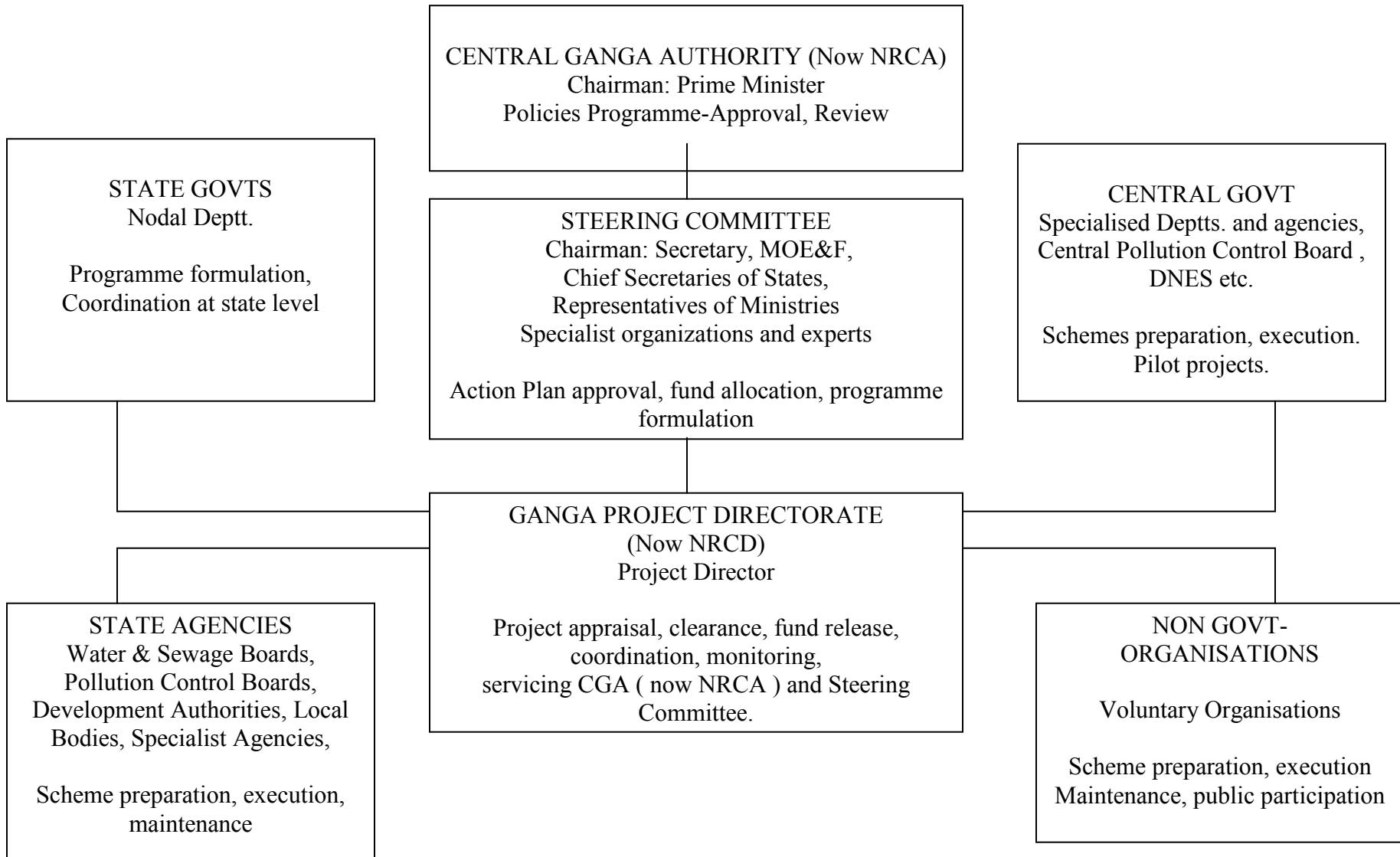


Annexure I

ORGANIZATIONAL STRUCTURE FOR THE GAP (NOW NRCP)

(Source: Department of Environment, Govt of India, 1985)



Annexure II

STATUS OF PROGRESS OF NATIONAL RIVER CONSERVATION PLAN

As on 31/03/2006

(Rs. In lakh)

| ACTION PLAN / STATE | ESTIMATED COST | NO OF SANTD. PROJECTS 31-12-2006 | COST OF SANTD. PROJECTS 31-12-2006 | NO OF COM. PROJECTS 31-12-2006 | FUNDS RELEASED BY GOI 31-12-2006 | FUNDS RELEAASED DURING 2006-2007 | EXPDT. INCURRED (BY STATE) (31/12/2006) | STP CAPACITY APPROVED (MLD) | S C S (|
|----------------------|-----------------|----------------------------------|------------------------------------|--------------------------------|----------------------------------|----------------------------------|---|-----------------------------|----------|
| DELHI | | | | | | | | | |
| YAP | 1994.30 | 3 | 1758.473 | 3 | 1288.70 | 0.00 | 1621.64** | 20 | 2 |
| YAP-EXTENDED | 16662.12 | 9 | 16305.61 | 9 | 16425.84 | 0.00 | 14447.89 | 10.00 | 1 |
| YAP PHASE-II | 38717.00 | 0 | 0.00 | 0 | 440.00 | 150 | 0.00 | 135.00 | |
| TOTAL (DELHI) | 57373.42 | 12 | 18064.08 | 12 | 18154.54 | 150 | 16069.53 | 165.00 | 3 |
| U.P. | | | | | | | | | |
| YAP | 25023.49 | 89 | 24859.54 | 89 | 20733.50 | 0.00 | 24188.84 | 401.25 | 4 |
| YAP-EXTENDED | 2964.75 | 57 | 3406.96 | 57 | 3268.00 | 0.00 | 3134.18 | 0.00 | |
| YAP PHASE-II | 12413.00 | 4 | 10612.32 | 0 | 1360.00 | 0.00 | 423.97 | 38.00 | |
| GOAP | 5811.37 | 32 | 5575.09 | 26 | 4049.72 | 0.00 | 6308.36 | 436.00 | 4 |
| GOAP-II | 26326.00 | 6 | 26304.00 | 0 | 2940.00 | 1140.00 | 1716.96 | | |
| GAP-(MS+SC) | 19904.74 | 43 | 17114.32 | 17 | 9374.06 | 2137.00 | 9708.85 | 400.50 | 8 |
| TOTAL (U.P.) | 92443.35 | 231 | 87872.23 | 189 | 41725.28 | 3277.00 | 45481.16 | 1275.75 | 9 |
| HARYANA | | | | | | | | | |
| JBIC-YAP | 20650.63 | 69 | 19762.93 | 69 | 15570.40 | 0.00 | 19606.48* | 303.00 | 3 |
| YAP-EXTENDED | 2228.33 | 29 | 2563.84 | 29 | 2300.00 | 0.00 | 2515.70 | | |
| YAP PHASE-II | 6250.00 | 2 | 351.82 | 0 | 918.00 | 690.00 | 187.31 | | |
| NON-JBIC-YAP | 1976.93 | 13 | 1893.50 | 13 | | | 2698.85 | 20.00 | |
| TOTAL (HAR) | 31105.89 | 113 | 24572.09 | 111 | 18788.40 | 690.00 | 25008.34 | 323.00 | 3 |
| UTTARANCHAL | 8563.60 | 44 | 7062.15 | 21 | 2551.00 | 825 | 1578.80 | 27.33 | 1 |
| BIHAR | 3242.23 | 18 | 395 | 14 | 307.94 | 0.00 | 297.54 | 51.20 | 0 |
| W.B. | | | | | | | | | |
| DAP | 1219.18 | 10 | 398.41 | 6 | 10.74 | 0.00 | 71.71 | 27.95 | |
| GAP-(MS+SC) | 31746.06 | 168 | 21642.92 | 53 | 13272.63 | 1800.00 | 10557.92 | 269.85 | 1 |
| CETP | 6500.00 | 3 | 7696.00 | 1 | 3328.00 | 0.00 | 3952.00 | 30.00 | |
| TOTAL (W.B.) | 39465.24 | 181 | 29737.33 | 60 | 16611.37 | 1800.00 | 14581.63 | 327.80 | 2 |

| | | | | | | | | | |
|---------------------------------------|-----------------|------------|-----------------|------------|-----------------|---------------|-----------------|---------------|----------|
| CONSULTANTS, ESTT. R&D | 13072.52 | | | | 6429.78 | 784.46 | | | |
| GAP PHASE--1 | 46203.47 | 261 | 45331.00 | 259 | 45170.00 | 0.00 | 43330.00 | 882.00 | 8 |

NRCP—National River Conservation plan, YAP- Yamuna Action Plan, GOAP- Gomti Action Plan, DAP- Damodar Action Plan

Ms- Main Stem, S/C – Supreme Court Town, CETP – Common Effluent Treatment Plan

* - includes the State Govt's share of expenditure incurred till 31/3/97 & as well as the cost of Land Acquisition after 31/3/97 which is also to be borne by the state Govt.

#- Excess amount over CCEA approved cost is to be borne by the State Govt.

** - includes the State Govt's Share

Source: MIS report 2006, MOE&F

Annexure III

LIST OF THE 25 CLASS I TOWNS UNDER GAP PHASE – I

| Uttar Pradesh | Bihar | West Bengal |
|-----------------------|---------------|--------------------------|
| 01. HARDWAR-RISHIKESH | 07. CHAPRA | 11. BAHRAMPORE |
| 02. F'BAD & FATEHGARH | 08. BHAGALPUR | 12. NABADWIP |
| 03 ALLAHABAD | 09. MUNGER | 13. HUGLI CHINSURA |
| 04. KANPUR | 10. PATNA | 14. CHANDAN NAGAR |
| 05. VARANASI | | 15 SERAMPORE |
| 06. MIRZAPUR | | 16. BALLY |
| | | 17. KALYANI |
| | | 18. BHATPARA |
| | | 19. TITAGARH |
| | | 20. PANIHATI |
| | | 21. HOWRAH |
| | | 22. CALCUTTA CORPN. AREA |
| | | 23. BARANAGAR |
| | | 24. KAMARHATI |
| | | 25. NAIHATI |

Annexure IV

| TOWN WISE ESTIMATED COST OF YAMUNA ACTION PLAN | | | | | |
|---|-------------------|-----------------|------------------|-------------------|------------------|
| (Rs.in lakhs) | | | | | |
| River No. | River Name | Town No. | Town Name | State Name | CCEA Cost |
| I | Yamuna | 1 | Agra | Uttar Pradesh | 6607.64 |
| | | 2 | Chhchhrauli | Haryana | 102.54 |
| | | 3 | Delhi | Delhi | 1994.30 |
| | | 4 | Etawah | Uttar Pradesh | 796.74 |
| | | 5 | Faridabad | Haryana | 7038.41 |
| | | 6 | Gharaunda | Haryana | 173.37 |
| | | 7 | Ghaziabad | Uttar Pradesh | 8658.14 |
| | | 8 | Gohana | Haryana | 335.60 |
| | | 9 | Gurgaon | Haryana | 2191.54 |
| | | 10 | Indri | Haryana | 128.15 |
| | | 11 | Karnal | Haryana | 2326.97 |
| | | 12 | Mathura | Uttar Pradesh | 2139.85 |
| | | 13 | Muzaffar Nagar | Uttar Pradesh | 1181.14 |
| | | 14 | Noida | Uttar Pradesh | 2679.83 |
| | | 15 | Palwaal | Haryana | 1056.18 |
| | | 16 | Panipat | Haryana | 4152.82 |
| | | 17 | Radaur | Haryana | 181.09 |
| | | 18 | Saharanpur | Uttar Pradesh | 2338.23 |

| | | | | | |
|----------------------------|--|-----------|---------------------|----------------------|-----------------|
| | | 19 | Sonepat | Haryana | 2322.26 |
| | | 20 | Varindavan | Uttar Pradesh | 621.92 |
| | | 21 | Yamunanagar- | Haryana | 2618.63 |
| Sub Total : | | | | | 49645.35 |
| ESTT. & R&D | | | | | 1300.00 |
| OVERALL TOTAL | | | | | 50945.35 |

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Annexure IX
COMPLETED R & D PROJECTS UNDER GANGA ACTION PLAN

| S.NO. | PROJECT | AGENCY | DATE OF SANCTION | BUDJET (RS.LAKHS) | PROJECT OBJECTIVE | FINDINGS AND UTILISATION |
|-------|--|----------------------|------------------|-------------------|---|---|
| 1 | Development of PC based software for water quality modelling | IIT, Bombay | 27.1.88 | 8.48 | Development of 1-D and 2-D models for predicting the river scenario with the implementation of GAP. | User friendly and menu driven STREAM-I and STREAM-II developed to provide simulation results of DO and BOD. Prediction scenarios and comparisons with TOMCAT done. |
| 2 | Sewage fed Pisciculture with special reference in Bihar | MKU Madurai | 27.10.88 | 11.16 | Prevention of pollution by recycling of sewage through fish culture with the dual aim of protein production and biodegradation of organic matter causing sewage purification . | Manuals on ‘Risk and Safety aspects of sewage Recycling and O&M schedule of sewage recycling ponds’ prepared for initiating dovetailing pisciculture in the existing or proposed STPs where land is available. |
| 3 | Bio-monitoring, bio- conservation of river –Ganga in Bihar | Bhagalpur University | 26.9.89 | 5.40 | The study aimed at evaluating the potentiality of phytoplanktons, bacteria and micro invertebrates. It also aimed at ascertaining the role of riparian vegetation in checking the erosion of banks. | The study was conducted for three major location at Munger , Bhagalpur and Kahalgaon in Bihar .. Identification of pollution sensitive and tolerant species. Heavy metals uptake and floor resistance ability of riparian plants studied. A list of pollution abating and resistant activities provided to NAEB for undertaking Afforestation activities. |
| 4 | Rehabilitation of fresh water turtle in river Ganga. | UP Wildlife | 17.3.88 | 59.32 | The project aimed at rehabilitating the fresh water soft shelled turtles that have gradually disappeared from river river Ganga owing to a number of causes like poaching , pollution, habitat degradation etc, | Turtle hatching and rearing centers set-up at Kukrail (Lucknow) and sarnath (Varanasi) with incubation facilities for 18,000 eggs and rearing facilities for 15,000 turtles. A 7 km stretch of Varanasi secured as |

| | | | | | | |
|---|--|-------------------|---------|--------|---|--|
| | | | | | Also the project aimed to utilise the scavenging capabilities of these carnivores animals for reducing the organic pollution from dead organic matter of human and animals bodies. | sanctuary. 38,000tutles released in river Ganga. |
| 5 | Environment impact of GAP on public health | NEERI & AIIH & PH | 14.2.89 | 16.76. | The study aimed at evaluating the cost of Ganga Action Plan schemes against improvements in water quality aesthetics. Mortality and Morbidity of water borne and water washed Diseases of Users. | Pre and post Ganga Action Plan studies in the towns of varanasi and Nabadwip carried out to correlate the effect of GAP implementation on the health of the pollution. Draft final report submitted. Results to be used for cost benefit analysis of GAP. |
| 6 | Creation of Research database | INSDOC New Delhi | 17.3.93 | 7.00 | To design a user friendly query based research database for the completed research projects of the Integrated Eco –development Research Programme of river Ganga involving 14 universities and 49 research projects. | The database has been available on the national and international network for use by various research institutes .INSDOC has also been asked to prepare a brochure for popularizing the database. |
| 7 | Fate of fecal coliforms in USAB plant at Jajmau Kanpur. | IIT, Kanpur | 21.6.93 | 1.31 | Evaluation of efficacy of UASB plant in reducing the fecal coliform doses counts, suggesting optimum doses of chlorine for reducing the bacterial load upto desired levels and cost benefit analyses of maturation ponds Vs. Chlorination in reduction of bacterial count in domestic sewage. | Effect of seasonal variation on the efficacy of UASB plants studied, optimum doses of chlorination provided Cost benefit analyses of various options not done. |
| 8 | Monitoring and performance Evaluation of 36 mld UASB plants in Kanpur. | IIT,Kanpur | 12.9.94 | 2.82 | A comprehensive study of the plant during or. start up, secondary start up and operation thereafter to gain insight into the aspects of design, operation and maintenance. | The results of study helped in overcoming the initializing problems and stablise the reactors. |
| 9 | Economic | Garwal | 24.9.92 | 5.54 | To understand the ecology of | Water quality, ecological change due to |

| | | | | | | |
|----|--|-------------------|---------|-------|--|--|
| | population dynamics of endangered Mahseer. | University | | | breeding habitats for indicator species –Mahseer and quantitative evaluation of factors affecting their population in upper reaches of Alaknanda and Bhagirathi rivers. | construction of barrages/dams etc. food feeding habits of Mahseer, and migration studied standardisation and optimization of hatching through exsitu hatching carried out . |
| 10 | Biological restoration of Ganga in Uttar Pradesh –An indicator. | Jiwaji University | 24.9.92 | 5.39 | The study aimed at conducting surveys for population evaluation of turtles. Others and Mahseer fish . Habitat conditions and breeding site studies for taking effective conservation measures. | Population studies on macro animal population between Rishikesh and Kanpur studied. Ecological aspects of habitat preferences highlighted. Factors to be considered for taking bio- conservation measures enumerated. |
| 11 | Bio- monitoring & Ecorestoration in selected stretches of Ganga & Yamuna | CICFRI, Allahabad | 24.9.92 | 4.45 | Aimed at studying the population of commercial fisheries in the stretch of Kanpur to Buxar in Ganga & Yamuna rivers and factors responsible for their decline. | Status conducted and data from landing centres obtained. |
| 12 | Gangetic dolphin and Turtle bioconservation in Bihar | Patna Uni. | 22.4.01 | 19.17 | The study aimed at carrying out status and distribution of dolphins and turtles in the river Ganga and its tributaries in Bihar .Evaluation of causal factors responsible for depletion of these species in river Ganga. | The population studies of Dolphin, the only cetacean of Ganga has been evaluated and reasons for its decline highlighted. The final out come includes results on habitat degradation and ways restarting the population. The results of the four projects (Nos.9-12 above) are being compiled into one for giving a complete account of macro population of indicator species and bioconservation measures to be adopted. |

| | | | | | | |
|----|---|---|----------|-------------------|---|---|
| 13 | Evaluation of the project on Rehabilitation of fresh water turtles. | WII Dehradun | 29.12.94 | 1.45 | To carry out a physical and financial evaluation of the turtle rehabilitation programme carried out by wildlife from 1987-1994. | The Preliminary findings indicate very low turtle population in the river. The stretch of river declared as sanctuary was highly disturbed and the scavenging potential of the turtle was expected to be low. |
| 14 | Sewage treatment through plantation at Buxar, Bihar. | a)CSSRI. Karnal b)BRJP Bihar | 6.11.90 | 6.53 61.78 | The project aims at using alternate low cost technology utilizing and disposal of sewage using suitable vegetation cover. The technology is economically safe and socially acceptable especially for small towns. | Development of site, interception and conveyance of sewage to the experimental land achieved. Plants/ saplings of eucalyptus grown. Sewage loading rate of 0.3 MLD / Ha achieved. Technology after successful implementation in Dinapur Varanasi, has been planned for certain Towns in YAP/NRCP. |
| 15 | Aquaculture as a tool for treatment of domestic sewage | | 16.7.93 | 27.60 | The project objective is to optimize the aquaculture practices with ref. to land and invest on efficient treatment of domestic sewage alongwith economic evaluation through resource recovery. | The project is in advanced stage of progress and results shall be utilized in some of the NRCP sites. The institute is interacting with implementing agency of Punjab for replicating. |

| | | | | | | |
|----|--|-------------|---------|---------------|---|---|
| 16 | Survey of Medium and Minor rivers in coastal states. | Cpcb | 27.3.95 | 2.00 +8.40 | The costal states of Gujarat , Kerala, Tamil Nadu and Orissa to carry out detailed surveys of their medium & minor rivers for their status on pollution levels. | The remaining three states of Maharashtra , Karnataka and Andhra Pradesh yet to submit proposals. CPCB has submitted only the report from Goa, other reports awaited. |
| 17 | Rehabilitation of fresh water. | UP Wildlife | 6.10.94 | | A status survey carried out in the 550Km stretch of river Yamuna below Mathura and based on the same a proposal on turtle rehabilitation on the lines of Ganga under consideration. | The proposal not accepted by the Research committee. UP wildlife to take funds from UP govt. |

Source: MIS report 2006, MOE&F

Annexure V

**RIVER WISE ESTIMATED COST OF
GOMTI ACTION PLAN**

| (Rs. in lakhs) | | | | | |
|-----------------------|----------------------------|-----------------|------------------|----------------------|------------------|
| River No. | Rivers Name | Town No. | Town Name | State Name | CCEA COST |
| I | Gomati | 1 | Jaunpur | Uttar Pradesh | 566.38 |
| | | 2 | Lucknow | Uttar Pradesh | 4774.96 |
| | | 3 | Sultanpur | Uttar Pradesh | 470.03 |
| | Sub Total : | | | | 5811.37 |
| | Estt. & R&D | | | | 300.00 |
| | OVER ALL TOTAL: | | | | 6111.37 |

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Annexure VI

| RIVER WISE ESTIMATED COST OF DAMODAR ACTION PLAN | | | | | |
|---|--------------|-----------------|------------------|-------------------|------------------|
| River No. | River | Town No. | Town Name | State Name | CCEA Cost |
| 1 | Damodar | 1 | Andal | West Bengal | 141.34 |
| | | 2 | Asansol | West Bengal | 761.42 |
| | | 3 | Bokaro-Kangali | Bihar | 115.46 |
| | | 4 | Chicunda | Bihar | 172.12 |
| | | 5 | Dugdha | Bihar | 123.80 |
| | | 6 | Durgapur | West Bengal | 161.51 |
| | | 7 | Jharia | Bihar | 193.35 |
| | | 8 | Ramgarh | Bihar | 295.38 |
| | | 9 | Raniganj | West Bengal | 154.91 |
| | | 10 | Sindri | Bihar | 0.85 |
| | | 11 | Sudamdih | Bihar | 99.83 |
| | | 12 | Telumochu | Bihar | 21.27 |
| Sub Total : | | | | | 2241.24 |
| Estt. & R&D | | | | | 117.00 |
| OVER ALL TOTAL : | | | | | 2358.24 |

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Annexure VII

| RIVER WISE ESTIMATED COST OF GANGA ACTION PLAN (MAIN STEM) | | | | | |
|---|-------------------|-----------------|------------------------|-------------------|------------------|
| (Rs. In lakhs) | | | | | |
| River No. | River Name | Town No. | Town Name | State Name | CCEA Cost |
| 1 | Ganga | 1 | Allahabad | Uttar Pradesh | 3272.36 |
| | | 2 | Arrah | Bihar | 255.20 |
| | | 3 | Badreshwar & Champdani | West Bengal | 3378.84 |
| | | 4 | Baidyabati | West Bengal | 1291.11 |
| | | 5 | Bansberia | West Bengal | 2680.59 |
| | | 6 | Barahya | Bihar | 41.26 |
| | | 7 | Barh | Bihar | 68.69 |
| | | 8 | Barrackpore | West Bengal | 2395.18 |
| | | 9 | Bhagalpur | Bihar | 516.77 |
| | | 10 | Budge-Budge | West Bengal | 985.37 |
| | | 11 | Buxar | Bihar | 76.14 |
| | | 12 | Chapra | Bihar | 167.62 |
| | | 13 | Circular Canal | West Bengal | 901.82 |
| | | 14 | Farrukkabad | Uttar Pradesh | 51.02 |
| | | 15 | Fatwah | Bihar | 66.56 |
| | | 16 | Garmukteshwar | Uttar Pradesh | 153.90 |
| | | 17 | Ghazipur | Uttar Pradesh | 771.78 |
| | | 18 | Hardwar & Rishikesh | Uttar Pradesh | 648.00 |
| | | 19 | Kanpur | Uttar Pradesh | 8573.88 |
| | | 20 | Mirzapur | Uttar Pradesh | 369.60 |

| | | | | | |
|----------------------------|--|----|----------------|---------------|-----------------|
| | | 21 | Mugal Sarai | Uttar Pradesh | 409.02 |
| | | 22 | Munger | Bihar | 116.38 |
| | | 23 | Patna | Bihar | 1163.57 |
| | | 24 | Rishra | West Bengal | 1191.24 |
| | | 25 | Sahebganj | Bihar | 47.50 |
| | | 26 | Saidpur | Uttar Pradesh | 61.62 |
| | | 27 | Sultanganj | Bihar | 93.81 |
| | | 28 | Tolly's Nallah | West Bengal | 3545.36 |
| | | 29 | Varanasi | Uttar Pradesh | 4505.97 |
| Sub Total : | | | | | 37800.16 |
| CETP, Calcutta | | | | | 6500.00 |
| ESTT. & R&D | | | | | 1816.00 |
| OVER ALL TOTAL: | | | | | 46116.16 |

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Annexure VIII

TOWN WISE ESTIMATED COST UNDER GAP-II (SUPREME COURT TOWNS)

(Rs. in lakhs)

| River No. | River Name | Town No. | Town name | State Name | CCEA Cost |
|------------------|-------------------|-----------------|--|----------------------|------------------|
| I | Ganga | 1 | Anupshaher | Uttar Pradesh | 549.07 |
| | | 2 | Badrinath | Uttar Pradesh | 67.54 |
| | | 3 | Bijnor | Uttar Pradesh | 718.20 |
| | | 4 | Chakdah | West Bengal | 235.06 |
| | | 5 | Chunar | Uttar Pradesh | 468.30 |
| | | 6 | Deo Prayag | Uttar Pradesh | 381.19 |
| | | 7 | Dhulian | West Bengal | 371.05 |
| | | 8 | Dimond Harbour | West Bengal | 342.53 |
| | | 9 | Garulia | West Bengal | 1035.82 |
| | | 10 | Gopeshwar | Uttar Pradesh | 97.42 |
| | | 11 | Goyespur, Halilshar & Kanchanpara | West Bengal | 2591.60 |
| | | 12 | Hazipur | Bihar | 292.63 |
| | | 13 | Jangipur | West Bengal | 335.09 |
| | | 14 | Jijganj Azimganj | West Bengal | 556.54 |
| | | 15 | Joshimath | Uttar Pradesh | 43.82 |
| | | 16 | Kahelgaon | Bihar | 206.92 |
| | | 17 | Karan Parag | Uttar Pradesh | 29.23 |
| | | 18 | Katwa | West Bengal | 357.61 |
| | | 19 | Kharda (Extended) | West Bengal | 986.17 |

| | | | | | |
|----------------------------|--|-----------|--------------------------|----------------------|-----------------|
| | | 20 | Konnagar | West Bengal | 1486.50 |
| | | 21 | Maheshtala | West Bengal | 1275.72 |
| | | 22 | Mokamah | Bihar | 176.68 |
| | | 23 | Murshidabad | West Bengal | 488.65 |
| | | 24 | Naihati | West Bengal | 2322.05 |
| | | 25 | North Barrackpore | West Bengal | 1922.23 |
| | | 26 | Ranipur | Uttar Pradesh | 746.09 |
| | | 27 | Rudra Prayag | Uttar Pradesh | 209.38 |
| | | 28 | Shrinagar | Uttar Pradesh | 707.85 |
| | | 29 | Uttar Kashi | Uttar Pradesh | 918.08 |
| | | 30 | Uttarpara Kotrung | West Bengal | 1069.93 |
| Sub Total : | | | | | 20988.95 |
| Estt. & R&D | | | | | 1106.00 |
| OVER ALL TOTAL : | | | | | 22094.95 |

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Annexure X

RESEARCH AND DEVELOPMENT PROJECTS RUPEES IN LAKHS

| S.No. | Name of the Project | Agency | Sanctioned Date | Annual Budget | Amount Released till March '01 | Released during 01-2002 | Completed/ Expected Completion Date |
|-------|---|--------------------|-----------------|---------------|--------------------------------|-------------------------|-------------------------------------|
| 1 | To increase & conserve fish in river Ganga at Haridwar | FFDA Saharanpur | 27/1/79 | 1.00 | 0.65 | 0.00 | 26/01/90 |
| 2 | Non point pollution monitoring of pesticides | IARI New Delhi | 19/3/90 | 32.72 | 32.22 | 0.00 | 30/6/93 |
| 3 | Use of treated sewage for irrigation | IARI New Delhi | 13/3/90 | 18.57 | 17.93 | 0.00 | 18/3/94 |
| 4 | Workshop on Bio –monitoring | CICFRI Barrackpore | 03/6/91 | 0.48 | 0.40 | 0.00 | 03/6/91 |
| 5 | Use of the treated sewage for irrigation | CSWRS Dehradun | 23/4/91 | 2.30 | 1.30 | 0.00 | 31/3/92 |
| 6 | Sludge analysis of STPs | PCRI Haridwar | 15/4/94 | 0.10 | 0.10 | - | 31/12/94 |
| 7 | Sludge analysis of STPs | NEERI Nagpur | 15/4/94 | 0.81 | 0.81 | - | 31/12/94 |
| 8 | Disinfection of treated sewage by UV radiation | PCRI Haridwar | 23/2/94 | 10.868 | 10.868 | - | 31/3/96 |
| 9 | Disinfection of treated raw sewage by Gamma radiation | BARC Baroda | 01/12/93 | 0.00 | 0.00 | - | 31/12/94 |
| 10 | Performance evaluation study of improved wood crematoria | NPC | 28/11/94 | - | 2.50 | - | |
| 11 | Workshop on aquaculture technology for sewage Treatment | UP Wildlife Deptt. | | 1.50 | 0.75 | - | 13-14 Jan 96 |
| 12 | Disinfection of waste water by chlorination techniques | ITRC Lucknow | 08/06/95 | 4.20 | 2.10 | - | 30/9/96 |
| 13 | Impact on Ganga water and ground water pollution due to community toilets | PCRI Haridwar | 21/06/96 | 6.60 | 6.63 | 0.00 | 31/05/97 |
| 14 | Sewage treatment through plantation at Buxar, | BRJP | // | 55.25 | 55.25 | 0.00 | // |
| 15 | Control of microbial pollution through biological means | Delhi University | 07/03/95 | 14.80 | 3.945 | 0.00 | 31/5/90 |

| | | | | | | | |
|----|---|-----------------------------|----------|------|------|------|----------|
| 16 | Preparation of manuscript on technical document on Biomonitoring –Bioconservation | Patna University (RK Sinha) | 11/09/96 | 0.61 | 0.61 | - | 31/03/97 |
| 17 | Guide book & small handout on Dolphin conservation in the Ganga | Patna University. | 07/11/97 | 0.27 | 0.27 | 0.00 | --* |
| 18 | Estimation of non-point pollution in river Ganga at Varanasi | AIHPH Calcutta | 06/05/98 | 4.86 | | 0.00 | 31/05/99 |

Source: MIS report 2006, MOE&F

WATER QUALITY AND SEWAGE TREATMENT MOINTORING PROJECTS

| SL. NO. | NAME OF THE PROJECT | AGENCY | SANCTIONED BUDGET DATE | ANNUAL BUDGET | AMOUNT RELEATED TILL MAR. 01 | RELEASED DURING 01-2002 | COMPLETION/ EXPECTED COMPLETION DATE |
|---------|--|---------------------|------------------------|---------------|------------------------------|-------------------------|--------------------------------------|
| 1 | Microlevel WQM of river Ganga in UP (Rishikesh, Haridwar, Kanpur & Varanasi) | CPCB/UPPCB | 01/04/86 | 36.00 | 31.96 | 0.00 | 30/04/90 |
| 2 | Microlevel WQM | CPCB | 01/04/86 | 95.66 | 97.91 | 0.00 | 01/11/93 |
| 3 | Determination of Heavy metals & pesticides in Ganga River | ITRC Lucknow | 01/07/86 | 56.12 | 56.12 | 0.00 | 30/6/92 |
| 4 | Performance evaluation of STPs | NEERI Nagpur | 24/12/93 | 32.23 | 32.33 | - | 30/9/94 |
| 5 | Performance monitoring of STPs | IIT Kanpur | 21/10/94 | 0.45 | 0.45 | - | 30/11/95 |
| 6 | Performance monitoring of STPs | Patna university | 09/2/95 | - | 0.40 | - | 31/3/95 |
| 7 | Automatic WQM of river Ganga stations | CPCB | 27/9/88 | 72.50 | 73.91 | - | 31/11/95 |
| 8 | Automatic WQM of river Ganga Floating platforms | CPCB O&M/yr | 27/9/88 | 44.74 7.78 | 44.74 12.19 | 0.00 | 30/3/95 |
| 9 | Water quality of river Godavari | APPCB Hyderabad | 15/10/97 | 13.57 | 6.80 | 0.00 | |
| 10 | WQM of river Ganga in Upper stretch Rishikesh –Garhmukteshwar | BHEL –PCRI Haridwar | 03/06/33 | 6.69 | 33.65 | 3.95 | 30/11/97 |
| 11 | WQM of river Ganga in Kanpur stretch | UPPCB | 17.9.93 | 7.64 | 7.18 | 4.29 | 30/11/97 |
| 12 | WQM of river Ganga in Allahabad | NEERI Nagpur | 16.7.93 | 11.45 | 15.66 | | 30/11/97 |

| | | | | | | | |
|----|---|---|-----------|-------|--------|------|----------|
| | -Varasansi | | | | | | |
| 13 | WQM of river Ganga in Bihar stretch | Patna University | 03/06/93 | 18.04 | 44.617 | | 30/11/97 |
| 14 | WQM of river Ganga in West Bengal | CICFRI Barrackpore | 06/11/94 | 38.12 | 12.01 | 0.00 | 30/11/97 |
| 15 | WQM River Yamuna | CPCB | 09/11/94 | 13.95 | 45.79 | 9.43 | 30/11/97 |
| 16 | WQM Western Yamuna Canal | BHEL- PCRI | 21/9/93 | 6.999 | 29.27 | 2.33 | 30/11/97 |
| 17 | QWQM of River Gomati | ITRC, Lucknow | 12/10/93 | 3.96 | 44.16 | 7.58 | 30/11/97 |
| 18 | Analytical quality control for labs engaged in WQM | CPCB | 29/9/94 | 1.70 | 1.70 | 0.00 | 30/6/96 |
| 19 | WQM of river Hindon | Rooke University | 15/9/93 | 5.59 | 23.11 | 5.58 | 14.1/98 |
| 20 | WQM of river Sutluj | TIET ,Patiala | 05/6/96 | 6.122 | 29.73 | 3.11 | 30/12/97 |
| 21 | WQM of rivers in MP. (Khan, Kshipra Chambal Tapti, Wainganga Narmada) | MPSPCB Bhopal | 15/10/96 | 13.88 | 37.73 | 0.00 | // |
| 22 | WQM of river Ganga in Kannauj – Kanpur stretch | IIT Kanpur | 18/12/96 | 6.05 | 20.86 | 4.23 | 30/2/97 |
| 23 | WQM of river Kaveri in Tamil Nadu | Bishop Herber College Tirirchirapalli | 26/07/07 | 7.87 | 7.50 | 0.00 | // |
| 24 | WQM of river Godavari | APPCB, Hyderabad | 15/10/97 | 13.57 | 6.80 | 0.00 | 11/11/98 |
| 25 | WQM of river Damodar | BSPCB, Patna | 02/02/98 | 16.32 | 8.41 | 0.00 | // |
| 26 | WQM of river Ganga under GAP phase II | Patna University Patna | 02/02/98 | 42.44 | 52.27 | 4.62 | // |
| 27 | WQM of river Chambal in Rajasthan | Rajsthan SPCB | 06/02/98/ | 6.72 | 3.36 | 0.00 | // |
| 28 | WQM of river Ganga at upper stretches (up stream of Rishikesh) | BHEL –PCRI Haridwar | 12/2/98 | 14.76 | 19.98 | 0.00 | // |
| 29 | WQM of river Subernrekha | Metallurgical & Engg. Consultants (INDIA) LTD | 07/8/98 | 10.23 | 24.88 | 9.88 | 31/09/88 |

| | | | | | | | |
|----|---|---------------------------------|----------------------|--------|-------|--------|---------|
| | | ,Ranchi | | | | | |
| 30 | WQM of river Cauvery, Kabini, Tunga, Bhadra , Tungabhadra | Karnatka SPCB, Bangalore | 30/10/98 | 21.60 | 46.38 | 4.62 | 30/9/99 |
| 31 | WQM of river Ganga at Allahabad at Taright | CPCB, Delhi | 15/4/99 | 23.24 | 11.84 | 4.59 | // |
| 32 | R&D under Pollution Action Plan | Bihar ,Patna | 12/11/01 | | | 17.30 | |
| 33 | Monitoring of 7 STPs in U.P. | CPCB | 04/3/02 | 200400 | | 100000 | |
| 34 | WQM Buxer to Raj- Mahal | Patna University Bihar | 28/3/02 | 11.79 | | 6.427 | |
| 35 | Monitoring of Heavy metal load in river Ganga at Varanasi | Patna University. Bihar | 28/12/01 | | | 4.44 | |
| 36 | Studies on Decontamination of chromium from UASB treated Tannery effluent & contaminated soil of adjoining areas at Jajmau ,Kanpur (J-150 11/04/2002) | Director NBRI | 20/9/01 | 7.90 | | 3.95 | |
| 37 | Assessment of Ecological & Hydrological functions of Flood plains of river Yamuna in Delhi Streach (J-150 11/02/2001) | Director Westland International | 01/02/02 | 11.25 | | 3.40 | |
| 38 | Standards of technology options for sewage treatment (J-150 11/05/2000) | Director CLRI | 16/01/01 | 16.93 | | 8.46 | |
| 39 | Workshop as came river of flood plains in India (RRZ) (J-150 11/17/01) | JNU Delhi | 12/11/01 20/02/02 | 2.50 | | 1.50 | |
| 40 | Enhancing water flood in River Yamuna (Brij Gopal) study (J-150 11/07/01) | JNU Delhi | 03/05/02 | 7.95 | | 4.47 | |
| 41 | Hydrological & Hydro chemical - (TERI) (J-150 11/05/02) | TERI Delhi | 22/07/02 | 12.08 | | | |

Source: MIS report 2006, MOE&F

Annexure XI

Expert Advice for GAP II

| SL NO | NAME OF THE PROJECT | AGENCY | SANCTIONED | ANNUAL BUDGET | AMOUNT RELEASED TILL MAR,01 | RELEASED DURING 01-2002 | COMPLETION/ EXPECTED COMPLETION DATE |
|-------|---|---|------------|---------------|-----------------------------|-------------------------|--------------------------------------|
| 1 | Expert Advice on Yamuna and Gomti Action Plan | Prof.RK Pandey Roorkee University | 12/4/93 | 1.250 | 2.50 | - | 31/8/93 |
| 2 | Expert Advice on Yamuna and Gomti Action Plan | Prof. RH Siddqui AMU | 13/04/93 | 1.250 | 1.36 | - | 31/8/93 |
| 3 | Expert Advice on Yamuna and Gomti Action Plan | Prof. N Chaudhary Jadavpur University | 13/4/93 | 1.250 | 1.37 | - | 31/3/94 |
| 4 | GAP phase II works in Kanpur | C Venkobachar IITK | 18/6/93 | 2.000 | 0.89 | - | 31/3/94 |
| 5 | GAP Phase II works in Allahabad and Varanasi | IC Aggarwal Motilal Nehru Engineering College Allahabad | 11/06/93 | 0.810 | 0.818 | 0.0 | 31/12/93 |
| 6 | GAP phase II works in Bihar | Patna University. | 14/09/93 | 0.460 | 1.84 | - | 31/03/93 |
| 7 | Investigation & survey studies of Damodar river in stretch of west Bengal | NEERI,CMRS BPCB Patna | 04/05/93 | 34.860 | 18.00 | .00 | 30/9/94 |
| 8 | Expert advice on GAP II works for I&D Schemes | Roorkee University & AMU & AIHSPH | 27/12/93 | 4.200 | 4.44 | - | 30/4/95 |

| | | | | | | | |
|----|--|-----------------------|-----------|-------|------|---|----------|
| 9 | Monitoring & Evaluation of GAP phase I | Roorkee University | 07/02/95/ | 9.250 | 6.75 | - | 30/10/95 |
| 10 | Evaluation of Rehabilitation of turtle project | WII Dehardun | 29/12/94 | 1.450 | 1.30 | - | |
| 11 | Computer installation | DCM data Systems LTD. | 11/08/95 | 2.71 | 2.44 | - | |

| | |
|---------|---|
| AIHH&PH | All India Institute of Hygiene & Public Health |
| AMU | Aligarh Muslim University |
| BARC | Bhabha Atomic Research Centre |
| BHEL | Bharat Heavy Electrical Ltd. |
| BPCB | Bihar Pollution Control Board |
| BRJP | Bihar Rajya Jal Parishad |
| CICFRI | Central Inland Capture Fisheries Research Institute |
| CIFA | Central Institute of freshwater Aquaculture |
| CMRS | Central Mines Research Station |
| CPCB | Central Pollution Control Board |
| CSIO | Centre for Scientific Instrumentation Organisation |
| CSSRI | Central Soil Salinity Research Institute |
| CSWRS | Central Sheep & Wool & Research Institute |
| FFDA | Fish Farmers Development Agency |
| GAP | Ganga Action Plan |
| IARI | Indian Agriculture Research Institute |
| IIT | Indian Institute of Technology |
| INSDC | Indian National Scientific Documentation Centre |
| ITRC | Industrial Toxicology Research Centre |
| JNU | Jawahar Lal Nehru University |
| MKU | Maduraj Kamaraj University |
| NEERI | National Environmental Engineering Research Institute |
| NIE | National Institute of Ecology |
| PCRI | Pollution Control Research Institute |
| UASB | Upflow Anaerobic Sludge Blanket |
| UP | Uttar Pradesh |

| | |
|-------|---------------------------------------|
| UPPCB | Uttar Pradesh Pollution Control Board |
| WQM | Water Quality Monitoring |
| | |
| | |

Source: MIS report 2006, MOE&F

Annexure XII

WATER QUALITY DATA FOR RIVER GANGA (Summer Average i .e. March –June)

| S. No. | Station/ Location | 1986 | | 2006 | |
|--------|-------------------|----------|------------|-----------|------------|
| | | DO(mg/l) | BOD (mg/l) | DO (mg/l) | BOD (mg/l) |
| 1 | Rishikesh | 8.1 | 1.7 | 8.30 | 1.00 |
| 2 | Haridwar D/S | 8.1 | 1.8 | 8.10 | 1.30 |
| 3 | Garhmukteshwar | 7.8 | 2.2 | 7.70 | 2.10 |
| 4 | Kannauj U/S | 7.2 | 5.5 | 7.35 | 1.11 |
| 5 | Kannauj D/S | NA | NA | 6.45 | 4.20 |
| 6 | Kanpur U/S | 7.2 | 7.2 | 6.20 | 6.80 |
| 7 | Kanpur D/S | 6.7 | 8.6 | 3.90 | 6.80 |
| 8 | Allahabad U/S | 6.4 | 11.4 | 7.10 | 4.90 |
| 9 | Allahabad D/S | 6.6 | 15.5 | 8.50 | 3.20 |
| 10 | Varasnasi U/S | 5.6 | 10.1 | 8.70 | 2.10 |
| 11 | Varanasi D/S | 5.9 | 10.6 | 8.65 | 2.25 |
| 12 | Patna U/S | 8.4 | 2.0 | 7.40 | 2.05 |
| 13 | Patna D/S | 8.1 | 2.2 | 8.10 | 2.30 |
| 14 | Rajmahal | 7.8 | 1.8 | 7.20 | 1.95 |
| 15 | Palta | NA | NA | 6.80 | 3.00 |
| 16 | Uluberia | NA | NA | 5.45 | 2.50 |

Source: MIS report 2006, MOE&F

Annexure XIII WATER QUALITY STATUS OF RIVER GANGA

SUMMER AVERAGE VALUES FOR WATER QUALITY ON MAIN STEM OF RIVER GANGA ACTION PLAN

| STATION NAME | DISTANCE IN KM | DISSOLVED OXYGEN (DO) (mg/l) (Acceptable limit 5 mg/l or more) | | | | | | | | | | | | | | | | | | | |
|----------------|----------------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
| Rishikesh | 0 | 8.1 | 8.1 | 7.6 | 6.2 | 7.1 | 6.8 | 8.5 | 9.0 | 9.6 | 9.0 | 8.9 | 8.9 | 9.3 | 9.0 | 9.1 | 8.2 | 9.2 | 8.4 | 8.5 | 8.3 |
| Hardwar D/S | 30 | 8.1 | 7.7 | 7.6 | 6.3 | 6.9 | 7.1 | 7.7 | 7.2 | 8.8 | 8.4 | 8.4 | 8.8 | 8.6 | 8.6 | 8.8 | 7.8 | 9.0 | 8.1 | 8.1 | 8.1 |
| Garhmukteshwar | 175 | 7.8 | 4.7 | 7.4 | 7.5 | 6.1 | 7.2 | - | 8.5 | 8.0 | 7.9 | 7.7 | 8.1 | 8.1 | 7.9 | 7.8 | 7.4 | 8.2 | 7.6 | 7.7 | 7.7 |
| Kannauj U/S | 430 | 7.2 | 7.7 | 6.9 | 7.5 | 7.1 | 7.3 | 7.7 | 7.2 | 8.8 | 8.0 | 8.0 | 7.8 | 7.4 | 7.1 | 7.4 | 7.6 | 7.9 | 6.95 | 8.5 | 7.3 |
| Kannauj D/S | 433 | NA | 6.5 | 6.7 | 7.5 | 6.1 | 7.1 | 7.1 | 8.4 | 7.2 | 7.8 | 7.9 | 7.5 | 7.4 | 8.8 | 6.8 | 6.5 | 6.2 | 7.85 | 7.6 | 6.4 |
| Kanpur U/S | 530 | 7.2 | 7.8 | 7.3 | 7.6 | 7.9 | 7.8 | 7.5 | 7.5 | 7.0 | 8.1 | 7.8 | 7.5 | 6.7 | 6.8 | 4.9 | 6.2 | 6.7 | 7.18 | 6.2 | 6.2 |
| Kanpur D/S | 548 | 6.7 | 6.2 | 3.2 | 5.0 | 4.4 | 5.1 | 5.6 | 5.2 | 4.6 | 6.8 | 6.4 | 5.6 | 5.2 | 7.5 | 4.8 | 7.2 | 4.4 | 5.28 | 4.7 | 3.9 |
| Allahabad U/S | 733 | 6.4 | 7.8 | 7.8 | 8.9 | 8.0 | 7.1 | 6.8 | 6.9 | 8.2 | 8.2 | 8.9 | 7.4 | 7.7 | 8.8 | 7.5 | 13.0 | 10.0 | 7.82 | 8.5 | 7.1 |
| Allahabad D/S | 743 | 6.6 | 6.7 | 7.4 | 7.9 | 6.9 | 6.4 | 7.6 | 7.2 | 7.4 | 8.2 | 8.5 | 7.6 | 8.2 | 7.9 | 7.2 | 8.2 | 7.3 | 6.58 | 8.4 | 8.5 |
| Varanasi U/S | 908 | 5.6 | 8.4 | 8.6 | 7.7 | 7.8 | 7.6 | 7.3 | 8.2 | 7.2 | 8.5 | 8.0 | 8.8 | 8.8 | 8.2 | 6.5 | 10.8 | 7.2 | 6.30 | 8.6 | 8.7 |
| Varanasi D/S | 916 | 5.9 | 8.6 | 8.1 | 7.5 | 7.2 | 6.8 | 7.1 | 7.6 | 6.8 | 8.0 | 7.7 | 8.7 | 6.6 | 8.4 | 7.2 | 7.5 | 8.1 | 5.55 | 8.3 | 8.6 |
| Patna U/s | 1188 | 8.4 | 8.5 | 7.9 | 8.0 | 7.7 | 8.1 | 8.1 | 8.2 | 7.0 | 6.8 | 7.3 | 7.5 | 7.0 | 7.7 | 7.8 | 7.0 | 7.5 | 6.55 | 7.4 | 7.4 |
| Patna D/S | 1198 | 8.1 | 8.7 | 7.5 | 8.1 | 7.5 | 7.4 | 8.0 | 8.0 | 7.2 | 6.9 | 7.0 | 7.1 | 7.2 | 7.8 | 7.7 | 7.1 | 7.8 | 6.73 | 8.0 | 8.1 |
| Rajmahal | 1508 | 7.8 | 8.1 | 7.7 | 8.0 | 7.8 | 7.5 | 8.1 | 8.5 | 7.6 | 7.6 | 7.3 | 7.2 | 6.9 | 7.5 | 7.7 | 7.9 | 7.5 | 6.90 | 7.4 | 7.2 |
| Palta | 2050 | NA | 7.3 | 6.5 | 7.2 | 6.8 | 7.3 | 7.4 | 7.1 | 6.8 | 6.7 | 6.6 | 6.5 | 7.3 | NA | 6.8 | 7.2 | 7.2 | 7.55 | 7.0 | 6.9 |
| Uluberia | 2500 | NA | 5.8 | 5.8 | 6.3 | 6.4 | 5.9 | 6.9 | 6.1 | 6.8 | 6.6 | 5.5 | 5.1 | 6.6 | NA | - | 5.4 | 5.6 | 6.33 | 5.4 | 6.4 |
| | | BIOCHEMICAL OXYGEN DEMAND (BOD) (mg/l) (Acceptable limit less than 3 mg/l) | | | | | | | | | | | | | | | | | | | |
| STATION NAME | DISTANCE IN KM | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
| Rishikesh | 0 | 1.7 | 2.8 | 3.4 | 1.8 | 1.5 | 1.1 | 1.2 | 1.3 | 2.0 | 1.5 | 1.0 | 1.1 | 1.1 | 1.0 | 1.1 | 1.2 | 0.5 | 1.1 | 1.0 | 1.1 |
| Hardwar D/S | 30 | 1.8 | 3.9 | 3.5 | 1.9 | 1.8 | 1.1 | 2.0 | 1.4 | 2.1 | 1.7 | 1.1 | 1.3 | 1.6 | 1.2 | 1.4 | 1.7 | 0.8 | 1.5 | 1.4 | 1.3 |
| Garhmukteshwar | 175 | 2.2 | 2.7 | 4.9 | 4.5 | 3.4 | 1.6 | NA | 1.6 | 2.5 | 2.4 | 1.5 | 1.5 | 1.8 | 1.4 | 1.8 | 2.2 | 1.2 | 1.9 | 2.0 | 2.1 |
| Kannauj U/S | 430 | 5.5 | 2.7 | 2.2 | 1.0 | 2.6 | NA | 2.1 | 2.3 | 2.7 | 2.4 | 2.9 | 3.4 | 3.6 | 5.3 | 14.4 | 1.1 | 1.2 | 1.73 | 1.7 | 1.1 |
| Kannauj D/S | 433 | NA | 5.1 | 5.6 | 1.1 | 3.0 | 3.0 | 2.7 | 2.5 | 3.0 | 3.2 | 3.2 | 3.7 | 3.5 | 4.8 | 11.8 | 4.2 | 3.3 | 3.18 | 4.5 | 4.2 |
| Kanpur U/S | 530 | 7.2 | 2.9 | 1.8 | 1.1 | 2.7 | 1.6 | 1.7 | 1.9 | 5.0 | 2.0 | 2.8 | 3.1 | 4.3 | 4.6 | 14.5 | 3.8 | 3.7 | 3.20 | 4.3 | 6.8 |
| Kanpur D/S | 548 | 8.6 | 9.7 | 13.4 | 3.5 | 3.5 | 65.8 | 25.0 | 24.5 | 8.5 | 5.5 | 4.1 | 5.4 | 6.4 | 6.5 | 18.5 | 4.8 | 6.1 | 5.73 | 5.4 | 6.8 |
| Allahabad U/S | 733 | 11.4 | 7.0 | 2.8 | 2.6 | 2.6 | 2.3 | 2.0 | 1.8 | 2.3 | 4.5 | 2.5 | 3.3 | 4.3 | 1.8 | 5.3 | 8.0 | 4.8 | 7.38 | 5.5 | 4.9 |
| Allahabad D/S | 743 | 15.5 | 8.2 | 3.1 | 2.3 | 2.0 | 1.7 | 1.9 | 1.9 | 3.6 | 3.2 | 3.3 | 2.1 | 2.6 | 3.2 | 3.6 | 3.8 | 3.2 | 3.58 | 3.1 | 3.2 |
| Varanasi U/S | 908 | 10.1 | 4.1 | 3.3 | 3.0 | 2.6 | 1.2 | 0.9 | 0.8 | 1.8 | 2.6 | 2.2 | 2.4 | 2.9 | 2.2 | 2.5 | 3.0 | 2.5 | 2.60 | 2.0 | 2.1 |
| Varanasi D/S | 916 | 10.6 | 4.8 | 4.3 | 4.0 | 5.9 | 1.9 | 1.3 | 1.0 | 2.9 | 1.4 | 2.3 | 3.1 | 4.3 | 3.7 | 4.4 | 2.5 | 5.4 | 2.65 | 2.3 | 2.3 |
| Patna U/s | 1188 | 2.0 | 1.9 | 2.0 | 0.4 | 0.3 | 1.4 | 1.2 | 1.2 | 1.6 | 1.5 | 2.0 | 2.0 | 1.2 | 1.9 | 1.9 | 1.8 | 2.0 | 1.63 | 2.0 | 2.1 |
| Patna D/S | 1198 | 2.2 | 2.1 | 2.2 | 0.4 | 0.3 | 0.9 | 1.6 | 1.5 | 1.6 | 1.4 | 1.6 | 1.3 | 1.6 | 2.4 | 2.4 | 1.9 | 2.8 | 1.65 | 2.2 | 2.3 |
| Rajmahal | 1508 | 1.8 | 1.6 | 2.0 | 0.2 | 0.3 | 1.0 | 0.6 | 0.7 | 1.9 | 1.7 | 1.3 | 1.4 | 1.1 | 1.5 | 1.5 | 1.4 | 2.2 | 2.10 | 1.8 | 2.0 |
| Palta | 2050 | NA | 1.0 | 1.3 | 1.0 | 0.9 | 0.8 | 1.0 | 0.9 | 2.5 | 2.1 | 1.6 | 2.1 | 2.2 | NA | 1.3 | 2.6 | 2.2 | 2.03 | 3.1 | 2.6 |
| Uluberia | 2500 | NA | 1.1 | 1.1 | 0.9 | 1.0 | 0.8 | 1.0 | 0.9 | 3.2 | 2.8 | 2.0 | 2.4 | 2.2 | NA | - | 1.9 | 1.9 | 2.43 | 2.6 | 2.6 |

* Mean value for the months of March to June when the temperatures are high and flow are low.

NA-->Data not available.

^ → The BOD levels for all locations between Kannauj and Kanpur reported very high .

→ The BOD levels of Allahabad U/S reported is high.

@ → Summer averages (April+ May +June)

& → Summer averages (March only)

Source: MIS report 2006, MOE&F

Annexure XIV
SUMMARY OF THE FINDINGS OF THE COST BENEFITS ANALYSIS

The objective of the study was to provide a comprehensive analysis of the cost and benefits of the schemes within the Ganga Action Plan (GAP) and to quantify to the maximum extent possible the monetary values attached to those costs and benefits.

The results of the study cover the following three aspects:

1. EVALUATION OF NET BENEFITS OF THE ACTION PLAN

(A) Non- user benefits

- General aesthetic satisfaction
- Less polluted river for ritual bathing
- Less water –borne diseases
- Improved bio-diversity
- Recreational benefits

(B) User benefits: basically dominated by benefits

- To pilgrims (5million)
- To tourists
- To those staying near the river

(C) Health benefits

Savings in working days for the general population obtained by a comparison of morbidity rates in areas before GAP and in comparable areas after GAP is estimated at Rs. 92.88 million.

(D) Agricultural benefits

Irrigation benefits due to application of treated effluent containing fertilizers has been reduced to Rs. 81.55 million , instead to the earlier value of Rs. 90.61 million.

(E) Other benefits (non- quantifiable)

- Benefits of bio-diversity
- Benefits of fisheries
- Benefits from reduction in toxicants

(F) Financial estimates of net benefits and IRR

The financial IRR for GAP-I is around 14-17% with the economic IRR being about one percentage point lower.

2. DISTRIBUTIONAL IMPACT OF GANGA ACTION PLAN

The cleaning of river Ganga in the Indian subcontinent can produce significant income distribution benefits in the Indian economy. Therefore, the quantification of income distribution effect is important in the social cost-benefits Analysis of GAP. The main GAP beneficiaries were found to be the following.

- Urban & non –urban : from amenity –related and areas & non –users health- related benefits
- Skilled & unskilled : from employment in GAP labour projects
- Farmers : from increase in crop productivity & savings in use of chemical fertilizers.
- Fisher men :from increased fish supply from a cleaner Ganga and thus increased income.
- Industrial units
- Government

3. SUSTAINABILITY OF GAP - Suggestions

(i) Polluters- pay- principle

Water charge of Rs. 3.48 per kiloliter on an individual & household would cover capital costs of GAP & Rs. 0.15 would cover O&M costs. Could be collected as a tax or as part of water tariff.

To be levied on all industrial effluents.

(ii) Users-Pay- principle with Govt .involvement

- Tax on beneficiaries (both users & non- users) at Rs. 38 for capital cost per annum; and
- Rs. 1.6 for O&M costs per annum.

(iii) Users-pay-principle without Govt. involvement.

- Charitable commission far Ganga to collect payment from beneficiaries.
- Autonomous but a accountable to the public.
- Regional offices to collect money & create public awareness.

(iv) Using of general taxes

- Not a very reliable source.

Combination of any of the four could also be worked out.

FINAL VIEW OF THE STUDY

The broad conclusion of the study is that, in spite of its many shortcomings, the GAP has delivered significant benefits to India. Both users and non-users have benefited & the result is that the real rate of return on phase-I is well above the 10% required of public sector projects. Furthermore, Phase-II is even more attractive to these groups. The reasons for this are the large number of people who stand to benefit.

The question of financial sustainability can also be addressed. A number of options are open to recover at least the O&M costs. It needs the political will to implement them.

Finally there is the question of what lessons this has for other river clean up project. The identified benefits of GAP are unique. They arise from its special place in Hindu culture and in Indian Society. Other rivers would not generate the same levels of benefits from non-users, or have the same number of pilgrims. Without them, the project would be extremely difficult to justify on extended cost benefits grounds.

Source: Status paper on the river action plans (Feb 1999), MOE&F