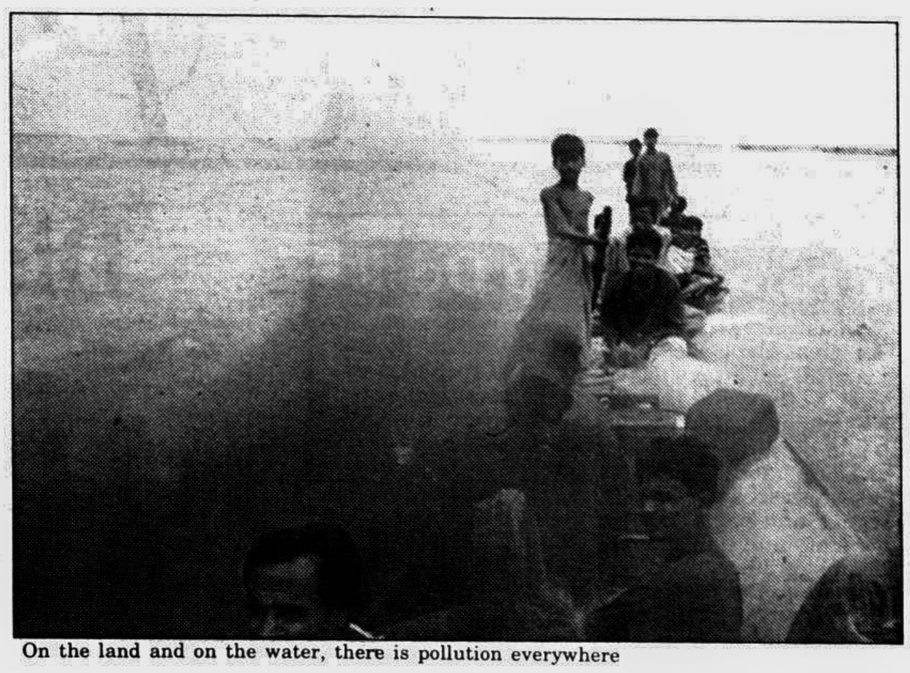
Endangered existence

Solution to environmental problems does not always require costly projects. Correct policies with proper implementation are what is needed. To that end, the civil society must play a leadership role to create awareness and thereby build up a social movement,
writes **Nazrul Islam**



On the land and on the water, there is pollution everywhere

SERIOUS environmental degradation has taken place in Bangladesh in recent years. There are many dimensions of this degradation. Urban air pollution, ground water contamination (by arsenic, etc.), surface water pollution, filling up of rivers and other water bodies, improper disposal of industrial, medical, and household waste, deforestation, loss of open space, loss of bio-diversity, noise pollution, etc., are just a few examples. In many cases, the extent of degradation has reached crisis proportions.

This degradation of Bangladesh's environment has taken place at a time when the developed countries have been improving their environment in many respects. Thus, air quality in many cities of early industrialising countries is now better than before. The total area under forests in New England (of the United States) and in Germany has increased. The health of rivers and other water bodies in the United States and in Europe is improving. Many dams have been torn down to restore the natural life of rivers. Wetlands are reclaimed. Many threatened animal species have been protected from extinction and revived. The list may be made longer.

There was a time when Bangladesh's per capita income was low, but her air was pure, and the water was clean. Over the past years, the country has been trying to achieve economic growth and thereby narrow its *income-gap* and *technology-gap* with the developed countries. Unfortunately, in the process the environment has been let to suffer, and as a result now a new, painful *environment-gap* has emerged. Most of the indicators of environmental quality in Bangladesh are now far worse than in the developed countries. Ironically, this neglect of environment has not led to a narrowing of the income-gap. According to the World Bank statistics, per capita income of Bangladesh and the USA in 1975 was $150 and $8,070 respectively. In 1998 the corresponding figures were $350 and $29,340, respectively. Thus, over these twenty-three years the absolute size of per capita income-gap has increased from $7,920 to $28,990. Meanwhile a yawning environment-gap has emerged.

There are several factors that make Bangladesh particularly vulnerable to environmental degradation. Fragile ecology, delicate flora and fauna, wetness of land, high density of population, reliance on foreign capital for industrialisation, poverty of the masses are few such factors. This vulnerability enjoins Bangladesh to make extra efforts to protect her environment.

Sometimes it is argued that a low-income country such as Bangladesh does not have the luxury to worry about environmental quality. Some allude to the so-called Environmental Kuznets' Curve (EKC) to argue that developing countries should concentrate on achieving fast economic growth and not worry about environment because economic growth will automatically take care of environmental problems. The Environmental Kuznets' Curve (EKC) is a concept that is parallel to the concept of Kuznets' Curve (named after eminent economist Simon Kuznets) regarding income inequality. The idea behind this curve is that at low levels of income environmental quality first deteriorates with growth, and then it improves when the economy reaches higher levels of income. This would yield an inverted-U shaped relationship between level of pollution and level of income.

However, recent research has shown that the EKC is largely a myth. There is no universal rule that pollution has to first increase with economic growth before decreasing. In a recent article in the journal Science, Nobel laureate economist Kenneth Arrow and several other reputed scientists have argued strongly against the EKC and the use of the EKC for policy inaction regarding environment. Developing countries can influence the quality of environment through conscious efforts. There are countries (such as Nigeria) whose environment has suffered terribly because of the way economic growth was pursued. On the other hand, there are countries (such as Costa Rica) that have achieved remarkable economic success without damaging the environment. Costa Rica's experience clearly testifies that the goals of economic growth and environmental protection can be complementary rather than being contradictory.

In fact, environmental degradation can even stifle economic growth. An example is provided by the situation of Dhaka city. Poisonous air, uncollected garbage, lack of open space, dying and polluted water bodies, congestion, noise, traffic jam are all making life in Bangladesh's capital increasingly difficult. Noting Dhaka's situation, Amartya Sen, the Bangalee Nobel laureate economist, commented during his visit to the city in December 1998 that he would not recommend anybody to live in Dhaka, even in its posh quarters such as Gulshan and Baridhara. If allowed to further deteriorate, this situation will inhibit foreign investment. Even domestic capital will take flight, which according to some accounts is already taking place. This will certainly not help economic growth.

Note that it is Bangladesh's poor who are the worst victims of environmental degradation. Poor people are dying of arsenic contamination in Bangladesh's villages, and it is the poor urban dwellers who are most exposed to the poisonous air. Protection of environment is therefore necessary even from the point of view of social justice. Thus for both economic growth and social justice, Bangladesh has to make environmental protection a high priority.

There are some efforts in Bangladesh to confront the environmental problems. The government agencies, in collaboration with other organisations, are implementing quite a few donor-financed environmental projects. A good number of environmental NGOs are active. Even many large, general purpose NGOs now have environmental components. However, it is clear from the continued environmental deterioration that these efforts are not proving adequate for the environmental challenge that Bangladesh faces. It is necessary to raise the efforts to an entirely different level.

It is a mistake to think that the government will do all that is necessary to protect Bangladesh's environment. If that were the case, then environmental degradation would not have proceeded to this extent in the first place.

Solution to environmental problems does not always require costly projects, which in Bangladesh tend to be donor-financed. Sometimes correct policies with proper implementation are what is needed. However, such policies will not always be adopted and properly implemented unless there is a social pressure to do so. It befalls upon Bangladesh's civil society (intelligentsia) to provide the leadership in generating such social awareness and pressure.

The experience of the developed countries also vindicates this conclusion. Improvement of environmental quality in the developed countries did not come about automatically. Numerous citizens' groups had to work hard to bring about these changes. It is because of their persistent work that a strong social pressure now exists in the developed countries for protection of environment. Both major political parties of the USA now take environmental issues seriously. In Germany pro-environment Green Party is now a coalition partner of the government. Environment is a high priority in other developed countries too.

A similar process has to unfold in Bangladesh. Environment has to enter the agenda of all sections of Bangladesh's civil society. The professional and trade organisations have to take up the environment issue. Literary and cultural organisations, which represent the most sensitive sections of the society, have to get involved with environment. Educational institutions and students have to assume a leading role. Women and children's organisations have to play a special role. Journalists and other members of the media can be very effective in spreading awareness and mobilising citizens' action about environmental issues. Such a process will ultimately lead the Bangladeshi political parties also to become serious about environment.

It is heartening to note that various sections of Bangladesh's civil society are indeed becoming more active about environment. The media, particularly the print media, is giving more exposure to environmental problems. Many civic voluntary organisations are emerging with environmental protection as the goal. There are many on-going movements focused on particular environmental goals, such as protection of Dhaka's greenery and lakes. There are environmental movements outside of Dhaka, in various districts. Some of these movements even proved successful. For example, responding to citizens' urgings, the government has recently changed the venue of NAM summit. There are successes at district level too. These are encouraging signs.

The civil society of Bangladesh is no longer confined to the geographical boundary of Bangladesh. A large number of Bangladeshis now live and work overseas, and their number is rapidly increasing. Revolution in the communications technology, particularly the advent of the Internet has now made it possible for the non-resident Bangladeshis (NRB) to be closely integrated with life in Bangladesh and extend co-operation to resident Bangladeshis (RB) in solving various problems of the country. Bangladesh Environment Network (BEN) has been set up with precisely such a purpose.

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Through BEN the environment conscious NRBs are lending their support to the RB environmentalists in the common fight against environmental degradation in Bangladesh.

In her fight for environment, Bangladesh also needs support of the international environment community. Many of Bangladesh's environmental problems are of regional or global origin. Without active support of environmentalists of other countries of the region and of the global community at large, Bangladesh will not be able to effectively solve these problems.

It is now necessary to combine all these forces to give a new momentum to environmental protection efforts in Bangladesh. That is precisely the purpose of the upcoming International Conference on Bangladesh Environment to be held in Dhaka on January 14-15, 2000.

The general goal of the Bangladesh environment conference is to bolster the environment protection efforts in the country. More concretely, the conference has two objectives, reflected in the two types of sessions that it will have, namely technical sessions and general sessions. The technical sessions are for expert-level discussion of major environmental problems of Bangladesh that include air pollution, water contamination, impact of urbanisation and population growth, loss of bio-diversity, water and resource management, legal and institutional framework for pollution control, global environmental issues, etc. A sizeable number of international and NRB environment experts will come to Bangladesh to participate in this conference. They will be joined by a large contingent of RB environment experts.

Arranging a discussion of all major environmental problems under one umbrella has particular value. Many of Bangladesh's environmental problems are interrelated. For example, it is difficult to find long-term solution of the arsenic problem without having an optimum solution of water management problem in Bangladesh. Similarly, the air pollution problem cannot be separated from the general problem of urbanisation. A comprehensive discussion will better reveal the interconnections among various environmental problems, and hence help reach better solutions. An overall, integrated action plan for protection of Bangladesh's environment will emerge from the conference.

However, lack of technical knowledge about solutions is not the main obstacle to solving environmental problems in Bangladesh. In many cases, the solutions are well known, at least in broad terms. For example, it is well known that the main source (about 70 per cent) of air pollution in Dhaka is the two-stroke-engine vehicles (TSEVs), commonly known as scooters and tempos. The main solution to Dhaka's air pollution problem is to replace the TSEVs by similar vehicles that have converters. Such alternative vehicles are easily available. Yet this solution has not been implemented because the social pressure necessary to compel the government override the resistance by pro-TSEV vested interests is missing. Hence mere technical solutions are not enough, these solutions need to be combined with social mobilisation.

The general sessions of the conference are intended to serve that purpose. Representatives of various sections of the society will be invited to these sessions so that through mutual discussion they can more clearly realise and articulate their role in protecting environment and recommit themselves to playing out that role.

Bangladesh Environment Conference 2000 is thus geared to bringing together all those who are working or are willing to work for environmental protection. It will combine experts with activists, non-residents with residents, international environmentalists with Bangladeshi environmentalists. It will join various partial and local environment movements that are going on in various parts of Bangladesh and on various concrete issues. It will combine environmentalists working in the civic organisations, academia, non-government organisations, social and political organisations, and the government. By getting together, environmentalists of Bangladesh can emerge as a potent force on the social scene of the country and give birth to a broad-based environment movement. Only such a social movement can save the country from an environmental disaster. Bangladesh Environment Conference 2000 can therefore be an important milestone in the struggle for good environment in Bangladesh.

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Together against arsenic aggression

Arsenic contamination of ground water has ominous proportions. The situation calls for an integrative approach towards mitigation, involving government and none-government organisations and the donors. Unfortunately, co-ordination appears missing, write
Stijn Hoorens and **Pepijn Koenders**

A victim of arsenicosis

ARSENIC problem in Bangladesh and West Bengal is so massive that it tends to overwhelm those who attempt to do anything about it. Many international and domestic organisations are trying to organise a concerted effort to address this problem. Generally, five directions of arsenic mitigation efforts can be observed: monitoring shallow tubewells, installing (and monitoring) deep tubewells, surface water treatment, rainwater harvesting and treatment of contaminated water.

It is vital to measure the extent of arsenic concentration in all the four million shallow tubewells and to use only those that have low concentration for drinking and cooking purposes. Only one per cent of all wells has so far been measured. This indicates that millions of Bangladeshis may still be using contaminated water. Secondly, maps of arsenic concentration show that the south-eastern part of the country, and the city of Dhaka, are free from serious contamination; there, water is extracted from deep aquifers, more than 100 metres in depth. Still, several difficulties do exist; some deep tubewells have been detected with arsenic contamination. Supporters of deep tubewells claim that contamination here is due to improper installation. On the contrary, so little is known about the underlying processes that no-one can assure that these deep aquifers will remain arsenic-free in the coming decades.

In a great number of rivers, canals and ponds Bangladesh have enough surface water available for drinking purposes. However, increasing pesticide concentrations from agricultural run-off and toxic waste from industries pollute surface water, making use of this alternate resource hazardous. Besides, pond water supply is susceptible to drought.

This also applies for collection of rainwater. Due to hydrological conditions, the water availability is limited by rainfall intensity. Storage capacity is needed, though this is precarious for hygiene.

Technologies for removal of arsenic from contaminated water are widely known and available. In fact, by adding an oxidant and an absorption-chemical nearly all the arsenic can be separated from water. Nevertheless, these chemicals may have long-term impact on people's health in case they are not properly removed along with the arsenic. Alum, for example, can be used in this process, but is suspected to cause neurological damage. In adding chemicals, there may be a risk of replacing one poison with another.

Each of these mitigation directions seems to have major execrable aspects which naturally can be dealt with by means of sophisticated techniques. However, is a strong technical assessment sufficient for successful implementation?

There is a difference between a solution and a mitigation measure. Mitigation measures are just part of an overall strategy towards an effective solution. Social, cultural, economical, technical, geographical, institutional, hydrological and other differences between regions and communities within Bangladesh as well as between Bangladesh and other countries make assessment of strategies rather troublesome.

Certainly, these factors are present at the grassroots level. Observations and interviews make clear that position of women is essential in this regard. After all, it is they who play a pivotal role in household water management. Although some men claim that other members of the family also participate, not a single man carrying a pitcher has been noticed. This has implications for both location of drinking water source and distance between place of collection and place of consumption. In a particular case, women do not have access to a deep tubewell installed at a mosque-yard. Distance is also major deterrent in many cases. Women have a busy schedule — animal feeding, cow-dung collection, cooking, cleaning and taking care of children to name the obvious few. A walk to a nearby shallow tubewell, albeit contaminated, can save a lot of time.

In this regard the *purdah* system also works as an impediment. This phenomenon familiar throughout the country and not only restricts Muslim females but also those of other religions. Fetching water over large distances is avoided whenever and wherever possible.

On the community level, a great deal of individualism can be noticed. Operation and maintenance of several kinds of both household-based and community-based options are rather limited. This can be subscribed to lack of education and awareness on one hand, and dearth of activism towards rural development and in particular arsenic mitigation on the other. Overpopulation combined with lack of financial resources made inhabitants of Bangladesh learn how to stand up for oneself and even to give individual interests higher priorities. This can be interpreted as a derivation of the Dutch NIMBY (Not-In-My-Back-Yard) effect. For this reason, the extensive tradition of corruption and bribing is embedded in the system mainly in the lower-level government departments and, local and regional organisations.

On the field level it is manifesting in another way. People are reluctant to contribute to tackling several development problems; it is either too much capital-intensive or too much labour-intensive. Several mitigation options require donation of a piece of land or a pond. Therefore, many of villagers adopt the Not-In-My-Pond approach; after all, with donation and preservation of a pond for drinking water purposes many economic activities (e.g. fishery) would disappear.

Many options of alternative water supply failed in the past. Achieving changes in traditional patterns turned out to be laborious. Without strong motivation of the community every desired attitudinal change is bound to fail. Although 30 years ago ponds were a common water resource, currently people seem reluctant to shift towards options that require more attention than easy-maintenance tubewells.

In order to ensure operation and maintenance of, for instance, a pond sand filter (PSF), institutional facilities are required. However, participation, covering all social hierarchic levels, in arsenic mitigation process does not seem forthcoming, for it requires a drastic, and undesirable, cultural shift. The lowest social layer will be difficult to mobilise. The poorest can barely afford to offer money or time for a village committee or maintenance of installations. Therefore, local communities allow each of the families that are making use of the water resource to contribute an amount they can afford. Sometimes, contribution from 30 families for a deep tubewell of Tk. 5000 varies between Tk. 0 and Tk. 800. The poorest families claim that they cannot afford to contribute even the minimum. The fact that other members of the community accept this, as it is ingrained in the (Islamic) religious belief of common right for drinking water, hardly any problem is there in sharing water resources. Anyone is allowed to use another's tubewell as much as one possibly need, gender, social or economical status or religion do not matter. However, besides community concern personal objectives play a role. Amount of donation reflects the social status of a particular family. Thus, donating nothing is accepted according to the community norms, but the future social respect decreases considerably. Hence, the system maintains itself, because relatively well-off people who can afford to contribute a large amount of money or to become a member of a village committee, are able to derive more privileges from their increased status; nobody seems to act out of philanthropic objectives.

Why is it that investment of so much money returns so little? The crux of this problem doesn't seem to lie in the grassroots. Donor agencies compete with each other by means of extensive large-scale projects. Co-ordination among each other is nearly non-existent, though this is extremely desired for an integrative approach to tackle the problem.

In their mitigation strategy donor agencies are using countless NGOs and seem to avoid governmental organisations along all aggregation levels. Although the DPHE (Department of Public Health Engineering) is formally in charge of the Bangladesh Arsenic Mitigation and Water Supply Project (BAMWSP), this department is hardly involved in arsenic mitigation. Despite the quite impressive network of DPHE thana, district and division offices, these departments are hopelessly subject to inefficiency, bureaucracy, corruption, lack of capacity, lack of capabilities, lack of professionals, so on, and so on. A tradition of corruption and bribing makes the system reluctant to a participatory policy. After all, this would imply a distribution of money and power directed to the lower echelons; higher level people will have less income and less status due to participation.

The NGOs, in fact, have a strong commitment to the local community and their workers are highly motivated in their job. Nevertheless, these NGOs form an extensive diverse non-conform network, whereas co-ordination as well is utterly problematic. Large-scale development programmes, in which many NGOs are included, require much effort in guiding the organisations into the direction of an overall project policy. Moreover, NGOs generally show difficulties in understanding thoroughly the technical features of the arsenic problem. Probably, the reason is that NGOs generally employ personnel less educated than their counterparts in the private sector. Because NGOs have relatively lower social status, technical NGO professionals are quite rare, especially in this country where social status is of grave import. This does not imply that nothing is being done. Some organisations conducted, as far as their abilities and their knowledge permit them, tubewell surveys and intended to implement alternatives for drinking water supply.

As it was found out, many NGOs have arsenic mitigation plans ready. These plans, however, mainly focus on ambitious sophisticated installation-based options (e.g. modern rainwater harvesting plants (RWH), pond sand filters (PSF), and arsenic removal plants). Still, NGOs are not only restricted by available knowledge and skills, but by available funds as well. There is a structural constraints of financial resources in this sector. In this regard the most frequently heard statement is "we are still waiting for our donors, but within a few months the project is expected to take off". Thus, these capital demanding alternatives still only exist on paper, and presumably will continue to be. Desire for these installations is probably due to importance of social status and prestige. After all, would it not be nice to show off these ingenious PSFs and RWHs and gain respect from other colleague-organisations. Thereby, installation-based options are favoured because of personal gains. Each station is left with a proportion of the financial stream; the larger the stream, the larger the proportion.

The strength of these NGOs must be found somewhere else. Due to their strong commitment at the field level, those organisations are extremely useful in awareness building. The hard- and software is available and it requires very limited extra investments. Neither additional financial fund nor technical professionals are needed.

Attention should be directed towards conditions at the lowest level: a bottom-up approach is indispensable. Mitigation measures are widely available, however they should comply with the requirements of the community concerned. In the observations stated above, these factors have been recognised.

Addressing these findings to the possible mitigation measures, several recommendations can be made. Exemplary, tubewell-based options, such as deep tubewells, require extensive monitoring programmes, by means of GIS (Geographical Information System). As it has become apparent, Bangladesh lacks in institutional facilities necessary for a certain monitoring system. Although human empowerment cannot be regarded apart from resource management, installation of participatory institutions would require a change in existing social patterns within a village community that is neither desirable nor workable.

In the process of mitigation of arsenic contamination one needs to distinguish a short-term strategy from a long-term strategy. Tactics, part of the short-term strategy should be appropriate for immediate effective implementation, given the objective of providing arsenic-free water to the population of rural and urban areas. According to cultural and social constraints immediate mitigation measures are likely to be addressed to women in particular, accompanied by a strong committed awareness campaign. Home-based arsenic treatment, despite its presumable long-term health effects, could well be part of this strategy.

Long-term measures, however, should come up to a sustainable system to provide safe and clean water drinking water and may require a certain period of implementation, since institutional framework needs to be established, installations need to be built, funds need to be raised, etc. Moreover, a long-term strategy needs to be robust in different future scenarios. Thus, as long as it is unknown whether the deeper aquifer will be contaminated in future, installation of deep tubewells is not a feasible tactic for a long-term strategy assessment.

It is not only a large-scale education on arsenic awareness (eventually compared with other development issues, e.g. sanitation) at the micro level that is necessary. An integrative approach towards a process to mitigate the effects of arsenic contamination demands co-ordination and co-operation among NGOs, donors and governmental organisations, which is not present at the moment.

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