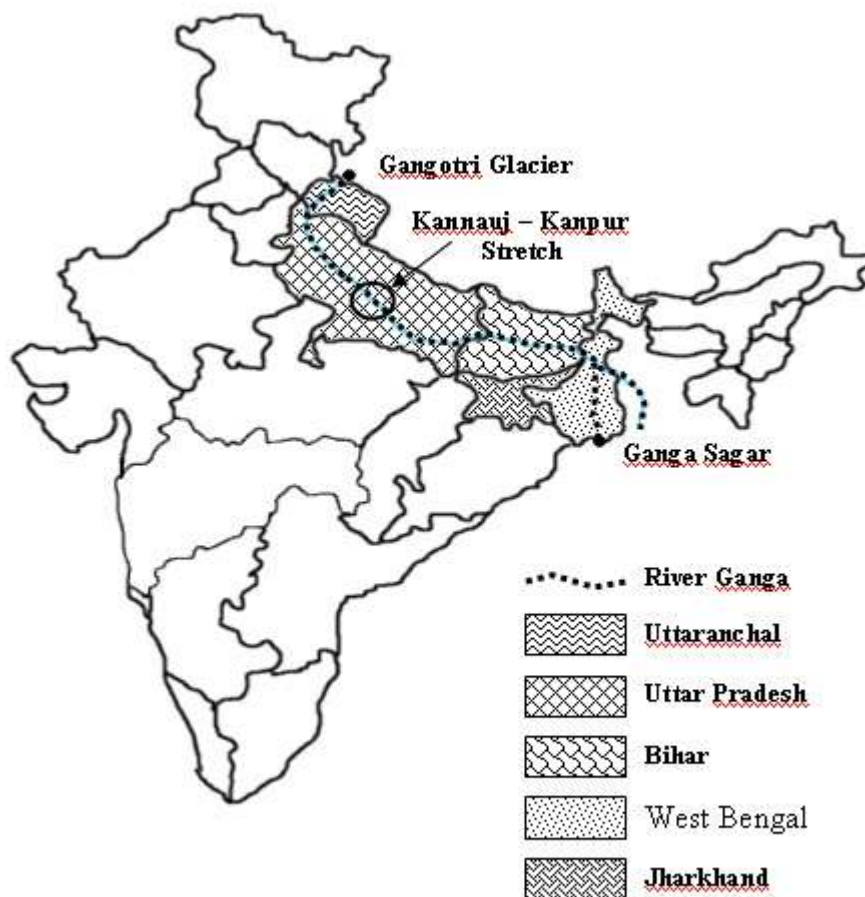


Ganga Action Plan-A critical analysis

The Ganga River

Ganga is not an ordinary river. It is a life-line, a symbol of purity and virtue for countless people of India. Ganga is a representative of all other rivers in India. Millions of Ganga devotees and lovers still throng to the river just to have a holy dip, Achman (Mouthful with holy water), and absolve themselves of sins. We Indians are raised to consider Ganga as a goddess, as sacred. We tell our children and grandchildren the stories of how she came down to Earth through a lock of Shiva's hair. The Ganga temples, countless rituals associated with Ganga and our belief that Ganga is a cleanser par excellence prove that Ganga has a status of a deity. Hundreds of verses have been used to extol her glory and greatness. Lord Krishna, Lord Rama, Lord Siva, Lord Vishnu including great saints like Sri Swami Sivananda, Sri Ramakrishna and others have all glorified her.



Map of India Showing River Ganga

Ganga is a perennial river which originates as a stream called "Bhagirathi" from Gaumukh in the Gangotri glacier at 30 ° 55' N, 79 ° 7' E, some 4100 m above mean sea level. Ganga river basin is the largest among river basins in India and the fourth largest in the world, with a basin (catchment area) covering 8, 61,404 sq km. It has a total length of 2,525 km, out of which 1,425 km is in Uttaranchal and UP, 475 km is in Bihar and 625 km is in West Bengal. Already half a billion people live within the river basin, at an average density of over 500 per sq km, and this population is projected to increase to over one billion people by the year 2030.

The Ganges plains were first settled by Aryans around 1200 BC and in subsequent 3,200 years of occupation, the landscape of the region has been completely transformed by generations of agriculturists and the more recent expansion of urban centres and industrial activities.

The Ganga drains 9 states of India. Today, the 2,525 km long river supports 29 class I cities, 23 class II cities and 48 towns, plus thousands of villages. Nearly all the sewage, industrial effluent, runoff from chemical fertilizers and pesticides used in agriculture within the basin, and large quantities of solid waste, including thousands of animals' carcasses and hundreds of human corpses are dumped in the river everyday.

The inevitable result of this onslaught on the river's capacity to receive and assimilate waste has been an erosion of river water quality, to the extent that, by 1970s, large stretches (over 600 km) of the river were virtually dead from an ecological point of view, and posed a considerable public health threat to the religious bathers using the river everyday. The problem of river pollution is further compounded by the over-extraction and diversion of the river waters at various points (about 47 percent of the country's irrigated land is in the Ganga basin). The situation is intolerable, primarily because it is a common practice for Indians to bathe in the 'holy' waters of Ganga. In addition, a large number of people living along the river use Ganga water for drinking and other household purposes. Livelihoods of many people (e.g., fishermen, boatmen, priests etc.) are also linked with the condition of the river.

Ganga Today

The **Ganga** today is more polluted than when the **Ganga Action Plan** was first initiated by the late Prime Minister Rajiv Gandhi in 1986. The fast shrinking glaciers, dams, barrages, canals and alarmingly high volume of pollution pose an ever increasing threat to the health and life of the river. The state of Uttar Pradesh alone is responsible for over 50% of the pollutants entering the river along its entire journey to the sea.

The defilement of the river Ganga begins at Rishikesh when the river enters the plains. The Ganga river water is brown or black in colour from Narora to Varanasi during the lean months. At Kanpur the water stinks even during the monsoon when the river is flooded. Since the launching of GAP, things have gone downhill in a big way in Kanpur. The amount of filth along and in the river still continues unabated. Polybags are tossed in publicly and casually; piles of refuse tumble down slopes to the river edge. The river is still the private garbage dump of industries and individuals alike. During the lean period, the river is so shallow that one can walk through the black muddy waters of the river. The river is littered with human corpses and animal carcasses throughout its course and

the sight is truly offensive, repulsive, irritating, and disgusting and the oily blue-black stench of tannery waste is unbearable. These are utmost insults to the holiness of the river and any idea of purity.

Today there are more than 50 drains carrying raw sewage to the river Ganga and Yamuna at Allahabad while there were only 13 drains before GAP was launched in 1986. Every Magh mela, Ardha-kumbha, and Kumbha, sadhus and saints protest in large numbers against the river pollution and boycott the ritual bathings.

Nowhere in Varanasi the Ganga is worth taking a holy dip. The coliform and faecal coliform count is exceedingly high in the river water. The 84 bathing ghats are sandwiched between two tributaries, Assi and Varuna, which are now huge sewage drains.

As the Ganga continues to wind its way down towards Kolkata she experiences dozens of similar assaults that leave her waters fetid and filled with toxins and diseases. The situation is the same throughout the length of the river.

Ganga Action Plan (GAP)

Inertia in taking action to reduce the level of pollution stemmed largely from a widespread belief that the Ganga, as a holy river, had the ability to purify all that came into contact with it. Although there is some scientific evidence for the Ganga river's high capacity to assimilate (i.e. biodegrade) a large level of organic waste input, including pathogens, but no river can sustain its self-purifying power with this kind of over-use, misuse and abuse of its waters.

The Ganga Action Plan (GAP) originated from the personal intervention and interest of our late Prime Minister Mrs Indira Gandhi who had directed the Central Board for the Prevention and Control of Water Pollution, now Central Pollution Control Board (CPCB) to do a comprehensive survey of the situation in 1979. CPCB published two comprehensive reports which formed the base for GAP in Oct 1984 but was not presented to the nation formally due to assassination of Smt Indira Gandhi.

In Feb 1985, the Central Ganga Authority (CGA) with the PM as Chairman was formed, with an initial budget of Rs 350 crore to administer the cleaning of the Ganga and to restore it to pristine condition by our late PM Sh Rajiv Gandhi. In June 1985, the Ganga Project Directorate (GPD) was established as a wing of the Department of Environment. GAP was launched on June 14, 1986 by Sh Rajiv Gandhi at Varanasi.

Failure of the GAP

The Ganga Action Plan launched in 1986 by the Government of India has not achieved any success despite expenditure of approximately 2,000 crore rupees. Even though the government claims that the schemes under the Ganga Action Plan have been successful, ground realities tell a different story. The failure of the GAP is evident but corrective action is lacking.

GAP has been dubbed variously as Ganga Inaction Plan, Pumps and Pipes scheme, a Colossal Failure...Media report that there are GAPING HOLES in GAP and its a shocking tale of official apathy and corruption ... All the money has gone down the drain, People are quick to offer their opinion of why GAP has been doomed to failure. Mismanagement, corruption, and incompetence all rank high on the lists of accusations.

While launching the GAP, our late PM Rajiv Gandhi said:

“The purity of the Ganga has never been in doubt. Yet we have allowed the pollution of this river which is the symbol of our spirituality. The felling of trees has caused severe floods, and silt and mud now flow into the Ganga making the river shallow so that boats can not ply in it as they did before. Sewage and pollution from cities, industries and factories and dead animals are also being thrown into the Ganga. From now on, we shall put a stop to this. We shall see that the waters of the Ganga become clean once again.

The Ganga Action Plan is not just a government plan. It has not been prepared for the PWD or government officials alone. It is a plan for all the people of India; one in which they can come forward and participate. It is upto us to clean the whole of Ganga and refrain from polluting it.

This programme, starting at Varanasi here today will reach out to every corner of our land and to all our rivers. In the years to come, not only the Ganga, but all our rivers will be clean and pure as they were thousands of years ago.”

Unfortunately, the statements/promises made by the late PM have been proven untrue. The expectations of the people have been belied and dazed to the ground.

The GAP I was extended as GAP II from 1993 onwards covering 4 major tributaries of Ganga, namely, Yamuna, Gomti, Damodar and Mahananda. The program was further broad-based in 1995 with the inclusion of other rivers and renamed as National River Conservation Plan (NRCP). Ganga could not be cleaned but 34 other rivers have been taken up for cleaning with the same failed model of “GAP”.

Various explanations abound as does speculation and apportionment of the blame for this failure. In the last 21 years, leadership and staff of GAP have come and gone, often without any vision and commitment. There have been reviews and monitoring from time to time at different levels but the problems identified were never addressed and the decisions taken were never enforced. The lower level officials most often were unfamiliar with the work done by previous groups.

GAP needs a critical examination, a thorough review and a complete overhaul. It has become so infamous and stale that it needs to be done away with completely. A new plan with a fresh name, more real and practical objectives, concrete action plans is needed to restore the health of the river Ganga. A committed, visionary, dynamic and practical man needs to be given the charge of cleaning and restoring the ecological health of river Ganga. Serious and honest efforts are needed. Casual approach and cosmetic efforts will only worsen the condition of river Ganga.

Objective of GAP

The objectives of the GAP were broad: to abate pollution and improve water quality, to conserve biodiversity and develop an integrated river basin management approach, to conduct comprehensive research to further these objectives, and to gain experience for implementing similar river clean up programs in other polluted rivers in India. A plan of action was developed in order to achieve these objectives, those actions that addressed the major, direct causes of pollution in the Ganga were identified as “core sector” schemes, and those that address indirect sources or sources deemed to be direct but of a lower impact were called “non-core sector”. Core sector schemes included the interception and diversion of domestic wastewater including the construction and rehabilitation of sewers and pump houses, while non-core sector schemes consisted of the installation of crematoria, river front development and aesthetic improvement, implementation of low cost sanitation systems, and miscellaneous activities such as water quality monitoring, research programmes, and identification and management of waste from grossly polluting industries.

At the time of launching, the main objective of GAP was to improve the water quality of Ganga to acceptable standards by preventing the pollution load reaching the river. However, as decided in a meeting of the Monitoring Committee in June 1987 under the Chairmanship of Prof MG K Menon, then Member, Planning Commission, the objective of GAP was recast as restoring the river water quality to the 'Bathing Class' standard which is as follows:

BOD	3 mg/l max.
DO	5 mg/l min.
Total Coliform	MPN 10,000/100 ml
Faecal Coliform	MPN 2,500/100 ml

Source: Report of the Committee constituted to recommend measures for improvement in GAP, Mar 1999, MOE&F

The standard for river water quality as set by the CPCB for outdoor bathing is as follows:

BATHING QUALITY (B CLASS) STANDARD FOR INDIAN RIVERS

PARAMETERS	PERMISSIBLE LIMIT
☑ BOD	3 MG/L (MAXIMUM)
☑ DO	5 MG/L (MINIMUM)
☑ COLIFORM (FAECAL)	500 (DESIRABLE) 2500 (MAX. PERMISSIBLE)
] <u>MPN</u> 100 ml

BOD - BIO-CHEMICAL OXYGEN DEMAND
 DO - DISSOLVED OXYGEN
 MPN - MOST PROBABLE NUMBER

Source: Presentation to NAC members by NRCD in 2006

It is obvious from the above tables that total coliform and faecal coliform levels were diluted by the Committee headed by Prof MGK Menon. **The two different standards, one set by MGK Menon Committee for GAP and the other by CPCB, an agency which operates under MOE&F, are contradictory.** Even the relaxed diluted standards have not been achieved and the microbial pollution at the bathing ghats even in the towns where GAP I has been implemented is of the order of MPN 10⁶/100 ml.

A proper understanding of the standards set by the CPCB will help to set the correct objectives for the GAP. The classification of the river water quality by the CPCB has been done on the basis of the designated best use to which the river water is put to at various stretches. The designated best use classification of the CPCB is as follows:

DESIGNATED BEST USE CLASSIFICATION OF INLAND SURFACE WATER

CLASS	DESIGNATED BEST USE(DBU)	CRITERIA
A	Drinking water source without conventional	pH : 6.5 to 8.5 Dissolved Oxygen : 6 mg/l or more Biochemical Oxygen Demand : 2 mg/l or

	treatment but after disinfection	less Total Coliform : 50 MPN/100 ml
B	Outdoor bathing (Organised)	Ph : 6.5 to 8.5 Dissolved Oxygen : 5 mg/l or more Biochemical Oxygen Demand 3 mg/l or less Total Coliform : 500 MPN/100 ml
C	Drinking water source with conventional treatment followed by disinfection	pH : 6.5 to 8.5 Dissolved Oxygen : 4 mg/l or more Biochemical Oxygen Demand : 3 mg/l or less Total Coliform : 5000 MPN/ml
D	Propagation of wild life and fisheries	pH : 6.5 to 8.5 Dissolved Oxygen : 4 mg/l or more Free Ammonia : 12 mg/l
E	Irrigation, industrial cooling and controlled waste disposal	pH : 6.0 to 8.5 mhos/cm μ Electrical Conductivity : 2250 Sodium Absorption Ratio: 26 Boron : 2 mg/l

MPN Most Probable Number

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

According to the designated best use classification of the CPCB, the river has been classified as under:

- | | |
|--|----------------|
| 1. From origin to Hardwar | Class A |
| 2. From Hardwar to confluence with river Roopnarayan in Bengal delta | Class B |
| 3. From Roopnarayan confluence to the Haldi confluence | Class D |
| 4. From Haldi confluence to Bay of Bengal | Saline stretch |

It is important that the GAP must ensure that the river water quality is brought upto the standards as stipulated in the designated best use classification of CPCB as prescribed for its various stretches. For this, the Directorate should first ascertain the use to which the river water is put to, along the various stretches of the river, and adopt the standards set by the CPCB for those stretches.

“Now the main objective of NRCP is to maintain the wholesomeness of water quality of major rivers through the implementation of various pollution abatement schemes.”

Source: Agenda notes for the 11th meeting of NRCA

But the word “wholesomeness” has not been defined and therefore, needs to be defined.

Organisational Structure of the GAP (now NRCP)

[See Annexure I](#)

Arrangement at the Central level

The river cleaning program was started with GAP in 1985 under the aegis of GPD established under the MOE&F. A CGA under the chairmanship of the PM was constituted to finalise the policy framework and to oversee the implementation of GAP. The Chief Ministers (CMs) of the concerned States, Union Ministers and Secretaries of the concerned Central Ministries and Experts were its members. The GAP was later extended to GAP II in 1993 and was broad-based in the form of NRCP in 1995. The GAP II was merged with NRCP in December 1996. Since then a single scheme of NRCP is under implementation as a Centrally Sponsored Scheme. The CGA was re-named as National River Conservation Authority (NRCA) with a larger mandate to cover all the programmes supported by the NRCD.

The functions of the NRCA are as follows:

- To lay down, promote and approve appropriate policies and programs (long and short term) to achieve the objectives.
- To examine and approve the priorities of the NRCP.
- To mobilize necessary financial resources.
- To review the progress of implementation of approved programs and give necessary directions to the Steering Committee, and
- To take all such measures as may be necessary to achieve the objectives.

A Steering Committee has also been constituted with Secretary, MOE&F as Chairman. Chief Secretaries of concerned states, Secretaries of concerned central ministries, Chairman CPCB, DG Health services, DG ICMR and some experts are the other members of the Committee. The functions of the Steering Committee are as follows:

- Promote appropriate policies, plan programs, and projects for improving water quality in the rivers.
- Examine and approve the components of the Action Plan and annual plan.
- Determine the manner in which funds are to be allocated to various agencies for implementing the Action Plans.
- Sponsor water quality monitoring through concerned agencies.
- Sponsor studies relevant to the objectives of the Authority.
- Oversee and monitor the implementation of the Action Plans and give necessary directions to the agencies concerned.
- Report to the NRCA the progress of implementation.

NRCD (earlier GPD) has been created under MOE&F to service the NRCA and the Steering Committee and to perform the following functions:

- Appraisal and approval of the sub-projects prepared and submitted by the field level agencies.
- Coordination of various agencies.
- Release of funds to agencies.
- Monitoring project progress and improvement in the quality of the river at critical points.
- Reporting to the Steering Committee on progress of the projects.

The NRCD is headed by the Project Director. He is assisted by a group of technical, scientific and other personnel.

Arrangement at the State level

Since the treatment of the municipal wastes is a principal component of the Action Plan, the State governments and its agencies have a substantial responsibility for the preparation and execution of these projects.

In UP, the Urban Development Department has been identified as the nodal department. Subject to the supervision of the nodal department, different state government agencies are assigned the work of individual scheme preparation and execution.

There is an inter-departmental committee with the secretary of the nodal department as the convener:

- to screen the schemes before sponsoring, indicating their inter se priority,
- to under-write State Government's role or contribution in the execution/maintenance of the project as may be necessary for the proper fulfillment of the objectives of the schemes,
- to ensure inter-departmental coordination at the state level,
- to review physical and financial progress from time to time, and

- to arrange for furnishing such information as is required by the NRCD.

Monitoring Mechanism

All the action plans are monitored at both the State as well as Central levels through a multi-tier monitoring mechanism. This includes:

State Level

- (i) The progress monitoring by a team of field engineers on day to day basis.
- (ii) Monthly review of progress by the Chief Executive of the nodal implementing agency.
- (i) Citizens' Monitoring Committee in each town to review the progress and provide inputs for public participation and involvement.
- (ii) Periodical review by the Divisional Project Monitoring Cells.
- (iii) Periodical review of progress by a State Steering Committee chaired by the concerned Chief Secretaries.
- (iv) Overall periodical review by a High Powered Committee under the Chairmanship of Chief Minister.

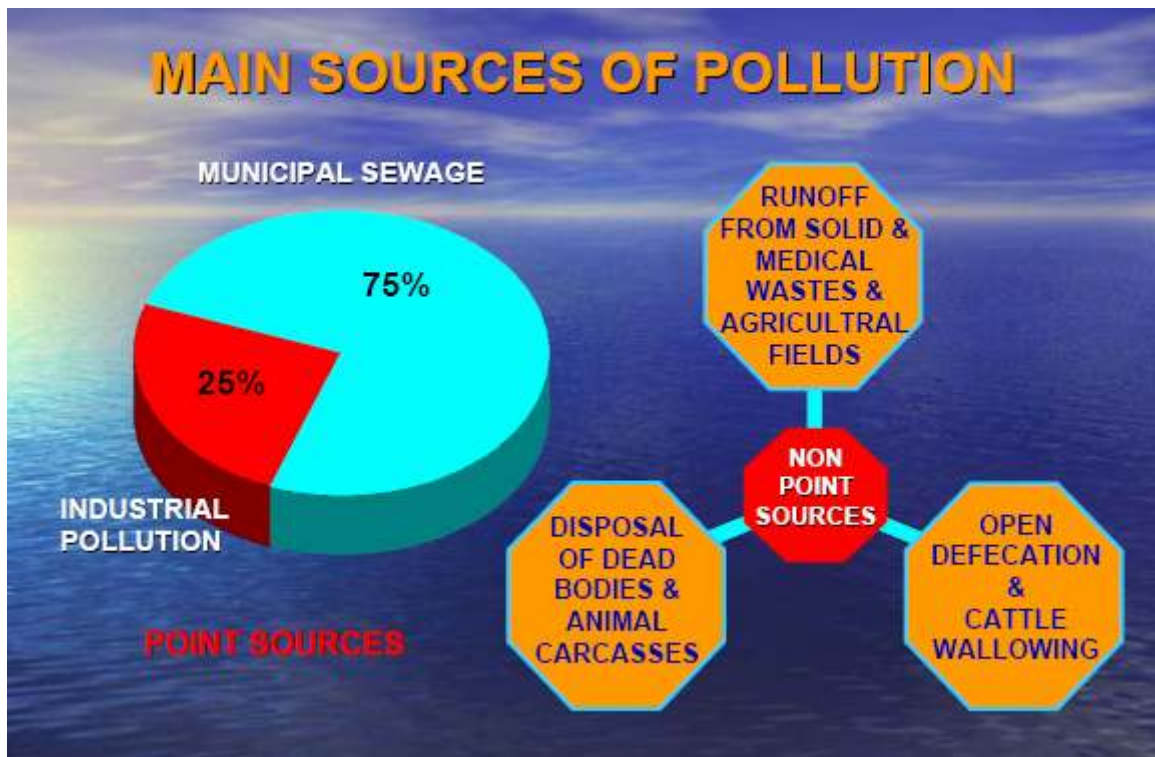
Central Level

- (i) Regular interaction and review by NRCD officials including frequent site visits. Regular review by NRCD Project Director.
- (ii) Quarterly review of progress by a Steering Committee headed by Secretary of the Ministry. Chief Secretaries of the concerned States and experts in the Public Health Engineering and other related areas are the members of this Committee. A total of 54 meetings of this Committee have been held so far.
- (iii) Quarterly review of progress of scientific and technical aspects of the programme as well as the impact of works on the river water quality by a Monitoring Committee headed by Member Environment, Planning Commission.
- (iv) Quarterly review by a Standing Committee headed by the Union Minister of Environment & Forests.
- (v) Annual review of progress by the National River Conservation Authority headed by the Prime Minister. The concerned Chief Ministers, among others, are the members of this Committee. So far 11 meetings of NRCA (earlier CGA) have been held till date.

Recommendations

- Regular meeting of the State Steering Committee needs to be conducted with inputs provided by local level committees to strengthen the monitoring mechanism.
- The local level citizens' monitoring committees need to meet at regular interval.
- The reporting system and flow of information from State Governments need to be activated and synergies built with implementing agencies and Central Government.
- The State Governments must also put in place a mechanism to carry out third party evaluation of projects from time to time.

Pollution sources



Source: Presentation to NAC members by NRCD in 2006

- i. According to the CPCB survey report, the total municipal sewage generated in the identified 25 towns in 1985 was of the order of 1340 million litres per day (mld). Apart from this sewage, 260 mld of industrial wastewater, runoff from 6 million tones of fertilizers and 9,000 tonnes of pesticides used in agriculture

within the basin, large quantities of solid waste, including thousands of animal carcasses and human corpses were being released into the river everyday. Out of this, works corresponding to 873 mld only (65%) were taken up under the first phase of GAP. The remaining sewage was to be taken up under the 2nd phase of GAP which is already in progress. The Action Plan primarily addressed itself to the interception and diversion for treatment of the targeted municipal sewage of 873 mld. Schemes for the abatement of pollution from such non-point sources as:

- (a) areas infested with open defecation,
 - (b) disposal of half burnt or unburnt dead bodies and
 - (c) run-off from solid waste and garbage dumps were also taken up under the programme.
- ii. Activities for construction and improvement of bathing ghats to provide a clean and hygienic access to the river were also part of the Action Plan.
 - iii. Pollution of the river from grossly polluting industries has been monitored and controlled under the existing Environmental Laws without any public investment except for a common effluent treatment plant (CETP) at Kanpur.
 - iv. The GAP model is as follows:



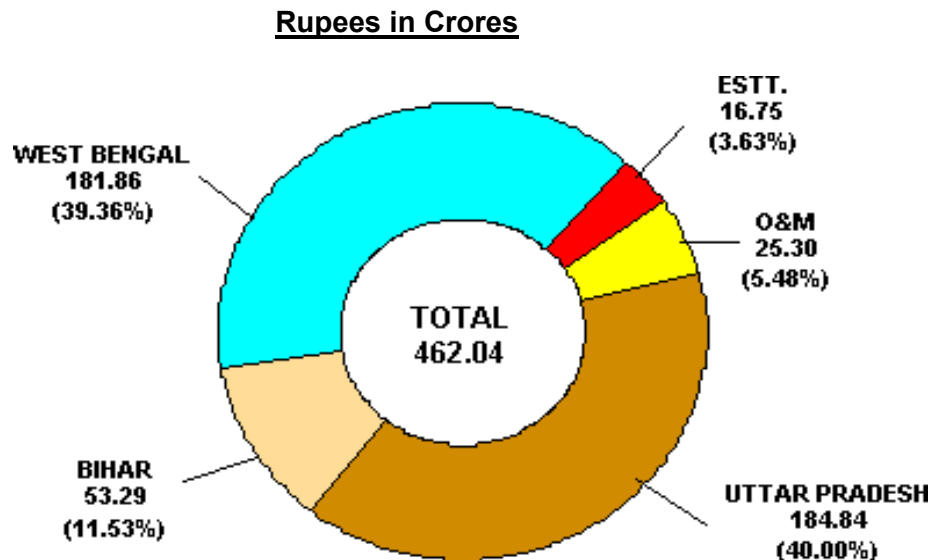
Source: Presentation to NAC members by NRCD in 2006

- v. The programme intended to address to the recovery of resources like biogas for power generation and sludge as biofertiliser from the sewage treatment operation. The treated sewage which contained nutrients was proposed to be used for irrigation wherever feasible. These steps were aimed at revenue generation form such resources to minimise the operation and maintenance cost burden.
- vi. The programme envisages scheme specific and site specific applied research with a view to improving the river water quality. The research projects were undertaken on the approval of a Research Committee.
- vii. Training programmes were also envisaged under the scheme for engineers and operators engaged in the design and operation & maintenance of the systems.

Costs & Status of GAP I & II

[See Annexure II](#)

STATE-WISE SANCTIONED COST OF GAP PHASE - I



The entire funding has been provided by the Central Government. The cost includes external aid components of equivalent to Rs. 33.04 crore from the World Bank and Rs. 47.32 crore from the Netherlands.

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

NATIONAL RIVER CONSERVATION PLAN

FUNDING PATTERN

- **Initially 100% funds were given by Centre. From 1993, equal sharing of funds between Centre and States was started**
- **The share between the Centre and States was changed from 50:50 to 100% by the Centre with effect from 1.4.1997**
- **New projects approved after March 2001 are being funded on 70:30 cost sharing basis between Centre and the State**
- **Operation and maintenance (O&M) of assets created is the full responsibility of the State Government/local body**

Source: Presentation to NAC members by NRCD in 2006

GAP I was started in 1985 as a 100% centrally sponsored scheme. Under GAP I pollution abatement works were taken up in 25 class I towns. So far, 259 schemes in 25 towns of Uttarakhand, UP, Bihar and WB have been completed and Rs 451.70 crore spent under GAP I. A sewage treatment capacity of 865 mld has been created under the programme so far. GAP I has been declared complete on Mar. 31. 2000.

GAP I was extended to GAP II which was approved in phases from 1993 to 1996 covering 4 major tributaries of Ganga, namely, Yamuna, Gomti, Damodar and Mahananda. This action plan covers pollution abatement works in 95 towns in 7 states along the polluted stretches of 4 rivers. The total approved cost of the action plan is Rs. 1498.86 crore, which was initially approved on 50:50 cost sharing basis between the Central and State governments.

Later, GAP II was merged with NRCP in Dec. 1996. NRCP was converted into a 100% centrally funded scheme on the pattern of GAP I in Nov. 1998. The land cost after Mar. 31, 1997 was however to be borne by the States.

In the X meeting of the NRCA held in Mar. 2001, it was decided to adopt an integrated approach for the river cleaning program; and all future works would be shared on a 70:30 basis between the Central and the State Governments. Of the State share, the share of the public shall be a minimum of 10% of the total cost.

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

[See Annexure III](#)

TOWN WISE ESTIMATED COST OF YAMUNA ACTION PLAN

[See Annexure IV](#)

RIVER WISE ESTIMATED COST OF GOMTI ACTION PLAN

[See Annexure V](#)

RIVER WISE ESTIMATED COST OF DAMODAR ACTION PLAN

[See Annexure VI](#)

RIVER WISE ESTIMATED COST OF GANGA ACTION PLAN (MAIN STEM)

[See Annexure VII](#)

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

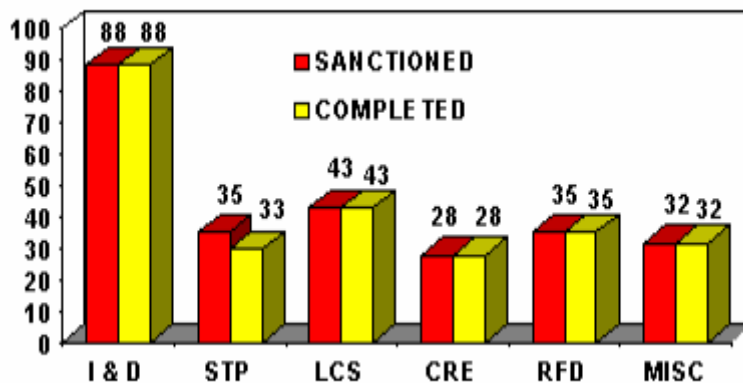
[See Annexure VIII](#)

Status of GAP schemes

**GANGA ACTION PLAN I
STATUS OF COMPLETION OF SCHEMES**

SANCTIONED: 261

COMPLETED: 259



→ CATEGORY OF SCHEMES


I & D : INTERCEPTION & DIVERSION
LCS : LOW COST SANITATION
RFD : RIVER FRONT DEVELOPMENT

STP : SEWAGE TREATMENT PLANT
CRE : ELECTRIC CREMATORIUM
MISC : MISCELLANEOUS

WORKS UNDER NRCP

Major types of works and respective %age cost incurred are

- ❖ Interception & Diversion of sewage(I&D)-52.32%
- ❖ Sewage Treatment Plant (STP)-36.66%
- ❖ Low Cost Sanitation (LCS)-7.22%
- ❖ River Front Development (RFD)-1.13%
- ❖ Crematoria (CRE)-0.64%
- ❖ Public Participation & Awareness (PP&A) 0.32%



Source: Presentation to NAC members by NRCD in 2006

Achievements

Technology

One of the achievements of GAP is in terms of the development of appropriate technologies of sewage treatment as Upflow Anaerobic Sludge Blanket (UASB), improved oxidation ponds, sewage treatment through plantation, aquaculture using duck weeds and pisciculture etc. These technologies are cost effective in terms of operation & maintenance (O&M) and as such will reduce the burden on the State Governments on this account. These developments will facilitate to make GAP and future programs sustainable. The per mld costs for capital and O&M and land requirement for different technologies used under GAP are given below:

Statement showing per mld land requirement, capital costs and o & m expenditure under different treatment technologies

S.No.	Type	Land in Hectares (per mld)	Capital cost per mld (Rs. in lakhs)	O & M Cost per mld per year (Rs. in lakhs)
1	Activated Sludge Process	0.4	35-40	3.0
2	Trickling Filter	0.4	35-40	2.5
3	Upflow Anaerobic Sludge Blanket	0.2	23-28	1.5
4	Aerated Lagoon	0.6	15-20	2.75
5	Improved Oxidation Ponds	1.0	12-15	0.5
6	Karnal Technology	1.0-1.5	0.6-0.8	0.25-0.3
7	Duckweed cum Fish Culture Technology	0.7-1.0	10-12	0.50-1.0

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

In view of the experience gained under GAP I, the choice of technologies for sewage treatment, a need was felt to undertake research for optimizing low cost technologies of sewage treatment that are less energy intensive, do not require skilled manpower and provide rich resource recovery. Field scale experiments were carried out for standardizing the aquaculture, technology using duckweeds and fish culture. With the success of the basic study, trials of the technology are being conducted for different agro-climatic situations.

While the conventional sewage treatment technologies adopted for GAP such as Activated Sludge process reduce the level of BOD and suspended solids to desired levels, there's only an incidental reduction in the bacterial load in the treated sewage. This sewage when discharged into the river, adds to the bacterial counts in the river water. In order to find a most economically viable technology for control of bacterial pollution, research on different technologies such as Ultra violet radiation, Gamma radiation, chlorination and biological alternatives using zooplankton were initiated.

Now only waste stabilization pond technology, which is eco – friendly and simple to operate, will be mainly supported to treat wastewater. This decision marks a decisive shift from the past. The earlier technologies adopted were power intensive and capital intensive, technologically more complicated and difficult to operate and maintain. The waste stabilization ponds in contrast can be constructed and maintained by the local community and are not power dependent. The waste stabilization pond technology is recognized to be the only cost effective technology, capable of killing pathogens to make the levels of microbial pollution in treated waste water safe for agriculture, aqua – culture and bathing. Land is the primary requirement for waste stabilization pond technology. The procurement of land should be arranged speedily by the State Governments so that additional projects can be executed without any delay. A committee of experts which examined the technology options in case sufficient land was not available for adoption of waste stabilization pond technology also recommended that a thorough search followed by a public hearing must be ensured to locate sufficient land.

In extreme cases where land is not available then conventional technologies followed by maturation ponds could be considered. But achievement of standards is in no way to be compromised. Since, river water is extensively used in our country for bathing, this shift in technology with a focus on reducing microbial pollution makes the approach people friendly and relevant for health.

Industrial pollution

For monitoring and control of pollution from industry, 68 grossly polluting industries located on the banks of Ganga and responsible for about 80% of the total industrial pollution were identified in 1985. These industries have been monitored rigorously. At the time of launching GAP, only 14 units were equipped with proper effluent treatment plants (ETPs). In June 1995, 55 units of these had set up the ETPs and 12 units had been closed down permanently with the remaining one unit having changed the technology and thereby not needing an ETP. Currently, ETPs in 45 units are operating satisfactorily and 23 units have been closed down. According to fresh surveys for grossly polluting industries, in addition to the 68 units already identified, another 119 units have been listed for monitoring purposes. Of these, 37 units are complying with the discharge standards, 9 units have been closed down and action has been initiated against the remaining 73 units under the Environmental Laws. The enforcement of the water (Prevention and Control of Pollution) Act and the Environment Protection Act against the defaulting industrial units is being done by the CPCB and the SPCBs. The NRCD plays a supervisory role over the SPCB with regard to the control of industrial pollution in the river included under the NRCP.

GANGA ACTION PLAN PHASE-1

The Ganga Project Directorate, Ministry of Environment and Forests, Govt. of India had identified 34 industries in UP under Ganga Action Plan Phase1 in 1985-86. The status of Pollution Control System installed in the industries is as following:-

1.	Industries which have installed ETP	19
2.	Industries which have installed ETP but are lying closed	9
3.	Industries which are lying closed for many years	6
	Total	34

The Central Pollution Control Board has identified another list of 83 industries located in UP which are discharging their effluent directly into River Ganga in addition to the 34 industries identified under Ganga Action Plan I.

The latest status of effluent treatment plant in these 83 industries is as following :-

1.	Industries which are complying the standards	59
2.	Industries which are lying closed	24
	Total	83

Research activities

A limited number of research projects were undertaken with thrust on scheme specific and site specific projects, the results of which could be gainfully employed in the implementation and efficacy of the GAP. Research studies were, therefore, carried out in identified thrust areas like pollution monitoring, bio-diversity, bio-conservation, cost-effective innovative technologies, impact assessment, control of bacterial pollution etc.

The list of the research projects undertaken under GAP

[See Annexure IX, X & XI](#)

Ecology

To restore the ecological health and biological wealth of the river, projects on bio-monitoring and bio-conservation by having indicator species approach were initiated in the Himalayan segment, mahaseer followed by otters and crocodiles from Hardwar to Kanpur, major carps from Kanpur to Varanasi and dolphins in the stretch of Bihar have been identified as indicator species for these studies. Scientists of Hemvati Nandan Bahuguna University, Garhwal, Jivaji University, Gwalior, Central Inland Capture Fisheries research Institute, Barrackpur and Patna University are involved in carrying out the bio-monitoring and bio-conservation studies.

Water Quality Monitoring (WQM)

In order to evaluate the results of implementation of the pollution abatement schemes under GAP, water quality monitoring in the state of UP, Bihar and WB is being carried out regularly at 27 monitoring stations with the help of reputed research institutes and universities. The selection of monitoring stations and the results are reviewed by experts from time to time. Amendments in WQM are provided by incorporating need based modifications.

Impact on River Water

Under GAP I, only about 35% of the total sewage generated presently in towns along the river has been tackled. On the other hand, the facilities created to tackle the targeted pollution load are not being maintained properly in States like UP and Bihar. Therefore, the impact of the completed works is not fully visible.

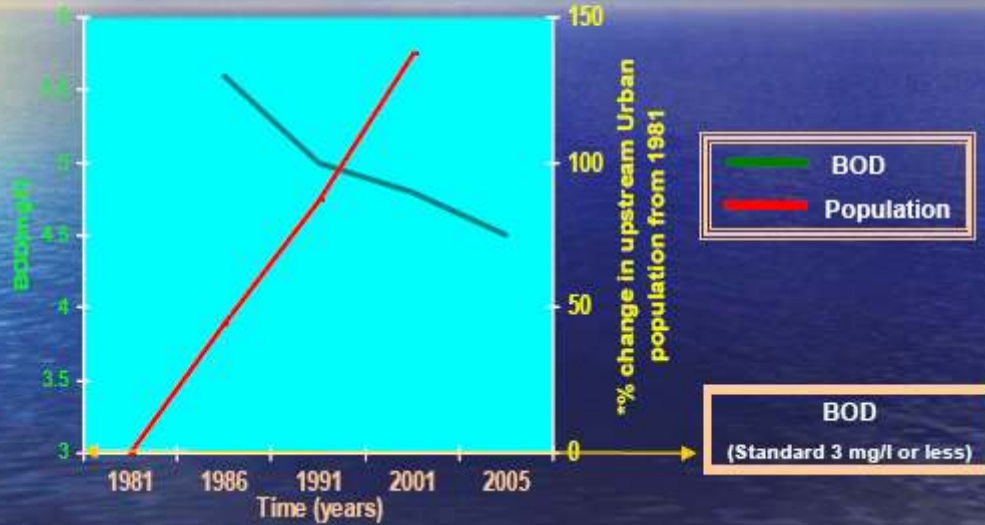
However, with the implementation of GAP, the water quality of Ganga has shown improvement over the pre-GAP period quality in terms of both BOD & DO, two important parameters to assess the river water quality. The pre and post-GAP (1986) data are shown below:

River water quality data

[See Annexure XII & XIII](#)

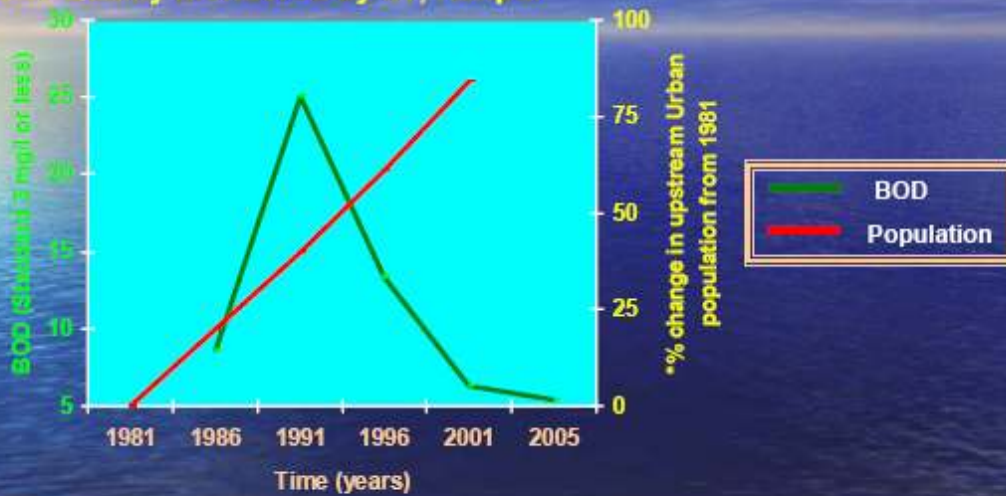
WATER QUALITY TREND OF GANGA (KANNAUJ)

Water Quality monitored by IIT, Kanpur



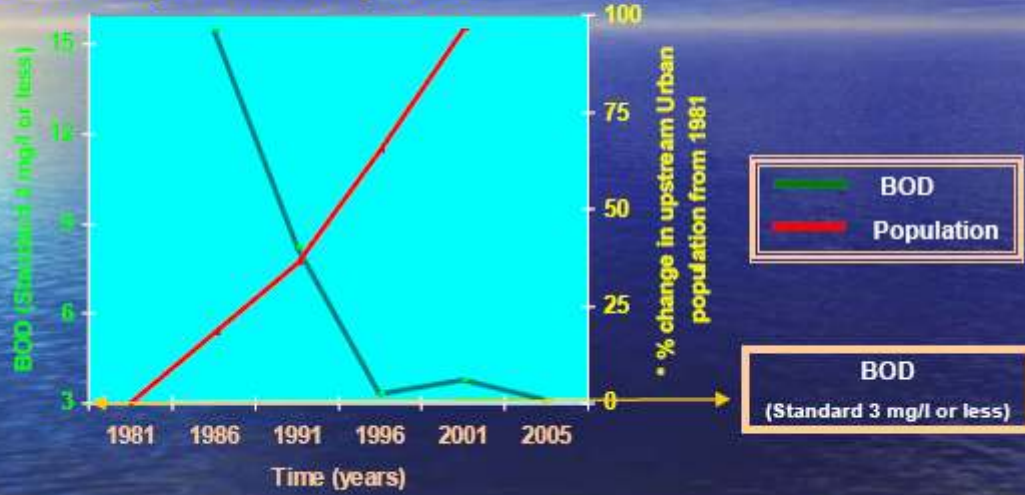
WATER QUALITY TREND OF GANGA (KANPUR)

Water Quality monitored by IIT, Kanpur



WATER QUALITY TREND OF GANGA (ALLAHABAD)

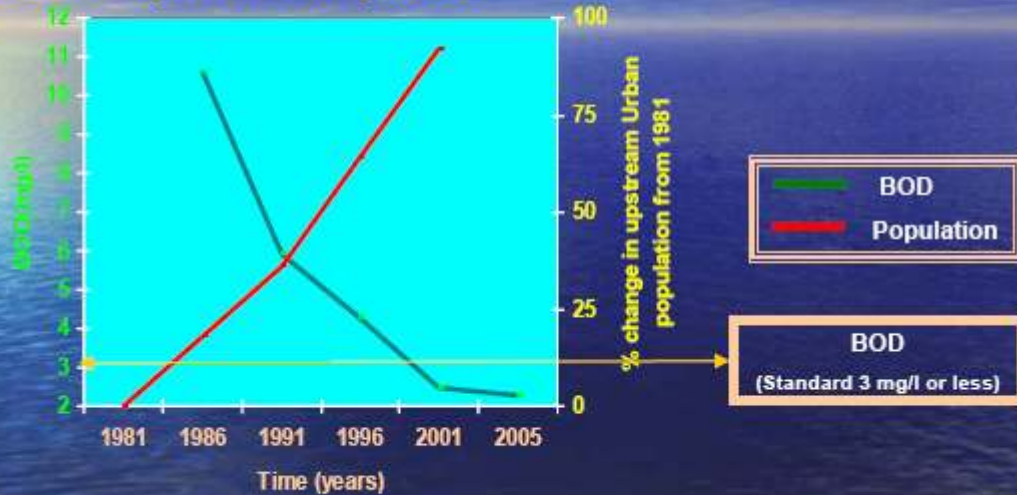
Water Quality monitored by CPCB



* → Population includes all urban population upstream of Allahabad falling on Ganga and its major tributaries.

WATER QUALITY TREND OF GANGA (VARANASI)

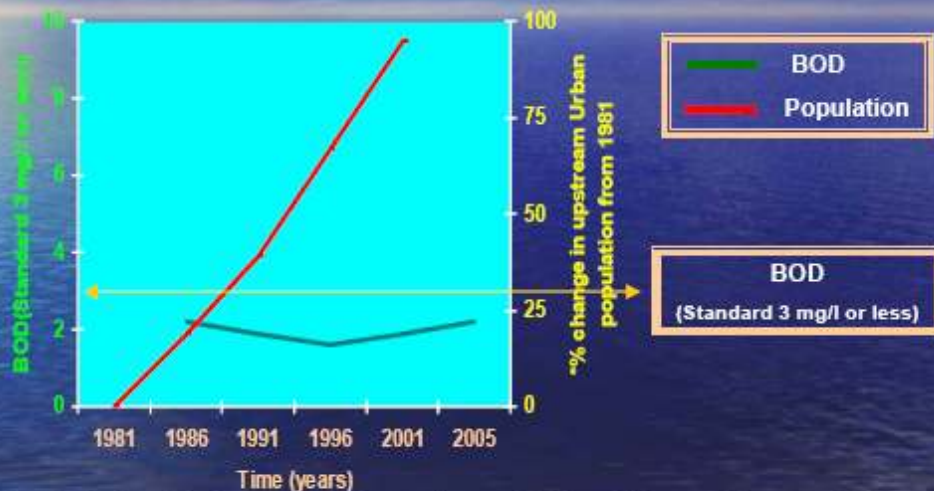
Water Quality monitored by CPCB



* → Population includes all urban population upstream of Varanasi falling on Ganga and its major tributaries

WATER QUALITY TREND OF GANGA (PATNA)

Water Quality monitored by Patna University, Patna



* → Population includes all urban population upstream of Patna falling on Ganga and its major tributaries

Source: Presentation to NAC members by NRCD in 2006

Despite the problems of O&M in UP and Bihar, the improvement in river water quality can be attributed to diversion of large quantities of sewage in towns like Kanpur, Allahabad and Varanasi for irrigating the farmlands.

Although the river water quality along Kanpur and Varanasi has improved significantly, it still does not meet the prescribed standard of BOD of 3 mg/l. This is mainly because:

- Only 160 out of 425 mld at Kanpur and about 100 out of 160 mld of sewage at Varanasi has been taken up for interception and diversion under GAP I.
- The river stretch from Farrukhabad to Varanasi in general and Kanpur in particular is critical in terms of the availability of the desired minimum flow for dilution purpose.

The quality of river water quality monitoring leaves much to be desired. There is lack of transparency and professionalism in this effort.

Impact on health

The efficacy of the schemes taken up under GAP in the towns of Varanasi and Nabadweep was evaluated for the effects on the health of the people particularly those who were directly affected by Ganga water. All India Institute of Hygiene and Public Health (AIHPH), Kolkata alongwith NEERI, Nagpur carried out studies in these towns. The studies revealed that as the projects under GAP were being completed, there was a decreasing trend in the incidence of water borne diseases. However, in case of sewage farm workers handling untreated sewage, there was prevalence of diahorrea, helminthic infection, skin diseases and respiratory tract infection.

Evaluation of GAP

On the direction of Planning Commission, a cost-benefit analysis of GAP was initiated under the leadership of Prof Anil Markandaya of Harvard Institute of International Development, in collaboration with local institutes viz., Institute of Economic Growth, New Delhi, ITRC, Lucknow, AIHPH, Kolkata. Funding for the study was provided by the government of UK.

Summary of the findings of this study

[See Annexure XIV](#)

Role of Municipalities

The pollution of rivers and the existence of unsanitary conditions in large towns is on several accounts. River Action Plans can be considered as one of the several inputs that are needed to keep the towns and rivers clean. Other inputs like management and handling of garbage and slums, regular operation & maintenance of sewerage systems and provision of adequate number of toilets for the masses to minimise the practice of open defecation, minimisation of use of rivers for cattle wallowing etc. are the primary

responsibilities of the respective local self-governments. Unless, concurrent measures are taken to address all these issues, full benefits of the river Action Plans cannot be realised.

Delay in completion

Initially it was expected that the program would be completed in 6-7 years. However, it has been delayed considerably due to following reasons:

- Being the first program of its kind and magnitude, there was lack of experience both at the central and the state levels.
- There were inordinate delays in land acquisition for major schemes of sewage treatment and pumping stations. The ministry has been taking up these matters at appropriate levels in the State Government on a regular basis. All these problems have since been resolved.
- Litigations and court cases resulted in considerable delays.
- Two sites of major projects were under encroachment for a long period.
- The schemes of some of the sewage treatment plants had to be tendered several times. There were contractual problems also.
- Externally aided components were delayed considerably due to initial formalities between the governments.
- Diversion of funds by State Governments resulted in delayed release of central funds.

Limitations

Notwithstanding the delay in completion of the program, the implementation of pollution abatement schemes has been by and large satisfactory. However, certain major limitations have surfaced which are as given below:

- States particularly Bihar and UP are unable to provide timely and adequate funds for O&M of assets created under GAP.
- In Bihar, O&M has been grossly inadequate. The State Government has neither been able to provide funds nor the required power on a continuous basis for O&M of assets like STPs, pumping stations, crematoria etc. Thus, the operation of nearly all the assets has practically come to a halt.
- O&M of conveying sewers and intermediate pumping stations has been grossly neglected in UP. As a result, despite the facilities being available, raw sewage is still finding its way into the river at several places.
- Erratic and poor availability of power for operating the pumping stations, STPs and crematoria is a major bottleneck in UP. Although, for such installations dedicated power supply had been provided for, this has not been adhered to by UPSEB. As a result, in the event of power failures, raw sewage finds its way into the river and the treatment plants are adversely affected.
- O&M of facilities like toilets and bathing ghats has been neglected in general by the local bodies. Local bodies have also failed in discharging other civic functions in GAP towns.
- The stretch of the river from Farrukhabad to Varanasi in general and Kanpur in particular is very critical in terms of the availability of the minimum flow in the

river. At Kanpur, the pollution load from both the municipal as well as industrial sources is significantly large and the dilution capacity of the river is severely limited. As a result, the desired improvement in the river water quality has not been achieved at Kanpur.

- It has been possible to minimize the organic pollution (which is indicated by BOD) reaching the river through the GAP. However, there has been only incidental reduction in the microbial pollution (which is indicated by the coliform counts). The present methods available to treat the microbial pollution are either hazardous to human health or cost intensive. Research projects have been commissioned to develop indigenous and appropriate cost effective technology. However, disposal of treated/untreated sewage only partly contributes towards the microbial pollution of the river. A large amount of this pollution is contributed by such activities as open defecation, cattle wallowing, mass bathing, garbage and carcass dumping. Such sources of pollution are difficult to tackle.
- The acceptance of electric crematoria has been slow in UP and Bihar. Due to non-availability of power and funds, these facilities are virtually defunct in UP and Bihar.

Corrective measures

Following steps have been taken by Ministry of Environment and Forests (MOE&F) to improve the implementation of GAP and NRCP:

- Standing Committee of NRCA chaired by MOE&F to facilitate more frequent progress review.
- Project Advisory Committee to visit and inspect project areas and suggest measures for improved implementation, O&M and involvement of public in the program.
- Chief Ministers to hold quarterly progress review with local MPs, MLAs and representatives of local bodies.
- Identifying and issuing directions to defaulting industries to set up ETPs within 3 months or close down.
- Due to unsatisfactory O&M of GAP assets in Bihar and some towns of UP, further grants to the State Government have been stopped. Directions have also been issued by CPCB to State Pollution Boards to initiate action against the local bodies/government departments responsible for non-operation of GAP assets.
- The State Governments have been asked to furnish income and expenditure statements as well as increase in revenue collection during the past 5 years by the respective local bodies of Action Plan towns. This will indicate the capacity of local bodies to support O&M costs of river cleaning program.
- Issuing directions for involvement of local communities in O&M of non-core schemes.
- Setting up Citizens Monitoring Committees and Divisional Project Monitoring cells in Action Plan towns.

Lessons learnt

Apart from the steps taken to improve the implementation of GAP and O&M of GAP assets, the modifications effected in GAP II and NRCP are as given below:

- Systems designs have been optimized on the basis of actual surveys and investigations of wastewater generated from towns.
- Decentralised approach has been adopted for interception, diversion and treatment schemes to optimize the costs.
- Steps have been taken to ensure that land acquisition activities are completed in time.
- Adoptions of cost effective and appropriate technologies like UASB, Stabilisation ponds and Karnal technology wherever feasible to improve the sustainability of the program.
- Consultations with other concerned ministries like Urban Development, Non-conventional Energy Sources, Water resources etc. to improve the quality of the program through an integrated approach.
- Maintenance of minimum flows and other requirements of a river action plan are kept in view while clearing large development projects e.g., dams, reservoirs, thermal power stations etc.
- Improved wood based crematoria have been adopted in place of electric crematoria which were not found popular in smaller towns due to non-availability of uninterrupted power supply..
- Siting of low cost toilet complexes has been done on the basis of physical surveys. The operation & maintenance of such schemes is proposed through reputed NGOs.
- Training programs in project management have been designed and introduced with an objective to minimize the implementation period.
- Greater emphasis is put on public awareness and participation. Privatisation of O&M of a few STPs is also proposed on experimental basis.

Can we clean river Ganga?

The GAP originated from the personal intervention and interest of our late PM Smt Indira Gandhi who in 1979 had enquired from Dr Nilay Choudhury, then CPCB Chairman “Can we not clean the Ganga?” Dr Choudhury’s affirmative reply prompted her to ask him to do a comprehensive survey, prepare an Action Plan, and if need be propose an Authority to implement the plan (Yojna June 1-5, 1985). CPCB prepared two comprehensive reports in 1984 which formed the base for GAP.

CGA was formed in Feb 1985 with PM as its Chairman. GAP was formally launched by late PM Sh Rajiv Gandhi on June 14, 1986 at Varanasi. Rajiv Gandhi in his inaugural speech said:

“We shall see that the waters of the Ganga become clean once again.....In the years to come, not only the Ganga, but all our rivers will be clean and pure as they were thousands of years ago”.

If we believe in what Rajiv Gandhi said, the objective was very clear. But today we're still groping in the dark, looking for a suitable objective. The government is confused. The objective was to clean river Ganga. Could we clean river Ganga? There exists a wide chasm between the promise of Ganga Action Plan and the reality of millions of litres of all kinds of pollution meeting the river every single minute. Inaccurate, partial and self-laudatory reports have become the norm but do precious little to make significant forward movement on reversing the flow of pollution in the river. The Ganga Action Plan today has been reduced to a yet another government intervention existing more as a showpiece than as an imaginative and effective plan as it is made out to be. The supreme irony of course is the replication of GAP as a model plan in other polluted rivers in India.

It's obvious that Mrs Gandhi and Sh Rajiv Gandhi, the two past prime ministers of India, evinced keen interest in Ganga and made sincere efforts towards its cleaning. The successive prime ministers lacked the interest and will to do anything concrete towards the cleaning of river Ganga. The apex body NRCA (earlier CGA) has met only 11 times in the last 22 years while its supposed to meet every year. This shows the interest and sincerity. The PM who is at the helm of affairs, the chairperson of NRCA, does not have time for Ganga, not even once a year. NRCA met last on June 16, 2003 under the chairmanship of then PM Sh Atal Behari Vajpayee. The NRCA has yet to meet under the present PM Dr Manmohan Singh.

Minimum flow, agricultural run off issues-never addressed

Since the scale of pollution also depends on the degree of dilution and velocity of the flow of water, it is necessary to maintain a minimum discharge in the river, specially at critical points, e.g., urban settlements and locations of large industrial units producing substantial quantities of obnoxious liquid wastes. The intensity of irrigation in the Ganga basin is very high. About 43% of the total irrigated area in the country is located in the Ganga basin. Practically the entire dry weather flow is diverted to the Upper Ganga Canal at Hardwar and whatever flow is regenerated between Hardwar and Aligarh is again diverted to to the Lower Ganga Canal near Narora. As a result of this, there is very little dry weather flow in the Ganga at Kannauj and Kanpur where there is a heavy inflow of pollutants in the river. The Ganga receives over 60% of its water from Yamuna, Ghagra, Kosi and Gandak, all joining the main river at or points below Allahabad. The Hardwar-Allahabad stretch is, therefore, particularly vulnerable." (Source: An Action Plan for Prevention of Pollution of the Ganga, Department of Environment, Government of India, July 1985).

The above concern has been raised in NRCA meetings by Sh KC Sivaramakrishnan, Member NRCA but without any decision or action. This issue has been highlighted in various NRCD documents, UP Jal Nigam's DPRs but without any attention.

The important question is: "Do we plan to clean river Ganga which is bereft of water?" No decision has been taken till date on this crucial issue by NRCA. Who else, if not the NRCA, can take a decision on such an important issue?

Another important issue which lacked decision and action is agricultural run-off, containing residues of chemical fertilizers, pesticides, insecticides and weedicides, entering the river waters. Agricultural run-off - single most important non-point source of pollution has not been addressed at all. In the beginning, some efforts were made to

quantify the consumption of chemical fertilizers, pesticides, insecticides..in the Ganga basin. But today we don't have even a vague idea about the impact of agricultural run-off on river water quality, its ecology and its impact on the Ganga users.

Unimplemented decisions

A decision was taken in the IX NRCA meeting that the States would have to meet the O&M costs of the assets created under River Action Plans. The decision remains unimplemented even today. Most of the GAP assets remain un/under-utilised due to paucity of O&M funds.

The NRCA in its IX meeting held on July 12, 1997 decided that the polluting industries which were discharging their effluents into the rivers should be directed to install the requisite effluent treatment systems within 3 months, failing which closure notices should be issued. The NRCA in its XI meeting held on June 16, 2003 was informed that a total of 851 defaulting units were identified in 1997. The latest number of such industries (as on Mar 31, 2003) has come down to 5. This claim does not seem to be true because there are still many industries which continue to discharge their raw effluent into river Ganga. The river water turns brown or black during every Magh mela held at Allahabad and there are protests by religious leaders who congregate on the river bank for two months. During the lean months, the river water becomes coloured and unpotable at Kanpur and Water Works struggle hard to treat the water to safe levels.

The NRCA seems to be a weak and helpless institution. The NRCA meetings are more of a ritualistic nature. PM is informed about the physical and financial progress of the plan, is shown some complicated data tables claiming improvement in the water quality, interception and diversion of sewage in MLDs, creation of additional treatment capacity in terms of MLD. Decisions are not taken on important issues, even the decisions taken remain unimplemented.

Recommendations:

There should be a proper compilation, documentation and assessment of the Agenda Notes for the NRCA (earlier CGA) meetings. It would be worthwhile to study the minutes/proceedings of the NRCA meetings.

Almost 21 years since the launching of the GAP, and a whopping investment of approximately Rs. 1500 crore seem to have completely gone waste. There is no visible improvement in the condition of river Ganga and its waters anywhere, instead the condition has worsened. The question "Can we not clean the Ganga?" raised by Mrs. Gandhi in 1979 is still valid, even today. I ask this question, every Indian should be asking this question.

GAP-A failure? Whose failure?

So far only 35% of the pollution load of the river Ganga has been tackled under GAP I. Works for tackling additional pollution load of about 30% are going on under GAP II. However, there is still a gap of nearly 35% which could not be addressed due to shortage of funds. In important towns like Hardwar, Kanpur, Allahabad and Varanasi alone, the additional funds required to tackle the remaining pollution load (over and above what has been done under GAP I & II) is estimated at Rs. 500 crore.

As for the river Yamuna, despite an investment of Rs. 680 crore under YAP I and a sizeable investment (over Rs. 600 crore in the IX Plan) by the Government of National Capital of Delhi for construction of STPs at 17 locations, the river stretch along Delhi and downstream still continues to be critical from the pollution angle. Under YAP II, which is funded by Japan Bank for International Cooperation (JBIC), only part works will be accommodated in Rs. 625 crore projects which is presently in the process of approval. In order to address the remaining pollution load of Delhi and other towns, an additional amount of atleast Rs. 1500 crore would be required.

Thus, the total requirement of funds for the remaining works of river Ganga and Yamuna alone is estimated at Rs. 2000 crore.

(Source: Agenda notes for the 11th meeting of NRCA held on 16th June, 2003)

I'm focusing on the main stem of the river Ganga while critically examining the GAP.

It's obvious from the above statement from the government that river Ganga is still polluted. The claims that 35% of the pollution load were tackled under Phase I and 30% is being tackled under Phase II are unfounded. Do we know exactly how much sewage and industrial effluent are entering the river Ganga today, have we tackled the non-point sources of pollution? Are we aware about the performance of GAP assets? What is the ground reality in towns where GAP I has been completed and GAP II is in progress?

Kanpur -a case study

Ganga and GAP in Kanpur:

Because of Kanpur's high level of pollution, Kanpur was identified as a key player in the GAP activities. Approximately Rs.730 million were invested under GAP Phase I in Kanpur. The total sewage generated in Kanpur at the time of launching of the GAP was around 285 MLD (Million Litres per Day) out of which 162 MLD of sewage was tapped under GAP Phase-I and diverted to sewage treatment plants. The objective of these plants was to treat this 162 MLD of domestic sewage and 9 MLD of tannery effluent generated from 175 tanneries and supply the treated wastewater to nearby villages to irrigate their farmlands. Four Intermediate pumping stations were built along the Ganga, and all wastewater drains, or nallas, were intercepted and diverted to the pumping stations. The pumping stations were to release the wastewater into a common waste pipe leading to the main pumping station, which filters out solid waste and then pumps the remaining wastewater into three sewage treatment plants. Two of these plants (5 MLD STP & 130 MLD STP) treat domestic wastewater, using sedimentation after aerobic treatment and anaerobic stabilization, and together have a capacity for 135 MLD. Another treatment plant, with a capacity of 36 MLD incorporated Dutch technology known as Upflow Anaerobic Sludge Blanket (UASB). It makes use of anaerobic bacteria to decompose the waste material, and requires some amount of post-treatment. This plant is meant for treating the tannery effluent, with the idea that the chromium and other heavy metals from this effluent should be recovered and recycled at the factory. Various other projects were undertaken as well, including cleaning the sewers, expansion of the sewer system, installation of electric crematoria, and the installation of low cost sanitation systems.

After completion of GAP-I, the Central government came out with a report in 1995, making the tall claim that the Ganga had shown 70% improvement due to GAP.

WORKS COMPLETED UNDER GANGA ACTION PLAN PHASE – I AT KANPUR

S. No	Name of Scheme	Actual Expenditure (Rs. In Lacs)	Operation and Maintenance Agency
A. WORKS EXECUTED BY U.P. JAL NIGAM			
1	Kanpur Sewerage Re-organization Master Plan (Immediate Works) Phase-1	226.07	Jal Sansthan
2	Cleaning of Trunk & Main Sewers	78.223	Jal Sansthan
3	Tapping of Nalas	29.10	Jal Nigam
4	Expansion of domestic sewerage system	274.955	Jal Sansthan
5	Construction of storm water drains at Jajmau	258.637	Jal Sansthan
6	Jajmau Water Supply Scheme	248.834	Jal Sansthan
7	5 mld UASB Treatment plant & Improvement works	94.660	Jal Nigam
8	Chrome Recovery Plant	2.73	Tannery Owners
9	UASB Pilot Plant (Tannery waste water)	11.13	Tannery Owners
10	Waste Water conveyance system for Northern belt, Jajmau.	430.395	Jal Nigam
11	36 mld UASB Tannery waste water treatment plant	1284.32	Jal Nigam
12	36 mld UASB Post Treatment Plant	629.950	Jal Nigam
13	130 mld Sewage Treatment Plant With Power Package	3102.29	Jal Nigam
Total		6728.445 Lacs	

**B WORKS EXECUTED BY KANPUR NAGAR NIGAM /
KANPUR
JAL SANSTHAN**

1	Low cost sanitation	331.65	Nagar Nigam
2	Electric crematoria at Shuklaganj & Bhagwatdaghat	78.09	Nagar Nigam
3	Solid Waste Management	91.89	Nagar Nigam
4	Public Health Education & Community Development	40.89	Nagar Nigam
5	Sewer cleaning Jajmau area (Indo- Dutch) Programme	34.18	Jal Sansthan

Total Rs. 576.70 Lacs

Grand Total Rs. 7305.145 Lacs

Say Rs. 73.05 Crore

The primary objective of GAP Phase II is to tap and treat 200 MLD of sewage that remained untreated in GAP Phase I.

This volume of untreated sewage is proposed to be diverted towards South outfall of the city for treatment and disposal. Under this scheme construction of two intermediate Sewage Pumping Stations, one main pumping station, nearly 10 kms long relieving sewers, 200 MLD treatment plant and disposal of treated waste water by developing sewage farm are proposed to be executed. The scheme also included water supply extension, the renovation and cleaning of old sewer lines, and the renovation and construction of additional pumping stations.

Status of GAP

As of today GAP has totally come to a stand still and almost all the assets are in shambles. Four tannery wastewater pumping stations do function, but are often overloaded, and when power is out in Kanpur (on an average up to 8 hours a day, sometimes 14 hours a day), the DG sets, provided to meet the power failure, run on a continuous basis but this is a very costly affair. This does not seem to be practical and feasible in the long run. The sewage treatment plants at Jajmau are facing a power shortage of an hour on an average daily basis. In addition, the 36 MLD UASB plant is functional with an efficiency of removing only 50% of BOD, COD and suspended matter, largely due to the fact that the order that tanneries remove the chromium from their waste stream before discharging into the conveyance system was not enforced, and the presence of the toxic heavy metals in the effluent rendered the use of biological treatment methods ineffective.

On the other hand, under GAP II approximately Rs. 65 crore have been invested in Kanpur. The IPS are still incomplete and standing like white elephants while the procurement of land for 200 MLD treatment plant has been completed.

GAP has done little to improve the status of the Ganga in Kanpur, instead GAP has impacted the local environment, health and livelihood of the people adversely due to paucity of funds for O&M of assets created under GAP I.

The Ganga Action Plan Phase I has failed on key counts both quantitatively and qualitatively. By quantitative failure we mean, the failure to tap significantly the discharge of raw domestic sewage and raw tannery effluents from entering the river waters. By qualitative failure, we refer to failure of the treatment plants to treat the tannery effluent and sewage to the desired and safe levels.

As of today, the total domestic wastewater generation in Kanpur is roughly 387 MLD. Arrangements were made to intercept and divert 162 MLD of sewage to treatment plants created under GAP I.

Roughly 95 MLD out of 387 MLD raw sewage is reaching the treatment plants, rest is being by-passed into the river. All the existing sewage drains are carrying raw sewage directly to the river Ganga and 4 drains carry the remaining sewage to River Pandu which ultimately meets River Ganga (25 km downstream).



There is very little flow during the dry weather. Ganga Barrage was commissioned in 2005. Ganga is allowed to enter Kanpur through just one gate during the lean period.



Two drains carrying raw sewage to river Ganga just before the water intake point (raw water source for drinking). This is a failure of GAP I. These drains were never tapped successfully.



This is the quality of raw water at Water intake point.



Sisamau drain discharging roughly 150 MLD of raw sewage into Ganga. This drain was not tapped under GAP I, is proposed to be tapped under GAP II.



Dapka drain discharging raw sewage into Ganga. This is a failure of GAP I. Instead of reaching the treatment plant, the raw sewage is finding its way to river Ganga. Perhaps the trunk sewer is broken and clogged.



Another drain at Dapka ghat discharging raw sewage and tannery effluent into river Ganga. This is a failure of GAP I.

As of today, roughly 15 MLD tannery effluent is generated from 400 odd tanneries in Jajmau area of Kanpur. Half of the tannery wastewater goes to the river through 4 drains without any treatment.

Under GAP I, a separate conveyance system and 4 Intermediate Pumping Stations were set up to collect and pump 9 MLD of tannery wastewater to 36 MLD CETP meant for treating the tannery effluent. The number of tanneries has gone up from roughly 175 in 1985 to roughly 400, and also the quantity of wastewater from 9 MLD to 15 MLD.



A drain carrying raw tannery effluent to the river at Buriha ghat.

The raw sewage, tannery effluent, dead bodies, solid trash, cattle wallowing, dhobi ghats have rendered the Ganga water completely unfit for any human use in Kanpur.



A human body decaying in the river.



Water buffaloes wallowing in the river.



A dhobi ghat in operation.



A variety of solid trash on the river bank.



A pile of discarded clay idols on the river bank.



This is how the river looks like in Kanpur.



Dark brown waters of Ganga.

Adverse impacts of GAP

At Jajmau, Kanpur, the post treated sewage irrigation water being supplied to the farmland has led to widespread contamination of food chains, sharp decline in productivity of food crops, soil, vegetables, livestock and even milk; contamination of underground water meant for drinking purposes with attendant grave public health implications.



The so-called treated wastewater is used for irrigating 2500 hectares of land.



The irrigation water is a cocktail of deadly chemicals. Farm-lands are turning fallow, crop productivity has gone down, agricultural produce and cattle milk are contaminated with Chromium.





GAP victims, adverse health impacts of GAP due to direct exposure to toxic irrigation water and consumption of contaminated groundwater.

Status of Main Pumping Station

It receives the total city sewage and then pumps it to treatment plants. At present it is receiving much less (95 MLD) of sewage than its installed capacity (162 MLD). Subsequently, it pumps 4 MLD to the 5 MLD STP, 21 MLD to the 36 MLD CETP and the rest 70 MLD to the 130 MLD STP.

Status of 130 MLD STP

The plant is working much below its installed capacity of 130 MLD. It is able to treat only 70 MLD of sewage (54% of the capacity) mainly because of the limitation of the sludge handling facilities. Four centrifuges provided for handling the sludge are almost non-functional. The non-withdrawal of excess sludge from the system thus restricts the capacity utilization of the plant. The presence of sulphides in the domestic sewage, due to some tanneries discharging their effluent into the sewage line, puts instantaneous demand on the available oxygen thereby reducing the capacity to degrade the organic matter. The presence of sulphides also is responsible for the corrosion of the centrifuge system. 27 numbers of sludge drying beds (SDBs) have been constructed, but these would increase the capacity to not more than 55 MLD. The Ganga Pollution Control Unit, UP Jal Nigam is now constructing 62 additional sludge drying beds to encounter the problem of sludge handling..

Status of PETP

All the tanneries are required to have PETP and almost all of them have it. Through primary treatment process, the suspended particles (all kinds of solids) are settled and removed. The wastewater after primary treatment should not have more than 600 mg/l of TSS (Total Suspended Solids) and Chromium concentration should not exceed 2 mg/l. (revised standard 2000).

At present, the TSS (ranges between 1500-3500 mg/l) and chromium (40-140 mg/l) contents of the wastewater reaching the CETP is very high. It's obvious that PETPs are not functioning.

Status of 5 MLD STP

The main purpose of setting up this plant was to assess the technical feasibility of the UASB technology for treating tannery wastewater. After commissioning of the 36 MLD plant, the 5 MLD plant was used to treat domestic sewage. At present, the plant is working at full capacity.

Status of 36 MLD CETP

The tannery wastewater is mixed with the domestic wastewater in the ratio of 1:3. The wastewater is fed into UASB reactors, and then from there the wastewater goes to first stage post treatment plant. In the post treatment plant, the wastewater is aerated and clariflocculated. Finally treated effluent is mixed with the treated sewage and this mixture is put into irrigation channel. This irrigation water should not have TSS more than 100 mg/l and BOD more than 50 mg/l but the TSS ranges between 150-200 mg/l and BOD 100-150 mg/l. Sulphide in this water should not be more than 2 mg/l but it ranges between 30-50 mg/l. The chromium ranges between 5-12 mg/l while it should not be present in the irrigation water. This water also contains lindane (.5 to 1.2 mg/l). Lindane is used in preserving the raw hides.

At present the plant is working but the right mix of tannery effluent and sewage (1:3) is not being achieved. Also, the presence of very high levels of chromium (between 100-200 mg/l) in the tannery effluent reaching the CETP hampers the rate of activity of micro-organisms in the biological processes to stabilize the organic matter. This obviously is having its effect on the treatment process, and the quality of the post-treated effluent which is being supplied for irrigation.

The bio-gas run generator which was set up to be run by the gas produced from the plant is also non-functional since a long time. The plant is heavily corroded because of the presence of H₂S gas which when come in contact with moisture produces Sulphuric acid. The revival of the plant does not seem to be feasible and economical..

At present efforts are being made to strengthen the existing drains, constructed around 16 years back to collect the tannery effluent to pumping stations. Construction of a 500 m long new drain is also in progress to collect the tannery wastewater from those tanneries which discharge their effluent in the 90" diameter domestic sewer system.

Status of Chrome Recovery Plants

All the chrome tanning units (225 odd tanneries) should have installed Chromium Recovery Plants (CRP) before the commissioning of the CETP in 1994. This would have tapped the toxic chromium at source. But the concerned pollution control agencies started battling to get the CRP installed since March 2000. Now all the medium and large sized tanneries (those processing more than 50 hides a day) have the CRP and a Common Chrome Recovery Plant (CCRP) has come up for the small tanneries with government support.

The CCRP runs regularly with chrome liquor reaching the plant ranging between 3 kl to 11 kl against an installed capacity of 70 kl. Efforts are being made to collect more liquor

from the tanneries. A large number of tanneries have yet to set up the chrome laden wastewater segregation and collection system.

Status of sludge

The problem of safe disposal of sludge continues. The sludge generated from 200 odd chrome tanning units, CETP and 130 MLD STP is hazardous in nature and needs to be disposed off in a safe and scientific manner. But the hazardous sludge is being dumped indiscriminately on an area adjacent to the treatment plant in an unsafe and unscientific way. The scientific landfill site constructed at Rooma is now filled up to its capacity. Proposal for another landfill is under preparation by KNN.

GAP-A complete failure at Kanpur

It's almost impossible to say that GAP has succeeded in any respect in improving the condition of the river or river water quality at Kanpur. The conditions were better before the launching of the GAP. There was much more water flowing in the river and less amount of wastewater entering the river. Can we define the success in terms of percentage when the river water quality is visible to the naked eyes? Do we need any water quality data if the water looks brown and black and if it stinks? The GAP assets are a big liability for the local government. The government agencies at the local level are battling hard to keep the assets somehow alive. GAP is orphaned, no government agency is willing to own the responsibility. Government contends that situation would have been much worse, had the GAP intervention not been there. If this is to be believed, then GAP is definitely a success.

The GAP failure is not specific to Kanpur only, it's evident in every GAP town. The story is the same all along the length of the river. The moot question is "Can we clean river Ganga, are we capable of doing it?" If the answer is "Yes", then why could we not clean it in more than 20 years? Who is responsible for this failure or who should be held responsible?

However, instead of a comprehensive, sustained and intensive attack on pollution in the river, action could not proceed beyond taking of symbolic steps. There exists a wide chasm between the promise of Ganga Action Plan and the reality of millions of litres of all kinds of pollution meeting the river every single minute. Inaccurate, partial and self-laudatory reports have become the norm but do precious little to make significant forward movement on reversing the flow of pollution in the river.

It's a centrally sponsored scheme which was initiated at the personal intervention of Mrs. Gandhi and launched personally by Mr. Rajiv Gandhi. The successive Prime Ministers headed the apex body CGA (now NRCA). Even today Prime Minister Dr. Manmohan Singh is the Chairman of the NRCA. So, were the prime ministers not responsible for the failure? Had our prime ministers been sincere and committed, river Ganga would have definitely been cleaned. It is a failure of the government at the Central level. The officials in the NRCD have a very simple excuse "We're only providing funds, execution, O&M of GAP schemes is the responsibility of the States". Can the Central Government be absolved from the responsibilities?

State governments never showed the interest and commitment. They were interested only in procuring funds from the Central Government. No Chief Minister has ever issued

any statement regarding the pathos of river Ganga. GAP funds were diverted at will, O&M funds were never released in time. Preventive steps were never taken. There is a High Power Committee at the State level, headed by the Chief Minister to monitor the progress of the GAP. I don't think that this Committee has ever met. This needs to be investigated.

As per 74th Constitutional Amendment, most of the GAP works like the sewage management, managing the non-point sources of pollution are the responsibilities of the local government. Supreme Court and also the High Courts have defined the duties of the local government on several occasions. But the local governments have failed in carrying out their responsibilities. In case of UP, most of the GAP works like sewage management are being carried out by UP Jal Nigam. The planning and execution is done by the UPJN, later the local government is expected to take over the GAP assets. But the local governments are not willing to take over the GAP assets. They lack the resources, technical expertise, skilled manpower and overall the interest. They should have been involved from the beginning, right from the planning stage. Now GAP is no one's baby.

GAP failure is also the failure of the judiciary. The Supreme Court has been involved in cleaning the Ganga since 1985 when MC Mehta filed a PIL. Another case "And quiet flows the maili Yamuna" is going on in Supreme Court since 1994. Two high profile court cases (RK Jaiswal vs. state & Swami Harchetan vs. State) are going on in Allahabad High Court. A PIL was filed in Patna High Court in 2006. There must be some court cases in Kolkata High court as well. So many efforts have been made by the judiciary in the last more than two decades but without any success.

All the Ganga cases should be documented, a compliance/non-compliance status of the judicial pronouncements should be prepared and the same should be presented to the Supreme Court. The highest judiciary should direct the High Courts to abstain from entertaining fresh PILs till the pending ones are disposed off and the earlier directions are complied with.

The failure of the GAP is also the failure of those who have been involved in making the river Ganga clean and making the demand for a clean Ganga. In all this, the civil society has been a helpless and passive observer. Everyone has a foot somewhere in polluting the river but no one could care less about doing anything about it. Very few Individuals and organizations are even attempting to do something beyond an occasional burst of green concerns, which are event driven and only perhaps serve to save ones' own souls rather than saving the soul of Ganga. The case of Hindu religious leaders is before us. They feel concerned about the health of the river only on certain occasions like congregations during Magh Mela, Ardha Kumbha, Kumbha and other bathing festivals. Once they disperse, they completely forget about the river. Also they restrict themselves to demanding a Clean Ganga, instead of doing something concrete to make Ganga pollution free. There are thousands of ashrams along the river course, but no one has bothered till date to take any initiative to stop the shit from flowing from their ashram into the river. They should set the precedent by taking concrete steps like setting up treatment facilities, educating the masses about the polluting social practices, instead of just sermonizing about the religious aspects of the river or telling them how to worship the river.

Another case is of Vishwa Hindu Parishad which included Ganga in their agenda in 1995 during Ardha Kumbha at Allahabad. They also formed Ganga Raksha Samiti and the Samiti organized a Ganga Conservation Awareness Trip (Kolkata to Allahabad) in 1997. All the frontal organizations associated with RSS were mobilized. 75 huge public meetings were held en route. But VHP dumped the issue after NDA government was formed at the Centre in 1998.

What is the use of the R&D?

Even before the formal launching of the GAP a major effort was initiated to get a better understanding of the river. A multi-disciplinary research program involving several universities located on the banks of the Ganga was formulated under the guidance of Dr MS Swaminathan and Prof MGK Menon. This integrated research program was one of the largest ever undertaken in the country. This was a sincere effort.

The integrated profile of river Ganga was prepared. But what has been the use of various research findings and recommendations? It was assumed that the talent pool generated through this research program would be gainfully used in strengthening the scientific base of the GAP. Was this objective ever achieved? Studies related to glacier formation could not be initiated, though it was intended. Investigations related to enteroviruses and enterophages remain incomplete. R&D projects are still going on but aimlessly and uselessly.

GAP objective is confusing

The objective was to stop the pollution and make the river clean. Rajiv Gandhi also used the word "Pure" but it's not clear what did he mean by it. Later the objective was defined as improving the river water quality to acceptable standards. Acceptable standards became bathing class standards. When this could not be achieved, the bathing class standards were diluted for GAP. Even the diluted standards could not be met, and then the objective became to reduce the pollution load on the river. This objective was the simplest and easiest to achieve.

NRCA recast the objective in 2003. Now the objective is to maintain the wholesomeness of the water quality of major rivers. The objective seems to be overly ambitious, impractical and confusing. The word "Wholesomeness" has not been defined. We need to set an achievable objective in unambiguous terms. This should be the first and foremost priority.

Water quality data make no sense

The sampling procedure is faulty. The water samples are collected from the upstream (before the river enters the town), downstream (after the river has left the town) and midstream (somewhere in the town). The water samples are collected from the midstream and one-fourth from the river bank. But no one goes either to midstream or one-fourth distance from the bank to have a dip or aachman. Also the water intake points are on the bank. So the river water quality should be monitored at the users' points e.g., bathing ghats and intake points.

The parameters for which the river water quality is monitored are DO and BOD which don't reflect the true water quality. If we have a look at DO from 1986 to 2006, it was

almost perfect except at some places in some years. BOD is definitely high at some places in some years but there is no consistency in the data. Also the DO and BOD simultaneously went up in the same stretch and the same year which is not understandable. If we have a look at the graphs (page 20 & 21) the BOD levels in 2006 at Kanpur, Allahabad, Varanasi and Patna are perfect and therefore, there is no need for any intervention. These data are meaningless.

Government of India constituted Water Quality Assessment Authority (WQAA) through an order in May 2001 to exercise powers under section 5 of the EPA for issuing directions and for taking measures to standardize methods for water quality monitoring and to ensure quality of data generation for utilization thereof and certain other purposes. The river water quality should be monitored as per the guidelines of the above-mentioned Act.

Preventive measures were never taken

GAP has always focused on curative measures, end-of the pipe solutions. In order to mitigate the problem of dead body dumping, electric crematoria or improved wood crematoria were constructed, in order to dissuade people from easing out in the river bed or on the river bank, public lavatories were constructed but preventive steps were not taken to mitigate the non-point sources of pollution. As a result these polluting practices still continue.

Those who are found polluting the river should be punished on the spot like those violating the traffic rules are punished. This will be an effective deterrent. This will also increase the use and acceptability of the GAP assets like electric crematoria and public lavatories. Fishing is banned between Farrukhabad and Allahabad for years but thousands of fishermen can be seen catching the fish. Turtles were released in Ganga at Varanasi but poaching was never controlled. Poaching and bio-conservation can not go hand in hand. Dozens of highly polluting glue factories are in operation right on the river bank. These factories have been removed by the district administration in the past but they resurface.

GAP was started with noble intentions

The plan itself was excellent. Those who conceived and conceptualized the idea were sincere and honest. Had there been an honest implementation of GAP, the story would have been different, Ganga would have looked different. The enthusiasm waned with the passage of time and GAP became just one of the government projects. The merger of GAP with NRCP in 1996 took the sheen and importance away from GAP. GAP is no longer an exclusive river cleaning program. No one is bothered about the Ganga cleaning. Ganga also gets some money from the government every year but this is only enough to keep the GAP alive. No body knows how many phases or years would be needed to clean the Ganga. There is no time bound plan, no target, no vision, no commitment. Ganga can not be cleaned like this. We need drastic steps, bold decisions and a visionary and committed leadership. GAP is a dead horse, and there is no point in flogging it any more.

A White Paper on Ganga and GAP

The government should commission a comprehensive survey of Ganga to identify and quantify the pollution sources, identify and quantify the addition and abstraction points of fresh waters on the main stem of the river Ganga during the lean months. This survey should also identify and quantify the communities and economic activities associated with Ganga.

A White Paper on the status of Ganga and GAP should be issued by the government. This White Paper should be based on the ground realities, instead of self-laudatory reports, useless data and complicated methodology. The White Paper should be simple, unambiguous and easily understandable. The White Paper should confine itself to the main stem of the river Ganga.

An independent Committee comprising government representatives and civil society should be constituted to prepare the White Paper. The Committee should be enabled to access the government documents, visit the GAP towns and form sub-committees to carry out independent surveys.

The White Paper will serve as a base to evolve a Vision for Ganga.

A VISION FOR GANGA

When we attempt to reconcile the significance of the sacred river in the past to its present reality, a most tragic paradox is encountered. Ganga today is being worshipped and defiled simultaneously. In fact, at most times, the process of worship itself has a polluting influence since bulk of the worship materials are disposed off in the river in ugly non-biodegradable polythene bags and in other unthinking ways. Even the mass bathing pollutes the river in a big way. The coexistence of worship and defilement of the Ganga defies logic and reason and leaves most observers confused.

Polluting socio-religious practices apart, Ganga since perhaps about a century, has been subjected to a multiplicity of serious threats, multiplying in their impact and intensity every second. Unplanned urbanization and industrialization together with the population boom have extracted a very heavy price from the river.

The painful reality still remains that environmental concerns in India continue to be the burden of a few green crusaders with the vast majority just plainly looking on. A serious erosion of faith has entered the psyche of the masses, gripping all with the thought that "nothing can be done". The rapid rise in the pollution of the river has been accompanied by (and also because of) mass apathy. Pollution and public concern of Ganga seem to exist in inverse ratios. If ever any crisis meant an opportunity to make a difference, it could not be truer than is the case for Ganga. The distressed river beckons all to come to its rescue.

Admittedly, the task is Himalayan in nature and requires sustained convergence of comprehensive attempts by government, industries and civil society alike.

It took hundreds of years of penance by Sage Bhagirath to bring the celestial river to earth and it would not be an exaggeration to say that today Ganga requires many Bhagiraths to survive and reclaim its sacred nature.

Before any action can be initiated, all concerned should start thinking in terms of a new vision for Ganga. How do we want Ganga to be and what can be done to achieve that vision is the question posed to all of us. A new vision for a pristine and pure Ganga has to pour forth and translated on the ground. A new vision, which needs churning of the spirit and mind. A new vision that can inspire the masses to action. A new vision that needs to reconcile the competing demands on the precious waters of the river with sustainability. It needs to think of the river as one organic entity where tinkering in one-part affects the entire body of the river. A new vision which believes that if we as humans wish to survive, Ganga needs to survive.

The eternal Ganga today, needs new heroes and new voices. A whole new approach is required to restore the river.

The Ganga devotees who consider the river as a cleanser par excellence and treat Ganga as a deity who gives salvation need to be taught that Ganga has lost its divine role, Ganga has lost its cleansing properties and Ganga herself needs salvation. It's written in the scriptures that mere a glance or just chanting of Ganga gives salvation. So why can't we be satisfied with just chanting or glance? Do we need some super-salvation that we need to wash our sins along with our bodily filth in the river? The Hindu religious leaders must play their role in educating the masses.

Ironically governments have spent more money on Magh Melas, Ardha Kumbhs and Kumbhs than in cleaning the river. Millions of people congregate on the river banks, stay there for weeks and shit in the river bed. The entire shit ultimately goes to the river. Is it justified? These government sponsored and organized pollution events need rethinking. Why can't we be honest and warn people that Ganga waters are not worth bathing and drinking? Instead of admitting the facts and telling the truth, our top level politicians go to such events, express their solidarity and deepen the superstition of the people by taking a dip in the river.

“Can we not clean Ganga?”-campaign

A massive campaign “Can we not clean Ganga?”should be launched. This question must reach every Indian.

Ganga can be cleaned, if the central leadership takes up the issue seriously with the States of Uttarakhand, UP, Bihar and WB. UP stretch of the river is important. Now we've a stable government in UP headed by a Chief Minister who can get the things done if she so desires. Recently Uttarakhand Chief Minister held a meeting and constituted a Committee for cleaning the river. The UP and Uttarakhand stretches can be taken up on priority. Other stretches can be taken up later.

Recommendations

- A white Paper on the status of Ganga and GAP.
- A compliance status report of Ganga related court cases.
- The agenda notes of the NRCA should be documented and assessed.
- R&D projects should be assessed for their relevance and usefulness.
- Water quality monitoring system needs to be revamped.

- Ganga Dialogues should be held involving those who were involved in the planning and execution of GAP, religious institutions, NGOs and others.
- A Ganga Restoration Plan with an independent institutional mechanism, a full time Ganga Restoration Authority like National Highway Authority to carry out the clearly defined goals in a definite time frame.
- The focus should be on visual pollution. The river should be made visually clean and the riverfront should be beautified.
- Governments should take preventive measures first which do not require funds.
- A Ganga Restoration Fund should be constituted.
- River bed farming, poaching of turtles, dolphins and fishing should be banned.
- No more colonization of Ganga land for urbanization and industrialization should be allowed.
- Additional resources should be generated by charging the Ganga users, through sand mining etc.
- Army should be involved in cleaning the river in Cantonment stretches.
- River Regulation Zone on the lines of CRZ. 200 m of coastal land wherever possible should be allocated for afforestation.
- Government sponsored pollution-Kumbha/Ardha-Kumbha should be stopped.
- Self-purifying power of the river should be ascertained. The mysterious X factor should be isolated.
- People should be warned that the river water is not worth aachman and bathing.
- “Can we not clean Ganga” and “We demand a clean Ganga” campaigns should be launched.

Why do too few people seem to get worked up about the sad state of Ganga? Why are they so indifferent? What would it take to really motivate Indians to save this river? Can we find a win-win solution, where both Man and Ganga get something positive out of their interchange? These are some troubling questions which haunt the Ganga crusaders.

Rakesh K Jaiswal
May 28, 2007