2.05 cr. with 12% interest (less Rs. 11 lakh for loss of business) to the contractor. The State Government has filed an Appeal against the Arbitration in Patna Civil Court in 2008, where it is reported to be pending. The Urban Development Department of the State was advised, to re-examine the case and decide whether the expenditure will be much more if the High Court also decides in favour of the contractor. It was also suggested that the STP should have dual fuel power plant which can utilise diesel as well as biogas.
- An STP capacity of 109 MLD was set up in 1997 in Patna against a sewage generation 200 MLD currently. Further, 109 MLD capacity is able to treat only 70 MLD. The major problem seems to be with the plant and machinery which are very old and need renovation. Another problem seems to be that municipalities do not have funds to maintain STPs. Only about 20% of Patna's households are given sewage connections. The remaining 80% population seems to be generating domestic sewage which is let into Ganga River through various drains. This has to be curtailed.
- Acquisition of land for STPs is a major problem with some land acquisitions taking as long as five years.
- Some of the STPs visited under the GAP were not properly maintained as the Urban Local Bodies (ULBs) did not collect appropriate user charges. Also interruption in power supply affected working of STPs. To deal with power cuts, some STPs had installed dual fuel diesel generators which run mainly on the biogas generated by the STP.
- By and large STP capacities created are inadequate to treat sewage generated.

Inadequate Operation and Maintenance (O&M) of the Sewage Treatment Plants (STP) by the States is a cause of concern. Under utilization of STPs and in some cases, non conveyance of the sewage to the STPs, delay in acquisition of land, contractual issues court cases, erratic

power supply and in adequate capacities of local bodies are some of the major bottle necks. Many States are not able to provide their share of funds for schemes in time and for O&M. There is also lack of coordination among various Centre, State agencies and local bodies.

The Ganga River is also subjected to substantial load of industrial pollution which amounts to about 20% of its total load. This pollution is toxic and non biodegradable in nature. Untreated effluents in the industrial pockets along the rivers are due to tanneries, distilleries, paper mills and sugar mills and these are causing sharp depletion of DO levels in the river affecting its eco system. Along with STPs to treat municipal waste water, treatment of industrial effluent to prescribed quality must be enforced.

According to the CPCB, at the end of 2008-09, a total of 374 grossly polluting industries with BOD load of 100 kg/day or more have been identified which discharge their effluents into the Ganga Basin. Based on the actions of CPCB and SPCBs, 71 of these industries have been closed, 263 industries have provided requisite treatment/disposal facilities and are operating satisfactorily, while the remaining 40 industries have installed treatment plants, but are not operating them satisfactorily. Action has been initiated by the SPCBs against these defaulting industries.

6. STP Capacity Needed:

The STP capacity created is inadequate to treat the sewage generated. *Table 7* gives the total generation of domestic sewage and capacity of Sewage Treatment Plants (STP) all over the country and in the Ganga Basin.

Table 7: Generation of Domestic Sewage and Existing STP Capacity

	<i>MLD</i>	
Region	Generation of Domestic Sewage	Existing STP Capacity
All India	36,000 (Class I & II towns)	7,000
Ganga Basin (26% of Indian land mass)	12,000	3,750
Class I & II towns along River Ganga (Main Stem)	2,900	1,017

Source: CPCB

As indicated in **Annexure III**, the population of cities/towns/villages on the banks of Ganga in the 5 GAP states (13 cities in Bihar, 1 in Jharkhand, 12 in UP, 34 in WB and 10 in Uttarakhand) is 165.852 lakhs and 192.791 lakhs in 1995 and 2001 respectively. The domestic sewage generation and existing STP capacity including STP capacity under augmentation is 1915.11 MLD, 1020 MLD and 476.11 MLD respectively. Considering the population projection for 2010 and 2020 for the 5 GAP states (70 cities in total), the projected sewage generation is of the order of 2073.56 MLD and 2518.821 MLD respectively.

As indicated in *Table 6* the sewage generation in 6 selected towns of GAP is 1,288 MLD in 2008 and is estimated to increase to 1,700 MLD in 2020. Based on the above, the sewage generation in the whole of Ganga basin is estimated at 15,000 MLD in 2020 from 12,000 MLD currently the present capacity of STPs is 3,750 MLD. An additional 8,250 MLD needs to be established even to meet present backlog, whereas additional capacity of 11,250 MLD needs to be created by 2020 (*Tables 7 and 9*).

There are three processes for sewage treatment, each of which is appropriate in specific circumstances. The cost of STP for meeting the current deficit of 8,250 MLD by Waste

Stabilization ponds is Rs.2,060 cr., Up-Flow Anaerobic Sludge Blanket (UASB) + Post treatment technology is Rs.4,540 cr. and by activated sludge process is Rs.7,180 crores. The above costs do not include the land cost as well as the cost of interception & diversion works. Depending on the availability of land, Rs.2,060 cr. to Rs.7,180 cr. is required for treating the sewage alone with the technology being finalized. However, to keep up with the growing urban population, STP capacity must be planned for projected population of 2020. In which case the cost as shown in *Table 9* will vary from Rs.2812 crores to Rs.9788 crores.

Table 8: Technology Cost Estimates for Setting Up STPs in 6 Stations Under GAP

Technology	Cost of Tech. in Rs. lakhs, per MLD (at 2008 prices)	MLD Sewage generated, 2008	Land required (ha./MLD)	Total Cost in Rs. lakhs for Treatment	MLD Sewage Gen. Expt. in 2020	Total Cost in Rs. lakhs for Treatment (at 2008 prices)
Waste stabilisation ponds	25	1288	1.00	32200	1700	42500
UASB+Post Treatment	55	1288	0.25	70840	1700	93500
Activated Sludge Process, C-Tech, FAB	87	1288	0.30	112056	1700	147900

Table 9: Cost Estimate for STPs in Ganga Basin

Technology	Cost of the tech. in Rs. Lakh per MLD (At 2008 Prices)	Additional STP Needed = MLD Sewage Generation-Present STP Capacity		Total Cost of Construction of STPs of Sewage Generation in 2020 (Rs. Lakh) (at 2008 prices)
Waste Stabilisation	25	12000-3750 = 8250	15000-3750 = 11250	281250
UASB + Post Treatment	55			618750
Activated Sludge	87			978750

For all the class I and II towns, the sewage generation in 2020 can be projected on the same basis to be around 45000 MLD. Given that the present STP capacity is only 7000 MLD, the resources required would vary between Rs.11,250 crore to Rs.33,000 crore. The cost of Interception & Diversion works (mainly trunk sewers and pumping stations, but excluding house connections, branch and lateral sewers) and cost of land acquisition is around Rs. 3-4 crore/MLD and this would increase the total cost to the extent of Rs.45,000 crore to Rs.1,32,000 crore.

7. Recent Initiatives Taken to Clean Up Ganga:

The Prime Minister, in a Meeting on 04.11.08 with Ministers of Urban Development (UD), Water Resources, Deputy Chairman of Planning Commission and MOS (Environment) decided, *inter alia*, that Ganga will be declared as a National River and a **Ganga River Basin Authority (GRBA)** be set up as an empowered, planning, implementation and monitoring authority for the River. A final proposal to this effect is to be prepared within 2 months after wide-ranging consultations. The aim is to improve the Ganga water quality to acceptable

standards. The GRBA will be chaired by the PM with CMs of riverine States and concerned Union Ministers as Members. The Authority will be responsible for water quality, equitable and sustainable access of water to all users and flood management in the River Basin. It shall be notified under section 3(3) of the Environment (Protection) Act, 1986 with regulatory and enforcement powers. It will concentrate initially on Ganga Main Stem. It will involve all stakeholders. Adequate funds will be made available through JNNURM and other schemes in GOI. The notification is under finalization.

The MOEF has proposed the following basic elements of revamped strategy for cleaning the Ganga:

- i) Focus on catchment area treatment, protection of flood plains and institutional restructuring;
- ii) Development of sewage treatment infrastructure;
- iii) Assessments of the requirements of the whole River Basin;
- iv) Maintenance of minimum ecological flow in the River;
- v) Delegation of powers to the GRBA to control water abstraction to allow minimum flow; and
- vi) To ensure that quality of water downstream is not worse than that of upstream water for any industry or a city that discharge effluents in the river.

States are expected to generate resources through taxes, user charges, municipal bonds and use these funds for pollution abatement. State Plans must provide adequate outlays for O&M expenditure. Compliance and enforcement of industrial pollution by the States has to be strengthened. All the Urban Local Bodies (ULBs) have capacity constraints, GRBA will be empowered to set up Special Purpose Vehicles (SPV) through Public-Private Participation (PPP) mode to serve as delivery mechanism to allow infusion of private capital and expertise. A beginning could be made at Varanasi.

The State Governments will continue to play a significant role in river cleaning. They will undertake municipal reforms for increasing their resources through taxes, municipal bonds etc. which will be utilised for the pollution abatement works. States should provide for adequate outlays for meeting the O&M expenditure. Compliance and enforcement of industrial pollution by the States has to be made stronger.

The ULBs have many constraints. What is needed now is an innovative solution like SPV in the domestic sewage sector through PPP mode which would be flexible and deliver efficiently. It would also bring in private capital and expertise. As a beginning, a SPV could start functioning at Varanasi. ULBs, at the same time, take the help of State agencies under the JNNURM and other schemes of MOUD to continue building STPs.

8. Summary and Recommendations:

- (i) The funds released under GAP I and GAP II have been by and large utilized and 92% of the targeted capacities of sewage treatment plant have been created (**Annexure II**).
- (ii) While the Eleventh Plan outlay for NRCP is Rs.2100 cr. for the entire country, the actual expenditure/BE has been Rs. 252.93 cr. in 2007-08, Rs. 254 cr. in 2008-09 and Rs. 276 cr. (BE) for 2009-10. In other words, percentage utilization during the first 3

years is about 37% against a targeted pro-rata utilization of 60%. Thus, there is likely to be a shortfall in plan expenditure during the remaining 2 years of the Eleventh Plan.

- (iii) Domestic sewage generation and existing STP capacity in the Ganga Basin is about 12,000 MLD and 3,750 MLD (about 31% of sewage generation) respectively. In Class I and II towns along main stem of Ganga river, the corresponding figures are 2900 MLD and 1017 MLD (about 35% of sewage generation) respectively. According to the Eleventh Plan Document, the average capacity utilization of existing STP capacity is only about 72% against 100% desired. This is mostly due to factors like irregular power supply, absence of connections between domestic sewage drains and STPs, failure of States to provide for maintenance costs of STPs, and so on.
- (iv) There has been a wide gap between domestic sewage generation and STP capacity installed, to the extent of 65% resulting in untreated sewage flowing into rivers and other water bodies. This has been due to failure to anticipate capacities in tune with growth in population, various delays in planning capacities, land availability problems especially in urban areas, litigation causing inordinate delays in land acquisition, etc.
- (v) Even if all the targeted capacities materialize and operate, the problem will still persist as the domestic sewage being generated is many times the STP capacity installed. The targeted capacities are inadequate and planning for these capacities did not fully account for urban growth. The planning of capacities has thus been faulty and resource allocation for creation of assets inadequate.
- (vi) The goal of cleaning Ganga has not been fully achieved. The quality of the river water at some locations has marginally improved. In many other locations, the quality in terms of BOD/COD has in fact worsened. Quality in terms of FC count has been poor virtually all along the river downstream of Haridwar. Without the STPs, the situation would have been much worse.
- (vii) The coliform count in the river has increased particularly at pilgrimage places due to bathing of pilgrims who also pollute the river.
- (viii) If the Ganga has to be cleaned up fully, it would require adequate resources, proper planning, anticipation of capacities with levying of user charges and proper maintenance of assets created.
- (ix) Resources required are large, but not daunting. A rough estimate indicate that NRCP projects all over India are estimated to cost about Rs.11,250 cr. to Rs.33,000 cr. to create additional STP capacity of about 38000 MLD by 2020. For the Ganga basin alone the resources required to create 8250 MLD of additional capacity to meet present shortfall above can be between Rs.2,060 crores to Rs.7,180 crores. To meet the projected requirement for 2020, the resources required would vary from Rs.2,812 crores to Rs.9,788 crores. This could be provided for under the Jawaharlal Nehru Urban Renewal Mission (JNNURM). These estimates exclude the cost of land and cost of interception and diversion (I&D) works. The I&D works should be looked upon as a short term solution. In the long run, the possibility of providing every household with sewage connection should be explored. These costs should be added to the cost of STP technology mentioned above.

- (x) Keeping in view both quantity and quality of the river, institutional arrangements for holistic programme at National and State level unlocking the potential of human technical and financial resources for river conservation, etc. should be considered.
- (xi) The idea of measuring not only BOD but also FC count and aquatic life as measurement of pollution abatement should be explored and the CPCB and SPCBs should work in developing their capacities for such measurement of parameters.
- (xii) GAP should not be just for cleaning Ganga waters, but for improving all habitations on its banks. The ultimate goal should be to provide sewerage facilities for all and zero discharge of untreated sewage into the river.

352 S. NO. 1 (R)

Annexure-I

भारत सरकार
पर्यावरण एवं वन मंत्रालय
GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT & FORESTS

BY SPECIAL MESSENGER

F.No.K-13011/4/2006-NRCD-I

Dated: 25th January, 2008

To
The Member Secretary,
Planning Commission,
Yojana Bhavan,
Parliament Street,
New Delhi-110 001

① Member (CWP) KP
B. Adv (Adm) ✓
②

DS Adm
JE
30/1

8/2007
DRC W/O
(Sr. Avinash Mishra)
Pl. Convey to
Director
appropr. H

Sub: Copy of the order dated 5th December, 2007 in the matter of Writ Petition No.3727 of 1985 - M.C.Mehta vs. Union of India & Others, pending before the Hon'ble Supreme Court of India regarding pollution in river Ganga

20/2

Sir,

सचिव का कार्यालय
O/o Secretary
इसकी फाइल/Computer Dy. No. 258/1
दिनांक/Date 24/1/08

This is in connection with a Public Interest Litigation (CWP 3727/1985 M.C. Mehta Vs. Union of India and others) related to pollution in river Ganga pending before the Hon'ble Supreme Court of India. The matter was last heard on 5.12.2007 and the Hon'ble Court has observed, among others that 'If further funds are allocated by the Union of India, the Planning Commission Member In-charge of Water Resources may verify whether those funds are duly utilized for the States effectively'. A copy of the order is enclosed.

URGENT

A. opar a
new file
and put up
E&F
Section
24/1

2. Presently, the Ganga Action Plan Phase-II (GAP-II) is under implementation with a sanctioned cost of Rs.539.31 crore for pollution abatement works in river Ganga in the states of Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal. The funds are allocated by the Planning Commission under the overall Centrally Sponsored Scheme of National River Conservation Plan (NRCP) which covers works in all major rivers of the country taken up under the Plan. This Ministry projects estimates of state-wise fund requirements for the NRCP on the basis of Physical and Financial Progress of the ongoing/sanctioned works as well as any new work to be undertaken. The allocation for every financial year is decided by the Planning Commission based upon these projections during Annual Plan Consultations in the months of November-December of the

Diary No. 109
21/2

जहाँ है हरियाली ।
वहाँ है खुशहाली ।।

राष्ट्रीय नदी संरक्षण निदेशालय National River Conservation Directorate
पर्यावरण भवन, सी.जी.ओ. कॉम्प्लेक्स, लोदी रोड, नई दिल्ली-110 003
PARYAVARAN BHAWAN, C.G.O. COMPLEX, LODHI ROAD, NEW DELHI-110003
0375/WR
19/2/2008

preceding year. Fund releases to the implementing agencies nominated by the States are made on the basis of progress of works and receipt of Utilisation Certificates in respect of the previous fund releases. Regular review and monitoring of implementation of works are done both by NRCD and the nodal Department concerned in the respective State Governments.

3. The process of utilization of funds by the States already allocated and released for the works during the year 2007-08 is underway and the estimates for allocation have been reported to the Planning Commission for the year 2008-09. Planning Commission may like to take necessary action in the light of the observations of the Hon'ble Supreme Court.

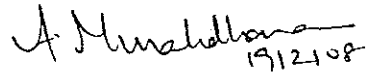
Yours faithfully,


(M. Sengupta) 28/11/08
Adviser(NRCD)


Encl: As above

Planning Commission
W.R. Division

E & F Division may kindly take further action on the Supreme Court decision for appropriately appraising Member (Water).


19/12/08
(A. Muralidharan)
SRO(WR)

Joint Adviser (E&F) P.C.
No. 11(BB)/2008-WR.


23/2/08

D.NO 594/98/SC/PT. 3

3

SUPREME COURT OF INDIA
NEW DELHI

Dated : 15th December, 2007

From : Assistant Registrar (PIL CELL)

- To :
1. The Chief Secretary,
State of U.P.
Lucknow
 2. The Chief Secretary,
State of Uttarakhand
Nainital.
 3. The Chief Secretary,
State of Bihar,
Patna.
 4. The Chief Secretary,
State of Jharkhand,
Ranchi.
 5. The Chief Secretary,
State of West Bengal,
Kolkatta.
 6. The Member Secretary,
Central Pollution Control Board,
CBD-cum-Office Complex,
East Arjun Nagar, Shahdara,
Delhi - 110 032.
 7. Mr. Kishan Mahajan, Advocate (A.C)
162, Lawyers Chamber
Patiala House Court.
 8. The Secretary,
Ministry of Environment & Forest,
Govt. of India, C.G.O. Complex,
Lodhi Road, New Delhi.

~~A. V. S. (Dr. M. Sengupta)~~
Director (NRCO)

[Signature]
1/1/08

[Signature]
29/12

[Signature]
Smt. Madhujit

1772/50/100/2007
31/12

536 (Adv. Ch. 89)
5/1/12

IN THE MATTER OF:

WRIT PETITION (CIVIL) NO. 3727 OF 1985
(Under Article 32 of the Constitution of India)

WITH
INTERLOCUTORY APPLICATION NOS. 103, 106, 343 & 348

Contd...2

5/1/07
16/1/07
28/12
277/Dio-CA
1/1/07

INDEX NO. 3

COURT NO. 1

SECTION 42

S U P R E M E C O U R T O F I N D I A
R E C O R D O F P R O C E E D I N G S

135053

W.P. (C) No. 3727/1985

M.C. MEHTA

Petitioner(s)

VERSUS

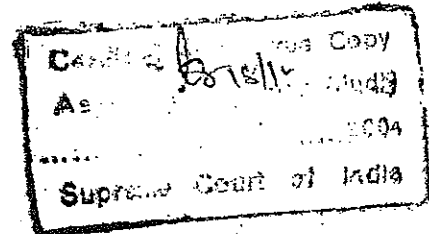
UNION OF INDIA AND ORS.

Respondent(s)

(With office report)
(S.T.P. and Railway matters)

WITH

I.A.No.103 in W.P(C) NO. 3727 of 1985
I.A.No.106 in W.P(C) NO. 3727 of 1985
(For directions on behalf of C.P.C.B.)
I.A.No.343 in W.P(C) NO. 3727 of 1985
(For directions)
I.A.No.378 in W.P(C) NO. 3727 of 1985
(For intervention)



Date: 05/12/2007 These Petitions were called on for hearing today.

CORAM :

HON'BLE THE CHIEF JUSTICE
HON'BLE MR. JUSTICE R.V. RAVEENDRAN

Mr. Krishan Mahajan, Adv. (A.C.)

For Petitioner(s) Mr. M.C. Mehta, Petitioner-In-Person

For Applicant Mr. Anis Suhrawardy, Adv.

For CPCB Mr. Vijay Panjwani, Adv.

For Respondent(s) Mr. T.S. Doabia, Sr. Adv.
Mrs. Kiran Bhardwaj, Adv.
Ms. Sadhna Sandhu, Adv.
For Mr. D.S. Mehra, Adv.

Mr. Ashok K. Srivastava, Adv.
Mr. B.K. Prasad, Adv.

For State of
Uttaranchal Ms. Rachana Srivastava, Adv.

For State of UP Mr. Shail Kr. Dwivedi, AAG
Mr. Mukesh Verma, Adv.
Mr. C.P. Pandey, Adv.
Ms. Vandana Mishra, Adv.
Mr. S. Wasim A Qadri, Adv.
Mr. Rajiv Dubey, Adv.

Mr. A.K. Jha, Adv.
 Mr. G.V. Rao, Adv.
 For Mr. Kamendra Mishra, Adv

State of W.B. and
 For K.M.D.A.

Mr. Janardan Das, Adv
 Mr. Swetaketu Mishra, Adv.

Ms. A. Gupta, Adv.
 Mr. Janardan Das, Adv.

NCT of Delhi

Mr. S. Wasim A. Qadri, Adv.
 Mr. Jubair Ahmad Khan, Adv.
 For Mr. D.S. Mahra, Adv.

Mr. B.B. Singh, Adv.

M/s. Sinha & Das, Adv.

Mr. Pradeep Mishra, Adv.

Mr. B.S. Banthia, Adv.

Mr. P.K. Chakravarty, Adv.

Mr. Shashi B. Upadhyay, Adv.

Mr. Debasis Mishra, Adv.

Mr. Rattan K. Chandhary, Adv.

Mr. T. Anil Kumar, Adv.

Mr. Manoj Swarup & Co., Adv.

Mr. Vishwajit Singh, Adv.

Mr. Virender Kr. Sawhney, Adv.

Dr. Kailash Chand, Adv.

Mr. Goodwill Indeevar, Adv.

Mr. Sushil Kr. Jain, Adv.

Mr. Mriduala Raj Bhardwaj, Adv.

Mr. Dinesh Kr. Garg, Adv.

Mr. S.K. Dhingra, Adv.

Mr. Gaurav Jain, Adv.
 For Ms. Abha Jain, Adv.

Mr. B.V. Balram Das, Adv.

Mr. K.K. Mohan, Adv

- State of Bihar Mr. Manish Kumar, Adv.
 Mr. Gopal Singh, Adv.
- For WBPCB Mr. V.G. Pragasin, Adv.
- UP Jal Nigam Mr. Ajay K. Agrawal, Adv.
- State of Haryana Mr. Manjit Singh, Adv.
 Mr. T.V. George, Adv.
- State of Tripura Mr. Ritu Raj Biswas, Adv.
 Mr. Gopal Singh, Adv.
- Intervenor Mr. K.K. Mani, Adv.
 Mr. C.K.R. Lenin Sekar, Adv.
 Mr. Mayur R. Shah, Adv.

UPON hearing counsel the Court made the following
O R D E R

Heard learned amici curiae, learned counsel appearing for Union of India and States of U.P, Uttaranchal, West Bengal and learned counsel for C.P.C.B.

There was large-scale pollution caused by untreated sewage being let into the river by the various municipalities/nagar palikas and also by the industries on either side of the river letting their toxic untreated industrial effluents into the river. The river Ganges passes through five States and there are about 29 major cities, 23 medium cities and about 48 towns. The scheme for cleaning Ganges started in the year 1985 and the Union Government allocated about Rs.949 crores. Ganga Action Plan (Phase I), Rs.451 crores were released by the Government of India to the States of Uttar Pradesh, Bihar and West Bengal. For Ganga Action Plan (Phase II) Rs.279 crores has been released to five States - U.P., Bihar, Uttaranchal, Jharkhand and West Bengal.

But the results have been far from satisfactory

The Comptroller and Auditor General of India in the report for the year ending March, 2000, was stated that though the funds have been allocated to the various States under the Ganga Action Plan, so far they have not filed the utilization certificates and the scheme as such has not progressed well. Many defects and misutilisations have been pointed out by the C&AG in his Report.

The Public Accounts Committee (2005-2006) in their 26th Report before the Parliament has also stated that there are shortfalls in respect of achievement of overall targets and there is urgent need to further strengthen the monitoring of work.

In the affidavit filed on behalf of National River Conservation Directorate (NRCD), MoEF, it was stated that the main objective of the Ganga Action Plan, now a part of National River Conservation Plan (NRCP) is to check pollution in rivers and improve the quality of the water by the following pollution abatement schemes:

- (i) interception and Diversion (I&D) works to capture the raw sewage flowing into the river through open drains and divert them for treatment;
- (ii) Installation of Sewage Treatment Plant (STP) for treating the diverted sewage;
- (iii) Putting in place Low cost Sanitation (LCS) works to prevent open defecation on river banks;
- (iv) Establishing Electric and/or Improved Wood based Crematoria (EC&IWC) to conserve the use of wood and help in

ensuring proper cremation of bodies brought to the burning ghats;

(v) Afforestation and tree planting;

(vi) Creation of public awareness; and

(vii) Taking up River Front Development (RFD) works such as improvement of bathing ghats etc.

It is evident that the major work has to be done by the concerned States and Municipalities/Nagar palikas. The Pollution Control Board of the respective States should also ensure that the various industries which are letting effluents into the river are prevented from discharging untreated effluents in the river. The monitoring carried on by the PCBs of the respective States is far from satisfactory. The Central Government, being the funding authority, should have monitored whether the work have been carried out properly and the funds were utilised for the work.

Many of the States have not so far filed the utilization certificates for the money utilisation. Even the State that have filed utilization certificate have not disclosed the full particulars. Proper affidavits with details should be filed within a period of eight weeks.

If further funds are allocated by the Union of India, the Planning Commission Member In-charge of Water Resources may verify whether those funds are duly utilised for the States effectively. The States of Bihar, U.P. Jharkhand, Uttrakhand, West Bengal are directed to file further affidavits indicating the progress in this regard and

9

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also utilization certificates of funds in respect of already received by them. We request the Central Pollution Control Board, Union of India and the amicus curiae to suggest what further steps could be taken to improve the situation.

List in the month of March, 2008.

I.A.No.343

The Central Pollution Control Board is directed to file latest Report (2007 Report) regarding Environmental Quality in the Polluted Singrauli Area.

Rathawan
(R.K. DHAWAN) 10/12/07
COURT MASTER
7/5

Veera
(VEERA VERMA)
COURT MASTER
10/12

Recd on 11/12/07
AZ
11/12/07

Annexure II

Projections of Sewage Generation and Cost

State	(Summary)			
	STP Created (MLD)		Cost (Rs. Lakh)	
	Target	Actual	Actual	Completion Cost
Bihar	135.50	122.00	5178.87	5083.65
Jharkhand	-	-	20.67	24.57
U.P.	389.24	352.24	170.62	143.41
West Bengal	504.54	504.54	36715.69	18357.85
Uttarakhand	71.50	28.50	6943.72	3068.25
Total	1100.78	1007.28	49029.57	26677.73

Annexure III

Projections of Population, Sewage Generation and STP Capacity Required

State	Population (in lakh)		Domestic Sewage (MLD)	Existing STP Cap. (MLD)	STP Cap. Under augmentation (MLD)	Population Projections (in lakh)		Projected Sewage Generation (MLD)	
	1995	2001				2010	2020	2010	2020
Bihar	22.48	28.03	394.12	124.00	-	37.16	48.01	425.00	553.50
Jharkhand	0.49	0.80	2.50	-	-	1.00	1.21	3.00	3.70
U. P	42.640	56.249	1026.40	385.06	433.11	76.031	100.638	1078.795	1310.361
West Bengal	98.01	105.22	461.15	482.44	-	117.27	128.72	491.73	557.36
Uttarakhand	2.232	2.492	30.94	28.50	43.00	6.039	7.562	75.03	93.90
Total	165.852	192.791	1915.11	1020.00	476.11	237.50	286.14	2073.56	2518.82

Planning Commission
(E&F Division)

Subject: Report on Official Tour Undertaken by Dr. Kirit S. Parikh, Member (WR) to review Ganga Action Plan Projects at Haridwar, Uttarakhand during 18-20, August, 2008.

Pollution of Ganga at Haridwar/Rishikesh is due to municipal waste, flooding the River through drains and nullahs, deforestation causing disiltation and erosion of soil due to floods, religious causes like immersion of ashes, idols and other offerings to the River and lack of awareness leading to open defecation, disposal of dead animals and half-burned bodies in the River, use of soap while bathing and washing of clothes and vehicles.

The objective of Interception and Diversion (I & D) is to intercept sewage and divert it to the Sewage Treatment Plant (STP) and to ensure proper carriage of untreated sewage to the STP and treated sewage from the STP. The objective of STP is to improve quality of water in Ganga by reducing BOD and fecal coliform and by increasing dissolved Oxygen. The following are the norms adopted for the Ganga Action Plan.

NORMS FOR RIVER WATER QUALITY

S. No.	Parameter	Prescribed Limit
1.	BOD	< 3 mg/lit
2.	DO	> 5 mg/lit
3.	Fecal Coliform*	<500 MPN/100 ml (desirable) <2500 MPN/100 ml (maximum)

NORMS FOR EFFLUENT DISPOSAL

S. No.	Parameter	Prescribed Limit
1.	BOD	< 30 mg/lit
2.	Suspended Solids	> 50 mg/lit
3.	Fecal Coliform*	<1000 MPN/100 ml (desirable) <10000 MPN/100 ml (maximum)

* Imperative under Honb'le Supreme Court's directions.

18 MLD STP at Jagjeetpur at Hardwar

The plant consists of Grit Removal Tank, 3 primary treatment tanks for settling sledge, 3 aeration tanks with agitation for decreasing BOD and increasing DO, 3 secondary settling tanks, sludge removal for bio-gas generation and open lagooning of sludge for making compost. The inlet BOD of 170-200 mg/lit is reduced after treatment to 8-10 mg/lit which is fit for discharging into the River. Sludge is tapped at primary treatment tanks and sent to thickener and recycled to secondary settling tank. The process is Activated Sludge Process (ASP). At present the plant is

treating about 22 MLD of sewage which is more than its rated of capacity of 18 MLD. The plant is working very well. The capacity is proposed to be expanded to 27 MLD by December, 2009. The estimated cost is about Rs. 16 crore (70:30 funding pattern).

There is an old 6 MLD oxidation pond based STP at Lakkarghat commissioned in 1991 under GAP-I. The plant consists of 5 oxidation ponds of 1.2 acres each where sewage of 170-200 BOD is reduced in stages through 5 oxidation to less than 30 BOD. The plant is working very efficiently with no power requirements as the operations are entirely through gravity. This is a very efficient system but the drawback is that requirement of land is very high.

New STP of 9 MLD at Bhopatwala at Haridwar

Total estimated cost is Rs. 6.13 (70:30 funding pattern)

Planning Commission
(E&F Division)

Sub: Report on official tour Undertaken by Dr. Kirit S. Parikh, Member (WR) to review working of Ganga Action Plan projects at Patna during the period 23rd to 25th August, 2008.

Under the Ganga Action Plan (GAP), Phase I, 45 schemes were sanctioned out of which 44 were completed. One project at Munger was construction of 13.5 mld Sewage Treatment Plant (STP) which was held up due to pending of writ petition before Patna High Court. Munger project is about 70% complete but there is a dispute between the Government and the civil contractor, due to which the case went into arbitration and the arbitrator ruled in favour of the contractor. The State Govt. has appealed against the arbitrator's decision in Patna Civil Court. The total sanctioned cost for 45 schemes is Rs. 54.02 crore out of which Government of India released Rs. 53.55 crore and total expenditure as on 31st March 2008 is Rs. 53.55 crore. The locations are at Patna, consisting of Interception and Diversion (I&D), STP, Low Cost Sanitation (LCS), River Front Development (RFD) and Solid Waste Management. Other locations with similar projects are at Chapra, Munger, Bhagalpur, Barauni and Mokamah. All these projects have either of Core and non-Core projects or some of them. All of them except STP at Munger were completed.

45 mld STP at Saidpur, Patna

The plant was originally commissioned in 1999 with 45 mld capacity using activated sledge process. The plant consists of grit removal, primary settling tank, aeration, secondary settling tank, digester, and sludge pond. The plant is able take a load of 30-32 mld of sewage of 160-170 mg per litre (BOD) reducing into about 20 BoD after treatment which is fit for either irrigation or for reducing it to Ganga.

The plant has no facilities for use of Biogas generated from the sludge and the biogas is wasted by flaring. The plant is entirely dependent on grid power supply and the power cut is of 1-2 hours everyday during which the plant has to be shut down.

The plant operations and maintenance agency (Bihar Rajya Jal Parishad) were advised to install facilities of dual, fuel generator for utilising the biogas generated. A major problem is shortage of funds. Against requirement of about Rs. 8,40 crore per year towards Operation & Maintenance (O&M), the Parishad has got only Rs. 55 lakh last year. In addition, most of the plant and the machinery are rusted and deteriorated which need to be replaced immediately for which proposal costing Rs. 35 Crore has been submitted by the BRJP to the Government of Bihar.

35 MLD STP at Beur, Patna.

The plant was initially of capacity of 15 mld and later increased to 35 mld. The plant is similar to the Saipur plant with the same ASP being used. BOD is getting reduced from 160-180mg/lit to less than 18-20 mg/lit. This plant is also not able to take full load due to dilapidated condition of plant and machinery. Here also, there is need for a dual fuel power plant. Biogas generated is not being utilised, but is being burned wastefully.

Planning Commission
(E & F Division)

Subject: Report on official tour Undertaken by Dr. Kirit S. Parikh, Member (WR) to review Ganga Action Plan (GAP) projects at Varanasi/Allahabad during 23.10.08 to 25.10.08.

Varanasi

A meeting was chaired by Member (KP) on 23-10-08 with Shri B. Sikka, Director (NRCD-MOEF), Principal Secretary (UD), Secretary (UD), GM-NRCD, Varanasi, Project Manager-Varanasi, GM-GAP (Allahabad), GM-GAP (Varanasi), Chief Engineer- UP Jal Nigam and the undersigned.

2. A detailed presentation was made by UP Govt. officials. Domestic sewage being generated in the city is 290 MLD of which only 102 MLD is being treated in the STPs. Balance 188 MLD is being drained untreated into Ganga.
3. Shri B. Sikka, Director, MOEF advised the State Govt. to provide operation and maintenance (O&M) cost in time to STPs which has not been ensured in the past. The STPs are maintained only when they breakdown. However, the State Govt. officials assured that releases of O & M cost have improved during the last six months and all the earlier backlog has been released.
4. To a query from Member (KP), it was stated that Dinapur and Bhagwanpur STPs at Varanasi have capacities of 80 MLD and 9.8 MLD respectively. Diesel Loco Works (DLW) of Indian Railways are also operating another STP (12 MLD). The Dinapur and Bhagwanpur STPs are based on Activated Sludge Process. It was also indicated that both the STPs have dual –fuel engines which are operated during power cuts. These dual fuel engines run on a mixture of bio-gas generated in the STPs and diesel in the ratio of 70:30 and supplement the power supply to the STPs during power cuts. It was also indicated that the STPs do not have dedicated power lines which is affecting their performance.
5. To another query from Member (KP), the following information was furnished by the State Govt. officials for Varanasi :

Present Population	Present Sewage Generation (MLD)	Existing STP Capacity (MLD)	New STP Capacity to be added (MLD)
16 lakh	290	102	200+37

6. By the years 2015 and 2030, the generation of domestic sewage is likely to go up to 331 MLD and 389 MLD respectively.

7. The STP capacities of 200 MLD and 37 MLD are yet to be sanctioned. The DPR of 37 MLD capacity STP is being prepared again by Sankat Mochan Foundation on behalf of UP Govt. based on the new Advanced Integrated Waste Stabilisation Pond System (AIWPS) technology.

Allahabad

8. It was stated that projects under G.A.P were commissioned in the city in 1986. At the time, the city was generating about 110 MLD of domestic sewage which used to drain into 13 drains. Population of the city at present is 12 lakh. The number of drains increased from 13 in 1986 to about 57 now. Correspondingly, sewage generation had also increased many fold. At present, the city is generating about 210 MLD of domestic sewage.
9. At present, two plants are functioning at Allahabad at Naini (60 MLD) (based on ASP) and at Salori (29 MLD) (based on fluidized aerobic bed process). Compared to the ASP process, FAB process requires only about 10-20 per cent of land compared to that required by the ASP process.
10. Based on the Feasibility Report prepared with the assistance of JICA, the State Govt. has prepared a project for tackling the balance pollutionload at Allahabad at a cost of Rs. 450 cr. However, keeping in mind the revamping of river conservation strategy which is before GOM for decision, MOEF can not sanction the project at present and the possibility of taking up these projects under JNNURM has to be explored.

It was indicated by the State Govt. that for STP have been planned in the city on cost of Rs. 45 Crore consisting of new plant of 65 MLD, 50 MLD, 15 MLD and ornamentation of 60 MLD capacity to 80 MLD. These, a total of 210 MLD of STP capacities are likely to be created in the city 5 years after sanction. Like in Varanasi the acquisition of land of STP is a major constraint in Allahabad.