

Ganga Cleaning Forever with Minimal Money/Time

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Abstract

Unlike in the western countries, Indian rivers, especially the Ganga is worshipped and its water is inhaled directly as a religious ritual/rite called "aachman" for ensuring salvation. Therefore, the Ganga water-quality at its bathing-"Ghats" (platforms) must qualify drinking water-quality standards. Obviously, therefore, the river-cleaning, strategies applicable in the west would not be sufficient enough for cleaning Ganga and many other Indian rivers as per the requirements for the stated Indian situations.

Further, in any Indian city, not more than half of the City's generated wastewater gets collected through the city's sewerage-system, as a result, half of the generated wastewater finds its way directly into the river flowing through the city which is rather very large enough to keep the river highly polluted and totally unfit for the stated religious rites and many other river uses. And thus, despite sophisticated and/or imported technologies being adopted for the treatment of the collected wastewaters, the Indian rivers are bound to remain polluted.

Methodology

Therefore, in the above stated situations involving Indian habits, culture, administration, finances, systems, etc., the Ganga or any other Indian river, can be kept close to fitness standards only if not a drop of any wastewater is allowed to enter into the city stretches of the Ganga.

And this can be made possible only by creating a barrier between the river Ganga and the various cities along the Ganga. The barrier can be a dam or retaining-wall like structures on either or both sides of the river (depending on the development of the city) as had been done for Gomti river at Lucknow to prevent flood-waters from entering into the city. Also, a covered canal or sewer should be constructed between the dam and the city to collect all the wastewater flowing towards the Ganga. The canal/sewer should be long enough to carry all the wastewater up to say 2 or 3 km downstream of the city. This way, the Ganga would be protected from getting polluted at the various cities along it in a fool proof manner.

All the wastewater collected at the end of the suggested covered-canal or sewer would then be treated at zero level (that is, only screening would be done for the collected waste eaters to free it from all floating matters/rags/etc.) or at primary level (when the wastewaters would be subjected to only screening, grit

removal and primary sedimentation to further remove the settle able impurities/particles) or at secondary level (wherein, the colloidal/non-settle able impurities too shall be removed through aeration of the wastewaters followed by another sedimentation designated as secondary sedimentation). Sludge can be digested anaerobically (methane generated I useful as fuel) or aerobically needing more oxygen but aesthetically fit for crowded areas. The treated/digested sludge can be used for land filling or even as some building material. Depending on the availability of the funds, the extent of treatments can be chosen.

This natural organic-manure containing treated wastewater can then be pumped to the agricultural-fields for irrigation such that the farmers would get water also during the drought times (farmer-suicides would thus also be prevented) and that too enriched with nutrient-rich organic manure (such organic farming will earn more profit to the farmer in the present craze of high-selling-fashionable organic-crops) and thus the farmers would even volunteer to pay for this service which amount can cover the cost of pumping, etc. Industries along the Ganga river will however, have to ensure their own treatment plants for their specific-wastes.

The left over wastewater can easily be discharged into the Ganga such that the Ganga, famous for its extremely high self-purifying abilities which are 15 to 25 times higher than other rivers, vide author's researches published all over the world [1-4], would

comfortably assimilate this wastewater by the time it reaches the next city.

The stated dam site can be developed into picnic-spots/ tourist-spots with platforms (“Ghats”) for bathing/religious-rites, umbrellas, benches, flowers, “Gujraati-jhoolas(swings)”, etc. to attract public esteem such that different designs at each city would identify the city for/by an air-passenger.

The cost of construction can easily be met through donations from Rich-Saint-houses/”akharas”, charitable socio-religious organizations, rich-devotees of Ganga by way of material, labor, etc. Likewise, retired/serving engineers, technicians, designers, etc. will easily volunteer their free services (“shramdaam”) in the name of Ganga. As a result, the Ganga-cleaning can possibly be done free of cost.

Similarly, the “kar-sevaks” (construction-workers), Ganga devotees, religious-organisations would easily come forward to donate their labor in extremely large numbers as a result, the construction work can be completed in as short times as desired.

Incidentally, the two main reasons due to which the Ganga could not get cleaned in the last 35 long years despite all possible efforts, include.

Technical Reasons

The effluent standards (permissible quality of waste effluent for disposal into river) were not evaluated scientifically and were made arbitrarily and whimsically via expensive meetings of mostly not right type of people. Their evaluations are highly technical and involve the use of waste-assimilation models in mass-balancing equations [5].

Involvement of pseudos’ (“quacks” in medical terminology) in decision making etc. who have not only captured the Environment Ministry and other places, but also (through their thickly organized unity) ensured “no-entry” for the real Environmental Engineers (4 yrs BTech CivilEngg + 2 yrs MTech EnvntlEngg + 4-7 yrs. PhD instead of just 2 yrs. for MSc in sciences or in the defunct Environmental Science subject courses without, any regard for “pre-requisites”, making them good enough just only for testing of water & wastewater), vide Bhargava, 1995 [6].

Conclusions

- The Ganga would remain clean forever
- The Ganga’s fool-proof pollution control strategy would cost almost nothing and this can be made effective in as short a time as desired
- Farmers would get free natural organic manure rich in natural fertilizers/nutrients enabling them the bliss of organic-farming, the current craze
- Farmers will get plenty of irrigating waters even during the drought times and prevent farmers suicide
- Safe and economical disposal of wastewaters generated in cities along the Ganga
- Prevent groundwater pollution and eutrophication of stored waters
- Ganga tourism would get promoted and encouraged

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