

Our future lies in the drain

DR NIZAMUDDIN AHMED

NOT many would associate a Scottish biologist studying the evolution of sex with the planning of Dhaka, but Patrick Geddes (1854-1932) did just that. Credited with drawing up plans for the improvement of Edinburgh and numerous cities in India, the converted civic planner imagined Dhaka in 1917 as a network of canals and pools interspersed with vastly populated land mass in what is the city's first plan. Drawn to human environment and city planning, Geddes' interest in Dhaka was understandable as by then it had already been a capital city twice.

PG, as he would have been addressed today, would not recognise the former capital of East Bengal and Assam, not for sheer environmental degradation by high-speed urbanisation, but because the city has managed to clog itself. Migration from deprived rural areas, coupled with greed of urban landlords, abetted by public servants who failed to serve successive governments, politicians caught in the swirl of power, insincerity and lack of competence among professionalism... they all played their part in transforming Geddes' eastern Venice into a concrete tangle.

Architect Dr. Zebun Nasreen Ahmed in today's piece makes a timely appeal for all institutions and individuals to harness their resources to save the capital from further abuse, and to make the best when the

annual floods strikes for the worse.

Flooding causes untold miseries, death to man and animal, and loss of property. Fish life is lost, roads are worn out, schooldays are lost, business suffers... are they not enough reason for us to pay heed to warnings, take preventive and preparatory measures?

Further filling up of common ground and levelling low-lying areas, misuse of polythene, unsanctioned use of public sewer, blocking of surface drain, illegal construction, and encroachment of water body are all the outcome of our selfish mentality. We live in a society almost not as its constituent members but as outsiders extracting its sap. Little do we realise that we are in fact depleting a future generation that may never be.

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Dhaka floods: The need to act now

DR. ZEBUN NASREEN AHMED

CLIMATE change is no longer a matter of speculation. Its evidence is all around us, sensed in the floods every year, excessive rainfall in some areas around the world, unnatural and unseasonable droughts in other yet other areas, acid rain, melting ice bergs, shifting rivers, and so on and so forth. The endless list continues to be added to with increasing human interventions. Probably the only bright spot in the whole picture is that our knowledge of the whole scenario, about its causes and influences, and also about ways to stem the tide is increasing rapidly, and given the will, commitment and resources, that knowledge can be put to use. Whether the will can prevail against the surge of development is another issue. For the short-term gains from development in many cases far outweigh any long-term considerations for the environment. And therein lies the problem.

It is not the intention of this discourse to discuss the issue of climate change, as that has been the topic of research and study for quite a while in recent times, and there is no need to repeat their findings in yet another paper article. The time has now come to the act. This paper will merely discuss the issue of how to cope with one of the most compelling manifestation of climate change floods, which are becoming an inevitable and integral part of Dhaka city, tackling which life in this city may be a bit easier and more in line with what is expected in a modern city of the twenty first century.

One can argue that the repeated flooding in Dhaka city is just another routine annoyance to be tolerated. But surely it is cause for alarm that just about 12 hours of rain caused many areas of Dhaka to be inundated for about three days in early July, and the rainy season hadn't even begun in earnest at the time. That's a flooding, the effect of which lasted six times more than the rain duration itself! And among the areas flooded were important business areas, university areas, residential areas and main roads, bringing life to a stand still for many. But if we cast our minds back a couple of decades or so, I distinctly remember that long spells of rain lasting five, even seven, days while causing the difficulty any rainy day presents of being wet and miserable, didn't result in floods of anywhere near the present dimensions. So why the change? The obvious culprit is man-made: development, even over-development, land-filling, land-grabbing, etc. We have managed to fortify our city to save us from the annual overflows of the northern rivers into the bay. But with it we have also succeeded in stopping any leaks or escape routes for the water that can collect in our urban areas from rain or any other source.

The age-old dialogue between the inclusionists and the exclusionists thus continues. Do we allow the waters to flow through our city at regular intervals and ebb quickly, or do we build dams to stem the flow, but create insurmountable barriers for unexpected (or expected) accumulations, thus making the city retain water for even greater periods? Of course the best solution would be to have flood-gates kept in place to prevent any entry of the water in the first place, but to let out the water if it accumulates. If we ignore the selfish aspect of this solution, of keeping ourselves high and dry while the rest of the country suffers, the only problem then would be what to do when the two conditions occur together, that is the surrounding country-side water level is high while there is unwanted accumulation of water within the city. Then we would be at square one and we might as well not have built the embankments and floodgates. And that is exactly the

situation now. So the question remains, what to do?

Possibly the past may have some pointers for us. At one time Dhaka city had a number of canals and waterways, indirectly connecting its rivers the Buriganga on the south to the Turag on the north and west and the Balu on the east. This arrangement had the advantage that if the water level in one portion of the city rose, it was automatically drained by the waterways through gravity to the nearest river. Similarly when the



water level of one of the rivers was over the danger mark, this too could rid its excess into nearby canals. Moreover, there were also innumerable ponds and low areas dotted around the city, which acted as natural reservoirs for any surface run-off within the city itself resulting from rain or flooding. Unfortunately there is hardly any trace of these waterways and most of the ponds and low areas of the city are being filled up and built upon, choking the drainage of the city as a result. Development is coming at a cost. If the objective of sustainable development is about finding a lifestyle that does not compromise the needs of the future generations, then we are failing miserably.

However we place our arguments, there is no dispute about the fact that time is running out. We need immediately to have a concrete action plan of how to tackle the problem and the concerned authorities need to be committed to the implementation of this plan, so that irrespective of political, personal or short-term development gains, the long-term environmental objectives of sustainability remain focussed. This plan will among other areas include the following:

- = Identification of the most affected areas within the city. Refurbishment of the existing drainage system, if needed by installing new drains with connections to the lowest storm sewer levels. In many cases it may be a matter of keeping these drains un-blocked. Mass awareness programmes to educate the public in waste disposal needs to be undertaken hand in hand with the refurbishment programme.
- = Identification of the canals of the past with steps to reintroduce them. Rehabilitation of occupiers of such areas will need to be part and parcel of this step.
- = Creation of softer areas (green, unpaved areas) within the city that will allow water absorption so that flash floods and water logging can be avoided. Creation of large water reservoirs or ponds within the city can also be considered in order to contain rain water run-off. Again if people have to be rehoused to clear space for creating such located strategically softer surfaces and water bodies, then this should be undertaken along

with the clearing. Annual Programmes of checking the drains, cleaning them and making them free of silt should be undertaken just before the onslaught of the rainy season. Household and landowners can be encouraged and provided incentives to leave soft areas within their building sites. This may even be made mandatory, as the benefits far outweigh any other considerations. Building permission should be

steps can help alleviate the flooding problem in Dhaka. It is obvious that no single organisation within the city is equipped to, or has the jurisdiction to, cope with all the above steps. Therefore all the related organisations like the Dhaka City Corporation (DCC), along with the Rajdhani Unnayan Kartipakhya (RAJUK) need to coordinate their activities and chalk out one master action plan in conjunction with other related service organisations, like DESA, WASA, Roads and High-

ways, etc, under one leadership, which can be controlled by appropriate sanctioning from the Government. In addition the major stakeholders, the citizens of Dhaka will also need to be included at appropriate levels, to gain the cooperation of the general public, without whose active participation any such plan could fail to reach optimum success. So one may ask about the much talked about measure of dredging. Surely increasing the depth of the surrounding rivers is likely to ease the possibility of floods in Dhaka? River training is a practice all over Europe where not only are the river

given only after consideration of its environmental impact. The building regulations at present are very general, dealing mainly with set-backs and height restrictions. However, area based regulations may be formulated which will reflect concern for water-logging in vulnerable city areas.

Low lying surrounds of the city need to be maintained so that they can act as natural run-off pits. Indiscriminate filling of land, whether water-ways or not need to be checked.

Only a very quick response to these short term and long term

banks kept suitably deep, but the banks of the river are also kept in tight reins, being paved and maintained to prevent erosion which can be disastrous for river side settlements. Often too the course of the river is modified so that the river instead of winding into the sea, gets a more direct route, thus increasing habitable land area, while at the same time accelerating the flow of water through the land. This increased force of the river, then prevents silting and makes the river deeper.

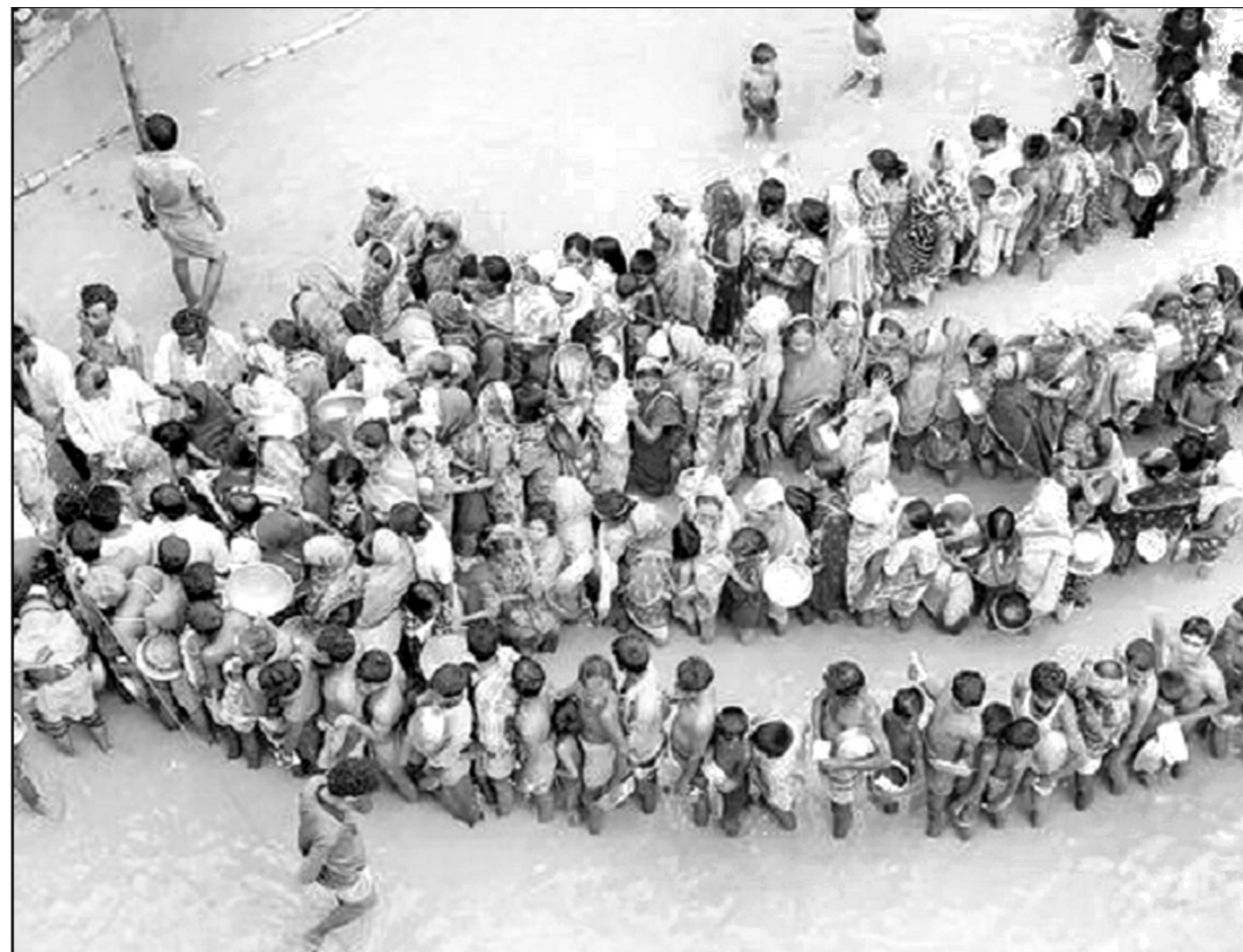
While the advantages of the system are without doubt tremendous, it is important to note that the rivers in Europe are almost trickles compared to the rivers we have in our flood plains. Applying the same principle to volumes of water so widely different can only be undertaken with prudence and painstaking calculations. It is the task of our hydrologists, geographers, water resource experts and other relevant researchers to study likely effects of such interventions like river training with deep attention to likely after effects for rivers are as vast as ours when millions and trillions of cusecs of water are being transported from the higher regions of the Himalayas to the Bay when the volume is likely to increase exponentially due to increased rain fall and be increasingly abundant with soil erosion debris as a consequence of human activities like deforestation in the surrounding hills when the water level itself is uncertain due to a likely rise in global temperatures as predicted by experts on climate change who predict a rise in the sea level to higher and higher elevations. It is not a wise decision to plunge into an action of such wide environmental consequences without studying probable effects of such projects. Technology has its uses. If we can solve the problem by technology, so be it if in the long run we are gainers by using such interventions, we should go for it. However, we must not allow our land and people to be subjected to untested human interventions of such proportions without adequate consideration of the future. The days of trial and error

experimentation on human populations are over, and our vision has to be more sensitive to all aspects of life focussed on long-term and comprehensive holistic effects. Technology should be guided by caution; development should favour equity, and should not be for one group of people at the cost of another. Nature can be guided we can nurture nature. But we should treat the idea of conquering it with caution, as it has the habit of hitting back with a bang.

Floods during the rains are inevitable; we cannot change our geography or shift the mountains. The recent unprecedented floods in Mumbai should also act as an eye opener for all of us in this part of the world. We may shudder to think of their plight and thank God that we were saved that, but for how long? The way we are going, had we received the Mumbai cloud-burst, it is unlikely that we would have escaped so easily. If twelve hours of rain can bring us to our knees, what would the world record 1m of rain in 24 hours have done to Dhaka's infrastructure?

Coming back to the question of immediate actions, we have two options: Option one is fatalistic we sit back complacently, hope for the best, pray that the rains don't last too long, be on tenterhooks every cloudy day in case we are stranded or maybe even drowned, and be unnecessarily stressed out in case we have to face a deluge and be water locked for days on end. But option two is the one that any sane person would choose that we try to put our efforts where they can be of use now when there is still time, we try to put an end to the flooding and inundation of Dhaka, that we work together irrespective of creed or class or political affiliation and aim for a better life and a sustainable future for all the citizens of this city of possibilities, Dhaka.

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Chronology of big floods

- 1781 Serious flood, which was more pronounced in the western part of Sylhet district. The cattle suffered much from the loss of fodder.
- 1786 Floods in the Meghna wrought havoc to the crops and immense destruction of the villages on the banks. It was followed by a famine, which caused great loss of life at Bakerganj. At Tippera the embankment along the Gumti gave way. At Sylhet the Parganas were entirely under water, the greater part of the cattle drowned and those surviving were kept on bamboo rafts.
- 1794 The Gumti embankment burst again, causing much damage around Tippera.
- 1822 Bakerganj division and Patuakhali subdivision were seriously affected, 39,940 people died and 19,000 cattle perished and properties worth more than 130 million taka were destroyed. Barisal, Bhola and Manpara were severely affected.
- 1825 Destructive floods occurred at Bakerganj and adjoining regions. There were no important embankments or other protective works against inundation in the district.
- 1838 Heavy rainfall caused extensive inundation at Rajshahi and a number of other districts. The cattle suffered much from loss of fodder and the people were greatly inconvenienced when driven to seek shelter on high places and when the water subsided cholera broke out in an epidemic form.
- 1853 Annual inundation was more pronounced than usual in the west of Sylhet district, partly the result of very heavy local rainfall and partly caused by the overflow of the Meghna.
- 1864 Serious inundation when the embankment was breached and the water of the Ganges flooded the greater part of Rajshahi town. There was much suffering among the people who took shelter with their cattle on the embankment.
- 1865 Extensive inundation caused by the annual rising of the Ganges flooded Rajshahi district. Excessive rainfall seriously affected Rajshahi town.
- 1867 Destructive flood also affected Bakerganj. Crop was partially destroyed. But no general distress resulted.
- 1871 Extensive inundation in Rajshahi and a few other districts. Crops, cattle and valuable properties were damaged. This was the highest flood on record in the district. Cholera broke out in an epidemic form.
- 1876 Barisal and Patuakhali were severely affected. Meghna overflowed by about 6.71m from the sea level. Galachipa and Bauphal were damaged seriously. A total of about 215,000 people died. Cholera broke out immediately after flood.
- 1879 Flooding of the Tista when the change in the course of the Brahmaputra began.
- 1885 Serious floods occurred due to the bursting of an embankment along the Bhagirathi, affected areas of Satkhira subdivision of Khulna district.
- 1890 Serious flood at Satkhira caused enormous damage to cattle and people.
- 1900 Due to the bursting of an embankment along the Bhagirathi, Satkhira was affected.
- 1902 At Sylhet the general level of the river went so high that there was terrible flood. Crops and valuable properties were damaged.
- 1904 The crops in some parts of Cox's Bazaar subdivision and Kutubdia island were damaged due to an abnormally high tide.
- This flood was exceptional in severity in Mymensingh. The distress caused on this occasion is probably the nearest parallel to that which resulted from the flooding of the Tista in 1879, when the change in the course of Brahmaputra began.
- 1954 On August 2, Dhaka district went under water. On August 1 flood peak of the Jamuna river at Sirajganj was 14.22m and on August 30 flood peak of the Ganges river at Hardinge bridge was 14.91m.
- 1955 More than 30% of Dhaka district was flooded. The flood level of the Buriganga exceeded the highest level of 1954.
- 1962 The flood occurred twice, once in July and again in August and September. Many people were affected and crops and valuable properties were damaged.
- 1966 One of the most serious floods that ever visited Dhaka occurred on 8 June 1966. The flood level was almost the highest in the history of Sylhet district too. A storm on the morning of 12 June 1966 made the situation grave. About 25% of houses were badly damaged, 39 people died and 10,000 cattle were lost, and about 1,200,000 people were affected. On September 15 Dhaka city became stagnant due to continuous rainfall for 52 hours, which resulted in pools of water 1.83m deep for about 12 hours.
- 1968 Severe flood in Sylhet district and about 700,000 people were badly affected. 1969 Chittagong district fell in the grip of flood caused by heavy rainfall. Crops and valuable property were damaged
- 1974 In Mymensingh about 10,360 sq km area was flooded. People and cattle were severely affected and more than 100,000 houses were destroyed.
- 1987 Catastrophic flood occurred in July-August. Affected 57,300 sq km (about 40% of the total area of the country) and estimated to be a once in 30-70 year event. Excessive rainfall both inside and outside of the country was the main cause of the flood. The seriously affected regions were on the western side of the Brahmaputra, the area below the confluence of the Ganges and the Brahmaputra, considerable areas north of Khulna and finally some areas adjacent to the Meghalaya hills.
- 1988 Catastrophic flood occurred in August-September. Inundated about 82,000 sq km (about 60% of the area) and its return period is estimated to be 50-100 years. Rainfall together with synchronisation of very high flows of all the three major rivers of the country in only three days aggravated the flood. Dhaka, the capital of Bangladesh, was severely affected. The flood lasted 15 to 20 days.
- 1989 Flooded Sylhet, Sirajganj and Maulvi Bazaar and 600,000 people were trapped by water.
- 1993 Severe rains all over the country, thousands of hectares of crops went under water. Twenty-eight districts were flooded.
- 1998 Over two-thirds of the total area of the country was flooded. It compares with the catastrophic flood of 1988 so far as the extent of flooding is concerned. A combination of heavy rainfall within and outside the country, synchronisation of peak flows of the major rivers and a very strong backwater effect coalesced into a mix that resulted in the worst flood in recorded history. The flood lasted for more than two months.
- 2000 Five south-western districts of Bangladesh bordering India were devastated by flood rendering nearly 3 million people homeless. The flood was caused due to the outcome of the failure of small river dykes in West Bengal that were overtopped by excessive water collected through heavy downpour.

Source: Banglapedia, Asiatic Society of Bangladesh

2003 The floods this year claimed the lives of 82 people and affected more than 50 lakh others in 26 districts. About 40,000 dwelling houses were completely damaged. Triggered by torrential monsoon rains and waters from the upstream, the flood has inundated over 1.5 million hectares of cropland in a month-long fury.