

Gopal Chandra Das, a septuagenarian inhabitant of Dhaka's Azimpur area, is a living witness to Dhaka's massive transformation: from a serene, clean city with picturesque waterfronts to a congested, concrete jungle. He shares how his life was intertwined with the many lakes and canals that once crisscrossed through the city. "I used to start my day by having a walk along Dholai Khal (Dholai canal, the lower course of Balu River), which used to flow through the present Nilkhet area. The place, where you see the huge bazaar of old books and bedding accessories, was, in the 60s, the bank of a canal."

It would be a cruel joke to search for any trace of Dholai Khal in present day Nilkhet, adds Gopal ruefully.

In fact, the network of 53 canals of Dhaka that once ran through the city and functioned as its water extraction and flood control system is now almost dead. A few of the surviving lakes and canals are also on the verge of extinction due to continuous encroachment, from a total lack of monitoring and maintenance. According to a study by Bangladesh Centre for Advanced Studies, 84 percent of wetlands and water bodies in and around Dhaka have disappeared since 1947.

How these canals have vanished over time can be understood by observing the miserable situation of Hazaribagh canal. The government city map says that the Hazaribagh canal is three kilometres long and six to eight metre wide. In reality, however, the canal—which once linked the Buriganga River with the southern part of Dhaka city and was a busy trade route—is now no more than a narrow sewerage line. Local inhabitants have filled up the canal and constructed buildings and roads indiscriminately. The remaining, shrinking stream of the canal can be found inside a slum which is also about to be filled up with tonnes of garbage dumped on it every day.

This process of encroachment of water bodies is being replicated in every part of the city. As water resource and climate change expert Dr Ainun Nishat argues, "How can these water bodies survive if the sewage lines of all the surrounding buildings drain hundreds of tonnes of filth into them every day? Unplanned urbanisation is the main reason behind the destruction of these lifelines of Dhaka."

Even the Hatirjheel-Begunbari project, which was one of Bangladesh's biggest water body restoration projects, has failed to preserve the water quality of two of the vital water bodies of the city. Untreated sewage water from all around the city is being poured into these lakes and their unbearable stink is adversely affecting the local population.

According to Natural Water Reservoir Conservation Act, 2000, all the canals and natural lakes of Dhaka have to be preserved by the state. However, no sustainable steps have been taken over the years to preserve and maintain these water bodies. Mohammed Kamrul Islam Chowdhury, Chief Estate Officer, Dhaka South City Corporation says, "We are unable to restore these water bodies as many of these lakes and canals are the property of different government organisations. Some parts of these water bodies have also been claimed by different individuals. Several cases on these issues are yet to be solved by the court."

On the other hand, Md Salah Uddin, Deputy Commissioner of Dhaka, argues that one of the main problems of restoring these water bodies is to determine their original boundaries. He says, "We have

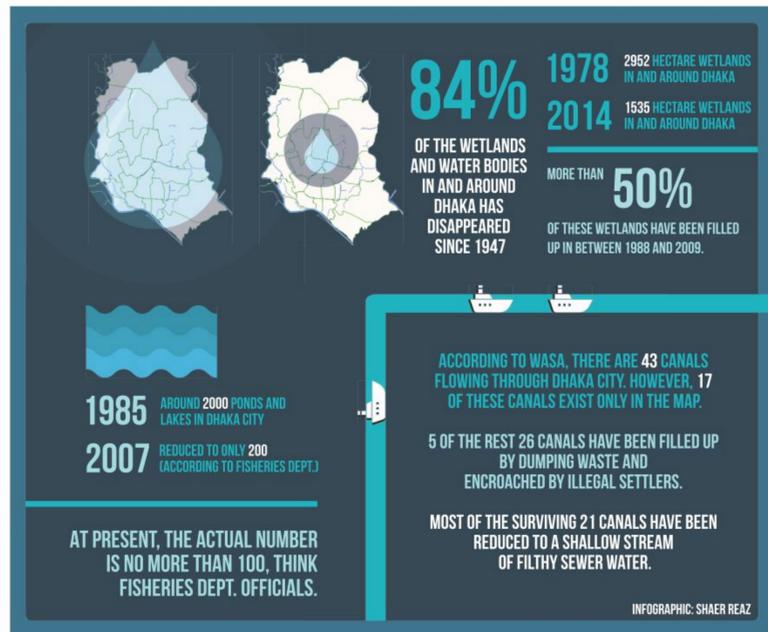


The current state of Hazaribagh Canal.

PHOTO: STAR FILE

## CUTTING OFF DHAKA'S LIFELINE

MD SHAHNAWAZ KHAN CHANDAN



discussed this issue with different government organisations as different government organisations own different water bodies. We have agreed to form a joint task force soon to determine the boundary of the canals, which will be the first step for sustainable restoration."

Meanwhile, the government has consistently been unsuccessful in reclaiming the encroached areas of the water bodies, failing to counter the vehement protest organised by the local political leaders during its previous drives. Dr Nishat says in this regard, "Mostly the local political leaders fill up the lakes and canals to construct buildings and slums. They have the muscle

power and in most cases, the law enforcing agencies succumb to their muscle power by allowing them to continue with their land grabbing."

"In fact, when the Supreme Court ordered to determine the boundary of Buriganga and Turag River, the law enforcing agencies established the pillars in places which were recommended by the local political leaders," adds Dr Nishat.

In fact, in Dhaka's Hazaribagh area, an entire street has been built filling up a large section of the Hazaribagh canal and the local administration, instead of resisting it, has accepted this illegal act by naming the street as 'Bahadur Bepari Ghat Street'.

In the absence of political goodwill of the authorities to protect Dhaka's water bodies, millions of Dhakaites have been suffering from severe water scarcity in the blistering summer heat, and devastating floods and water logging in the monsoon. Dr M A Matin, professor, Department of Water Resource Engineering, Bangladesh University of Engineering and Technology, says, "Dhaka's canals which were linked to different rivers used to drain the rain water during monsoon and the lakes, wetlands and canals used to recharge the ground water. Also, the vegetation growing around the water bodies help to keep the city

clean and cool."

He argues that to restore these water bodies, it is necessary to determine the original area of the lakes and canals and make it free of human intervention.

These crises, created by the filling up and pollution of the city's lakes and canals, have made Dhaka one of the worst cities to live in this world. And, septuagenarian Gopal, who once upon a time walked along the serene banks of the Dhaka's waterfronts, is a sad witness of this depressing transformation; now in every summer, he has to stand in a long queue to buy some gallons of drinkable water from a water supply truck.

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### AIR POLLUTION

Mustafizur Rahman Khan, a lifelong resident of Ghoramara in Rajshahi city, remembers how a decade or two ago, dust storms during the day would darken the streets as if it was nighttime. Dust would also creep into homes on a regular basis. "We would beat the dust off the sheets at night and go to sleep. By morning, the bed would be covered in dust again."

Dust storms occur much less frequently than before, says Khan. He attributes this to the afforestation on the banks of the river and in and around the city. These changes became noticeable starting around 15 years ago, he adds.

Rajshahi previously experienced severe dust pollution, especially in the drier months of the year. Dust storms

and mineral dust, is the pollutant that affects human health the most. PM10 (particulate matter of 10 microns or less in diameter) and finer PM2.5 (even more harmful) can penetrate and embed deep in the lungs. Poor urban air quality has numerous health impacts, not limited, to risk of stroke, heart disease, lung cancer, and respiratory diseases such as asthma.

Research by WHO found a "close, quantitative relationship between exposure to high concentrations of small particulates (PM10 and PM2.5) and increased mortality or morbidity, both daily and over time". Even at very low concentrations, PM has also been found to have negative health impacts. Thus, WHO air quality guidelines (2005), aiming for the lowest possible levels,

reduce the amount of black smoke and pollutants expelled.

Perhaps the most significant of the City Corporation's green initiatives was a 'zero soil' programme, designed by Haque personally, which ensured that all available soil was covered. This was accomplished either by constructing pavements or planting trees. More pavements not only mean more space for pedestrians to walk but less opportunity for dust to be kicked up into the air by people and vehicles. As of now, 20 km of pavements have been created, according to Haque. Tree planting drives continue, with 19,000 neem trees to be planted across the city already this year. "Seedlings have already been distributed to students of V, VIII, and X in schools

countrywide to monitor major air pollutants and generate real-time air quality data.

CASE addresses urban air pollution in Dhaka with initiatives such as those undertaken in Rajshahi. For example, it introduced cleaner and energy efficient vertical shaft brick kilns which emit 60 percent-70 percent less PM than traditional kilns and constructed around 35 km of pavements to improve safe mobility in Mohammadpur and Tejgaon areas of the capital. However, progress in Dhaka is slow.

Farazi Shahabuddin Ahmed, Chief Engineer of the Dhaka South City Corporation, points the finger at numerous private construction companies for the increase in dust

## RAJSHAHI A MODEL FOR TACKLING AMBIENT AIR POLLUTION IN OUR CITIES

MALIHA KHAN



PHOTO: ANWAR ALI

would frequently arise from exposed charrs and dusty river banks of the Padma in the summer, restricting residents to their homes behind shuttered doors and windows.

Today, Rajshahi not only offers cleaner air and a largely dust-free environment for its residents but has also received worldwide recognition for achieving the largest reduction in levels of harmful PM10 between 2014 and 2016. It sets an inspiring precedent for other major cities, particularly Dhaka, in successfully tackling air pollution.

### Rajshahi: A Success Story

In 2016, a report in the Guardian lauded the success story of Rajshahi in tackling urban air pollution. According to WHO data, Rajshahi showed a 67.2 percent decrease in concentration of PM10 particles, from 195 micrograms per cubic metre of air volume (µg/m3) in 2014 to 64 µg/m3 in 2016. This was the largest percentage reduction in PM10 concentration worldwide. PM2.5 concentration also nearly halved from 70 µg/m3 to 37 µg/m3.

Particulate matter (PM), composed of various substances such as black carbon

recommend an annual mean concentration of 20 µg/m3 of PM10 and 10 µg/m3 of PM2.5 only.

Rajshahi, in the north west of the country, does not admittedly have the large industrial areas and high numbers of vehicles typical in cities like Dhaka. However, its impressive reduction of harmful PM10 is largely the result of successful targeting of air pollution sources and green initiatives undertaken by the city authorities—a process which began more than 15 years ago.

One of the first pollution sources to be targeted was the transport sector—in 2004, the city introduced battery-powered rickshaws and banned large trucks in the city centre during daytime. These measures reduced petrol and diesel fumes, which emanate from the more polluting vehicles, used earlier, and also cut carbon emissions.

However, according to Ashraf Haque, Chief Engineer of Rajshahi City Corporation, it was cleaning up the brick kiln industry and green initiatives which proved instrumental in tackling air pollution. The former involved modernising brick kilns, such as by raising the height of the chimneys, to

across the city for them to plant in their neighbourhoods," says Haque.

Even more path-breaking in Rajshahi is the construction of its very first cycle lane, also a first in the country. Where there is no space for a separate lane, a border will ensure a separate lane for cyclists, who are using an eco-friendly and cheap mode of transportation. Construction of a cycle lane, three and a half km long, is currently underway, according to Haque.

### Can this model be replicated in Dhaka and other major cities?

While Dhaka has the drawback of much larger scale pollution sources, it also has the benefit of multi-million dollar funding from the World Bank. In comparison, the Rajshahi initiatives were funded by city corporation and government funding alone.

Since 2009, the Department of Environment (DoE) has undertaken a US\$ 71.25 million Clean Air and Sustainable Environment project (CASE), in collaboration with the World Bank. CASE has installed 11 Continuous Air Quality Monitoring Stations

pollution. "Unless RAJUK can make building permits conditional on maintaining safe practices and limits for the amount of dust generated by construction, there is little we can do to tackle air pollution." Between November and February, the dust from construction and brick production does not settle.

Ahmed's department attempts to reduce PM in the air by sprinkling water on the streets during particularly dry times and repairing broken roads in order to reduce dust being kicked up by vehicles. On being asked whether constructing pavements is another option, an initiative which worked successfully in Rajshahi, he says ruefully, "Where is the space?"

Tackling air pollution in Dhaka city requires a concerted cross-sector effort, involving the two City Corporations and DoE among others, as happened in Rajshahi city. Rajshahi city is a shining example of how long-term initiatives successfully planned and implemented can have measurable and noticeable positive impact in a short time. Dhaka can look to the model of Rajshahi for improving its air quality in the years to come. ■