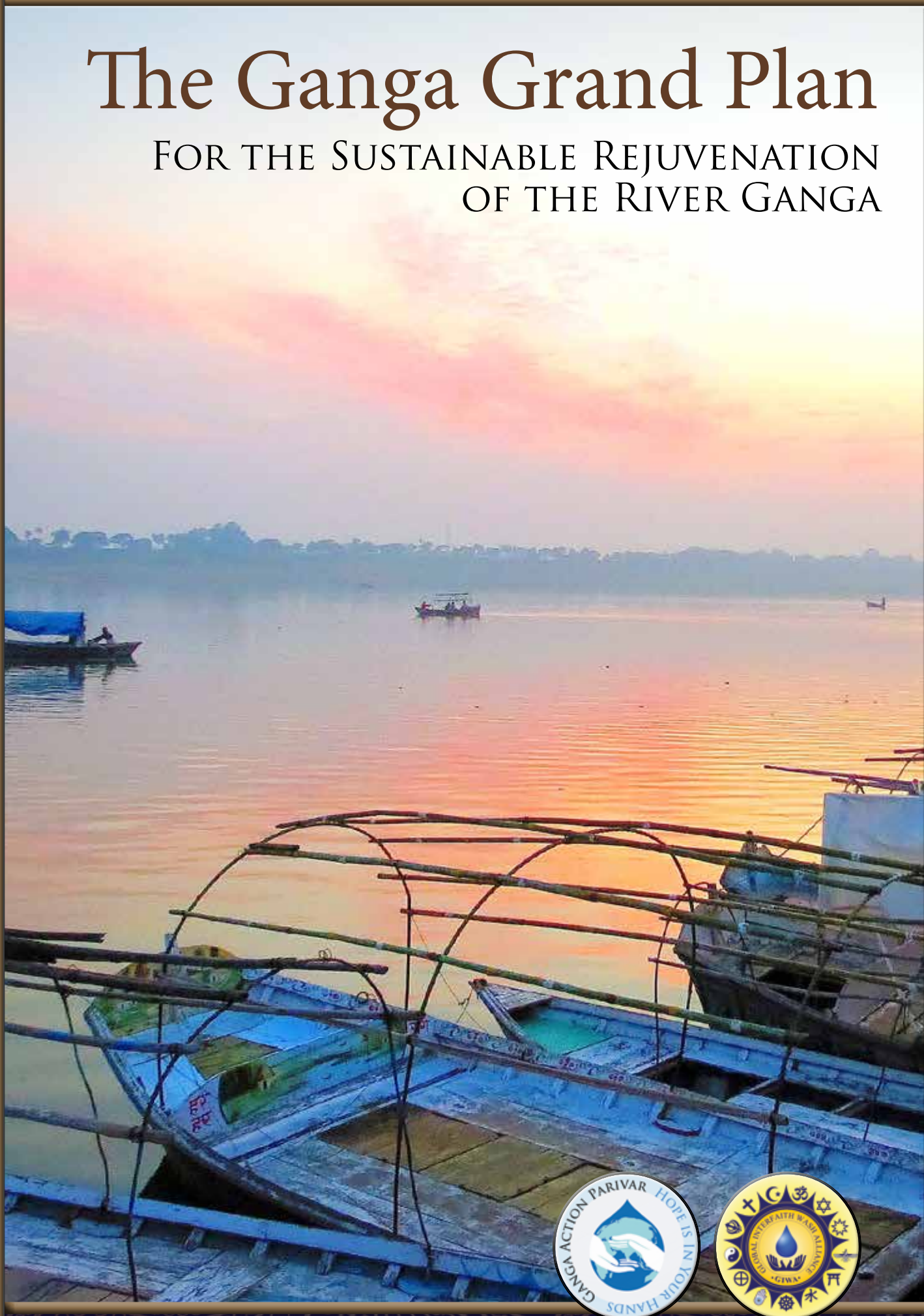
WHITE PAPER

The Ganga Grand Plan

For the Sustainable Rejuvenation of the River Ganga



Contents

Introduction

The Ganga River is the largest and most sacred river of India, playing an intimate role in the spiritual and cultural history of our nation and supporting a population of some 500 million people. For many, Ganga is life itself, providing water for cooking, bathing, irrigating crops and sustaining livelihoods.

The River Ganga also serves a fundamental ecological role, nourishing and sustaining several fragile ecosystems which are renowned for their astonishing beauty, as well as for their rare flora and fauna.

Providing over 30% of India's water resources, the Ganga River basin (GRB) encompasses nearly 26% of our nation's land mass and is home to nearly half of India's poor.

Threats to a Crucial Lifeline

Whilst a population akin to that of the United States, Russia and Canada combined directly depends on the Ganga for sustenance and livelihoods, it is seriously threatened by unsustainable and harmful human activities.

Some 80% of the Ganga's waters are diverted for irrigation, much of which is lost to factors such as evaporation. Whilst alternative irrigation methods are available which utilize far less water, they are rarely put into practice, to the general detriment of the river's health and the populations residing downstream.

Compounding matters further, at some sections, the Ganga's waters, are diverted for hydroelectric projects into underground tunnels or canals that span for kilometers. In these locations, the natural riverbed becomes dry and barren, often supporting only small, stagnant pools in which mosquitoes can proliferate. As a result, once glorious ecosystems decline as human populations suffer.

With very little foresight or consideration, the Ganga is also contaminated every day with some three billion liters of sewage and carcinogenic industrial and agricultural effluents. Further complicating problems are issues including mass deforestation, unsustainable construction activities, and the dumping of decomposing bodies and solid waste, including discarded religious material, directly into the river.

In Varanasi alone, nearly 70% of those that use the Ganga for bathing or drinking will contract a waterborne-illness such as typhoid and dysentery. In Calcutta, nearly 90% of municipal drinking water is contaminated with fecal matter. In rural Kanpur, industrial toxins emitted by tanneries can cause cancer, organ failure, convulsions and death.

Failed Restoration Attempts

In response to these growing concerns, the Government of India launched two cleanup initiatives, the Ganga Action Plans (GAP) I and II in 1985 and 1996, respectively. Although well over 900 crore rupees had been spent under these schemes, no great progress was made and, as a result, they were widely-regarded as failures.

This report will analyze mistakes made, while presenting crucial solutions and recommendations for the restoration and rejuvenation of our precious National River moving forward, so She may continue to support life for generations to come.

Let Her Flow

Problems

1. Dams and barrages are draining tremendous, unsustainable amounts of water away from the Ganga, causing parts of Her riverbed to dry to the point in which there is nothing left but parched rocks for much of the year. Every year, more and more of Mother Ganga thus becomes more traversable by foot and vehicles, whilst countless citizens and ecosystems are denied their rights to drink, worship and earn livelihoods from Her waters.

3. Unsustainable agriculture practices are the key reason behind the over-extraction of the Ganga, adding to Her unhealthy state.

4. Cities are furthermore draining our aquifers dry. By the time the Yamuna reaches Delhi, every last drop has been drained from it in order to nourish the growing city. A good portion of this water is lost through bad infrastructure, such as leaky pipes.

Solutions

1. Sustainable Flows: All water-diverging barrages and dams must be regulated in order to ensure that at least 51% of the Ganga's waters flows in Her natural riverbed at all times.

So that we can ensure stable, ecologically-sound flows, the following must also be pursued:

2. Conservation Agriculture: We must make it a national priority to conserve Mother Ganga's waters. Agriculture must be addressed. Please see page 10.

3. Water-Sustainable Cities: Public education, coupled with a rewards and penalty system should encourage every citizen to think twice before turning on the taps, for businesses and households to repair their leaks, and for less water to be expended for car washing, private greenways and other less-crucial uses.

In addition, the city of Chennai should be looked to for its example of encouraging mass public participation in rainwater harvesting. Such practices should be subsidized and made mandatory everywhere.

4. Grey Water Reuse and Recycling: gently-used water, or water that has been processed through STP plants, should be channeled for irrigation. Households and businesses should be granted incentives-- alongside mass public awareness programmes-- that encourage reusing gray water for the flushing of toilets, industrial use and other non-drinking-related reasons.

Stop the Poison

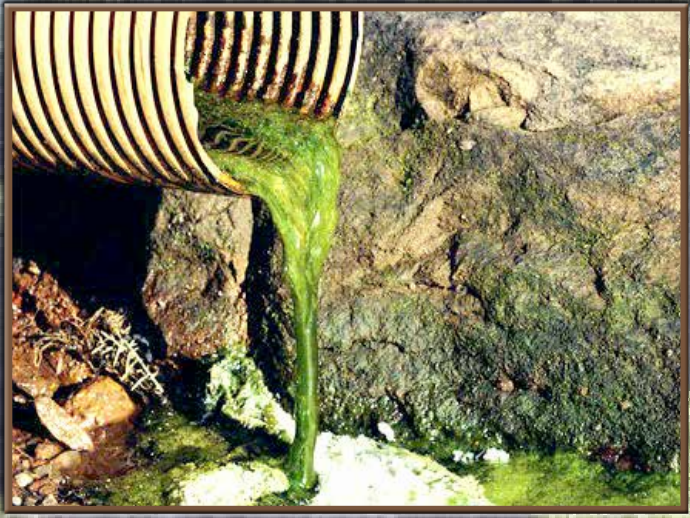
Problems

1. Whilst the practice has been illegal since the Water (Prevention and Control) Act of 1974, extensive amounts of toxic, cancer-causing chemicals are still being illegally dumped directly into Mother Ganga every day by industries such as the tanneries of Kanpur. This causes the people living alongside portions of our National River to become more prone to contracting certain cancers than those living anyplace else in the world.

Solutions

1. Violators Must be Fairly Warned, Shut Down and Punished: There are no gray areas where the repeat poisoning of the River Ganga and its population is concerned. The practice is illegal and punishable by stiff fines and imprisonment, according to the Water (Prevention and Control) Act of 1974 and other laws and judgements.

2. A Special Ganga Police Force should be immediately empowered to enforce the law through investigations, fines, detention and other actions.



A Sanitation Revolution

Problems

1. Nationwide, some 70% of those living in rural areas have no access to toilets, potentially leading to diseases that can turn epidemic, especially in times of disaster.

2. Studies show marked increases in waterborne disease during yatra seasons, due to insufficient access to toilets for travellers.

3. Sanitation schemes utilizing technologies such as sewage treatment plants (STPs) are expensive to build and difficult to maintain. They also become overwhelmed during monsoon season.

4. Countless drains empty sewage directly into the Ganga, Yamuna and other drinking water sources, fouling the water for all.

4. Because India does not have a steady supply of electricity in many areas, STPs are not always functional.

5. STPs and public toilets are often not properly maintained due to lack of O&M funds and oversight. Many, such as the STPs of Varanasi, are considered obsolete. As a result, more sewage enters our drinking water, and more people fall ill.

Fast Fact: Municipal sewage constitutes 80 per cent by volume of the total waste dumped into the Ganga.

- World Bank

Solutions

1. Inspire a New Vision and Dream: Turning a bane into a boon, India can become a world leader for profiting from waste, instead of discarding it into Mother Ganga, Mother Yamuna and other drinking water sources. We know that sewage and other forms of waste can be converted into biofuel and fertilizer. If we scale the technology on a massive level, our pollution problems can largely be solved, and India will have a powerful new tool for the production of energy, which all other nations can emulate.

2. Strengthen Provision of Toilets Whilst Providing Educational Outreach: Efforts to provide sanitation for all residents and visitors to the Ganga River Basin should be strengthened through financial assistance and an intensification of community education and awareness campaigns.

3. On-Site and Local Solutions: Biodigester toilets and other technologies which can process all waste on-site at the household, village and colony levels, should be considered as standard models for future rural and urban development and retrofitting. This would eliminate the need for expensive trunk-lines, STPs and other infrastructure.

4. Tap and Reroute: Drains that empty raw sewage into the Ganga and tributaries must be rerouted to sewage treatment facilities. All people, businesses or organisations found to be repeatedly dumping their sewage into our rivers should be financially and technically assisted in rerouting to sewage lines or in building on-site treatment facilities. Repeat violators should be penalized.

5. Augment Electric STPs: Off-grind, on-site energy generation, through solar, wind or biogas production, should be explored and implemented, so that STPs remain functional at all times.

6. Increase O&M: Existing STPs must be upgraded and maintained with proper funding, to ensure they are functioning. Public toilets must be similarly maintained.

SOLID WASTE AND BODIES

Problems

1. The majority of the municipalities lining the Ganga and Her tributaries do not have adequate solid waste disposal facilities.

2. According to the United Nations, some 50 million trees are harvested every year for cremations alone. Yet, even so, bodies are dumped by the thousands in partially-burned or fully un-cremated states. Yet, the electric crematoriums of GAP and YAP failed, due to lack of reliable electricity and cultural reasons.

3. Plastic bags have been banned since the Plastic Waste (Management and Handling) rules of 2011, yet they continue to mar the Ganga's appearance and to cause threats to its ecosystem.

4. Most of our population has a use-and-throw mentality that results in our Ganga, streets and more being used as open rubbish bins. Religious immersions add to the problem.

5. Animal corpses are far too often disposed of in the Ganga, adding to public health and ecological problems.

Solutions

1. Redouble Efforts to Ensure Solid Waste Capacity is met by Urban Local Bodies (ULBs). Energy-producing methods and recycling must be promoted to help ensure that O&M can be sustained for the long-term.

2. Eco-Crematoriums, such as the less wood-consuming models produced by the NGO, Mokshda, which uses 70% less wood while also allowing the appropriate religious rituals to be performed, should be propagated throughout the Ganga River Basin.

3. Cremation Assistance Programmes: should be offered to the needy, so that bodies may be fully-cremated rather than placed whole into our drinking water sources.

4. The ban on the manufacturing and distribution of poly carry-bags must be enforced throughout the Ganga River Basin, and backed by mass public awareness programmes.

5. The public must be educated as to the importance of not littering and not using our waterways as dump sites. Businesses and medical facilities in repeat violation should be ticketed and punished according to law.

6. Animal Incinerators should be made widely-available, for use by all.

BLESSINGS. NOT BLASTING.

Problems

1. The Himalayas are young and fragile mountains. Blasting for roads and tunnels weakens them and can trigger landslides that can destroy entire villages. It also can lead to increased siltation in the Ganga, which reduces the river's carrying capacity, causes obstructions and can lead to greater chances of floods.

2. Too much traffic, as well as obstructions from bridges and other structures can trigger natural hazards.

Solutions

1. Blasting as a Last Resort: All alternatives to blasting should be considered before such a method is ever used.

2. More Careful Evaluations should be conducted by MoEF and other parties before any project is approved.

BUILD SAFELY

Problems

1. Developers are building too closely to the Ganga, its tributaries, and flood plains. This resulted in the loss of thousands of lives during the Uttarakhand floods of 2013.

2. Construction has taken place directly on flood plains and dry riverbeds, putting countless people in harm's way, and harming water tables.

3. Construction materials, such as conventional cement, radiate heat, triggering microclimatory effects that can expedite and exacerbate glacial melting.

Solutions

1. **Move Buildings Away from Rivers:** It is imperative that all new construction is placed away from the Ganga, its tributaries and flood plains.

2. Move Buildings Away from Flood Plains and Dry Riverbeds: Similarly, to protect life and property, buildings and dwellings on flood plains and riverbeds must be relocated. Dry riverbeds, as we so tragically learned from June's flooding disaster in Uttarakhand, don't always remain so.

3. Utilize Sources Such as the Green Building Index: Sources such as the Green Building Index, the post-Kyoto Protocol international rating tool for evaluating the siting, design and performance of buildings and infrastructure, should be consulted and followed by mandate, in order to reduce the climatory triggers that can lead to natural disasters and expedited melting of the Gangotri Glacier.

TREES FOR LIFE

Problems

1. Over-Harvesting: Many Himalayan trees have been harvested for commerce, to make way for public works and construction projects, and by local inhabitants. Such harvesting can cause increased erosion and susceptibility to landslides, while preventing proper recharging of underground aquifers.

2. Improper Re-Planting: Since the time of British rule, indigenous trees, such as the Himalayan Banj Oak, have been replaced with species such as the Chir Pine. While fallen Oak leaves nourish undergrowth and absorb moisture for underground aquifers, shed pine needles do not, causing increased erosion, more susceptibility to landslides, and less water to be absorbed into underground aquifers.

3. Himalayan villagers use wood to cook their meals, causing more rampant deforestation. Gas canisters are expensive, difficult to fill and offered on a lottery system making it nearly impossible for poor villagers to afford as an alternative.

Not only must trees be planted, but the right ones—meaning indigenous oak and other leafy trees—must be planted. Pine trees can add to soil erosion, the loss of groundwater and other problems.

Solutions

1. **Prevent Further Deforestation**: The States should strictly follow the Supreme Court directions on deforestation even for development purposes. Proper monitoring systems should be set in place and the community and the media should be recruited to help in this crucial effort as a patriotic duty.

2. Greening the Himalayas: Uttarakhand already has one Ecological Battalion which has done commendable work in greening the hills of Mussoorie and areas around Dehradun. Additional Ecological Battalions should be raised for reforestation in other Ganga River Basinareas.

3. Planting the Right Trees: Chir Pines should be harvested and replaced with Banj Oak and Walnut trees, as well as other species recommended by environmentalists. These must be monitored and cared for in their formative years by compensated locals and/or employees. Pictorial reports should be submitted and assessed to ensure success.

4. Alternative Cooking Stoves and Fuel: such as solar, biogas, biomass briquettes from forest waste, high-combustion stoves and other options, as well as education, should be provided to villages in eco-sensitive areas, to protect forests and trees.

5. Empower Village Women as Tree Stewards: through education, motivation and vocational opportunities, women can be empowered to plant trees, care for them and earn money from their fruits and nuts.

ECO-AGRICULTURE

Problems

1. Conventional irrigation techniques require a great deal of water, much of which is lost to evaporation, causing over-extraction of the water needed to sustain life elsewhere.

2. The run-off from chemical pesticides and fertilizers into aquifers such as the Ganga is detrimental to human health and to the already-threatened ecosystem.

3. Detrimental land management activities, including deforestation, improper cultivation, and over-grazing can cause erosion and lead to landslides.

Fast Fact:
Almost 90% of the Ganga flows are abstracted for irrigation... exacerbating the water quality problems.

- World Bank

Fast Fact:
Israel purifies and reuses approximately 70% of its wastewater each year for agriculture.

Solutions

1. Conservation Agriculture: it must be a patriotic—if not mandated—duty for all farmers to use less water-intensive irrigation methods. Mass public outreach, subsidies and crop marketing assistance will be required to ensure feasibility. In addition:

2. Irrigation subsidies should be stripped from water-wasting agricultural practices and instead be invested in water-saving techniques, such as drip irrigation, as well as the public education and marketing assistance needed to ensure its sustainability.

3. Organic and less water-consuming crops should be grown in order to help ensure more water is left in the Ganga and other key aquifers.

4. Mandate Organic Zones: All farms located within 500 metres of the Ganga and other important aquifers should become mandated organic farming zones. Producers should be propelled to success through educational outreach, special governmental subsidies and lending assistance as well as help in securing access to markets, domestic and foreign, which have special interest in organic goods.

5. Promote More Efficient Land Management: All farms on mountain and hill sides, as well as those located within 500 metres of the Ganga, should be evaluated as to land management. Farmers that are improperly using their land should be re-educated and compensated in order to make and maintain changes.

7. Channel Treated Gray Water for Agriculture, instead of using valuable drinking water. See also page 4.

END ILLEGAL MINING

Problems

1. The extensive removal of sand and boulders within the Ganga's riverbed and alongside Her banks causes damage that impacts the river's natural flow. Stripping the sand layer leads to downstream erosion, changes ecosystems, and eventually results in the lowering of the river system. As this happens, local groundwater begins to dry up, leading to water scarcities aggravating agriculture and local livelihoods.

2. Due to a lack of enforcement, sand mining activities continue despite the fact that in August, 2013, the National Green Tribunal ruled, "We restrain any person, company, authority from carrying out any mining activity or removal of sand from river beds anywhere in the country without obtaining environmental clearance from competent authorities."

Solution

1. Strictly enforce a the ban of sand mining: Whilst construction, which uses sand, is important for our economy, it is a short-term benefit when compared with forever damaging the Ganga, Her tributaries and the water supplies of our citizens. For this reason, alternates must be sought and mandates prohibiting mining activities must be enforced. A specially-appointed Ganga Police Force, as mentioned on page 5 could ensure such a ban is enforced.

The Right Energy

Problems

1. The creation of many forms of energy, such as from certain types of Hydel and Coal works, are taxing on the environment, including the Ganga and can trigger or worsen climate change and disaster risk. Yet, India's requirements for power generation will continue to rise alongside population and industrial growth.

2. Emissions from vehicles travelling through the delicate Ganga-Himalayan ecosystem can worsen local climate change, increasing glacial melting and disaster risk.

Solutions

1. Clean and Green Energy: With the exception of Hydel, the use of solar, biogas, wind, and other forms of renewable energy are recommended. Power generation through biofuels from organic waste, including sewage, are also recommended, for a cleaner, greener Ganga.

New dwellings and public buildings, including schools, hospitals and life-line buildings in the Ganga River Basin should use renewable energy by mandates that include financial assistance when possible. Industry should implement co-generation and other sustainable methods.

2. Placing solar panels over canals, such as has been done by Sun Edison in Gujarat and others (photos: below left) should be explored as an appealing method of conserving water from evaporation whilst generating energy for the masses and saving land.

3. Reduce Vehicular CO_2 Emissions: Mandates, similar to that of Delhi, should be set in place requiring buses, taxis and other modes of transportation in fragile Ganga-Himalaya regions to run on Compressed Natural Gas (CNG) or other, more environmentally-friendly alternatives by a target year.

Solar panels over a canal in Gujarat prevent evaporation of precious water, whilst producing energy and saving land for other uses

Rethink Hydel

Problems

Whilst hydel-created energy is beneficial in some ways for the people of India, following are certain issues to consider, especially in light of the June, 2013 flooding disaster in Uttarakhand:

1. Due to extraction and diversion, in the dry season, people and ecosystems suffer from riverbeds that have gone entirely dry.

2. Obstructions can lead to flooding and other hazards.

3. Blasting and excavation can trigger landslides.

4. Over-extraction and rerouting of water is extremely detrimental to dependent populations and the ecology, especially during dry seasons.

5. Greenhouse gases produced by reservoirs can add to warming conditions, triggering floods and the eventual drying of the Ganga.

5. The construction of too many hydel projects in close proximity to each other can cause a cascading failure effect, potentially triggering mass loss of life and property.

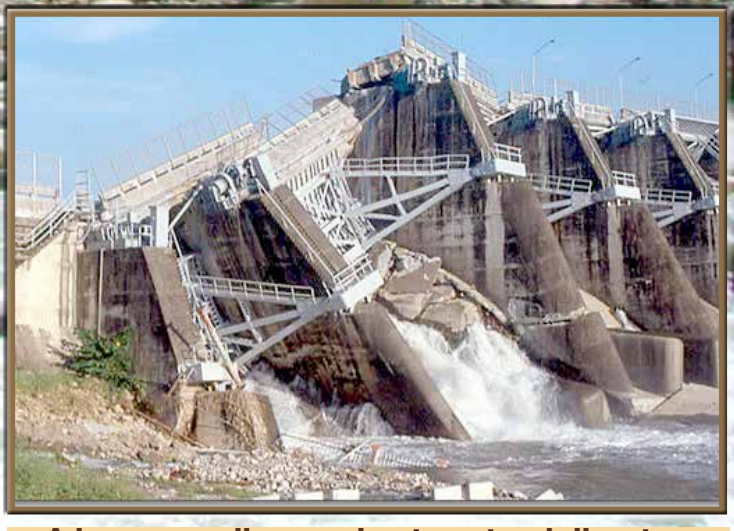
Solutions

1. Sustainable flows of at least 51% must be maintained in the natural riverbed at all times.

2. Reconsideration: All hydel projects must be carefully reconsidered, taking into account cumulative assessments on the impact on the entirety of the Ganga River Basin, rather than solely on the small portion of the river in which the dam/barrage will be, or has been, built.

3. Exploring Alternatives: All alternatives should always be thoroughly explored before any new hydel projects are approved. Approval should only occur once it has been fully demonstrated that there are no other feasible options.

4. **Consideration of Decommissionment:** Existing hydel projects should be carefully re-examined in terms of their environmental impact and their potential for triggering or exacerbating natural disasters. Those proven to present extensive safety hazards should be decommissioned or remediated.



A barrage collapses due to natural disaster: a growing risk in the light of climate change

GREEN PILGRIMAGES

Problems

1. The delicate Himalayan region is being taxed of its natural resources, while new construction is also sullying the region's beauty.

2. Guest houses, hotels and other structures are being built from reinforced concrete cement instead of from wood and stone. This radiates more heat at night, making the region warmer.

3. Current models of Tourism Development do not take into account environmental impact.

4. Trash and sewage have become unsightly public health nuisances that sully the environment.

5. Pilgrims and tourists have little understanding about the fragile nature of Mother Ganga's ecosystems, and thus are prone to damaging the very areas they revere.

6. Hotels and restaurants are responsible for additional pollution loads through improper waste management, the use of non-sustainable/polluting fuels, over-consumption of water, etc.

Solutions

1. Enacting a Himalayan Green Zone would be a historically-remembered decision, made at the crucial time in which the fate of the environment is in the balance. This would propel new sustainable development techniques and open new inroads for **eco-tourism**.

2. Mandate Green Construction materials and techniques for all structures to be built or renovated. Locally-sourcing such materials would provide additional opportunities for regional residents to earn livelihoods.

3. Unify Tourism Plans in coordination with environmental agencies, local populations and civil society.

4. Mandate Waste Management Plans for all businesses, colonies, villages, guest houses, etc. lining the Ganga and Her tributaries. Implement comprehensive recycling programmes. See also page 7.

5. Public Education is Essential. A compelling campaign, featuring religious figures/messages and celebrities should be launched. Hotels, restaurants and other places of stay can be required as part of their certification process, to prominently display such messages. Messages should also be highly-visible in well-trafficked areas, such as pilgrimage paths and near temples.

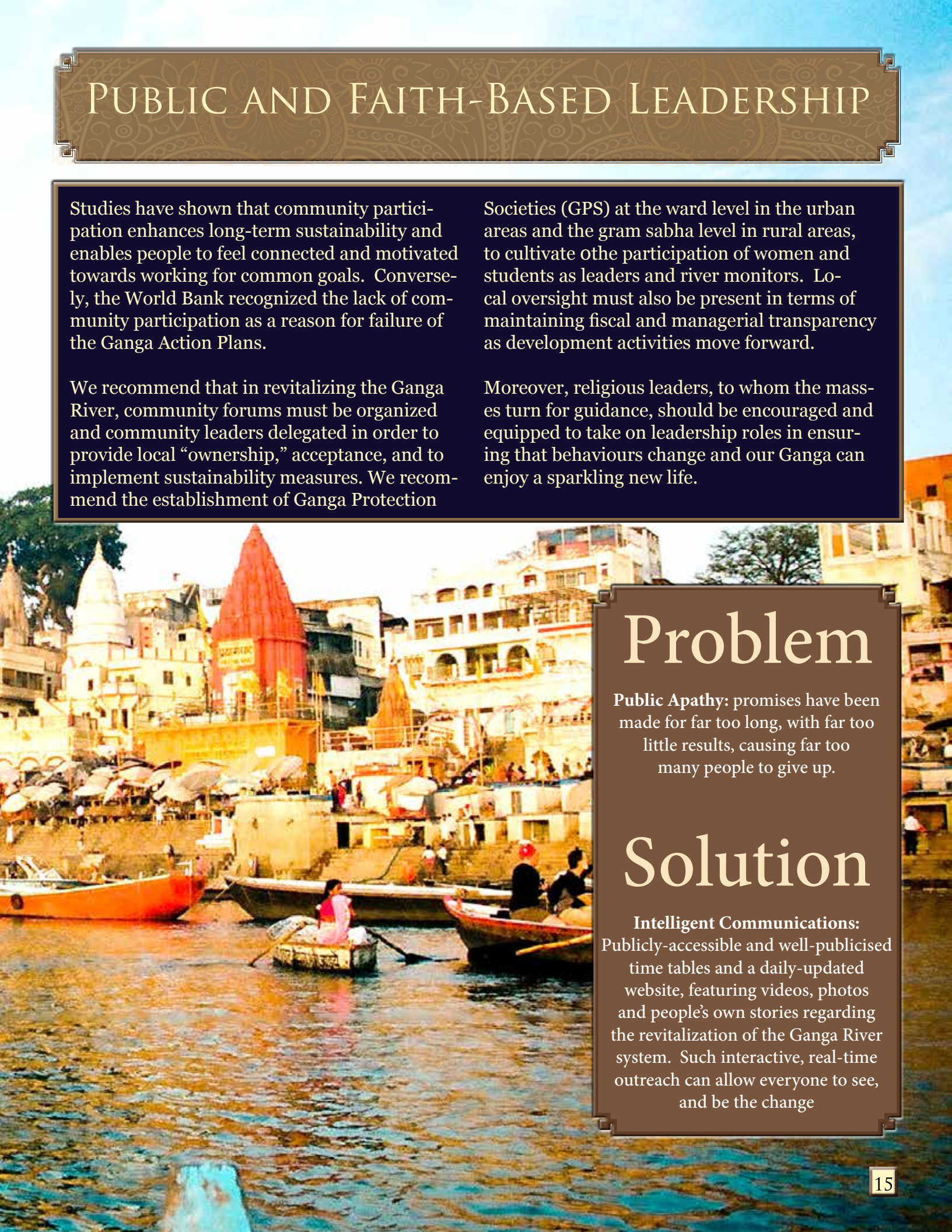
6. Train, Grade and Certify Ganga River Basin Service Providers in Green Practices. Yearly grades and citations can be placed in highly-visible locations by mandate, so that all visitors can have educated choices before becoming customers.

Public and Faith-Based Leadership

Studies have shown that community participation enhances long-term sustainability and enables people to feel connected and motivated towards working for common goals. Conversely, the World Bank recognized the lack of community participation as a reason for failure of the Ganga Action Plans.

We recommend that in revitalizing the Ganga River, community forums must be organized and community leaders delegated in order to provide local "ownership," acceptance, and to implement sustainability measures. We recommend the establishment of Ganga Protection Societies (GPS) at the ward level in the urban areas and the gram sabha level in rural areas, to cultivate othe participation of women and students as leaders and river monitors. Local oversight must also be present in terms of maintaining fiscal and managerial transparency as development activities move forward.

Moreover, religious leaders, to whom the masses turn for guidance, should be encouraged and equipped to take on leadership roles in ensuring that behaviours change and our Ganga can enjoy a sparkling new life.

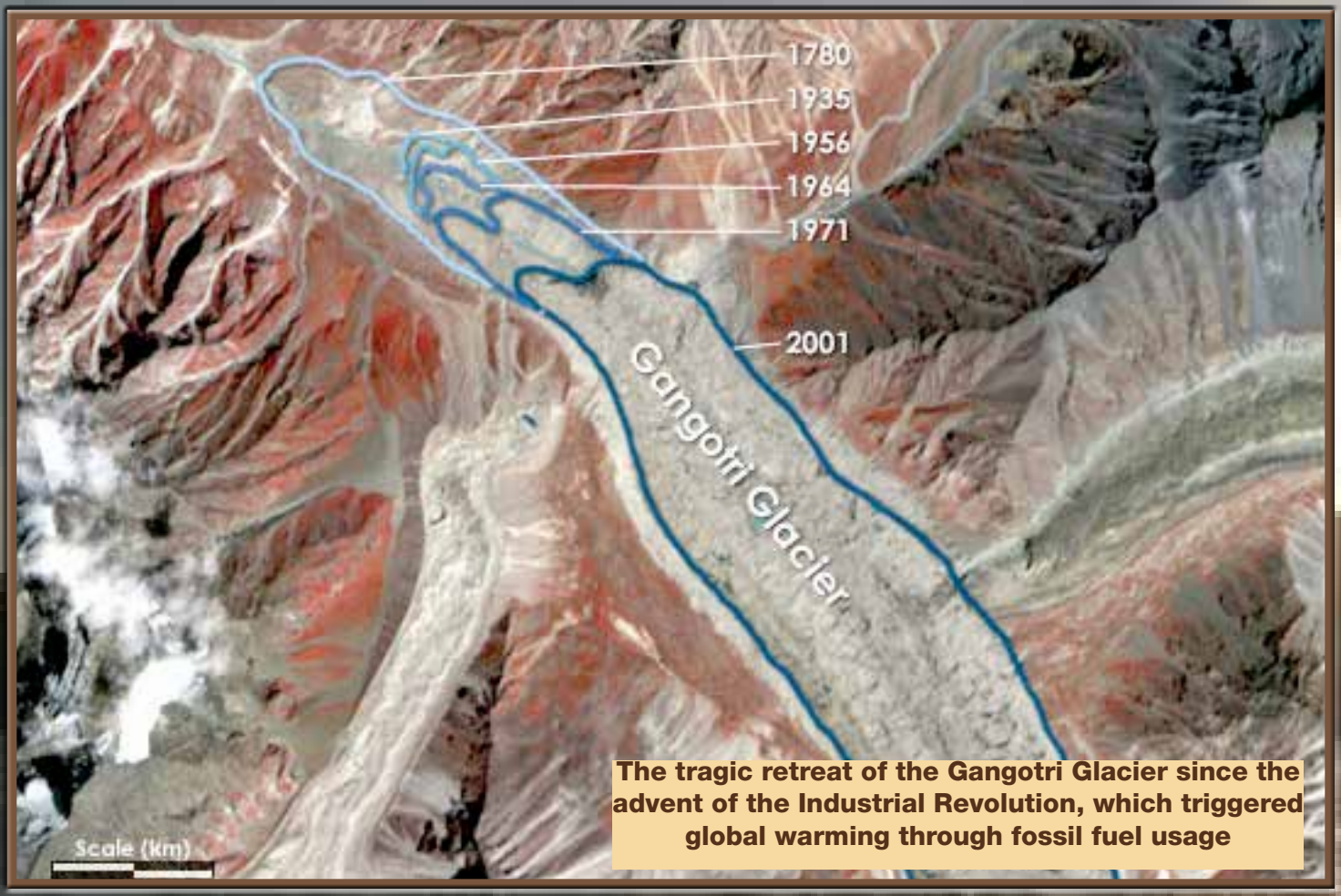


Problem

Public Apathy: promises have been made for far too long, with far too little results, causing far too many people to give up.

Solution

Intelligent Communications: Publicly-accessible and well-publicised time tables and a daily-updated website, featuring videos, photos and people's own stories regarding the revitalization of the Ganga River system. Such interactive, real-time outreach can allow everyone to see, and be the change



The tragic retreat of the Gangotri Glacier since the advent of the Industrial Revolution, which triggered global warming through fossil fuel usage

SLOW THE CHANGE

Problems

1. Because of global climate change, the Gangotri glacier, the source of the Ganga, is now receding at a frightening 20-23 metres per year, compared to 7.3 metres a year between the years of 1842-1935 (see table, above). Without the Glacier's waters, the Ganga stands to become only a seasonal river.

2. Conditions are worsened due to the microclimatory effects induced by the burning of wood and trash, as well as certain construction materials, vehicular traffic, deforestation and certain public work projects.

Solutions

1. International Advocacy: India must become a foremost advocate for the adoption of improved international and domestic policies in order to promote practices that decelerate climate change. Such advocacy can yet help protect life-sustaining resources, such as the Gangotri glacier.

2. Intensify Regulation and Enforcement: Mandates should be put in place and strongly enforced, so that practices that are accelerating Himalayan warming can be immediately and drastically reduced.

Analysis: Gaps in GAP I&II

On analysis of GAP I & II, we have determined that there were a number of weaknesses in the implementation of the programme, including:

Minimum Flow Not Addressed

• The river's minimum flow was never addressed. Since the scale of pollution also depends on the degree of dilution and velocity of the flow of water, maintaining a minimum discharge in the river is necessary, especially at critical points such as urban areas and locations of large-scale industrial waste production.

Community Participation Failed

• The plan has been viewed primarily as a Government scheme, the implication being that there was no sense of ownership amongst local people. This is due to the limited participation of local populations in formulating and implementing schemes

• Poor communication due to insufficient planning resulted in a failure of public relations.

Failed Sewage Treatment Approach

• Due to the population growth and new residential colonies, treatment facilities at many places were inadequate for the task set.

• Large volumes of wastewater, in excess of the treatment capacity of STPs, had to be discharged into the river without treatment.

• Power outages frequently cause treatment facility systems to fail, as the majority of these facilities are run on electricity.

• Many treatment plants became overwhelmed during monsoon season, forcing municipalities to shut them down.

• In many cases, there was no follow-up funding allotted for treatment plant maintenance. As a result, small and potentially avoidable problems often led to the total inoperation of plants. There was no proper O&M from state governments.

• It was only wastewater flowing through drains to the river that was targeted. The connection of household toilets to the sewer systems and solid waste management facilities were not addressed.

A Wholistic Approach Not Taken

• GAP concentrated on improving the water quality of Ganga, mainly in terms of organic pollution and dissolved oxygen.

• Several factors of pollution, such as heavy metals, pesticides, nitrogen and phosphorous, were not monitored.

• No attention was paid to the run-off from agricultural fields, which brings non-biodegradable pesticides into the river.

• The interaction between ground water and surface water was not covered.

• The plan only focused on class-I towns on the banks of river.

• Pollution from rural areas was altogether not addressed.

Managerial Failures

• In the absence of a fast-track mechanism, there were delays in preparing and sanctioning schemes.

• A decentralized approach was not ensured or followed.

• Throughout more than two decades of the plan, GAP leadership and staff regularly changed, thus continuity of vision and commitment suffered.

More Investment Needed

• The $250 million USD allocated to GAP over two decades was not sufficient, according to the World Bank.

• Investments must be on-going, addressing O&M, shifting population dynamics, changes in technology and factors such as climate change.

The National Ganga River Rights Act

Laws have been enacted since the 19th century to protect natural resources such as Mother Ganga, yet they have largely proven ineffective in stopping actions which could very well threaten the aquifer's future existence. For this reason, the proposed National Ganga River Rights Act has been drafted to specifically remedy gaps left by previous laws. The draft Act also presents modern modalities and a novel legal framework for the remediation and maintenance of this crucial resource.

The proposed National Ganga River Rights Act's unique features include:

- A rights-based legal framework for nature;
- Innovative environmental protection mechanisms, including community monitoring
- A dedicated policing system;
- Strong anti-pollution measures combined with the designation of Protective Zones;
- Robust enforcement methodologies, including additional layers of oversight;
- Anti-corruption clauses; and
- Updated penalties, which render repeat violators financially accountable for environmental remediation.

Your decisive support of this crucial legislation could very well pave the way towards ensuring a lasting legacy that could connote the very survival of our National River and the well-being of the approximately 500 million people who depend on it. For this reason, we humbly ask for your commitment to the National Ganga River Rights Act, on behalf of the population, flora and fauna for which Mother Ganga means life itself.

To receive a copy of the draft National Ganga River Rights Act, email info@i-wash.org

Conclusion: Ganga Dharma

The Government of India—at the local government level, at the level of the individual state governments in which Ganga flows, and at the central government level—can help resolve many of the issues facing Ganga and its tributaries today.

Currently billions of litres of sewage enter Ganga each day, and this pollution is not only killing life within the river but is also making millions sick throughout the Ganga River basin. The sheer fact that so many are dying within India because of this issue, that so many of India's people do not have access to clean water or proper sanitation—among the most basic of human rights—should alarm the Government. Rightly so, it is the responsibility of the government—its "Ganga Dharma"—to help fix this issue. It is the Government's duty to provide the necessary infrastructure for India's booming population, such as providing clean drinking water and proper sanitation.

The Government should help implement effective and sustainable methods of dealing with the country's sewage and waste, ranging from installing proper and fully-functional sewage treatment plants to creating solid waste management systems, so that the raw sewage and solid waste that India generates does not continue to pollute our rivers, our environment, and everyone's health.

Furthermore, the government must put into place clear policies to regulate the dumping of pollution from domestic and industrial sources, ensuring that all waste is properly treated and no toxic sewage or effluents pollute our waters. This would entail setting legal standards of what is considered "treated" and to what degree the waste must be cleaned.

Moreover, it is not just the Government's duty to create these policies, but it must also enforce its implemented policies and hold accountable those in violation of the law. Strict policies should ensure that various polluters—whether it be sewage treatment plants from which untreated or improperly treated sewage is negligently released, or industries that dump their toxic chemicals and heavy metals into the Ganga—are forced to stop their harmful practices. It must be that if industries do not comply or if they contravene the law, then they will surely be held to task and have to face certain consequences.

Additionally, it is also the Government's responsibility to play the role of steward of India's natural environment. The Ganga River basin alone supports the lives of 450 to 500 million people, and the crops grown in the Ganga basin feed over one-third of India's total population. Thus, in light of how many Indians are reliant on the Ganga, it is easy to the great importance of the river's conservation. It is the fundamental duty of the Government to ensure this continued existence of the Ganga. Policies need to be made and upheld which ensure that at least the minimum ecological water flow needed to sustain life in and around Ganga is maintained.

Laws must be passed and enforced which ensure that these minimum ecological flows are allowed, even if this would imply that there should be less industrial activity, fewer dams, a reduction in the siphoning-off of water, or any other current practice that is draining Ganga dry. It is unacceptable to allow parts of the Ganga to run dry, not just from a spiritual or cultural perspective, but also due to the sheer fact that the Ganga is a lifeline for nearly half a billion people. Thus, it is the Government's "Ganga Dharma" to safeguard Ganga, just as it is the Government's duty to safeguard its people.

This white paper has been written with the inputs of members of the National Ganga River Basin Authority, Navdanya, India Institute of Technology Kanpur, the World Wildlife Foundation, TERI, Banaras Hindu University, Community Environmental Legal Defence Fund, Mokshda, the Central Pollution Control Board, Former High and Supreme Court Judges and many others.

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June, 2014