

ZERO WASTE

Innovative approach to a vexing problem

Due to low economic growth, lack of infrastructure and the absence of an effective governance, Dhaka offers an unreliable waste management service to its inhabitants.

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WASTE is the symbol of inefficiency of any modern society and a representation of misallocated resources. Waste is considered as an 'end-of-life' product, as well as a social and environmental problem. Disposal as an 'end-of-pipe' solution has been widely considered to solve the waste problems since the early nineteenth century. After introducing the concept of sustainable development, resource recovery based sustainable waste management has been introduced as one of the key indicators of good governance. After three decades of application of sustainable waste management, the waste problem has never been solved, instead it has been difficult to manage.

Consumption-driven society produces an enormous amount of waste every day. A recent study done by the United Nations shows that, currently, the world's cities generate about 1.3 billion tonnes of solid waste per year and the volume is expected to increase to 2.2 billion tonnes by 2025. Waste generation rates will more than double over the next twenty years in lower income countries such as Bangladesh. Unexpectedly, waste management systems have not received as much attention in the city planning process as other sectors like water or energy.

In recent years, zero waste concepts have emerged to the local authority as one of the promising waste management philosophies. According to the Zero Waste International Alliance 'zero waste' means designing and managing products and processes systematically to avoid and eliminate waste, and to recover all resources from the waste stream. Hence, zero waste is a goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use.

In traditional waste management systems, waste is considered as an 'end-of-life'

product which is produced at the last-phase of resource consumption. Zero waste challenges this traditional definition of waste by putting forward a new concept, recognising that waste is a transformation of resources which happens at the intermediate-phase of the resource consumption process. The resources which transform into waste as a result of our consumption activities should thus be redirected into the production process through the holistic zero waste management system.

Zero waste is a combination of integrated design and management philosophy. Under the zero waste philosophy, both product design and waste management principles are considered simultaneously to eliminate potential threats to the environment caused by human consumption and behaviour. The zero waste product is the cradle-to-cradle designed product that does not produce any waste during its life cycle. The zero waste product eliminates the 'waste phase' from the traditional product lifecycle because after the end-of-life phase, the zero waste product could either be reused, repaired or remanufactured to produce a secondary product. If not, the zero waste management ensures that the discarded waste would be either recycled, recovered or easily be nourished through natural process, without polluting our natural environment.

More than 50% of the world's population live in urban areas and some estimates have suggested that 80% of the human population will dwell in urban areas by 2030. Cities cover only around 2% of the world's surface, consume over 75% of the world's natural resources and generate 70% of all the waste produced globally. Today, many developed cities such as Adelaide (Australia) and San Francisco (USA) are aiming to transform their current waste management practice into a more efficient and sustainable zero waste practice.

The concept of the "zero waste" includes a 100 per cent recycling rate and recovery of all resources from waste materials. However, transforming current over-consuming cities to zero waste cities is a challenging task. As a lead researcher at the Zero Waste SA Research Centre, the writer



Solid waste management remains a vexing problem in capital Dhaka.

identified both short term and long term drivers of transforming current cities into zero waste cities. Awareness and education, behaviour change and systems thinking are long-term strategies, whereas cradle-to-cradle based innovative industrial design, legislation, 100% recycling and diversion are the short-term strategies to implement in a city. One of the important aspects of the zero waste city is the conversion of the linear city metabolism to a circular 'closed-loop' city metabolism.

How can Dhaka be adapted to and benefited from the holistic zero waste concept in its local context? The case of Dhaka is not favourable to implement zero waste concept due to its socio-economic, cultural, institutional and technological differences.

Dhaka is one of the most densely populated cities in the world. Over seven million people live in 360km² land area and around 42% of them live in slums. Due to low economic growth, lack of infrastructure and the absence of an effective governance, Dhaka offers an unreliable waste management service to its inhabitants. The Dhaka City Corporation (DCC) is responsible for collection and disposal of 3000-4000 tons/day of municipal solid waste from the city's 90 wards. However, DCC can collect and dispose only 40-50% of the total waste every

day. As a result, the uncollected waste is primarily dumped illegally in the neighbourhood's streets, wastewater drains, ponds, lakes etc. or managed informally causing various socio-economic and environmental problems.

Due to lack of waste infrastructure and narrow road networks, DCC do not provide any door-to-door collection system. Community based private door-to-door waste collection is one of the exceptional community participations in waste management system in Dhaka. Informal waste collection and recycling system is also another key area. There are about 120,000 people involved in the informal recycling trade chain in Dhaka City without any government funding support.

Around 83% of plastic, 65% of paper and 52% of glass are informally recycled from the waste and returned to the recycling industries. No metals are wasted and disposed to the landfill due to high economic value. Despite risky market condition for composting of waste, Waste Concern a local non-profit organisation has initiated community-based decentralized composting in 2008 by adopting low-cost technology, community participation and partnerships among various local and international actors involved. The project is registered

and approved by the executive board of the Clean Development Mechanism under the Kyoto Protocol to the United Nations Framework Convention on Climate Change and is gradually scaling up.

Dhaka has many potentials to implement long term zero waste management strategies. However, there is no single solution that can be implemented within the limited economic, institutional and operational infrastructures. The following key aspects can be considered and implemented to improve current waste management systems and the vision for zero waste by 2050.

- Awareness and capacity building of the local people, waste management authority and local experts are important for implementing long term waste strategy.
- The national 3R-strategy reduce, reuse and recycle should not be limited to the policy level, instead it should foster the implementation and transformation of social perspectives on waste reuse and recycling.
- Institutionalisation and formalisation of informal waste recycling system into formal waste management system is urgent.
- Community based waste collection and composting systems should be encouraged and promoted by the local government.
- Long term waste strategy should be based on short term targets such as 70% waste collection by 2020 and 100% waste collection by 2030 and so on. After achieving a 100% waste collection system in Dhaka, more advanced zero waste goals such as zero landfill should be targeted.
- Waste diversion by informal recycling systems should be integrated with the formal systems and the recycling data should thus be recorded for the assessment of waste management performance.
- End-of-life products including electronic and hazardous waste should be managed under the extended producer responsibility scheme, Rahimafrooz battery return scheme, for instance, repaired and reused around 33,000 batteries and avoided potential environmental pollution.
- Public, private and international partnership mechanism such as the Clean Development Mechanism under the should be boosted by the local government and international organisations.

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POST AILA COASTAL AREA

Quest for sustainable livelihood

Salinity in soil and water and consequent lack of dependable resources are the main causes of insecure livelihood in the coastal belt.

MAHFUJUR RAHMAN

MONIRA (22) lives with his only child (03) in a hut made of polythene and gole pata, very close to her father's house, on the crossdam of Dakkhin Bedkashi under Koyra upazila of Khulna. The house and dress tell the tale of her being a climate victim.

She lives by working in people's house since her divorce two and half years back. Her father is a poor fisherman who goes for fishing in nearby Sundarbans forest. One of her brother was killed by tiger. One is ill. And one is yet little. The only earning member is her father. That's why she needs to work in other people's house.

The area is rude, even no grass grows in Dakkhin Bedkashi. Monira bought a goat about one year back with 2500 taka. As there is high crisis of fodder, she sold it at only 1300 taka.

What can be done to improve the livelihood condition of the people like Monira when general IGA activities do not work in the climate affected areas? Salinity is a major problem in the locality. Besides crops it also affects poultry and cattle.

Introduction of alternative variety and species of livestock and ensuring fodder for them may improve livelihood in the coastal area. Vegetable cultivation is already possible in Koyra which can be

promoted by development organization besides government.

As a result of livelihood loss due to salinity, the community people have become dependent on fishing and daily labour. Existing situation in the Aila affected community of Koyra, Khulna is that the inhabitants are marginal people living in extreme poverty. Their condition has deteriorated much more after the Aila cyclone.

Insecure livelihood

Salinity in soil and water and consequent lack of dependable resources are the main causes of insecure livelihood in the coastal belt. Due to rising sea level, saline water intrusion has crossed its historical limit and salinated the fresh water sources making drinking water a scarce resource.

Similarly, due to salinity increase in the water channels soil of coastal districts is also getting salinated that makes agricultural production almost impossible. Livestock rearing also has experienced a drastic fall. Height of daily tides also increased due to sea level rise.

The final thrust of the adversity is the cyclone hit. All the effects of salinity occurs very quickly during a cyclone surge.

Employment status

The local people of Koyra upazila under Khulna district and Assasuni upazila under Satkhira district have not sufficient work to earn a living in their native places. According to a



There are many like Monira bracing the brunt of climate change effect.

baseline report of ADRRCCA project of Islamic Relief Bangladesh 24% people in Koyra and 14% in Assasuni are landless. However, the local people are harnessing the following sustenance: selling green vegetable, ferrying cloth, ferrying cosmetics, grocery shop, tea stall, selling food stuffs.

Many natural as well as socio-economic conditions foster insecure livelihood in the coastal areas which ultimately produces various psychosocial consequences for the community people. The following are consequences of livelihood loss:

Direct Psycho-social

consequences: frustration of people due to low wage, lack of employment opportunity.

Ultimate consequences: poor health, poverty, lawlessness and insecurity, displacement of people.

Potential livelihood options

Though devastated by Aila the locality holds a few options of livelihood which can be scaled up to

bring about positive changes in the socio-economic system. In the current situation, following occupations hold some promise for the community people: small business, raising poultry, employment in factory.

IR Bangladesh is implementing a project where following alternative livelihood options are promoted: saline tolerant crop and vegetable cultivation, saline tolerant tree plantation (fruits and wood), reed and mat production, salinity tolerant fish cultivation, crab cultivation and fattening, productive asset transfer.

Interventions demand of time

Many organisation must come forward with all such assistance. Many other women in Koyra have similar condition like Monira. They can develop their life if proper support like loan, linkage with service providers and marketing facilities are provided. The following interventions may be very beneficial for the local community

support themselves with only some vegetables that grow in front of their houses. In one word, their miseries know no bound. But what government is doing there? Has it allocated extra fund for rapid rehabilitation or providing

livelihood supportive training or loan for business? Rather, hard to reach areas get less development fund as fund is allocated based on the population size. Even the efforts by development organisations are also very meager. The developed countries should mobilize extra fund for compensation of the damages done by catastrophic disasters since now it is proved that number and intensity of cyclonic storm in the coastal area of Bangladesh are enhancing because of the global warming.

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Only some vegetables grow at coastal homesteads, hardly any staple anywhere in the saline affected land.