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TREND

e-Waste: a mounting concern

In India, e-Waste management assumes critical significance as the country is also a dumping ground of e-Waste, particularly computer waste from developed countries, reports **Nivedan Prakash**



e-Waste management in India is becoming a complex issue what with increasing computerization, and the sub continent emerging as a favorite dumping ground for developed countries on account of our limited regulatory norms. Although e-Waste is hazardous for the environment it is also a business opportunity worth billions of dollars.

According to Frost & Sullivan estimates, India is a rapidly growing economy where PC ownership has increased by approximately 600% from 1993-2000, whereby the worldwide average has been 181%. Following the ban on imports of Waste Electrical and Electronic Equipment (WEEE) in China, India and SE Asia are the major destinations for dumping of WEEE. Information and Communications Technology equipment contribute 33.9% to WEEE in India.

Worldwide estimates for the amount of discharged electronic and electrical equipment are about 50 million tons. The total generated from WEEE in India amounts to about 146,000 tons per annum and this is

likely to rise to 1,600,000 tons by 2012. Households and domestic use generate more than 80% of e-Waste.

Besides the lack of e-Waste dismantling facilities, there is no large scale organized e-Waste recycling facility in India and most of the recycling units are operating in the unorganized sector. As per Eco Recycling, the unorganized segment is recycling 95% of e-Waste generated and the organized segment treats only 4-5%.

Deepak Thakur, Senior Research Analyst, Frost & Sullivan-South Asia and Middle East, commented, "India generated 3.5 lakh tons of e-Waste by the end of 2007. It sees an emergence of 1,040 tons of e-Waste on a daily basis, which includes shipments from abroad. This number is expected to rise to 4,300 tons daily by 2012. These require proper tracking system for adequate treatment. India, Pakistan and China are major dumping grounds for the developed countries."

According to the MAIT-GTZ e-Waste assessment study, a total of 3,30,000 metric tons of e-Waste is generated annually in India, while

an additional 50,000 metric tons is illegally imported into the country. However, only 19,000 metric tons of this is recycled due to high refurbishing and reuse of electronics products in the country and also due to poor recycling infrastructure. Currently e-Waste recycling, especially processing, remains concentrated in the informal sector, which due to poor processing technologies and very small capacities, contributes significantly to pollution and environmental degradation. It is estimated that e-Waste generated in India will touch 4,70,000 metric tons by 2011.

"As per GTZ-MAIT's latest estimates, India generates about 3.3 lakh metric tons of e-Waste annually of which close to 50,000 tons are illegal imports. From a policy perspective, there is a ban on the import of electronics waste. With growing electronics and IT consumption in the country, we expect the quantum of electronics waste to exceed 4.7 lakh tons per annum by 2011," said Vinnie Mehta, Executive Director, MAIT.

On the other hand, increasing disposable income of consumers

► combined with the retail price of electronic items has affected the life cycle of electronic goods. These developments, along with indigenous technological advancements, have led to more e-Waste being chucked out by Indian households, commercial establishments, industries and public sectors into the waste stream.

Even the developed countries, mainly from Western Europe and North America, are dumping their e-Waste in developing countries in Asia. India and China are the first strategic options for dumping e-Waste as worker protection and environmental safety standards here are weak. The US alone dumps around 30 million computers every year. The reasons are quite clear—increasing unemployment, inexpensive labor, and weak legislation.

Managing e-Waste

Today e-Waste has become a mounting concern for all and certain strategies need to be implemented to manage it. There should be an increase of the entry barriers in the recycle industry to discourage local players from disposing indiscriminately and mandate the same to big corporates. The government should increase the import duties on e-Waste being imported from outside. If a company dumps cheap products that are not durable (Chinese products for example), then that company should be made to take the responsibility for collecting back the same quantity of e-Waste from India simultaneously. The quantity of toxic element like cadmium, antimony, PCBs in an electronic product should not be more than a certain prescribed amount. The government should also specify an acceptable level for each electronic product.

e-Waste is increasing at a rapid pace due to the nature of technology companies where the pace of



Vinnie Mehta

EXECUTIVE DIRECTOR, MAIT

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obsolescence is very high, especially the IT industry that is the single largest contributor to the mounting electronic scraps. There needs to be better regulatory norms for the disposal of e-Waste along with process and technology innovations.

Siddharth Udas, Director-Polytela e-Commerce, asserted, "e-Waste management is now commercialized with several e-Waste recycling companies located in India. Lack of awareness of e-Waste recycling options available is a major reason for low volumes of e-Waste recycling compared to its generation in India. To address this problem there is an immediate need to create awareness through seminars, newspapers, magazines, advertising campaigns, and awareness in schools, colleges, and universities."

There are two issues related to managing e-Waste—one is logistics and collection, while the second is the processing mechanism. "The backbone of collection of e-Waste should be improved. There should be proper equipment machinery that could really safely manage this hazardous concern in an environment-friendly manner," said B K Soni, Chairman, Eco Recycling.

Need for stringent legislation

It would be incorrect to say that there is no legislation for managing e-Waste in the country. India is a signatory to the Basel convention, that puts restrictions on trans-boundary movement of hazardous substances, therefore import, and exports of e-Waste can only happen with government permission or license.

However, it is a different matter that illegal channels dump significant quantities of e-Waste. Secondly, the Foreign Trade Policy of India does not permit the free import of second-hand computers, and thirdly the Ministry of Environment & Forests



Prince Thakur

ASSISTANT VICE PRESIDENT-IT, GLOBALLOGIC

I am not aware of any specific legislation in our country to deal with e-Waste or lay down the process for its collection and disposal; however, there are many companies or social organizations that are highlighting the disastrous effects of e-Waste

along with the Central Pollution Control Board (CPCB) have issued in the month of April 08 'Guidelines for environmentally sound management of e-Waste', but these guidelines are voluntary in nature.

Lastly, recent amendments to the Hazardous Rules have made registration compulsory for e-Waste recyclers, thereby making processing (metal extraction and refining) in the unorganized sector illegal. The Government of India has introduced certain regulations for e-Waste management, including the Hazardous wastes (Management and handling) rules, 1989, 2000, 2003. The act defines hazardous waste as "any waste which by reason of any of its physical, chemical, reactive, toxic, flammable, explosive or corrosive characteristics causes danger or is likely to cause danger to health or environment, whether alone or when on contact with other wastes or substances."

The DGFC (Exim policy 2002-07) allows ban on import of second hand computers, laptops and certain other electronic gadgets.

Similarly, there are other regulatory norms, which include:

- MoEF Guidelines for Management and Handling of Hazardous Wastes, 1991
- Guidelines for Safe Road Transport of Hazardous Chemicals, 1995
- The Public Liability Act, 1991
- Batteries (Management and Handling) Rules, 2001
- The National Environmental Tribunal Act, 1995
- Bio-Medical Wastes (Management and Handling) Rules, 1998
- Municipal Solid Wastes (Management and Handling) Rules, 2000 and 2002

While all the above legislative provisions exist, these are not sufficient to manage the challenge of

e-Cycle initiative at Techshop.in

- The owner of the e-Waste sends it to Techshop.in
- TechShop.in makes note of all e-Waste received and immediately issues a coupon of Rs 125 to the rightful owners
- TechShop.in then transfers the e-Waste to MGA & Associates, one of the top rated e-Waste recyclers in India
- Segregation of different types of e-Waste received
- Racking and classification of various parts
- Dismantling to individual components
- Recovery of heavy metals, toxic waste, and other materials
- Refurbishing
- Sending the difficult portions to a special recycling plant in the US for further eco-friendly disintegration
- A certificate is provided to the original owner of the e-Waste that it was recycled with environmentally practice
- All of this is done at ISO 9001, ISO 14001 certified MGA & Associates Plant at Kandla

► **e-Waste in India.** The Hazardous Rules has its limitations as it deals with waste which results out of manufacturing process, but e-Waste is end-of-lifecycle waste. It is therefore necessary to have a dedicated set of rules for managing e-Waste.

In addition, none of the above regulations were stringently implemented at the grassroots level and do not appropriately address challenges related to e-Waste management in India. Said Thakur, "We need regulatory norms not only to identify environment-friendly products, but also the working conditions of the unskilled laborers and if the disposal processes are compliant with regulatory norms."

Prince Thakur, Assistant Vice President-IT, GlobalLogic, pointed out, "I am not aware of any specific legislation in our country that deal with e-Waste or lay down the process for its collection and disposal; however there are many companies/social organizations that are highlighting the disastrous effects of e-Waste."

Meanwhile, the government, industry, users and NGOs have started taking notice of the growing hazards of e-Waste and there is consensus that recycling and resource recovery has to be environmentally compatible. The government has formed a WEEE task force comprising of the CPCB (Central Pollution Control Board), the Ministry of Environment & Forests, Ministry of IT & Electronics, Industry associations, NGOs and some independent experts. This task force has been identifying, planning and implementing all issues relating to e-Waste with five thrust areas viz. (a) Policy and legislation, (b) Baseline studies, (c) Restructuring recycling, (d) System of Extended

Producer Responsibility (EPR) and (e) Awareness building.

Management challenges

The subject of e-Waste is relatively new to India and even some of the developed countries are still struggling to implement the same effectively. e-Waste management can only be truly successful if all stakeholders—the government, the industry, and the users all play their role well. The first and foremost challenge is that of infrastructure for e-Waste management. Until about a year or so, we had just about two or three odd recyclers. Their activities have been limited to collection, segregation and dismantling.

Moreover, there is no process or metal recovery industry in India. Only recently 9 or 10 companies have come up, some with metal processing capabilities. The users, especially the corporate users, need to take their corporate responsibilities seriously and need to return their e-Waste to the vendors or to the authorized recyclers who have state-of-the-art process technology and not sell these off to the local kabadiwala.

The other challenges that prevail in India and need to be tackled to ensure effective e-Waste management include wide spread knowledge amongst people, proper utilization of resources, technology change, human nature, legislation in our country, and above all acceptance in the society.

Harshit Patel, Director, Polyteela e-Commerce, explained, "It is important that the people realize that it is a big problem and that they can make a difference. When we at TechShop.in started this activity, we were surprised to find out that in spite of knowing the danger of e-Waste to our environment, people still preferred to sell their e-Waste to the local kabadiwalas for petty cash. That is, when we started giving these free coupons worth Rs 125 for each e-Waste article provided to us. Not only that, we can also arrange to pick up the e-Waste from your home or office if it is a large quantity. We have displayed this program in a few commercial spaces in media to attract attention of the common man."

Future trends

Any waste is the outcome of consumption in the market. The current PC penetration in the country is just about 2.5%, and similarly consumption of other electronics items is also not particularly high. Hence, the problem is not yet alarming. However, there are indeed some lessons to be taken from the developed countries that are today struggling with the issue. We need to put a



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framework in place so that this does not become unmanageable in the next few years as electronics consumption the country burgeons.

We need a sustainable model for e-Waste management and that needs monetary resources. The developed countries charge a processing fee upfront at the point of sale. We will also need a distinct model for India as consumers here expect to be paid when they return their e-Waste. Currently 95% of the e-Waste is processed in the unorganized sector that does not have the appropriate technology. In accordance with the essence of the National Environmental policy, we need to encourage the unorganized sector in collection and maybe in dismantling; however, processing should be limited to the organized sector with benchmarked international practices. The Hazardous Waste Rules have now been modified to address this. Lastly, the e-Waste industry needs to be encouraged and incentivized. The coming-up of this industry will help evolve the infrastructure for e-Waste management, including collection and reverse-logistics.

Prince Thakur, concluded, "We expect the following trends to emerge in order to ensure effective e-Waste management—various awareness programs, e-learning, detailed knowledge about e-Waste management, and proper audit of all companies."

Here, we could just say that managing e-Waste should be one of the prime focus areas of corporate social responsibility for all the companies and since computers are widely used today, it should be rather a "common social responsibility". Awareness of e-Waste management is the key for its disposal in a safe manner. ■

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Implications of improper recycling

Several companies burn e-Waste as a process of disposal for the scraps, such as monitors, motherboards, CDs PCBs, cables, cartridges, etc. Such processes release mercury and lead in the atmosphere, creating an environment of slow poisoning.

e-Waste, though hazardous, offers livelihood to the unorganized sector and to a large scale to unskilled employees. Nevertheless, lack of awareness about the waste management and inappropriate recycling risks their health and environment in the process.

Due to the unorganized nature of e-Waste processing industry, there are questions on the safety equipments used by the unskilled labors and their safety. At times there are questions raised on child labor employed in e-Waste processing in India.

- **Water pollution:** Resulting from waste dumped in rivers and drains amongst others.
- **Air pollution:** Resulting from burning of components.
- **Ozone layer depletion:** Many equipments produce lot of different gases whilst burning that deplete the Ozone layer.
- **Health hazards:** When waste is mixed with water/air, which is later consumed, even after going through various filtration mechanisms it is still not 100% pure.