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Environment

Recycling of Garbage Towards a world without waste!

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In the past 10 years, Dhaka and cities like Chittagong, Khulna and Rajshahi have transformed into vast terrifyingly crowded urban settlements which seem to rise out of a sea of uncollected garbage. The horror begins the moment one has stepped out of his house on the road. Speaking about Dhaka, it is now a disorderly and dirty city whose claim to fame so long has been its tree lined roads with clean pavements. But at the present moment, most parts of the city, especially Gandaria, Wari, Lalbagh, Hazaribag and even Mohammadpur and Mirpur now seems to be collapsing under crowding high rises generating mountains of garbage and seas of raw sewage.

The garbage spills out of the bins and other unofficial dumps and lines the city roads so that you see miles of pavements littered with human feces, rotting food, household as well as factory and medical wastes. And when it rains heavily, these spill farther into roadside shops interfering with pedestrian movement. Oblivious of the horrible stench and filth, people make their chores, clearly reconciled to the fact that squalor is a way of life and to expect anything better is a sheer madness.

Plainly speaking, half of Dhaka city's garbage isn't picked up. In most parts of the city filthy water in choked drains stagnates for days and so citizens learn to live with frequent epidemics of malaria, dysentery, diarrhea and now dengue fever. At the present moment, city's garbage collection points are nothing more than rotting, open heaps of refuse. Till now, half of the Dhaka city has the luxury of an underground sewer system, but in other areas human excreta flows directly into open, surface drains. On the other hand as population increases, its trash -- mainly hazardous plastics, metals and packaging -- is growing exponentially. Right now, Dhaka city generates about 10,000 tons of garbage everyday. And as almost half of this garbage is unattended, festering and stinking, it becomes



breeding ground for diseases.

But what keeps these cities so dirty? It is a combination of slothful city corporation or municipal authorities who refuse to change outdated waste disposal practices that can no longer keep pace with population growth, new kinds of trash like plastics and a near total apathy of citizens. As for sewage, an abysmal lack of planning on the part of DCC (Dhaka City Corporation) and WASA has led to a situation of total breakdown inundating city roads with the slightest shower. These days it breaks down so frequently with the wastes of about 70 million more people than it was designed for. The sewer lines lead to drains -- almost all of it untreated -- directly into the rivers, virtually killing the marine life. Dhaka's Buriganga and Narayanganj's Shitalakhya have turned into giant sewers, chiefly from raw sewage.

Garbage has never posed that much of a problem in the developed cities of the world as it does in our case, simply because of the absence of planning and total apathy on the part of the agencies concerned. In 1997, 276 million Americans produced about 195 billion kg of banana peels, Cheerios boxes, gum wrappers, coke cans, ratty sofas, car batteries disposable diapers, junk mail and worn-out nikes. And that's just the relatively benign municipal solid waste. Each year American industries belch, pump and dump more than 1.1 billion kg of really nasty stuff -- like lead compounds, chromium, ammonia and organic solvents -- into the air, water and ground.

The really bad news is that most of the planet's six billion people are just beginning to follow in the trash-filled footsteps of the US. "Either we need to control ourselves or nature will", says Gary Liss of Loomis, Calif, a veteran of recycling and solid waste programmes who advises clients aiming to reduce landfill deposits. In nature, Liss points out, there is no such thing as waste. What dies or is discarded in one part of the ecosystem nourishes another part. Liss says humanity can emulate nature's garbage-free ways, but it will require innovative technology and a big change in attitude.

Instances are not hard to come by. There an unusual place called "eco-industrial park" in Denmark shows how much can be gained by recycling and resource sharing. Within the park, a power company, a pharmaceuticals firm, a wallboard producer and an oil refinery share in the production and use of steam, gas and cooling water. Excess heat warms nearby homes and agricultural greenhouses. One company's waste becomes another's resource. The power plant, for example, sells the sulphur dioxide it scrubs

from its smokestacks to the wallboard company, which uses the compound as a raw material. Dozens of these eco-industrial parks are being developed all over the world.

Biotechnology is now giving us additional tools to cope with waste and mostly to our advantage. We now have microbes that can take toxic substances in contaminated soil or sludge -- including organic solvents and industrial oils -- and convert them into harmless by-products. Soon we may be using genetic engineering to create what Reid Lifset, editor of the "Journal of Industrial Ecology", calls "designer waste streams." Scientists at Monsanto and Heartland Fiber are working toward engineering corn plants -- with the kind of fiber content that paper companies would find attractive. So long as the genetic tinkering poses no ecological threat this approach could tap in a huge stream of agricultural waste, turning some of it into an industrial ingredient.

In consumer markets, recycling has already spawned an army of alchemists : Jackets are being made from discarded plastic bottles, briefcases from worn-out tires and belts from beer-bottle caps. Even though the U.S. has barely begun to get serious about recycling, about 25 percent of its 195 billion kg of municipal garbage is now salvaged, at least temporarily, for some sort of second life.

Recycling will gain momentum as we develop materials that are easier to reuse. For example, Jesse Ausubel, director of the Programme for the Human Environment of Rockefeller University, predicts that architects will increasingly rely on new types of foamed glass that can be made unusually strong but still lightweight. Glass is a very recyclable material made from sand, and it can be crushed back essentially into sand. Ausubel thinks we could see foamed glass replacing much of the concrete in to-day's buildings.

There are limits, of course, to how many lives you can give a pile of debris. In the long run, we have to reduce the amount of material we use in the first place. Some progress is being made -- aluminum cans and plastic soda bottles have become thinner over the years, for example -- but more sweeping reductions will require a whole new kind of manufacturing process.

That, says Lifset, is where nanotechnology plays a role. In this emerging field, which employs just about every kind of scientific and engineering discipline, researchers expect to create products by building them from scratch, atom by atom, molecule by molecule. This bottom-up nanotechnology ushers in the horizon that replaces traditional drilling, sawing, etching, milling and other fabrication methods that create so much waste along the

way.

Researchers have made headway toward molecule-size transistors and wires and even batteries thousands of times as small as those that are now in use. These laboratory feats are now producing sugar cube-size computers. Says Lifset: "A lot of the consumer goods and industrial equipment could become dramatically smaller when nanotechnology comes online. That, plus more efficient recovery of the discarded goods, ought to translate into huge reductions in waste."

But technology is not enough. Just as critical are changes in attitudes and lifestyle. Brad Allenby, AT&T's vice president for environment, safety and health, believes our move from the industrial age to the information age could help enormously. At last count, he says, 29 percent of AT&T's management force telecommuted, meaning less reliance on cars. This, Allenby speculates, could be part of something bigger -- a shift in our view of what enhances our quality of life. Maybe we'll put less value on things that use lots of materials -- like three cars in the family driveway -- and more on things that don't swallow up resources -- like telecommuting and surfing the Internet. Maybe downloading collections of music from the Web will reduce the demand for CD cases.

And while visions of a "paperless office" have proved wildly wrong so far, we still have an opportunity to use computers to cut consumption of paper and the trees it comes from. Allenby thinks of such trends as "dematerialization". The deeper dematerialization goes in society, the less stuff there will be to discard. What's more, as society becomes more information-rich, the easier it will be to find uses for the diminishing amount of discarded materials. Maybe, with the help of brokering services on the Internet, we can generalize the principle that governs garbage sales: One person's garbage is another's treasure.

Can't we make such a slogan a reality in our case?

True, the situation has come to such a pass in our country mainly because development has happened before urban planning. Still let's not lose hope. Let's also hope for the better like many others around the world.

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