

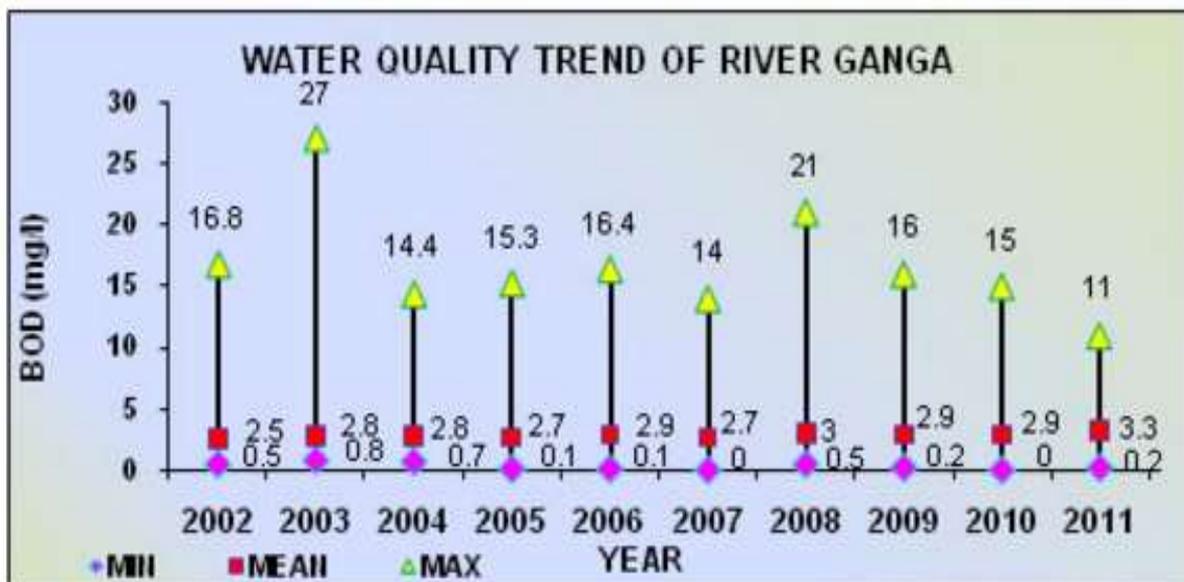
GREEN CANVAS

Introduction

The Ganga is the largest river in the Indian subcontinent In terms of river water flow. It has length of approximately 2,510 km. Its basin covers an area of approx. 1,000,000 square kilometre. Origin of river Ganga is the western ranges of the Himalayas in the state of Uttarakhand and it empties into the Bay of Bengal. Its basin caters to one of the largest populated area in the world. Ganga and its tributaries are the main source of water for domestic as well as irrigation purposes for the North Indian states and Bangladesh. The river has been proclaimed as the National river of India In the Hindu religion the river Ganga is revered as a deity. Holy places like Hardwar, Prayag, Varanasi attract pilgrims to its water to take a dip in the Ganges, which is believed to cleanse oneself of sins and help attain salvation. However, due to Increment in population density, harmful industrial waste and various anthropogenic activities across the Ganga bed, water pollution in Ganga River has been increasing exponentially. Quality of Ganga water is degrading day by day. Many initiatives including Ganga Action Plan and Namami Gange have been undertaken to clean the river but failed to deliver desired results due to lack of technical expertise, corruption, poor environmental planning and lack of support from religious authorities.

Status Quo

Ganga is suffering from extreme pollution level, which affects a large amount of population who live close to river. The amount of toxins, chemicals and other dangerous bacteria found are now almost 3000 times and levels of Coliform bacteria is over 2800 times the safety level considered by the WHO. (Source : <http://cpcb.nic.in>)



Source

The sources of pollution of Ganga can be classified broadly into two categories namely.

Point sources-

These are organised sources of pollution where the pollution load can be measured.

- Industrial waste: 260 million litres / day.
- Municipal sewage: 1.3 billion litres / day.

Non-point sources -

These are non-measurable sources of pollution

- Run-off from agricultural fields carrying chemicals and fertilizers
- Run-off from areas used for dumping of solid waste and open defecation
- Dumping of unburnt/half burnt dead bodies and animal carcasses
- Dhobi ghats, cattle wallowing, mass bathing, floral offerings etc.

Ill effects

- Decreases the level of dissolved oxygen (DO) in water. The decrease in levels of DO can harm aquatic animals such as fish, amphibians and copepods.
- Pollution of Ganga can cause significant changes in organism metabolism and other adverse cellular biology effects.
- It causes many waterborne disease like cholera, hepatitis, typhoid, amoebic dysentery, gall bladder disease and according to a study 80 per cent of stomach diseases in India are caused by polluted water.

National Mission for Cleaning Ganga (NMCR)

The aim of NMCR is pollution abatement, to improve the water quality by Interception, Diversion and treatment of domestic sewage and prevent toxic and industrial chemical wastes from identified grossly polluting units entering in to the river.

At the time of launching of the Ganga Action Plan in 1986, main objective was to improve the water quality of Ganga to acceptable standards by preventing the pollution load reaching the river. But after a meeting of the Monitoring Committee in June, 1987 under the Chairmanship of Prof. M. G. K. Menon, then Member, Planning Commission, the objective became to bring up the river water quality to the 'Bathing Class' standard.

Bathing Class Standard Parameters	
Biological Oxygen Demand (BOD)	3 mg/l maximum
Dissolved Oxygen (DO)	5 mg/l minimum
Total Coliform	10,000 per 100 ml
Fecal Coliform	25,000 per 100 ml

The other objectives are as under.

- Control of non-point pollution.
- Conserve the biotic diversity of the river to augment its productivity.
- New technology of sewage treatment like Up-flow Anaerobic Sludge Blanket (UASB) and sewage treatment through afforestation
- Rehabilitation of soft-shelled turtles for pollution abatement of river have been demonstrated and found useful.
- Resource recovery options like production of methane for energy generation and use of aquaculture for revenue generation.
- To act as trend setters

The ultimate objective of the GAP is to have an approach of integrated river basin management considering the various dynamic inter-actions between abiotic and biotic ecosystem.

Progress so far under Ganga Action Plan

A total of 575 schemes have been sanctioned for reducing pollution level in the identified polluted stretches of the river Ganga under both phases of GAP. Out of this 524 schemes have been established with a capacity to treat Pollution load of 1098 million litres per day (MLD). Under NGRBA, 96 projects have been sanctioned. These include 58 projects related to creation of 808.23 MLD new STP and rehabilitation of 1089.00 MLD and lying / rehabilitation of 3627.15 Km sewer network. In addition, there are 25 river Front Development projects which include creation of Ghats, Crematoria, Public and River interface and promenade. The total expenditure under the GAP Phase – I & II is Rs. 938.57 crore till 31st March, 2013.

Analysis of the impact of GAP phase I schemes on river water quality in Kanpur shows clearly that these schemes were unable to restore the water level to Class B or Bathing Class standards . According to the record of the National Ganga River Basin Authority (NGRBA), the progress status of the project as on June 30, 2013 is only 12%

Some improvements in water quality measured in terms of DO (dissolved oxygen) and BOD (biochemical oxygen demand) were observed everywhere, although the improvements were quite small.

PROBLEM STATEMENT

Concerns about the condition of the Ganges were raised for decades which gained impetus in the past few years owing to awareness and support from keen environmentalists. Furthermore, different studies revealed the deteriorating health of the river. The existing action plan is not able to treat this problem effectively. We expect from the participants various new feasible techniques and suggestions to facilitate the action plan. Your solution will be judged on the basis of your innovative ideas and how far that will be achievable including cost factors and other environmental aspects. Detailed calculations and estimations can be added to support your statement.

WHAT IS EXPECTED FROM THE PARTICIPANTS

1. Give a brief note on progress and government's approach on Ganga rejuvenation so far.
2. Suggest some new economical techniques or improvements in existing techniques so that efficiency of treatment can be improved.
3. Why first phase of GAP was not able to achieve its goals.
4. Redesign the treatment system for Kanpur city.
5. Perform the cost benefit analysis of your treatment system in Kanpur city.

Rules and Regulations

- Teams must consist of a minimum of 2 and maximum of 5 participants.
- Team must consist of at least one member from the Department of Civil Engineering.
- The event will be conducted in two phases:
 - ✓ Online submission of abstract
 - ✓ Final presentation by shortlisted teams at IIT Kharagpur
- Shortlisted teams from abstract submission round have to present their ideas in the form of power point presentation during Megalith 2017 at IIT Kharagpur.
- The abstract should be submitted with **minimum font size of 11 and single line spacing and must not exceed 3 pages.**
- The abstract should be supported with valid references.
- Relevant statistics can be added to support your claim (you may add one extra page to include stats, images and hyperlink them wherever required).
- Mail your submissions to **greencanvas@megalith.co.in** with subject as **<Team name>_GREENCANVAS_2017** on or before **12 FEBRUARY 2017, 11:59PM.**
- All the teams are requested to provide contact numbers, Email IDs and name of the college of each member along with the attached submission file in the mail.
- The results of first round shall be given to the above listed e-mails and mobile numbers.
- The decision of judges shall be final and binding.

CONTACT US

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