

MAKING TRASH INTO CASH

by

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Disposal of garbage is a bone of contention between neighbours, communities, Local Authorities, and sometimes-even nations. It is ironical that it is the more intelligent human species that make garbage, while their less intelligent cousins, the animals do not. People like to keep their houses clean, but unfortunately seem oblivious to the fact that doing so contributes to the problem of garbage in public places. Most people are happy as long as garbage is taken out of their backyards. Out of sight is out of mind. Many argue that since taxes are paid, the removal of garbage is solely a matter for the Local Authority.

Unrestrained garbage dumping (as is being done by most authorities) is a sign of **UTTER HELPLESSNESS**, both of the Authority, and the Public. There is nothing more tragic than the **LACK OF IDEAS AND VISION** in solving a problem.

I was fortunate in working with the solid waste disposal section of the Municipality of Hiroshima, at the grass root level, understanding their approach of tackling the problem. Being the first city on the Earth to have been devastated by an Atomic Bomb, the sufferings undergone, and the lessons learned, probably contributed in no small way to a more enlightened level of thinking, elucidated below.

The approach to the problem of garbage had three distinct features.

- 1) Separation at the source into 5 categories - at present
- 2) Treatment of garbage as an asset rather than a nuisance.
- 3) Mass education and participation of the people, in minimisation, adherence to regulation and voluntarism.

An yearly schedule is worked out for the entire Municipality, fixing dates and times and places of collection at which a particular type of garbage would be collected in a particular vicinity. Citizens are encouraged to put out the correct type of garbage just prior to the arrival of the collection truck, the methodology employed being as follows.

Food leftovers, tea leaves, egg shells, irreclaimable waste paper such as toilet tissues, oil papers, wood chips, broken boards, sticks, ropes, sawdust etc, are classified as **COMBUSTIBLE** refuse, and is put in a strong **PAPER** bag with neck tied, and kept at the collection point. The trucks which collect them come directly to an incineration plant, where they are burnt and the heat energy extracted to heat up buildings and swimming pools, and/or drive a steam turbine, converting it to electricity which is sold to the grid. The ash formed, is cooled and stabilized with cement, and used for reclamation of the sea on a well-planned programme. Such land is later sold to Property Developers on a well-planned programme. Combustible refuse is collected twice a week.

Glass fragments, broken crockery, vinyl wrappers, Polyethylene containers, Styrofoam etc, are classified as **INCOMBUSTIBLE** refuse, and are put in a strong plastic bag, and kept at the collection point. This is collected by the same truck, once a week, and taken its original volume. A small quantity of the plastic waste is being recycled at present to a macerating plant, where it is turned to a nodular form, drastically reducing Land fill sites are selected many years beforehand, by the City Planners, to serve for a considerable period, and its end use after being filled up is decided well ahead. Generally it ends up as a park, forest or recreational area, for the public. No permanent buildings are allowed in such areas. Often these sites are mountains gouged out, filled with incombustible refuse, and covered with layers of earth, to ultimately be more or less the same topography it had before. Some of the Sports Arenas of Hiroshima where the 1994 Asian Games were held, had been constructed on such sites.

Newspapers, magazines, leaflets, corrugated cardboard, empty boxes, wrapping papers etc, or cloth, is tied up into bundles. Used milk, juice and beer cans and glass bottles are put in a strong bag and kept at the collection point on the required date. These are collected only

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TWICE A MONTH, and is generally done by private transporters registered with the Municipality. **RECYCLABLES** are taken to a sorting plant, owned by the Municipality, but operated privately on a lease. Here on a conveyor belt, aluminium and iron cans are separated magnetically, whilst glass bottles are separated into Green Brown and opaque, manually. (A machine has been built for automatic colour separation), whilst broken bottles and pieces are collected separately, Newspapers and paper products are sent to pulp factories, whilst clothing is either exported in bulk, or shredded and used in a **VARIETY OF FORMS**. The cans are re-melted and take similar forms, whilst broken glass, a mixture of various hues, is made into glass wool.

Depending on the prevailing price of labour, recyclable material etc, the price per tonne of such materials is reached between the Municipality and the Transporters. The recyclables become the property of the lessee of the plant. By this arrangement, the Municipality gets an indirect profit by the reduction of the quantity of "waste" they would otherwise have to collect and eliminate by whatever method.

Unusable household furniture, mechanical, electrical and electronic equipment, is termed as **BULK REFUSE**. This is collected both by the Municipality and the Registered transporters, and taken to a crushing plant. Items discarded by some, but needed by others are picked up by the latter at such centres. After some degree of manual separation, more solid goods are crushed and whatever recyclables collected, the non-combustibles sent to a landfill site, and combustibles sent to an incinerator. The less "solid" ones are shredded and sent for incineration. **BULK REFUSE** is collected **ONCE IN TWO MONTHS**. The citizens pay the Registered Transporters for hauling of such refuse. The Municipality gets paid by the transporters for the utilization of the landfill site which is owned by the Municipality.

Fluorescent lamps, batteries, thermometers etc, are classified as **TOXIC REFUSE**. These are collected, stored by the residents in a plastic bag, and put out for collection on the designated date. As far as is practicable at present, Metals are extracted at a special plant in the Northernmost Island of Hokkaido (the only one of its kind in Japan) and the remainder crushed and used as landfill.

There are other categories of refuse **NOT COLLECTED** by the Municipality, such as factory waste, building debris, branches of trees etc. These have either to be carried to a designated point by the residents themselves, or transported and properly disposed by an authorized transporter, or specialised contractors.

HOSPITAL WASTES are collected and treated with special care. Incinerable chemicals are collected separately,

and fired with Kerosene oil in a special Incinerator. Contaminated wastes such as needles, bandages and other normal combustible waste are collected separately, but incinerated together in another incinerator. Toxic Mercury from broken thermometers, and wastewater containing radioisotopes are sent to specialized companies for recovery and disposal. X-ray developing bath water is sold to companies for the extraction of Silver.

BUILDING DEBRIS, (collected by authorized transporters) are taken to a crusher plant, where steel bars embedded in concrete are separated magnetically, the remainder crushed, and the final material sieved and utilized for road base construction and for mass concrete works.

Solid waste disposal is a subject in schools in the lower grades. Children are taken to Incineration. Landfill, Recycling plants etc, not only for educational purposes but also to change the attitude of some to whom garbage necessarily means 'dirty business'. Gymnasiums and other public utilities are built within such plants in order to win the hearts and minds of the people, while simultaneously "seeing, touching and smelling" what goes on within these plants. Officers and schools become good points of collection for recyclable materials.

In all activities, the Municipality plays a policy planning, supervisory and monitoring role, coupled with finding ways, means and partners to utilize the potential of the end product to its maximum.

Whilst in Japan, I was very fortunate to be an observer in the 'City Net' seminar in Yokohama, represented by many developing countries in Asia, including Sri Lanka. The theme of the seminar was 'CITIZEN PARTICIPATION IN URBAN ENVIRONMENTAL ISSUES AND FOCUS ON SOLID WASTE MANAGEMENT'. The main questions addressed were,

- 1) Reducing the amount of garbage and disposing of it an environmentally sound and economical manner.
- 2) Charging **REAL** user fees, to recover costs of collection and disposal.
- 3) Reducing or using more environmentally friendly materials in packaging, and promoting wider use of recycled products.

All proceedings were open to the public, who had been well informed, and was a forum where the city officials could feel the pulse of the citizens, while the latter could give vent to the topic without any fear.

The first paper was presented by a priest from Cotabato City in the Philippines, (who had won the respect of the people in ensuring fair elections in the area) who had been requested by the Mayor himself, to organize a task

force on garbage and sanitation. The following strategies had been used to organize the public.

- a) Local media for a massive exposure.
- b) Private sector for funds, material and advertisement of environmental slogans on their Billboards.
- c) Voluntary cleanup days, with planting of trees, ornamental and medicinal plants, and other greening activities.
- d) Message from the pulpit (Catholics being very religious minded)

At the *institutional level*, the following had been put forward.

- a) Proposals to enrich the age-old laws pertaining to garbage, sanitation and health care. A new anti littering laws had been put forward for public discussion.
- b) Discussions with school principles and teachers.
- c) An agenda for a partnership between the Local Authorities and concerned private citizens and organizations, who would play the role of CO-MANAGERS AND WATCHDOGS.

The Bombay Municipal Corporation at the time was getting ready to extract methane gas from mostly organic landfills. At the time, a trial of making fuel pellets with high calorific value had been successfully completed and the prototype plant expected to be set up in collaboration with the private sector and marketed as fuel. Even at present, plastic bags and plastic bottles. (among others) are collected by 'Scavengers'. One can see on television, the brightly coloured plastic water pots made from such recycled plastic, being brought home by Sri Lankan refugees. Voluntary Organisations are held in high regard, as they interact more effectively with the public, using their own methods of persuasion, reducing garbage collection points, ensuring proper garbage bag sealing by the public, ensuring that collected vans are filled to capacity prior to being taken for landfill etc.

In Dhaka, Bangladesh, (with a population of six million), garbage vans begin their daily trek at 5 A.M. avoiding city traffic. For a city which collected over 5000 Tonnes of garbage per day, a composting plant of 1000Tonnes per day was expected to have commenced operations in 1993. The policy of, REPAIR, REUSE and RECYCLE is being encouraged.

HO-CHI-MINH City, in Vietnam, where over 70% of that collected is Organic material, composting is a major item of waste disposal Strategy of direct from household to dumpsite, without garbage touching ground had been adopted. Two different varieties of fertilizers were being made by aerobic and non-aerobic composting. De-

mand outstripping production of organic fertilizer, the bidding for the license to collect and dispose garbage, is reported to be very stiff among the private contractors in Socialist Vietnam!.

The Chinese are brilliant by the simplicity of their ideas. This idea was well borne out by the extremely practical measures, which had been followed in Wuhan City.

- a) Cleaning of cities is done at night, while land and water transport is used for conveyance.
- b) Garbage is disposed of by three methods. Compost, Landfill and Incineration. Since there are over 1000 waste purchasing stations, and over 20 waste recovery companies, recycling is taken for granted, and is not even considered a method of waste disposal. Only Hospital waste is being incinerated at present. The present small loss in composting is subsidized by the government.
- c) To reduce drastically the amount of organic garbage produced by vegetables, it is **mandatory by law** that they be cleaned prior to entry into the city. This ensures that urban residents get cleaned vegetables, with less leftovers for collection by the city and transported back into the countryside as compost!
- d) Road sweepings being a sizeable component, and a daily activity, measures had been taken to manually/mechanically wash all vehicles entering the city, at all major points for a fee, resulting in reduction of the silt brought into the city from the countryside.
- e) Greening and covering the ground with hard/soft cover, is also utilized to reduce the quantity of silt generated within the city.
- f) The gas collected from landfills is sold back to the residents as fuel, weaning them away from coal, the ash content of at present.
- g) Professional management, with mass participation, is the order of the present. (Western management concepts, and Socialist thinking.) An ongoing campaign to manage refuse in a way to control the four pests-Flies, Mosquitoes, Cockroaches and Mice.
- h) 'Patriotic health month', 'Weekend Health voluntary day' etc are utilized to mobilize participants from schools, offices, factories, armed forces, and police, in various forms of **cooperation**, in **voluntary clean up**.

The paper presented from Indonesia highlighted the fact that President Suharto had once gone on television commending the effort of the 'scavengers', and requesting the public to grant them all assistance. Recognition

of their work by the highest echelons of the country, had been an impetus to those who indulge in this useful vocation, who are often looked down upon in a derogatory manner.

The final paper was presented by a 'Women's only' voluntary group, from Yokohama, who maintained that their exclusivity stemmed from the fact that women's opinions yet needed to be hammered down in a male dominated society! The group not only collected old clothes and rags (like the YWCA) but also got them converted to useful items like dust cloths and gloves. They video their activities not only to assess themselves in the future, but also to give the message that the possibility of recycling should not lead to over consumption.

Where then in Sri Lanka do we stand regarding the collection and disposal of garbage? Do we have a national policy? People in outlying areas have the right to know the facts regarding plans of garbage from cities being trucked or taken by rail from cities into their neighbourhood. Cities having the economic and political clout should really help outlying areas, in tackling this common problem, as it cannot be tackled on an individual basis, by local councils.

It is of interest that Germany has enacted laws whereby the manufacturer is required by law to take back their packaging material. Denmark too has followed suit in imposing high taxes on goods having one way packaging material.

What has been discussed is how diverse Asian cities have approached this problem, evolving solutions, sometimes having different solutions to the same problem. The success achieved by those alive to the problem is quite in contrast to those who have slept over it. Most authorities irrespective of their political colouring, have the nasty habit of imposing their solutions on the public, without entertaining the ideas of the latter, often leading to a never ending, costly series of patch up solutions. It's for the public to raise their voices high and clear on this matter now.