

# Waste Disposal in Dhaka City

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trede, where do you go?

So many people ask me for fast clearance, I say, nothing doing. Even clearance has to follow a certain procedure. Just discussing it here for a couple of hours at a seminar won't do. If I don't keep my house's surroundings clean, if I don't grow that consciousness, who will? I am also responsible.

**Kazi Mohammed Sheesh:** I will have to refer to DCC and RAJUK as there are many things of their concern too.

Today our topic of discussion is waste disposal. Many questions have arisen regarding data. I will try to reply with specific data, then we can discuss the matter and try to find solutions.

In Dhaka city we normally dispose of four types of waste. One is storm water. Then there is domestic sewage. Then there is liquid waste other than rainwater, like water from the kitchen etc. Then there is solid waste. Everywhere in the world, storm water, sewage and liquid waste either go through a combined system and is treated or it is done separately. But solid waste everywhere is treated separately and disposed. Here all four are supposed to be done separately.

Dhaka WASA is responsible to dispose and treat rainwater and domestic sewage. I am an employee of WASA. RAJUK is responsible for the disposal of surface drain water and solid waste. These systems are designed separately to be treated and disposed. This is in theory. But in practice, though we are doing so, these have all become combined. So you can understand just how ineffective the system is.

Let me give you some data on drainage. Our annual drainage volume on average is 560 million cubic metres. Of this, rainwater is 230 million cubic metres and wastewater is 330 million cubic metres. This covers 265 square kilometres of Dhaka city. Our planned drainage network is 140 sq km. Approximate coverage is 60 per cent. This system includes storm water line of 200km, box culvert of 60km, open canals of 65km and three pumping stations. These are permanent constructions. Other than this, for the sake of pumping, temporary pumps are set up.

We have approximately 1,04 cubic metres of sewage daily disposed of. Dhaka WASA's treatment capacity is 120,000 cubic metres. We can extend this up to 1,80,000. If there are nine million people under our sewerage system in Dhaka city, we are giving this service to 20 per cent of the people. This is 30 per cent area-wise. There is one sewage treatment plant, 23 stations and sewage lines of various diameters of about 630 km. There are 45,000 connections.

Surface drains, which are maintained by DCC, make up about 1500 kilometres in the city. Other than this, in various areas there are about 220 km of storm lines maintained by DCC. According to our estimates, solid waste in Dhaka is 5000 tonnes everyday. DCC's capacity is to deal with 3500 tonnes. The rest is removed by other means. The waste which I have been talking about so long is being disposed of, more or less, efficiently or inefficiently, by some means or the other. Other than this, the situation of waste is really bad.

There are about 300 different types of industries in Dhaka. For example, tannery is one type. From these every day 40 tons of BOD goes directly into the river without any kind of treatment. You can imagine the state of the river water. BOD means bio-chemical oxygen demand, a unit to measure pollution. Most of this waste goes into the river Buriganga.

There are about 12,000 cubic metres of untreated waste is going to various places from Tejgaon industrial area. Then there are about 300 large slums in Dhaka city. Of these, 200-250 are permanent.

The situation is coming to the point when at any time Dhaka city may have to be declared abandoned. So this is the time for us to take some steps. It is no use being dismayed.

To do such tasks, politicians, economists, scientists, government officials, journalists, everyone must be committed. Along with commitment, I will add that we have to develop the mentality to work together as a team. To me 'TEAM' means, Together Everybody Achieves More. If we can all be aware and work together, there is no doubt that we will be able to achieve more than we are achieving at present. We don't have much more time for this. If we are to save Dhaka city, we are to jump to this right away.

**Moderator:** We are all sitting on a volcano. We are in a very precarious situation. The sad thing is, there are concerned people working in this area, there are concerned people who have knowledge in this area. But they are not being listened to, they are not being heard. As in many sectors, the wrong people may be in the wrong places and they are taking the wrong decisions.

**Dr Badruzzaman:** I have a three-part question. First, Mr. Sheesh said that 30 per cent area-wise coverage is being given to sewerage. While 30 per cent goes to the treatment plant, the rest goes as leakage here and there. Then our so-called new town, Bardiha, Gulshan, parts of Banani and Uttara model town, please mark the work model, doesn't have any sewerage system at all. It is said that Tk. 25 billion is needed for this. The government is trying to arrange the fund. The rate at which we are proceeding, this will eventually cost Tk. 50 billion because the city is growing. How far has WASA progressed in this regard?

My second question is this. You have spoken about Hazaribagh. Studies have been conducted in this regard. Nowadays studies have virtually become picnics. We face situations where we are told, you all have carried out so many studies. So, you don't need to conduct anymore studies. In this context, as far as I know, ADB took several attempts to see if a treatment plant could be set up there.

Chrome recovery is to be carried out at Hazaribagh. This has progressed to some extent. I think funds are also being arranged for the purpose. However, there is much more pollution in Hazaribagh other than just chrome. There are the chemicals. There are other things too. And the state within Hazaribagh is so bad, I haven't venture into the topic. After DoE was given the authority, how many of the factories there have been established over the last five years or three years? Or are they all old? Are new ones being set up? Have we been able to arrest that trend?

**Kazi Mohammed Sheesh:** DoE can answer that, but possibly there is no room for any more industries. But the ones that exist there are expanding.

**Abul Mansur Azad:** You mentioned classification of waste including solid waste and water waste. Has this been done on a domestic basis or on a global basis?

**Kazi Mohammed Sheesh:** Some are universal. For example, even if you want to, you can't dispose of solid waste through the storm water line. This is a universal system which we follow and it has nothing contradictory to the laws of the land.

**Abul Mansur Azad:** There is a definition of solid waste and of hazardous waste. How you keep any difference between the two or simply everything as solid waste.

**Kazi Mohammed Sheesh:** We don't deal with solid waste, but since solid waste affects our system, we collect data to see how much harm it is doing.

**Abul Mansur Azad:** So let me come to wastewater management. Annually you are receiving about 560 million cubic metres of water. How are you carrying out the rehabilitation of this? What do you do after the treatment phase? Where is it being used, where is it being dumped? We would like to know this.

**Kazi Mohammed Sheesh:** This is not treated. Our storm water lines, canals go through box culverts to the low-lying areas or rivers. This is a really primitive method.

**Abul Mansur Azad:** And the drain water?

**Kazi Mohammed Sheesh:** When it is not too much, it goes through the surface below and goes to the river. Then there are connections with the storm water lines, though this should not be so. It has also connection with sewage which it shouldn't. There can be designs in this regard, but our system isn't designed so.

**Abul Mansur Azad:** So can we say that we aren't following any system, that the water goes to the river or the low-lying areas or the marshy land? Is this causing environmental problems?

**Kazi Mohammed Sheesh:** Domestic sewage is being treated at the Pagla treatment plant. That water is going into the river along with that amount of effluents that is allowed.

**Abul Mansur Azad:** Do you monitor this treated water that is going into the river?

**Kazi Mohammed Sheesh:** Yes, definitely.

**Abul Mansur Azad:** What is the monitoring system from WASA?

**Kazi Mohammed Sheesh:** We have our own laboratory. We have the Pagla treatment plant. We bring samples from the river. Particularly during flood times. We check the water by the DoE, by BUET to see if the effluents we send to the river is permissible. If we see that the BOD has gone too high, we then take steps. There is the chlorination system. We increase it. So this is the system. It is not always efficient because many things are coming to the sewer.

**Abul Mansur Azad:** Is there any check and balance downstream? We are seeing alarming reports in the press about the Buriganga. So what are the effects downstream, say towards Munshiganj or Chanderi? The polluted water is spreading. Do you have any plans in this regard? Of any system in place?

**Kazi Mohammed Sheesh:** The treated effluents are within the allowable level. But how much of the effluents are treated? Non-treated effluents are going to the river. I spoke of the Hazaribagh tanneries and other industries, the 2.5 million slum

dwellers. Where are their faeces going?

**Abul Mansur Azad:** So what is the use of your treating 560 million cubic feet of water? If there is a positive result, that is a good point. But we see that more pollution is coming in. So what is the point of keeping this treatment alive?

**Kazi Mohammed Sheesh:** The treatment has to be increased.

**Abul Mansur Azad:** What do you do with the residual solid substance that is left over after treatment?

**Kazi Mohammed Sheesh:** That is at the huge lagoon we have at Pagla. This is dealt with after every three years. It is only being used as fertiliser so far. But we hear it is possible to make bricks and such out of these. We still haven't looked into this.

**Abul Mansur Azad:** So that is still just dumped there?

**Kazi Mohammed Sheesh:** Not dumped. It is being used as fertiliser.

**Prof. Nurul Islam:** I think we are reaching an institutional constraint. The rate at which the population is increasing, it is going beyond the means of those who have been given the responsibility to look after these matters. They are not being provided with the resources. So the issue of private sector participation comes in here. There is the issue of community participation. Institutional reforms are needed.

Then there is the technical problem of centralised versus decentralised handling of the system. This raises the question of private versus public. WASA has legal authority. DoE has legal authority. DCC has authority. Then the question will arise, if a private sector is to enter, that will have to be given legal authority too. I don't know if the private sector can work under the existing law as a sub-contractor or something. Is there any broad-based thinking in this regard? Since there are global institutional reforms in the gas sector, oil sector and other sectors, such reforms can be considered in the city management sector too.

**Moderator:** You all will be knowing that The Daily Star and the Scouts had jointly organised a similar roundtable on traffic recently. We formed six citizens' motivation groups from that roundtable. One of them is headed by the former Home Secretary and one by the BRTC Chairman. The BRTC Chairman can go to DCC and so on. In this way the citizens' motivation groups will tell the government that our seminar says this is what you should do, this is in your scope of work. The people who come here know something or the other. They can say do this, what's your problem in doing this? Then we can report in the newspaper that our group went to RAJUK and this is what happened. Maybe this will get something done.

**Dr Badruzzaman:** You said that the sludge is kept for three years then it undergoes natural de-watering and then is used as fertiliser. The pollutants in the sludge can very easily go to the food chain. Is there any monitoring to see whether this sludge can be used as fertiliser? Is there any monitoring to see check toxic characteristics through a bleaching procedure?

Then there is fish cultivation at the Pagla lagoon. A report appeared in today's newspapers too. It said that this has just been restricted to a letter which you have issued. About four years ago we had conducted a study to see that the fish were being contaminated with high degree of heavy metal. Initiative was taken to stop this. How successful has this been?

**Kazi Mohammed Sheesh:** Firstly, actually we clean the lagoon thoroughly and then, through contract, the sludge is taken away. My presentation was a bit wrong. We actually do not say that you take this away as fertiliser. It is just for them to remove from that place. Anyway, when the Japanese renovated this, they said that the sludge could be used as fertiliser. But we do have lackings. We should check this for toxic materials.

The second point is very sensitive. I don't know whether this has been raised by the Board. Our Board member Firoze Ahmed is here. From quite some time back there were reports that the fish were being contaminated with heavy metals, that they grew very big in size and that there were a lot of buyers for these fish. Who knows if we ourselves have even eaten these fish? These lagoons are leased out to co-operatives. We have asked to stop the leases. While still in service of WASA, I cannot say anything much more about this.

**Architect Maqsood Sinha:** You spoke of 5000 tonnes of solid waste being generated. What was the basis of this? We feel that in Dhaka city seven million people live. In the entire metropolitan area of Dhaka this will be about 10 million. It is estimated that the waste is 5 kg per person. Then this comes to 3500 tonnes. If you say that the waste is 5000 tonnes, then Dhaka City Corporation collects 2500 tonnes. But that is not so. City Corporation doesn't collect more than 1800 to 2000 tonnes. It cannot do any more with its present manpower and trucks.



Indiscriminate dumping of everyday waste in locality ditches simply pollutes the whole environment.

- Star photo by Sk. Enamul Ifauq

Then there is the new concept of community decentralised system. And there is the partnership system. This is very important because we can't just pile everything on the government. The government is no isolated part. It is a part of Bangladesh. We can't solve things by just blaming one quarter. That doesn't get us anywhere. So under the Sustainable Environment Management Programme (SEMP) of the Ministry of Environment and Forests, we had been doing the same thing. Eight years ago we told the government that there is a technology which can solve the waste problems free of cost. It can't be solved 100 per cent this way, but can be solved to some extent. This is a community-based system. No one listened. But after we did a demonstration project, the Ministry of Environment and Forests came ahead. It is nothing complicated. Incinerator is not the solution. There has to be a community-based system of local technology. The public has to be made aware.

If we solve the problem on a localised level, if we can reduce the volume of waste, recycle it, and take this up on a policy level, things can be done. If the government gives some support to us who work on a community level, listen to us, bring in a mechanism to change policy, things can be done.

We hammered for long on the City Corporation, saying that community participation was needed. You will note that waste is collected in all the localities on community basis. These things happen as it affects everyone.

Look at the dengue problem. A child has been playing in a field for long and the mother never felt the need to have the field cleaned up. Now, however, when she sees picture of sick children in the newspapers, she herself hires labour to get the field cleaned. There was the plague problem in Surat. It was one of the filthiest cities. After the outbreak of plague, Surat is one of the cleanest cities of India. Calcutta is an example too.

So we must see how the government and the community can work in partnership to improve things.

**Kazi Mohammed Sheesh:** You said that if seven million people live in Dhaka, then where does the 5000 tons of waste come from? Dhaka Mayor has said that there are 10 million people in Dhaka and that leads to the calculation of 5000 tons of waste. Their reports say that we can remove 3500 tons, taking all the vehicles, manpower, broken down trucks, etc, into consideration. So this is from their data. This is not WASA's data.

**Moderator:** We have done a lot of things from a community basis, whether it is tree plantation, dengue, birth control, flood control. We have been successful. We are not here to blame the government or the government to blame the public. The City Mayor is on record as saying, at one of these seminars, that they are repeatedly asking the people to dispose of their garbage in the night and they will take it away before the morning. But this is not being done. We are not following this and so the morning we have this huge waste on the streets.

**Engineer Pulak Barua:** Badruzzaman Sir has already asked my question about the fish cultivation in the lagoon. A few days ago it was reported in the newspapers that Pangash and Magur fish were being sold in Dhaka's markets from that lagoon. And in the fertiliser, there are still heavy metals. So those who use that fertiliser are also ruining their soil.



Free flowing waste water from dying factories not only causes immediate inconvenience to the inhabitants but poses peril for their future.

- Star photo by Anisur Rahman.

**Mohammed Zohurul Haque:** My question too has been discussed. It is about institutional reforms and community participation. I want to know if there is any example that an organisation like WASA, I am sure there are similar organisations in the world, is commercially sustainable from its own revenue.

**Kazi Mohammed Sheesh:** In various countries of the world, particularly where water is concerned, there is government subsidy. The process of handing Thames Water Supply of London to the private sector started a few years ago. It is not completely under private sector as yet.

The other method of revenue earning in various places include the utility services as well as the traffic, police, all the rest. This can go under a metropolitan government as our Mayor has said many times. In Hyderabad and Kuala Lumpur we see a separate authority. However, gradually, various sections are going to the private sector. Without handing over to the private sector, this cannot be made viable. In WASA too we have such considerations.

**Dr Mujibur Rahman:** Let us return to the issue of sewerage. We are saying that 20 per cent of the people in Dhaka are under the sewerage system. You spoke about septic tanks. About 40 per cent of the total Dhaka population use septic tanks.

As there are many slum areas and low-income groups in the peripheries of Dhaka, there are arrangements for sanitary pit latrines done by the NGOs. About 15 per cent of the Dhaka population is covered by sanitary pit latrine. So 75 per cent are covered by some sort of sanitary system. The remaining 25 per cent of Dhaka's population, that is about 2.5 million people, are using some unsanitary means. The human waste is going directly into the environment.

You said that the septic tanks are also a kind of treatment. I want to clear this a bit. Septic tank will be a sanitary system only when its final disposal is done properly. But in Dhaka city more than 50 per cent of the septic tanks are not safe at all. The BOD or micro-organisms are potentially dangerous. Those are going directly to the surface drain and the WASA storm drain in most cases.

You said that you collect 560 cubic metres of storm water and dispose of it without treatment into the surface water bodies. There too is a potential of pollution of the surface water.

Another point arose that sewerage system is very costly. It needs a lot of money to being the entire population of Dhaka city under the sewerage system. We know that sewerage system is one of the best systems of sanitation in the world. Sewerage systems are set up in the big cities of the world. In the socio-economic backdrop of our country, we really cannot afford a sewerage system for the entire population. We have to think of low-cost alternatives. The effluents from these septic tanks are not safe at all. The BOD or micro-organisms are potentially dangerous. Those are going directly to the surface drain and the WASA storm drain in most cases.

The pilot scheme in Mirpur is half done till date. Unless you complete this system, the merits of the system will be lost and the people won't want to accept the system. So I request WASA, please, try to complete the system.

Then about North Dhaka city, that is Gulshan, Uttara, where there is no sewerage system, we can go for a more medium cost system which is 40 to 50 per cent cheaper than the conventional system.

Then there is the shallow sewerage system. It is also called the simplified sewerage system. It comes from the conventional sewerage system with some design modifications.

We can consider these sort of systems to lower our costs. If we can cut costs by 40 to 50 per cent, we can cover double the area. Take these things into consideration.

**Dr Farooq:** There is an alternative option for the areas where there is no sewerage system. That is sub-surface irrigation. There are septic tanks, but most have faulty design. Although it is very simple, there is often