

Waste – The business of exclusions

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Waste is exploding in India. As more and more people live in cities (expected 340 million by 2010), and consumption increases, waste streams too are growing. The major metros are expanding rapidly, while previously small towns are burgeoning into small cities. What was two decades back, mostly food waste, now contains electronic waste, construction waste, all types of plastics, metals, medical waste and also industrial waste mixed with it all, like a toxic cocktail. Most of all this still lands up in dumps often-situated in low-lying areas, which were previously water bodies. Pigs, cows and waste pickers rummage through waste piles on street corners, and passer byes hold their noses as they sidestep the decaying morass. Post monsoon, most of our green cities are subsumed by fallen leaves and cut grass, which is then piled up and burnt, the sooty smoke descending all around. Household hazardous waste also abounds. Batteries, old pesticide cans, mercury thermometers, used syringes, florescent lamps all find their way into the waste bin. On the other end, small and tiny recycling operations, hidden behind high brick walls, melt the plastic, rubber and metal down, emitting noxious pollutants into the air. At other places old computers are broken down, their parts melted in strong acids, or burnt to recover valuable materials. At best here, waste is ‘dirty’ business! Simultaneously the powerful international waste industry is offering state-of-the art waste processing facilities, provided it has access to the waste, both from here and from imports, even though there have been only a string of technology failures so far. Municipalities have meanwhile failed to implement even simple systems, leave alone complicated ones. While expert consultants and the promise of new funds (JNURM, the Twelfth Finance Commission, and CDM), are seducing city governments with high tech investments, and sophisticated jargon, what this simple concoction of materials, called waste, probably needs is better planning, more public participation, sensible investments and a bucket full of common sense. It is simply not enough to ‘sweep’ waste out of sight, to

make some neighborhoods seem deceptively clean, but it needs a systematic approach involving reduction, collection, safe treatment, recycling and disposal, something which has been beyond the scope of our municipalities.

Waste has a significant consequence, especially on health. Waste becomes a concentrated repository of all that is undesirable. Festering waste breeds vectors and old discarded tires can hide water, which breeds mosquitoes. It can contain very toxic compounds and heavy metals, and can produce greenhouse gases like methane, and very toxic gases like dioxins when burnt. Mercury from broken thermometers evaporates into the air, and settles back on the water and grass only to come back through milk and fish. In the US alone over 40% of the lead in landfills is from electronic waste. All the land dumps leak the toxicity into surface and groundwater, which is never removed before ultimately landing back into our food and water. Industrial effluents often used as irrigation water for urban farming, contaminate vegetables and other foods with heavy metals. Numerous internationally studies have shown a high incidence of respiratory diseases, and chemical body burdens especially in those people who live near waste dumping sites. Several hundred thousand waste pickers live off the discards in our cities, often since this is the only job they can find, and seriously compromise their health, through injuries and exposures to hazardous materials by doing so. For them it is a non-choice between health and livelihood. Waste is a major contributor to the increasing toxicity of the environment, and reducing this risk has to be the prime motive of any 'waste manager.'

Currently we generate over 45 mt of municipal waste each year, which is expected to cross 65 mt by 2010. Of this over 15% is plastic waste, while a major portion of the volume is construction malba. E waste is at 3.3 mt. while hazardous waste pegs at 7-8 million tonnes. However the waste generation is not constant across economic classes. Easily the rich are responsible to the most generation. A household, which earn about Rs. 3000 per month would generate less than 150 gm of kitchen waste per day, while one, which earn over 10,000 per month, could generate over 800

gms per day. Consider also that computer density of about 65 per thousand will be in the middle and rich classes, and that over 2 billion pet bottles are used by consumers of mineral water and soft drinks, the class character of waste generation becomes evident. Not only those who earn more generate more waste, but also the industrial activity, which benefits them most, contributes to waste generation. On the other hand, landfills are sited on the cheapest land available, and so is the location of recycling and waste treatment facilities. The poor obviously generate the least amount of waste, but feel its impacts the most.

Waste as trade

It is not by chance that India is a major recipient of waste internationally. Labour is cheap, and recovery of materials from waste relatively inexpensive. Plastics, electronics, even medical waste has been found to be imported into India, legally or illegally. Customs documents are misclassified to hoodwink port authorities and their port of origin fabricated to make them impossible to track. Several studies and court submissions have revealed the tip of the iceberg of what is probably a massive activity. In specific instances waste oil, asbestos laden steel, lead waste has been stopped by court orders. In Export Promotion Zones (EPZ) waste is imported, reprocessed and the materials recovered set back. However what remains is the waste or hazard, which no one wants and remains on our shores. Recent conservative estimates peg e – waste imports to exceed 50,000 mt annually. The dynamics of cheap labour and easy entry also guide the logic of India being a major shipbreaking country in the world. In fact these activities are justified internationally on the basis of an offer' cheap' labor, even though at home little is done to protect labour conditions. It is now history that India, along with the G 77 countries was one of the key nations demanding that waste dumping be stopped from developed to developing countries under the Basel Convention. Today, the situation is reversed as India openly argues for waste imports and sees this as an opportunity to be a waste processing country globally even though locally produced waste is left uncollected and continues to pollute local environments.

Business not health

In all this it is evident that the language around ‘waste’ has been transformed in the recent past. Waste is now promoted as a business first, in internationally sponsored workshops and seminars, even though such business hides a host of public subsidies. Waste as wealth, is considered not in the framework of dealing with waste as a public health hazard, but falsely as an economic good, even though even in developed countries, public money subsidizes waste systems. The waste industry is a mammoth one globally, exceeding an estimated over 6 billion USD in the US alone. In Italy the mafia controls waste, as the recent waste crisis in Naples amply demonstrated. In India too the waste industry is on the threshold of stepping in. Major investments have been made in e waste recycling units, hazardous waste units, and medical waste disposal units. While infrastructure development is key to proper waste management, there is also the danger of creating a powerful industry, which needs waste to survive, even as on the ground systems like local collection and segregation continue to fail or are insufficiently focused upon. For such an industry, more waste is good news, and the ideas of waste minimization, waste reduction, waste reuse, and design for longevity are ‘dirty’ words. Alongside, such industry is also rooting for the opening up of the international waste trade, since large investments need continuous raw materials for them to be profitable. It is this danger, which can and needs to be avoided. Sophisticated systems can only be built upon simple successes.

Natural resources

Waste has a direct connection to the consumption of raw materials and energy and arguably it represents inefficient transformation of minerals and raw materials into products. The life cycle of all the products we use lay bare a strew of waste and toxics in their trail of being mined as mineral, transformed into usable materials like steel, plastics and aluminum and then being discarded back as waste. If this loop is not closed down it essentially implies that we are constantly converting nature into waste. Hence all good and sustainable waste practices look at life cycle impacts and ‘close the loop.’ Policy instruments like extended

producer responsibility bring in the idea of end-of-life of products back into the production life cycle, and ensure that safe disposal is part of product and systems design. Hence a computer sold in Sweden already has a cost for recycling it built into it, and the industry association which collects the used computer in partnership with the local municipality, need to ensure that it goes to an authorized recycling facility. Such looping back has also changed the manner in which, for example, automobiles, which took over large land mass when junked, are being designed in Europe, to make them easy to dismantle and recycle.

Alongside waste disposal uses up a lot of land and creates conflicts over land use. In Delhi, the municipality has been fighting to convert a portion of the protected local ridge forest, a green lung of the city, into a landfill, instead of planning to reduce its growth. Hence sustainability of an efficient economy must build into it the idea of waste and preventive aspects of reducing impacts have to be seriously considered.

Legislation and Judiciary

The past decade has seen a flurry of legislations dealing with waste in India. However some have been more effective than others. Beginning from the Hazardous Waste Rules in 1989 (last amended in 2003), the Bio Medical Waste Rules (1998), a law to deal with Lead Acid Batteries Rules (2001), the Municipal Waste Rules (2000), the Plastics Waste Rules (2011) to the most recent guideline to deal with E – Waste Guideline (2008), these are based on different waste streams. Some like the Hazardous Waste Rules have triggered off public private partnerships and currently 22 facilities to deal with industrial waste have been set up in the country. Similarly, the Bio Medical Rules have resulted in the setting up of 160 facilities around the country for collection of medical waste from hospitals and clinics, based on user fee. This particular legislation also mandates a ban on the incineration of PVC plastics, which is globally recognized as a dioxin generator. However across the board quality of these services are matters of great concern. Typically, despite the Rules and Guidelines medical waste is burnt in illegally incinerators in centralized facilities, even though this is severely restricted by law and the safer way of autoclaving is not adopted. Similarly a recent major fire at the Ankeleshwar facility for treating hazardous waste, and promoted as one of the best, revealed that while the facility should have stored only 60 tonnes

of waste more than 6000 mt was on site. This is despite national standards on such operations which include landfill design and incinerator emission needs. Clearly, even though private actors are investing in infrastructure, regulation of operations and emissions is wanting and quality of disposal is dismal, with attention to detail lacking.

The Courts have played a major role in the past decade. The first ban on the import of hazardous waste into India was set up by the Delhi High Court (Srishti, April, 1996) and later fortified by the Supreme Court (SC, May 1997, RFTE vs. UOI). It still holds. The SC also set up the MGK Menon Committee for a plan to manage hazardous waste in the country, which gave its far-reaching report in 2001. The Bio Medical Rules were initiated after an NGO Srishti intervened (1996) in an ongoing case (B.L.Wadhera vs. Union of India), and were promulgated in 1998. The Municipal Waste Rules came along with the prodding of the SC (Almitra Patel vs. UOI), though under the same case where the petitioner was arguing for better landfills in each city, the Court also passed strict orders to remove slums. Similarly there have been several cases in High Courts and local courts, dealing with a range of issues like plastics, landfills, waste to energy etc. The judiciary has hardly been a silent spectator, and has led from the front.

A general fear of being overrun by regulation is resulting in the Government being reluctant to legislate even where it may be essential. The recently issued E – Waste Guidelines are a case in point. Only very recently (2010) has a draft law been published, but it is still awaiting notification. Hence even though e waste is one of the fastest growing waste streams both in India and abroad, India still does not have a requirement for its disposal. Most of this waste is dumped or recycled in backyard operations, which attempt to recover precious materials like gold and copper from the waste, rather than recycle it as a whole. To avoid such cherry picking demands a regulation where the objectives are spelt out and is not merely a voluntary guideline. The Industry too, which represents the heavy weights of Indian business is looking for a level playing field.

On the other hand a legislation made to trigger producer responsibility and take back systems in lead acid batteries has not succeeded. The battery industry has not been able to develop adequate collection systems even though it had been mandated to do so. Hence a car battery exchanged with the dealer for a new one often land up in highly polluting backyard operations. Of course any such legislation also needs detailed working on the ground, and there can be no short cut to do this. This legislation is also under review at the moment.

Industry's reluctance to take real responsibility for waste has not helped matters. In the case of plastics, for example, a high level committee headed by Justice (retd.) Ranganathan Mishra (2001) received an assurance from the Plastic Manufacturers Association that they will set up plastic PET bottle collection centers throughout the country and also provide a 25 paise bottle refund for those bottles, which are brought to such centers. Over a decade later, no (or hardly any) such facilities exist. Ironically, the Association has been promoting school programs to educate school children why plastics are 'essential' to life! Of the over 4 million tonnes of plastics packaging manufactures, over 50% end up as waste soon after usage. Plastic bags have been recovered from cows stomachs, bird innards and are ubiquitous everywhere. There is widespread concern in the public about them, and even the rural countryside is replete with them. Many States like Delhi and Haryana have attempted to ban plastic bags, only to be thwarted at the last moment by some unseen hand. Instead a national law, which bans bags of 40-micron thickness, has been now promulgated. However though this has ensured that only carry bags made of virgin plastic are available, it has not helped in the litter being reduced. Very recently, a new law (Plastic Waste Management and Handling Rules 2011) has been notified. This mandates the setting up of collection systems in each municipality, along with industry responsibility, charging for carry bags, tracking of waste as well as a ban on small multilayered plastic packaging.

Community Efforts

Over the past decade, there has been a spontaneous response from citizen's to improve cleanliness in cities. These are largely small scale and local,

but represent a common desire to live in clean surroundings. NGOs have helped with their expertise, and also attempted to link the issue of livelihoods through involving waste pickers in door-to-door collection. Exnora in Chennai, Toxics Link and Vatavaran in Delhi, Stree Mukti Sangathan in Mumbai, NEEDs in Shillong, NBJK in Bihar, CDC in Rajasthan are some of the more organized efforts. However there has been a response from Resident Welfare Associations, Housing Cooperatives, and Institutions like the IITs to set up local systems. In many places city officials like municipal commissioners have played an exemplary role. The problem of waste and sanitation in low-income colonies or in shantytowns is more severe, even though many NGOs have successfully intervened and created better systems on the ground. The municipality though extends partial or no services to these areas. There is also little incentive for them to create infrastructure on the ground since land use is disputed, and displacement of such settlements has become common across cities, as land prices have soured.

It is in such settlements that the waste pickers reside as well. Hutments are packed with collected paper and plastic to be sorted and sold to the local kabari. Often in the heat of summer, whole basti's have caught fire, fuelled by the waste. In a major fire in Jahangirpuri in Delhi in 1995, the plumes were seen for miles around and it was believed that the smoke was very toxic. Such incidents do not lead to better conditions within these bastis, but become another rationale for shifting them to the new margins of the city. In this way the slogan of 'Clean and Green' has led to more injustice in the name of environmental betterment. It is thus no surprise that while the clean and green agenda is supported by the rising middle class; it is paid for in human cost by those marginalized by income and caste.

Unfortunately, even in places where there have been successful community based interventions, whether in affluent or in poor colonies, there has been little attempt by the Government to help upscale these efforts. In a significant study carried out by Toxics Link to determine barriers to up scalability of successful community based projects nationally, it was clear that there was almost no real support available to

help such initiatives. They are looked upon rather patronizingly, as the efforts of good citizens, rather than as viable models of city waste management. In fact even land for local composting is not provided. Typically a local intervention would service 4 – 5000 households, though this could extend to 100,000 households, as in the case of Muskan Jyoti in Lucknow. These NGO and community led intervention involved waste pickers in door-to-door collection and local colony level composting. These models also augment the waste pickers income by safeguarding their access to recyclables. They have provided dignity and security to them by providing them recognition through ID cards, and made them less vulnerable to constant harassment by the police. They are good examples of integrating livelihoods and environmental sustainability. However large-scale privatization of waste collection, as is currently the trend, is only leading to a larger marginalization. It seems the state is more comfortable dealing with a single private player rather than a range of community actors.

Informal Sector

The informal sector has been collecting recyclable waste for decades in cities in India. They are mostly low skilled operators, who develop the fine art of distinguishing between different types of plastics, metals and essentially what will fetch them a higher price with the local ‘kabadi.’ Some have fixed beats and protect their own waste bin, while others roam the streets scavenging what they can find. On a landfill site the hunt for materials become even more nuanced. Every nail is picked up using ingenious methods like magnets on long poles, or dirty plastic bags, which no one else will touch are cleaned and washed. Clearly such detailed rummaging is something, which no machine can hope to achieve. However this livelihood is fraught with risk. Injuries, cuts and bruises are common. Exposure to infectious waste, mercury, lead and other dangerous chemicals is unavoidable. Many of the waste pickers are women and children. For them any livelihood is better than no livelihood.

However, despite many policy averments, to support waste pickers, including in the National Environmental Policy (2006), and earlier in the Supreme Court’s Burman Committee (1999) and the Planning

Commission's Bajaj Committee (1995), there has little investment by the state in their future. In fact the recent trend, especially under the urban renewal missions, to subcontract waste collection to private operators by municipalities has worsened the situation. Many of these private operators, deny access to the waste pickers to the bins they have been collecting from for decades. If there is money to be made, the private operators rather make it themselves than allow the booty form recyclable waste be shared. Hence some operators have begun the side business of collecting and selling recyclable waste, depriving the waste picker of his or her livelihood. Such mindless centralization is harmful, besides it is more costly. Private parties link to other technology investors in recycling and waste processing or waste landfills, and all waste goes into centralized places. Spaces too are not provided, and in fact in the new Master Plan of Delhi 2021, waste dealing (*kabaris*) or waste separation activities are not a recognized, even though they form part of colony infrastructures. While the city may seem cleaner, it is not more sustainable since waste, which could be recovered, is dumped and local communities have no participation in such systems.

Many NGOs and their collectives have been raising this issue trying to protect the waste picker from being excluded. A new initiative led by SWaCH (Pune) is bringing these groups (such as SWM – Mumbai, KKKP – Pune, Chintan and HRA – Delhi), together and they are proposing a new policy to protect livelihoods. What is needed is a mix of local and central systems, which allow for optimum collection and recovery of materials, and have strong ground level systems.

Waste to energy

Waste to energy has been promoted as the future of waste in India. As early as 1995, when the Ministry of Non Conventional Energy announced the policy to subsidize any energy produced by waste, it has been packaged as a win-win. However of the over 90 projects implemented or planned so far, hardly any has succeeded. Technologies like bio – methanation, incineration, RDF, even composting and vermi-composting have been tried, but non have much to show for success. The reasons for

failure are many, but could largely be owing to inappropriate technologies as well as poor systemic linkages. Take the case of incineration of waste to recover energy. The earliest plant installed was in Timarpur in Delhi, in 1984, where a Danish incinerator set up for a cost of over 34 crore rupees ran for less than a week. There had been severe miscalculations on the density of the waste and its calorific values, in spite of top technologists who did the equations. As late as 2006, a well accepted technology based on bio-methanation was installed by a private company in Lucknow, with the blessings of the local MP who was also India's Prime Minister, and subsidy by the World Bank. The plant today is closed, and has been subject to Supreme Court investigations about the reasons for its closure. While waste in Europe has almost 50 percent of the materials as plastics and paper, Indian waste is wet, food, and with little plastic or paper. Hence if incinerated more energy is put in than taken out! Where bio – methanation has been used, which converts waste into methane and then energy, municipalities have suddenly become very possessive about their waste, since they would rather sell it than just give it. If there is money to be made, why should they not too partake? Thirdly the energy produced is more expensive than that sold by subsidized State Electricity Boards, who are not willing to buy it. All these reasons also hide a subsidy- in-perpetuity scenario.

The question of safe technologies is an important one per se. Globally, incineration of waste has been severely regulated or outright banned (as in the Philippines) since the emissions of very toxic compounds like dioxins and heavy metals like lead and mercury push control technology cost up exponentially. A 2000-ton per day incinerator in Europe can cost upwards of USD 500 million and easily one of the most capital-intensive projects a city can undertake. Such high cost investments then scout for more waste to feed the guzzlers, and it is not unusual for international waste processing companies to scout for waste world wide. The energy from them is not necessarily cheaper than from other sources, and has to be weighed in against the comparative cost of recycling. Globally large civil society networks such as GAIA (Global Alliance for Incinerator Alternatives) resist such investments both on the logic of pollution but also their detrimental impacts on local waste systems of composting and recycling. In India there are 30 such proposal for waste to energy processing plants, which have mushroomed after the recent access to

climate change based carbon credits, and JNURM based funds.

Besides siting of such projects is a major challenge. Local protests have recently greeted one such project, which is proposed as an Integrated Waste Facility, based on a contested technology called RDF, (which converts waste into concentrated fuel pellets) to be setup close to a large colony in East Delhi. There is little information made available to the local residents, nor their consent sought about the siting. The community has serious concerns; amongst them is the burning of PVC based plastics, which is illegal in India.

New Funds

Till recently all waste management was solely funded by municipal tax collections. A significant portion, upto 50% of this money was devoted to waste and sanitation services. Over 30 % (upto 50%) of the municipal staff has been employed towards this end. The situation has now changed for larger projects. The Central Government has under the Twelfth Finance Commission allocated over Rs. 2500 crores for solid waste management. Over Rs. 10,000 crores can be availed by 63 cities under the JNURM for this use before 2010. Subsidies are available for composting and waste to energy. State governments are providing subsidized land, and various types of tax holidays as well for infrastructure development. Carbon Credit and Carbon Finance are available for eligible projects under the Kyoto Protocol. However there needs to be a more sustainable mechanism for the operations of these ventures, and the waste generator ultimately has to pay through a 'tipping' fee, paid by the waste generator. This issue is a political hot potato, and unless municipalities bite the bullet, waste infrastructure projects are not likely to succeed for a very long time. Also it is clear that while large capital-intensive projects are being supported by state funds, the same are not available to community based low investment projects.

Future Systems

Would it not be wonderful if everything we use were totally recyclable or reusable? That the materials we use are totally non-toxic, and do not harm people or the environment. Waste is a 'negative' good, undesirable and which society bears a cost towards. Often the cost is hidden in terms of the health and environmental impacts, but accounting for them helps in appropriating them where they must be borne. This is not a dream but the pillar of what the future of waste management is being built upon. There are two requirements for this. Firstly that there is adequate infrastructure to recycle whatever becomes waste, and re-introduce these materials back into the economy as raw materials. For example if the computers we use can be broken down and their individual components broken down to basic materials like plastic, glass, metal completely then these can be made the new parts afresh. Secondly it requires that all the hazardous components be removed from all the materials we use. Hence there should be no lead in the displays, no mercury in the switches, no lead in the solder, or no flame-retardants in the plastic, or no PVC in the electrical wires. This would make recycling much simpler and much safer. Both of these need fundamental changes, some of which are already happening through new laws like the WEEE and ROHS in Europe and other countries.

Along with such basic systems guided by principles of sustainability, new systems need to recognize and support local waste management and resource recovery. Both upstream 'preventive' as well as downstream (improved management and handling) approaches are needed together. Indian waste is largely organic, and as per World Bank figures is likely to remain so for the next three decades. In such a scenario, compost along with energy products makes eminent sense. With local composting comes also job creations and an opportunity to involve existing waste pickers in door-to-door collection schemes. Even in hazardous waste streams like that of e-waste, which need larger and more sophisticated facilities to process the waste, the informal sector can play the key role of a collection agency. In this manner, they still use their skills to earn a livelihood with the hazardous component of the work removed from their ambit. The private sector has an important role, since it brings in a new efficiency compared to municipalities, but it needs to sorely dovetail with existing systems not compete with them. It needs to do more than use waste bins as

ad-posts!

Like in many other sectors, India is opting for systems, which are very capital intensive and centralized. This is since most of the dominant players in the waste business operate in countries not confronted by the challenges of livelihoods and environment being combined. In India, by blindly following the logic of the west, we will end up creating greater injustice, social tensions and exclusions. On the other hand build up from what is there, instead of replacing it, and learning from the best the world has to offer, will utilize the systems present here but which the more advanced 'west' is now trying to revert to but cannot. Our cities of the future cannot be islands of prosperity, if the people in them are not participating in a just and equitable manner. How we think and deal with waste is a key test of sustainable development in the rapidly urbanizing India, a challenge not faced by any other country in the world today. The way we do it, will impact the globe for a very long time.