

E-waste - Designing Take Back Systems



A National Workshop Report

Foreword

Management of electronic waste has been an issue of serious environmental concern in India since over a decade and it was a result of much sustained campaign that the government finally announced regulation in 2011 aptly called the E waste management and handling rules 2011. The rules have incorporated the principle of Extended Producers Responsibility and made the manufacturers responsible for dealing with post consumer waste of their respective product range.

The current rules have been in force since May 2012 but there has been very little change on ground and the current situation suggests that it is 'business as usual'. Informally many stakeholders have pointed out the bottlenecks in implementation of the rules. Also there is inadequacy and lack of any serious efforts from the Producers and the regulators to bridge the gaps and ensure compliance. It is in this context that Toxics Link organized a national seminar in New Delhi on '*Designing Take Back Systems for E-waste*' on 11 Dec 2012 followed by a brainstorming session on 12th Dec 2012. This workshop was an attempt to bring together all stakeholders towards evolving an informed and consensual approach in E-waste management in India. Since take back systems and infrastructure seems to be a major bottleneck, the workshop was meant to focus on these aspects and in consultation with all concerned, find solutions to some of these.

Over 80 professionals representing Government officials, Manufacturers Associations, EEE producers, recyclers, and non-government organizations took active part in the discussions. The seminar was addressed by **Ravi Agarwal**, Director, Toxics Link; **Joao Cravinho**, Head of European Union Delegation to India; **B Vinod Babu**, HWMD, CPCB; **Priti Mahesh**, Senior Coordinator, Toxics Link; **Lars Ekland**, Advisor to Swedish Environmental Protection Agency; **Federio Magalini**, E-waste Academy Project Manager, United Nations University; **Anwar Shipurwala**, Executive Director, MAIT; **Silje Johannessen**, Advisor, Climate and Pollution Agency, Norway; **D K Behera**, Senior Environmental Scientist, Odisha State Pollution Control Board and **Raphael Veit**, Managing Director, Sagis Ltd. The speakers and participants brought to the table their experiences, challenges, breakthrough and best practices in E-waste management.

This report reflects the issues discussed at the workshop, including practices followed in countries like Norway, Sweden and United Nations. It also reflects issues related to E-waste Rules 2011, its implementation status, stakeholder perspectives and its inadequacies or shortfalls. The report also records suggestions made by the participants and speakers at the workshop.

The presentations made during the seminar are available at our website link <u>http://www.toxicslink.org/?q=events/international-workshop-designing-take-back-systems-e-waste-11th-december-2012</u>.

We hope that the report captures the concerns and expectations of all stakeholders – manufacturers, retailers, consumers and recyclers or dismantlers and provides an insight into some of the perceived bottlenecks in implementation of the rules.

Background

E-Waste – An India Perspective

Electronic consumption and E-waste: The sales figures of TV, radio, computers and its peripherals, mobile phones, washing machines, and an array of other gadgets and gizmos stand as a proof to this growing consumption trend. Rapid technology upgrade and designed for obsolescence of products drives further consumption and shorter product life leading to generation of huge quantities of this complex waste India currently is estimated to generate 8 lakh tones of E-waste annually.

Prevailing E-waste management and concerns: In the absence of scientific and organized processing of Waste electronic and electrical equipment (WEEE), it is recycled by ill-equipped and ill-informed unorganized sector making the process hazardous and causing serious adverse impacts on environment and human health.

In India about 95% e-waste recycling still happens in the informal sector that employs children and women in large numbers, who use most hazardous processes in the recovery of recyclable parts and material. The basic objective of the organized processing of e-waste is therefore protection of the health and environment in WEEE recycle/ dismantling/ disposal.

Hazardous elements in E-waste: A scrutiny of about 1000 of compounds that go into the making of electronic and electrical components makes the need for their scientific disposal quite evident. Among a number of toxic elements, electrical and electronic gadgets contain lead, lithium, arsenic, antimony, mercury, cadmium, selenium; hexavalent chromium, flame retardants are classified as hazardous waste. On the other hand, electrical and electronic equipment also contain valuable materials. Printed circuit boards contain precious metals such as gold, silver, platinum and palladium. Both these aspects necessitate organized and scientific approach in the collection, dismantling, recycle, recovery and disposal of WEEE.

Health and Environmental Concerns: In the prevailing scenario where major part of this waste is recycled by the informal sector, it poses environmental as well as health hazards for the people involved in the rudimentary processes of recycle and disposal. When remnants of e-waste are disposed of in landfills, its toxic elements leach into the surrounding soil, water and the atmosphere, while it's unscientific and unguarded processing exposes waste handlers to a number of health and occupational hazards and release toxins in the environment.

E-waste management rules prior to 2011: Prior to E-Waste (Management and Handling) Rules coming to force, Hazardous Wastes (Management, Handling and Trans-boundary Movement) Rules 2008 and a Central Pollution Control Board guidelines governed the E-waste management in the country. These rules did not offer specific standards for E-waste pollutants emanating from manufacturing or recycling units, nor on their collection and disposal after they reach end-of-life. This necessitated now in force E-Waste (Management and Handling) Rules 2011 to address concerns with regard to E-waste collection, processing/recycle and disposal. These rules, in principal follow extended producer responsibility (EPR).

E-waste (Management and Handling) Rules 2011: These rules were published by the Union Ministry of Environment and Forests on 14 May, 2010 and shared with the stakeholders for obtaining their

objections and suggestions. After the review of stakeholders' suggestions, the final rules were notified by the Central Government as E-waste (Management and Handling) Rules 2011, which came in force from 1st May 2012.

The E-waste (Management and Handling) Rules, 2011 apply to every producer, retailer, consumer or bulk consumer involved in the manufacture, sale, and purchase and processing of electrical and electronic equipment or component, collection centre, dismantler and re-cycler of e-waste. The policy also addresses financing of collection-storage-recycle-dismantling units.

In the first year of its force, E-waste Rules 2011 have presented many implementation gaps. If these gaps are not addressed in right earnest this rule also could go down with making any impact in delivering on its intended objectives. This trend will need to be reversed immediately.



Figure 1: Stakeholder Responsibility

Challenges: The E-waste Rules 2011 are ambiguous about many important operational aspects of the rules. They completely leave out defining collection and recycling systems and its accountability. The rules also do not give clarity on collection and recycling targets and the possible solutions to integrate the huge informal sector currently engaged in this. The Rules call for proper record keeping of e-waste at every phase – collection, segregation, transfer, storage, recycling and disposal by the respective stakeholders and making them available for scrutiny/audit by the enforcement authorities, but is silent with regard to the frequency of e-waste audit and transparency of many such information.

Therefore the challenges in making the desired gains from new e-waste rules are:

- Absence of a reliable data on EEE consumption and e-waste generation
- Define and identify bulk consumers on clear criteria of EEE usage
- Define procedure the audit processes and further procedure
- Integrating existing informal collection system with envisaged organized management of Ewaste
- Providing the enforcement agencies with a resource plan; pragmatic and target oriented goals and objectives; methods and procedures that are unambiguous
- Working on a pragmatic, target oriented national programme focused on managing identified e-waste that is more hazardous to human health and environment

Chapter I

E-waste Rules 2011 and Designing Take Back Systems – A discussion

S a first step, effective working of E-waste Rules 2011 depends on establishing clear, pragmatic and accepted e-waste collection streams in consonance with all stakeholders. With this view, Toxics Link organized a two-day workshop of stakeholders involving policymakers, enforcement authorities or regulators, manufacturers or producers, civil society, while E-waste experts from Sweden, Norway and United Nations University (UNU) shared their knowledge and practices in the management of e-waste in their region.

Designing Take Back Systems for E-waste

At the workshop, the stakeholders presented their experience of new E-waste Rules since they came in force on 1 May, 2012. In their analysis of the rule and its implementation, they discussed what is comprehensive and good, what is incomplete, confusing and required clarification. Almost all stakeholders, including those from CPCB, felt the need for amendments. They also sought learning from countries that have implemented similar rules and benefitting from them.

The speakers discussed implementation of E-waste Rules 2011 and shared their views or critical analysis of it, implementation gaps and how to plug them. International experts presented case studies and best practices from their region. At the end of each session consumers, producers and civil society interacted with the e-waste experts and enforcement regulators. This report is an effort to document their concerns /stance on various issues related to e-waste management.

Inaugural Session

Ravi Agarwal, Director, Toxics Link

He welcomed the stakeholders and stressed that most developing countries including India have no experience in setting up systems for managing e-waste. Informal sector that recycles or manages 95% of the e-waste needs to be roped into safe management of e-waste.

Sanjeev Kumar, Chairperson, Delhi Pollution Control Committee

He acknowledged lack of awareness among the masses of health and environment risks from unregulated e-waste disposal and for those who knew were not informed of whom to approach for its scientific recycle/disposal. Even in CPCB, officials are not entirely informed on various aspects of e-waste management.



Figure 2: Inaugural Panel

Citing his own example, he wondered, what would have happened to the many mobile phones, battery and other electronic goods that were discarded in his own home? They must have been taken by someone working at home or would have reached the hands of informal sector.

The issue needs attention of general public as well as of enforcement authorities as Delhi alone generates more than 32 tonnes of e-waste /day. DPCC has established 65 collection bins at schools and state-central govt offices under different municipalities. These bins are cleared once in 10 days.

João Cravinho, Ambassador and Head of Delegation of European Union to India

Sharing his experience and learning of Europe, Ambassador João Cravinho emphasized the need for a harmonized, transparent system for implementation of e-waste management. Commenting on the policy, he said, it needs to extend and expand as the experience builds with the policy and system.

Ambassador Cravinho said, "Even Europe has to go much further in this regard and has to cover quite a distance to realize the objectives e-waste management". He expressed his willingness to share the experiences of Europe in this regard with India in its efforts of designing efficient take back systems for e-waste. He also emphasized broad involvement of informal sector wherein processing is happening in an uncontrolled manner to the extent of 95%. This means, much of collection, transportation and other logistics including recycling and processing, is happening predominantly in an unchecked environment. The informal sector needs to be part of the solution system – whichever way India goes in handling and management of e-waste.

He appreciated Toxics links effort and said it is very significant step forward in bringing these issues to table, brainstorming and finding solution. He said his team certainly has not come with solutions to all problems and complex situation, but would participate in the deliberation as part of a process of mutual sharing and learning. The mission is an important one."

Satish Sinha, Associate Director, Toxics Link

Welcoming EU's offer of help by way of sharing learning and experience from their practices in ewaste management, Satish Sinha said Toxics Link and other NGOs as a community definitely look forward to EU as a source of inspiration and guidance in playing its role in establishing scientific ewaste management practices in India.

Commenting on the slow development on this concern, he said, "The rules were notified in May 2011. Over one-and-half-years later, we are not seeing the kind of changes that we hoped to see while being engaged in framing the rules. Take back systems design and implementation is yet to take off." Besides seeking a better pace of development in the implementation e-waste management rules, he expressed need for integrating informal sector in e-waste management under the new system or devising ways of formalizing informal sector as it has a better reach and wide spread network.

Technical Session I

The first technical session was chaired by Mr. B. Sengupta, Former Member Secretary, Central Pollution Control Board.

Mr. Vinod Babu, HWMD, CPCB

Recycling is the only (sensible) scope for e-waste management, opined Mr. Vinod Babu, who was representing the Central Pollution Control Board in the meeting. Collecting and channelizing e-waste for recycling is a big task and also a challenge. He admitted that the process (implementation of rules 2011) is not happening the way it was envisaged.

Elaborating on the Rules, he said that EPR concept is new in India and we have no experience of implementing it earlier. He talked about the problems producers have faced like approaching each state for authorization and the systems not being harmonized. To facilitate smooth implementation of the Rules, CPCB, in consultation with ministry, have published implementation guidelines. He stressed that the producers have lot of scope to put their creative and business tactics/relationships to set up systems for take back, as the rules have lot of flexibility.

Putting in a strong statement he said that so far it's a lukewarm response from producers and the things are not going to be easy for producers from now on. CPCB is answerable to respective state legislatures and parliament and may take tough action. Environment Protection Act is also a strict mechanism and any violation of that invites strict legal action.

On a positive note, he added that the manual work is excellent. But he cautioned saying that CRTs, which is recycled now, can become a liability in future as it has substantial lead.

There are problems in implementation at state levels, which needs to be worked upon.

He ended with saying that setting up adequate collection centers is the primary key activity. NGOs and RWAs can be attached with collection centers or in any effective collection mechanism – rules are open in this regard.



Figure 3: Technical Session 1 in progress

Priti Mahesh, Senior Programme Coordinator, Toxics Link

She began her talk with stressing on the fact that over eight months into policy implementation and not much progress is visible. Though there are 77 recycling companies in the country with collective recycling capacity of 2,30,000 tonnes of e-waste, in contrast to the estimated 8 lakh tonnes of e-waste generated in 2012, still the units are running below full capacity. It's amply clear that there is a huge gap in take back and collection systems. She said that a critical review is needed on how far producers have set up collection centers to collect e-waste from consumers and fulfilling their other obligations as per EPR under the Rules and also a need to understand why the collection systems are not working and look for alternate models to make the system more effective. Priti also pointed out that the informal sector operations are still continuing, with no impact of the Rules in volumes or processes.

She then shared with the participants some finding from the study that had been done to assess the actions taken by producers in fulfilling their responsibility under the E-waste Rules. The Rules specify that the producers need to

- Seek authorization from State PCB's,

- Collect e-waste from consumers and the manufacturing process,
- Set up collection centers individually or collectively,
- Finance the system meeting the cost involved for sound management of e-waste,
- Keep the info transparent, provide contact details of authorized collection centers to consumers,
- Create awareness.

Even after 18th months since the notification of the Rules, there is no visible evidence of this process making much progress and the implementation is in a sorry state. SPCBs – the monitoring agencies have shown very little initiative or drive in the last few months, from what is evident from their portals. Out of 35 SPCBs, only 7 have information on E-waste rules on their website and only 3 have put the Guidelines on their site.

Scene is not much different on the producer's online presence. The websites of the mobile phone, computers and consumers electronics producers were surveyed to assess their take back policies and take back infrastructure. 40% brands surveyed did not have any physical collection centers and many of the brands surveyed did not even have any take back policy. Inadequate collection centers, lack of convenient drop boxes for home and individual consumers with no incentive for the consumer to join the clean channel. Awareness drive has been dismal, pretty low in reach in the last few months of the Rules in force.

Setting target for collections — progressive targets – start small with achievable targets; defining accountabilities clearly seems to be the small steps that should be taken to move forward. Priti ended her presentation with some important and unanswered questions like,

- Do we need a national registry? .
- Which all brands are selling in India?
- Who takes the responsibility of products already in market?
- Should there be some financial guaranty for these products?
- How the orphaned products will be monitored, controlled?

Lars Eklund, Adviser, Swedish Environmental Protection Agency

Lars has been working in e-waste legislation domain since 2006 and has rich experience in legislation and implementation in Sweden. He has also worked with UNDP and Swedish governments over the years, handling e-waste assessments in Serbia, Mecedonia, and other countries.

His presentation focused on Swedish take back systems, their advantages and disadvantages, what actions can be taken to make it fully functional. Sweden collects about 7.5 kg/capita against a target of 4kg set by European Union. But this is against a huge consumption of about 25 kg/capita every year. He rated the following as the critical success factors to build an effective collection and take back system-

- Easily accessible convenient collection points
- Awareness and knowledge
- A strong willingness to participate in the overall collection systems
- Well defined role and responsibilities of the stake holder and
- A viable financing that establishes a level playing field

He elaborated on the WEEE flow and producers in Sweden who were mainly importing companies that sell either directly or through retailer/reseller. In 2011, Sweden imported around 230 tonnes of electronics and this was mostly home appliances. The statistics say that there was collection of about 180 tonnes of e-waste. So there was a gap of about 50 tonnes that may be missing every year. But he stressed that the collection systems in Sweden are very effective and efficient. Only 2 actors are engaged in collecting e-waste and the best part is that 99% of all importers have joined this system. Prior to a legislation and enforcement in 2006 only 30% had joined the collection systems. So, authority, legislation and enforcement are very important to make the system work.



Naturvårdsverket | Swedish Environmental Protection Agency

He also shared that there have a few recycling companies in Sweden and the largest recycling company also happens to be one among the largest recycling companies in the world which collects about 120000 tonnes/annum. Significant and noticeable fact is that it makes more profits from recycling than extracting metals from its own mines. It extracts gold of about 100gms/tonne from e-waste while the same is about 22 gms from the mining business! So, recycling is a profitable business.

He pointed out that the financing of recycling function is very critical. In Sweden, importers run the system and they charge the costs to retailers and consumers, the charge is included in the product sales and it is hidden from consumers, though the whole system is transparent. Accessible and convenient collection points and information to the consumers about what needs to be done are also very critical, stated Mr. Ekland. In Sweden, a survey is done every year to gauge the awareness levels on e-waste. This helps to rework on campaigns and implementation tactics.

He also shared some challenges as not all e-waste is profitable to recycle and WEEE like CRTs, refrigerators etc. are negative goods. Also, not all areas are same, dense urban areas will have more collection potential as against rural areas. If this complexity is not addressed one will have collection systems focusing on easy options of collecting it from urban areas only and the rural areas will be left out.

Mr. Ekland also spoke about the Clearing house in Sweden that accumulates and accounts for all ewaste. Importantly, clearing house employs mechanisms of financial leveling. While collection schemes represents different producers, each have their market share, different collection points collect different amounts, clearing house is where it is accumulated and financial leveling happens. This, he felt, was most important otherwise the collection companies will seek the most profitable areas making the whole system unfair. He also mentioned that there is a reward system identifying good campaigns.

Federico Magalini, Project Manager, E-waste Academy, UNU

Federico gave an impressive informative talk covering theoretical foundation and the significance of e-waste management in general and the concept of EPR in particular. His talk drew global statistics convincingly and putting in perspective the significance of arriving at systems that are based on local realities guarantying win-win situation for all stake holders. An Italian with 3.5 years of experience as a production manager in take back schemes, he has further experience with technical committees working on rules, resources etc, in international assignments and as part of Institute of sustainability and peace, a new institute founded by UNU, a think tank of the UN system in 2009. He spoke about different projects under the Step Initiative.

He appreciated the efforts of Toxics Link in getting together all stakeholders in to a room to brain storm, find new ways. He insisted that interactions and negotiations among stakeholders is a must to understand each other's priorities and expectations.

Elaborating on EPR, he said that one principle aspect is that the onus lies on the producers to look at the entire management of EEE, from organizing and financing collections and take back systems to recycling. The policy makers recognized that the OEMs have the strength in the field of designing, coordinating and collaborating the product manufacturing cycle. Hence, they are the ones who are well equipped to reverse engineer the sales and manufacturing process and are in a position to design a more comprehensive take back and recycling systems. Tradeoffs at design stages can only be handled by manufacturers. For example, if toxic and hazardous materials are used in the manufacture, the manufacturers can identify and set systems for their disposal too. Besides they are the ones who will have control over innovative eco-friendly designs. Eco design is an important problem avoidance method that could be looked at to resolve some issues related to e-waste. First, decrease the environment hazardous material use in manufacturing. Second, maximize the environmental benefits of those reaching the life end stage. Lastly, maximize environmental value of fractions recovered. These provide theoretical foundations for EPR.

He mentioned that there is reluctance among manufacturers in doing changes in the design. To encourage the manufacturers, they could be provided with an edge in selling those products. Like, in France they decided to differentiate the fees and offer incentives to promote eco-friendly designs and also while selling the products.

There is a resource management perspective too. A modern mobile phone consists of more than 40 elements. The same set of elements and more are used in variety of products covering tv, battery, health care equipments, green technologies like pv panels etc. High tech metals are used almost everywhere. Consumption is growing very large at a fast pace, hence this is not sustainable over a long term. Hence recycling is necessary. It might be a paradox or may even sound ironical that e-waste in general and mobile phones in particular are the highly concentrated resources for extracting different elements in general and precious ones like gold.

E-waste recycling is complex and can be considered to contain 3 phases- Collections, Pre-processing and Processing. The latter two form the core recycling function. While all the three stages are critical the collections and take back systems are crucial. Creating an environment, wherein access to waste and collection of waste is easy and convenient and systems that encourage the consumers of all sorts to return e-waste, is no easy task. Right and pragmatic targets need to be fixed across the process. Needless to say achieving the final goal depends on the effectiveness and efficiency at every level. The strengths of India might be collections and Europe may not be as efficient as India in collections but they are good at recycling. In the EU's 27 member states, there are different schemes and systems to make the whole system work.

While looking at examples from other parts of the world it is necessary to remember that producer alone cannot make the system work, there has to be cooperating and collaborative environment wherein all stakeholders take active part for the system to work. The retailers, the municipalities, the consumers all have to be brought into the system. So, it is imperative that all stake holder role and responsibilities be defined that converge in achieving the final objective. This is a daunting task as again there is not one set of rules defining these responsibilities. This is evident in the 27 member states of EU. Germany has a clearing house while UK does not have one. Multiple systems are working well for example in France and Italy. Every option provided in the system will have a pros and cons that impacts the social, environmental and economic costs. So it is important that India works out a system which suits the local context.

He spoke about his experience in Italy where it is an open market system with multiple competitors and a clearing house that is responsible for level playing field. Every producer has to collect e-waste from across countries, against targets. Minimum quality standards for recycling have been established by recyclers and producers representing the clearing house. And clearing house would direct e-waste only to registered recyclers. There is reward for huge collectors/performers; a small player in a small village collecting huge e-waste needs to be rewarded as against a huge municipality doing less collections although have huge potential. Mr. Magalini highlighted some points

- Retailers to collect from consumers to the municipal collection points
- Reward municipalities collecting huge waste and having chained up many retailers
- Build a chain of collection methods negotiations desired
- Goal oriented financial incentive based on population and collections at different levels
- Financial rewards/incentives to municipalities that transport fully loaded trucks

He also spoke about systems in Ireland, Denmark and Norway. He ended his talk by emphasizing that while setting procedure and systems it should be ensured that no stakeholder walks out of the system and market dynamics can't be controlled by legislation.

Q and A on first Technical Session:

You spoke of gaps in understanding and varied interpretations that SPCB's are doing with e-waste rules 2011. Are you planning any campaigns, workshops etc to overcome this hurdle? Are you planning any supplementary guidelines for recyclers and producers?

Vinod Babu - We are in regular touch with SPCBs. We are going to seek specific data about the list of manufacturers, how many have registered, any reasons offered by those who have not registered etc. Importantly these things will be discussed at length in chairman and member secretaries' annual meeting. Hopefully, we will set targets and establish sub committees.

Guidelines will also be reviewed in the light of feedback.

Will your portal contain info about collection points wherein consumers can go and deliver e-waste?

How the mechanism for varied fee structure is worked out?

Vinod Babu - We have asked all SPCB's for the data regarding collection centers. The portal will be updated with those details. Recycling costs may need to be included in the cost of products. May be a notification will be issued what exactly is meant and how it needs to be practiced.

Lars Eklund- Financing mechanism should be transparent.

SK Kaul, MSTC - We are engaged with e-waste management and we do a 6 crore annual business. There are 43 manufacturers registered with us. Government and IT sector also can come to us. Anybody willing to dispose their e-waste can approach us.

Why not focus on buyback systems/centers for collections? This will kill refurbishment industry too. And also ensure lot of electronics returning than occupying valuable space in offices and homes.

Vinod Babu- I agree this is a core question. Some micro level exercises are required to find viable finance options to make illegal recycling not a viable option.

Technical session – II

The second technical session was chaired by Mr. Satish Sinha, Associate Director, Toxics Link.

Anwar Shipruwala, Director - MAIT

Mr. Shipurwala put forth his perspective and thoughts on the problems and challenges in implementing e- waste rules. The issue of e-waste management is both interesting and conflicting with many challenges all across. He felt that awareness across all stake holders is very important. If all stake holders are well aware of the objectives of the rule and cooperate among themselves it can help the implementation.

He raised some questions regarding the role of stakeholders in effective implementation of the E waste rules. He pointed out that when a product is sold, the ownership is transferred to the consumer and questioned the right of the producer to seek take back of product and at what

periodicity this could be done. He was of the view that consumer also had a very significant responsibility in channelizing waste in clean E waste channel.

He said that the synergy between the maker of the rule and followers of the rule is desired for successful implementation and in the absence of such synergy the desired objective of the rule will be compromised.

He also shared some of the challenges faced by producer -

Challenge1 - Are the implementing authorities aware of the rules and how are they going to implement it as rules are perceived differently by different authorities and stake holders in different states across India.

Challenge2 – There is a feeling among some producers that they should not go ahead for seeking authorization as they feel they may not be falling under the producer category.

Challenge 3 – Do authorities know what information are they seeking from the producers? What kind of authorization is required for the producer? Instructions are confusing as they vary from state to state.

Challenge 4 – The new rules get mixed up with other rules, they get intermingled confusing everyone as to what rule to apply where.

Challenge 5 - Can producers set up the recycling within the stipulated timelines? Following varied timelines is another challenge.

He also elaborated on some challenges faced by recyclers where they set up a facility with some capacity and do not receive required quantity of waste for processing. Some recyclers thought of a plan to get the informal sector together and find ways of formalizing them to collect the waste from them and channelize it for safe disposal. Somehow, this thought process is not fully accepted by the authorities, not sure why.

He also said that if a collection center has to be financially viable to run. Some of these gaps indicated needs for education and awareness collectively. If all stakeholders actively participate and do their bit then implementation should not be a challenge.

Silje Johannessen, Adviser, Chemicals and Waste Department, Climate and pollution agency, Norway

Silje gave an overview of implementation and the enforcement of the regulation in Norway.

She spoke about how the need to set up a system for e-waste led to a voluntary agreement between Ministry of environment and industry and which paved way for initiating the regulation process in 1998 in Norway. The deliberations conceptualized the idea of EPR and that got culminated in e-waste regulation a year later in 1999. Although Norway is not part of EU, they are part of EU in economic areas and they do implement EU Directives.

Ms. Johannssen spoke about the EU directives, which were adopted in 2006. E-waste act concentrates on duties of importers and domestic producers; it is predominantly the importers as there are not many domestic producers there.

• The e-waste collection happens through municipality's network.

- The important part of the act is the role of the take back companies. Take back companies have the duties of collection and environment friendly treatment of e-waste.
- EPR implementation mandates the domestic producers and importers to finance the ewaste collection and treatment systems.
- The financing can happen individually or collectively. Currently there are 5 approved take back companies in Norway.
- The statistics reveal that since 1999 collection of e-waste has been increasing. 147000 tonnes of e-waste was collected in 2011 and collection rates have been pretty good. Segregation is often an issue. However, some new methods are being worked out to overcome this issue.

She specified that as a process, the take back companies need to get an approval from the agency. The approval process includes a verification of nearly about 50 criterions besides third party having to certify them. Importantly, the take back companies need to prove it to the authorities that they will be abiding by all the regulatory provisions before they can start off. This process includes them providing a plan detailing how they will collect e-waste, treat it in a sound way and this goes through a stringent verification process. They need to ensure that they will collect all e-waste from their market share; the market share is determined by how much of electronics is put into the market by the associates and members. Take back companies also need to have 6 months fund with them at any time required to run their operations. Take back companies report back to WEEE register and they also finance WEEE register.



Figure 4: Technical Session II in progress

Commenting on the individual consumers, she mentioned that all households can deposit their ewaste at any of the collection centers free of cost. Industry can also deliver but they need to pay a fee for storage. WEEE register, which is managed by the government, keeps all records regarding ewaste. They get data from customs on imported data etc, so they have data regarding market shares of companies. Take back companies need to report quite a lot of data from collections till processing stage, treatment facilities and methods they use.

Ms. Johannssen spoke about the periodic inspections on take back companies and the compliance as this is very important. Such inspections provide both the regulator and the take back companies valuable information about systems and regarding improvements needed to boost the efficiency.

Dr. D K Behera, Senior Environment Scientist, State Pollution Control Board, Odisha

Dr. Behera appreciated the facts and status presented by Toxics link regarding status of implementation by SPCB. He candidly admitted that although as a regulator of E-waste rules he possesses only 4 months of work experience in the state of Odisha, he has found many gaps in rules. Lack of clarity on many fronts is a major hurdle faced by the regulator in the rules implementation. He was candid throughout his presentation making simple but critical facts. He was also critical about Schedule-1 which lists the e-waste covered under the Rules as many electronic items were not accounted for. He also spoke about the problems related to interstate movement of e-waste.

He called for an amendment to include more products, especially industrial electronics.

The following are major points that he stressed during his talk -

- The standards and procedures applicable to industry are not very clear in e-waste management rule.
- In case of e-waste management rules, responsibilities of all stakeholders are well defined. However, when we approach to understand to whom the rule is applicable and what all it covers, there are still confusions.
- The rule is also silent about fund, finance or on the fees to be charged like processing fee
- Equipments listed in Schedule-1 and schedule-2 does not match: Sch-1 has a list of those that qualify as electronic waste. The Schedule-2 mentions that hazardous material to be reduced and/or controlled and includes those that are exempted, like for CFL lamps. This leads to confusions as to why give a list of equipments that are already exempted?
- Bulk consumers are required to channelize waste and maintain records that the PCB's have to verify. Bulk consumers include educational Institutions, other private and public companies etc. However, neither the rule mentions nor we have any information about how the resources required for carrying out this task is to be mobilized and organized. Is it possible for the regulator to go to each of these institutions to verify records? In Odisha, the info of e-waste was sought from some 200 bulk consumers. There was not a single response or any explanation was sought or offered.
- Most regulators will not even have a comprehensive list of producers/exporters.
- Developing large number of collection centers is the key for effective collections there are no guidelines for approving them.

- Economic feasibility of collections and recycling is not clear. Informal sector because of its methods makes profits. Can the whole process of e-waste management become a viable business model for a formal sector?
- Fraud products, orphaned products for which one can't find a manufacturer what is to be done?

So in his opinion, the rules in the present form leads to varied interpretations, confusion of all sorts, all contributing to delay in implementation, no implementation or implementation as per one's own interpretations. The rules need to be amended and/or clarifications provided. He offered the following suggestions - National inventory should be worked by getting all producers together. Accumulating these statistics at state levels will be an impossible and difficult task. Based on this – and based on economic viability –should emerge a plan of how many collection centers and recycling centers should be established.

Mr. Behera detailed the initiatives of Odisha State PCB in e-waste management rule awareness building, in terms of publishing public notices in dailies, holding workshops, meeting with government Departments, communicating to bulk consumers, requesting producers to start collection centers etc.

Raphael Veit, MD, Sagis

Raphael presented a wide overview of E-waste management systems worldwide and took the audience on a virtual global tour familiarizing them with the salient aspects of the history and the current practices, methods and situation. His talk was structured covering, spread of e-waste legislation 2012, policy objectives, compliance systems, stakeholders and key challenges, six types of e-waste models, evolution of these models in key countries and finally considerations for India.

He started his talk by stating that currently E-waste management is enforced in 77 jurisdictions and planned for legislation in 24. India figures in the count of countries wherein the e-waste rules are enforced. Objective of E-waste management legislation is both environmental protection and labor safety. Natural resource recovery came up later; however is becoming increasingly important as shortage of resources is becoming significant. Derived objective of these objectives is the modernization of the waste sector by breaking up historical (uncompetitive or informal) structures and adaptation to technical progress.

He opined that India is not alone in finding managing the e-waste issue complex. If in India the informal sector that is not under any regulator control is predominant in collections and processing, in Europe the municipalities and the network operating under its supervision own the accountability of managing the issue. In some ways both informal systems as well as municipality systems are difficult to control. One key factor of European experience and even the experience of Korea is breaking up the informal sector that is uncompetitive by bringing it under municipalities and e-waste companies; from thereon trying to break the inefficiency owing to the waste management companies and the municipalities.

He pointed out that positive value e-waste has been managed by scrap dealers in most countries since many years, formally or informally, whereas negative value e-waste has been managed by

municipalities and social enterprises to generate employment etc, like in Europe, Japan and Korea. He felt that solutions to key issues can be found by answering questions like,

- Who owns e-waste?
- Who has the right to collect positive value e-waste?
- Who should fund the e-waste management system?
- How all e-waste flows be controlled and converged?
- What kinds of schemes are required to promote e-waste collections to safe recycling?
- Who controls these schemes?

Elaborating on the basics, he said that EPR is a concept that has come out as a model for addressing these concerns and arrest the problems. Producer responsibility demands that producers provide funding, market knowledge and power to break the local industry, expertise and ingenuity to set up nationwide network. A central funding, coordination, organization mechanism coupled with appropriate schemes need to be worked out and implemented. State funded schemes, Collective funding schemes, powerful entities that get funds from producers and control the significant portion of the e-waste, are some differently flavored models that emerge. It might take the form of what is generally referred to as take back companies in Norway. In most countries including in Europe, US and Canada – and the latter in particular – there was a massive fight for controlling the schemes. Wherever producers fund the mechanism, they initially control it. But with passing of time, retailers and even powerful e-waste management companies want to have a control on them and in competition to the producers they set up their own schemes.

He talked about various models-

- **Gov. controlled Eco-tax fund** Producer only finances, otherwise controlled and run by Government through its municipalities and chain of approved recyclers. China, Taiwan and Hungary are some countries wherein this model is in effect.
- Producer controlled fund and scheme This mechanism is popular in countries like Norway wherein mostly owing to the threat of heavy taxation, the industry comes forward to fund and own the mechanism, gets into negotiation arriving at environmental agreement with government. Waste management firms and municipalities get involved in recycling and collection activities. Producer owns the obligation of taking back WEEE and also funding the whole mechanism. Belgium, Netherlands, Switzerland are some countries wherein this model is in effect.
- European 'standard' competing schemes model The model can be considered to have 2 types. One with defined targets for collection for producers and the other based on clearing house. In the first type, the producers' targets are fixed based on what electronics he has placed in the market and the system is run in such a way that every producer has to fulfill his quota. Bulgaria, Poland, Lithuania, Latvia, Slovakia are some countries wherein this model is in effect. So, the effective fine structure on defaulting producers can make this system work well.

Clearing house model tries to fulfill two obligations – One, it ensures that all municipalities are served and second, ensuring fairness between the different systems and players respecting the obligations of market share of producers and creating a level playing field. Italy, France, (UK) are countries wherein this model is in effect.

• **Rare Models** - There are 3 models falling in this category. The difference primarily is in who plays the central role in the model's enactment besides the way it is structured are the differentiating factors.

The first model is the *Producers without municipal collection model*. The producer runs the show with the chain of retailer, dealer in reaching out to consumers; producer designs the schemes and manages, consumer may or may not get any benefit for returning WEEE. The equipments may also be mailed back.

The second model is the *Clearing house but no schemes model*. This is a more strict model wherein producer has to organize for collection responding to request coming from anywhere in Germany; through the network of retailers, waste management companies, collection centers etc. but Producers can't transfer the responsibility.

The third model is the Recycler centric model, wherein recycler assumes the centre stage.

Mr. Veit also gave a brief outline of the legislations in some countries. Foremost among them was **Taiwan** which was the first country that introduced EPR in 1988. Currently EPA runs the show, it collects funds from producers, and fund is well balanced and managed to account for negative value e-waste too. Every recycler facility is under surveillance of CCTV cameras, the EPA enjoys freedom to the extent of been unquestioned, makes sensible laws. However, a challenge that they face may be in covering all EEE products for recycling.

South Korea went from state fund to EPR for e-waste management. In 1980, the government set up a recycling organization KORECO; from 1992 its activities were financed by producers. Producers paid 'deposit' on TVs, washing machines, air conditioners which was returned if they met collection targets and recycling happened at KORECO recycling plants. Promotion of Saving and Recycling of Resources Act (1992) was designed to keep the government systems in place. However, with time, producers started showing interest in putting up their own systems and finally privatized e-waste management activities started taking shape, culminating in full EPR coming into replace state fund and Government's operational role in WEEE management mechanism in 2003. KORECO is now transformed into a register managing company that keeps and maintains all records. In the new set up, the producers have to reach collection targets. In 2008 Korea banned e-waste from landfills putting in place better recycling systems. It will take some time to understand if producers feel lack of financial incentive in running systems and find the old deposit schemes more viable.

Non competing systems in Austria, Belgium, Netherlands, Norway, Sweden - One key factor that determined the emergence of non competing systems was the eagerness shown by the industry in having a negotiation with government and environment agencies to set up and owns the e-waste management mechanism. Producers were found to be in a better position to impose standards and quality efficiency from recyclers. However, the system was not without drawbacks, the main drawback being that the producers transferred the funding burden to consumers in the form of visible fees. The collection mechanism remained in place for several years' 5-10 years and consumers paid heavily but not all the funds collected were transformed into action that gave rise to heavy market distortions in most of these countries. Systems remained like that for nearly 20 years. Consumer awareness on the issue rose with several questions to producers on collections being made for 20 years and still no visible action. Making things worst was that the reserves were used up over 10-20 years and fees tumble! One key lesson from these experiences is that the Government cannot rely on producers to act on the interest of consumers.

He also elaborated on the systems in Germany, Japan, China and USA. Some conclusions that he drew from comparing difference models

Conclusions I - Concentration, fairness

- One or a few *central organizational scheme*(s) whether run by government or producers is more effective than individual programs
- The key precondition for involving producers financially is a robust mechanism to share burden fairly e.g. *national register* or tax or customs authorities

Conclusion II - Leveraging producers' potential

Government is best able to successfully leverage producers' funding, market power and organizational experience if it continuously enforces the delicate balance between the stakeholders:

- If a *mono collective scheme emerges*, it should be regularly and tightly controlled, e.g. regulator could have at least observer position on board
- If **competing collective schemes** are mandated or emerge, they should be required to join a *'clearing house'* body that provides for framework contracts between the schemes and municipalities. Schemes should be authorized, monitored, their number limited to avoid excessive transaction costs.

Conclusions III – Increase collection

To increase e-waste collection, incentives are needed:

- These can be either **collection targets** on producers, respectively schemes, **and fines** or
- Incentives for municipalities to collect WEEE (e.g. by guaranteeing compensation through a framework agreement with the schemes), and mandating producers to take back all that municipalities collect.

Conclusions IV – Control and practicability

- Not all e-waste needs to go though schemes but ALL parties collecting and treating e-waste should be subject to reporting obligations to a CENTRAL authority so that e-waste can be controlled and its performance be measured.
- Financing principles should be simple (e.g. by default collective but IPR and individual programs rewarded; IPR discussions on orphan waste, financial guarantees etc can easily distract from main issues)
- It is clear the for e-waste management to become a legal and clean operation, prohibiting cash transactions, money laundering etc would be necessary. Instead cash has to flow through cards and bank accounts that are traceable.

Chapter II

Designing Take Back Systems – A roundtable

he roundtable conference began with Mr. Satish Sinha, Associate Director, Toxics Link welcoming all the participants and appreciating each one for their part sharing. He explained that the basic objective of this roundtable conference is to create a mechanism or process which is able to make some change in the current scenario of take back system.

Mr. Ravi Agarwal, Director, Toxics Link said that being a national legislation, e-waste rules are legally mandated & compliance is least which needs to be done. On the other hand, he said capacity building and awareness generation is the need of the hour. Being one of the stakeholders, we can only encourage the system to operate. We don't implement or create any infrastructure. But there are people in the room who do and hence little brainstorming would help take the next step.

Presentations

- Mr. Satish Sinha highlighted various points discussed by stakeholders on the previous day workshop which included situation after 18 months of notification of e-waste rules, presence of multiple agencies in the supply chain, gaps in the rules like no targets for producers etc, issue of grey market and orphan products, lack of public awareness etc.
- Federico Magalini, Research Associate, UNU-ISP SCYCLE mainly talked about various elements of financing focusing on two important aspects who is doing what and who is paying. Resources are very vital in mobilizing the whole channel in e-waste management and involvement of private players has been seen as a cornerstone for effective management as they bring in new energy in the entire system. He said that take back models can be only be successful if all the aspects starting from collection to logistic to recycling is done in a proper way. Collection on its own cannot be the sole indicator of a good policy as official collection sometimes doesn't account for complimentary streams. That means collection might be 100% but not all the items are getting properly recycled/treated. There are elements like control over toxics substances, recovery of precious metals etc. which are very important and hence for better environmental performance, the entire chain needs to be in place.

He highlighted that first version of WEEE directive had a very complex financing system as it divided the waste stream into two categories – 1. Professional and household and 2. Historical and new WEEE. It was very difficult to actually differentiate between historical and new WEEE in practice and hence the financing model in first version was a failure. The main reason for having a proper financing system is to ensure money in available for recycling of problematic streams or streams with negative value. Recycling of products having intrinsic positive value doesn't require financing as such. For effective management of WEEE, proper funding needs to be raised and all stakeholders need to play their part of the responsibility.

He then focused on another important aspect in the e-waste treatment chain i.e logistics and explained it with an example. He also said that it is very important to set targets. But before setting targets, we need to keep in mind that the producers should have the capacity to influence the whole process, otherwise it can get reduced to a way of government making money.

He then mentioned that developing countries have a very good collection system but not a very effective preprocessing and treatment facility. On the contrary, developed countries have effective preprocessing and treatment facilities and are very poor in collection. He stressed on the fact that it is important to make a roadmap mentioning the role of various stakeholders in the recycling chain so that gaps can be analyzed and priorities can be set. He concluded his presentation by giving some examples of smart models followed across EU.

Raphael Veit, Sagis highlighted about various take back models followed in different countries. He talked about the importance of EPR and compliance schemes. According to him combined schemes are better than individual schemes. He also talked about clearing houses and incentivizing collectors.



Figure 5: Roundtable

Discussions

- Targets need to be set for the producers. It should be achievable and reasonable. Weight based target are easier to understand and achieve. Targets should be per capita basis as producers don't have all deleverages to control the achievement of targets.
- In Europe, targets are weight based and not waste stream based and collections from household are basically of large household appliances like fridge, washing machine and

televisions rather than small ones. Almost 4% of waste ending up in waste stream comprise of small household appliances in Europe.

- If the targets are weight based than it makes the system only collect heavier items. Therefore, lots of people are lobbying for weight based targets category wise to maintain balance in the collection.
- Collection infrastructure development should be responsibility of municipalities. Producers can't be entirely given the task of developing collection system because the amount of money involved is huge.
- In India community based collection is at a very early stage. Incentive based collection is
 hard to set up as it goes hand in hand with building awareness. Various cost elements like
 collection, logistics, preprocessing needs to be worked out in conjunction with creating an
 incentive. Recyclers have to look into two aspects one is economics and the other is social
 side. They have to compete with the informal sector, other recyclers etc. So for them
 creating incentive is a complicated issue and they are working on it.

Key Points

Operations	Difficulties	Gaps
Collection	National Registry of	Central registry needs to be created and maintained by CPCB
	producers	Role of municipalities is very vital. Coordination has to be there
	Lack of collection	between SPCB and municipalities. Drivers should be producers.
	infrastructure	Otherwise if recyclers are controlling the collection centre, negative
	Multiple Agency	value waste might not get ignored.
	Lack of incentives	Producers need to make use of their retail outlets.
	Absence of targets	Till date incentive based mechanism especially buy back has not been
		successful for individual consumers.
		Collective PRO is a very good option so producers should come
		together and take such initiative.
Transportation	Interstate	
	movement	
Preprocessing	Classification of	
	informal and	
	formal recycling	
Recycling	Downstream	
	recycling	
Monitoring	Lack of	Central registry needs to be created and maintained by CPCB
	implementation	
Awareness	Lack of information	
	in website	
	Awareness about	
	collection centre	
	Sustained	
	campaign	
Policy	Different	Central registry needs to be created and maintained by CPCB
	interpretation by	
	different SPCB	

Conclusion – It was decided that various working groups would be made to work on specific elements and all representatives agreed to be part of such groups and finally produce a document making their recommendations towards improving the implementation mechanism. Toxics Link would coordinate the entire process and then take up these issues with various stakeholders.

Chapter III

Opinions

Two international experts were interviewed to understand their viewpoint on the current scenario and their recommendations to move forward.

Federico Magalini, a mechanical engineer and Ph.D. in Management, Economics and Industrial Engineering from Politecnico di Milano University, has been involved in research on e-waste management. He has authored a number of research papers on the subject in national and international journals and co-authored Italy's first book on e-waste management, published in 2005.

His main interest is in the relationship between policy design and ewaste take-back systems performances. As a Research Associate at the UNU Institute for Sustainability and Peace (UNU-ISP), SCYCLE, Federico is engaged with Solving the E-waste Problem (StEP), and is



especially active in Task Force Policy and Legislation. During the National Workshop on Designing the Take Back Systems in New Delhi, Habitat Centre, on Dec 13, Toxics Link captured his impressions of E-waste (Management and Handling) Rules 2011 and India e-waste management scenario.

Excerpts from a conversation with him:

Based on your international and Italy experiences, what specific suggestions you want to highlight as crucial for making E-waste management a reality in India.

Collection infrastructure in general and infrastructure for handling the varied tasks in E-waste management process like, dismantling, recycling and transportation in particular are very crucial. Establishing collection points, which can be easily and conveniently accessed, is very significant first step. However, there is a cost involved. So, working out a financing mechanism through government engagement with producers, and how well and far producers can be roped into this effort to work out an acceptable mechanism of funding with tradeoffs and checks/balances is very necessary. Else, the issue may not progress at all. Establishing the collection centers, and taking the additional steps to motivate the consumers to hand over the e-waste in their procession, I consider as the first crucial steps.

Channelizing the collections made by the informal sectors to authorized recycling centers is the second most crucial and significant step. I understand that for the informal sector e-waste collections is more a livelihood question. Any effort of establishing collection centers or mechanism that leaves them out may not be very successful and it is not the right step. The solution lies in integrating them into the mainstream, making best use of their network for more efficient e-waste collections.

Let's assume that producers fund for establishing 1000 collection centers but what if no e-waste turns out to those centers. It is waste of resources, funds, efforts everything. There is no way but to

integrate the informal sector into main stream that assures a sure volume of collections. This may necessitate some tradeoffs. Therefore, the government and industry must be open for accommodating them. Running a pilot in a city –big or small – with sizeable potential of e-waste and putting to test some of these thoughts, working out relationships, business models is required.

The pilots should strive to succeed in finding effective solutions then scaling up would become easy. These discussions should assume national importance. Importantly, there will be amendments and tradeoffs to fill some gaps in the rule book itself (E-waste Rules 2011), that should be addressed too.

In Europe, there are countries that have such detailed policy on the issue that it would have an answer for any potential question. Some countries prefer overarching policy principles. The idea is to have a model that builds from the local context.

We heard yesterday and even today that strong legislation and close collaboration, coordination among stake holders is much desired. Could you tell us in brief how did the producers react to their EPR in other countries where significant headway is made?

There are two elements to the question. First, the electronics industry is a huge sector with a variety of industries. Just because these products are simple to operate and great convenience, they can't be considered to be simple nor is the industry producing them simple. There are thousands of producers- Big multinational companies, small and medium industries. Their primary business has been producing and selling products. They wouldn't be excited when told to manage the life cycle of these products as they reach end of life. However, they closely watch new legislations and also analyze their consequences on their primary business. Any legislation that might adversely affect their business –meaning the profits and there on –will make them very cautious in their approach.

Of course there are a few big multinationals – big producers – they are doing sales and are also committed to the cause of e-waste management. These are the ones who can be expected to take a proactive approach in the e-waste management effort. However, since, that is not their main business line; they try to go slow on them. Identifying and roping in such major producers is crucial and very necessary. This will help a lot and we have seen the positive effects of this in Europe. It's not a easy task, it requires discussions, good negotiations, trade-offs but at the end the results will be good.

The estimate of e-waste generation in India was put at 4 lakh metric tonnes/annum in 2011. In 2012 it was put at 8 lakh metric tonnes/annum in 2012. Please tell something on the scientific procedures adopted for estimating these statistics and how reliable and authentic are these figures elsewhere in the world?

No doubt, policy making requires reliable data. The data estimates generally base themselves on some assumptions like some percentage of sales is treated as e-waste, GDP, purchasing power of consumers, trends in the industry etc also are taken as indicators while computing these estimates. However, they may not be the realistic reflection of the magnitude of the problem out there. UNU and the StEP initiative, that I am also a part of, has a project called ADDRESS to address this gap and also provide a more scientific base for statistical analysis. We work on country specific projects and are in fact currently working on a simpler model capturing details to the possible accuracy levels considering the sales figures, consumer behavior, available historical data etc. I doubt if this also can

be entirely accurate. In Indian context also a more simple and transparent model should be worked out. Informal sector can provide close to real figures on collections, roping them in to the mainstream is important here also. Method may be to start with some transparent and simple model and improve upon it moving forward in the light of new experiences.

You said in your presentation that e-waste recycling can be a profitable business. Please throw some light on how pragmatic entrepreneurship programmes can be modeled around e-waste processing?

Recycling is not new. It t has been happening as a natural process and also with active and conscious role played by humans. It is as old as mankind. E-waste recycling also involves recovering metals like copper, silver, iron and also for example plastic. So, certainly the profits can be realized in recycling. For entrepreneurs in e-waste recycle it is essential to recover the elements and at an economical cost. Recycling sector can be profitable for positive market value elements, but the whole business may not be profitable per say as recycling involves extracting –elements that are toxic and hazardous that need to be recovered and safely disposed of. The economic balance has different values for different e-waste streams. Recycling can be considered as a *black box* that recovers elements, and the market dynamics determines their value. Given that e-waste recycling is not profitable for all the elements a recycling plant can extract, the government schemes and policies should strive to make it more profitable. For example, a rewarding mechanism for good recyclers should attract entrepreneurs to get into the activity, besides there can be financing and funding schemes.

What would be your suggestion for Indian audience in the context of e-waste management?

Bring in more resource management perspective into manufacturing. E-waste management stream is more complex than management of other waste streams. Make all stake holders part of systems design. This is where efforts of Toxics Link are very significant. The engagements should happen crossing local/national boundaries.

I don't think mankind can be stopped from creativity or science/technologists barred from creating more innovative products. There are so many potential benefits that these products offer to the society. But what is needed is that a consumer should be made responsible, producers should focus on eco-friendly designs and life cycle management of products they produce.



Raphael Veit (Policy Analyst, WEEE and Batteries) has worked with Perchards, UK, since 1998 and currently manages the WEEE and battery consultancy and information services, producing analytical reports on legislative developments and compliance markets in Europe and helping individual clients with compliance issues. He is currently developing information management tools for global extended producer responsibility compliance. During his visit to New Delhi for the workshop, we gathered his opinion on good compliance for E-waste Rules 2011.

Excerpts from a conversation with him:

Thanks for your presentation yesterday. You gave a fantastic overview of e-waste legislations and the way they are being managed around the world covering respective pitfalls, strengths and weaknesses. Now India has E-waste (Management and handling) Rules 2011. What are your comments on the Indian legislation?

Yes, I am very well aware. I have gone through the E-waste (Management and Handling) Rules and the drafts that govt produced prior to that. My reaction is that the content is both diluted and got weaker and weaker from draft to draft, although it went up a little at some stage but eventually what is rendered is a toothless regulation. I am sorry I am often candid and express myself in strong words. It is good that such discussions are being held. The legislation does not provide a real incentive or a threat to the parties involved for their performance or defaulting, this is a big deficit.

If there is learning from international experience in kick starting these policies, it is that if producers have to manage the e-waste then there has to be a credible threat to the producers of costly taxation that will be costlier than what it would cost them if they comply with the ruling. Else, the government should be capable of managing it through a strong environment protection agency or implementation body that manages this programme itself as a government controlled programme.

If implementation guidelines removing municipalities section is any indication then the govt is looking at producers to manage the program and as I said in the absence of a credible threat goals cannot be achieved.

Then, how can the mission be taken forward considering all stake holder –including the policy making body - participation?

I see a pretty close similarity in Indian and Taiwan situation. In Taiwan, eventually the enforcement agencies said they will manage the show and they are managing it with producers funding it. How could it be taken forward – the process of setting up collection centers should be facilitated by producers forming their associations.

The government seriousness must be seen in amending the legislation making it more robust, listing producer accountabilities in reporting systems and other functions clear, setting reasonable targets and covering a few other gaps as well.

Assuming India makes a strong legislation, what problems do you see in its enforcement, particularly in making all stake holders perform in accordance with what is expected from them?

On the producer's side if producers are cooperating and have a collective interest then they will comply with the legislation themselves. This is the case in Europe. There have been examples in UK, Germany and more recent ones I need to check. Producers usually comply when they get notice periods.

It is difficult for an individual company to comply with legislation but they can and they will as a collective organization. Bringing producers together is one key factor apart from legislation amendments.

Value proposition to every stake holder – is it really possible that every stakeholder can be economically benefited?

Value proposition to producers is to be compliant with guidelines in particular and on eco-friendly product design and manufacture in general.

With funding for collections and recycling plants coming from the producers, the biggest value proposition to municipalities is to establish collection centers and facilitate as much collections as possible through campaigns and programmes of awareness building. Informal sector has a lot to gain by joining the process.

How are concerns on the varied critical success factors for e-waste management addressed in countries like Sweden?

Government needs to play a major role. Its intervention is required. It needs to take position not only while legislating, but also during the course of implementation. One needs to accept that this is a difficult process and that this is a constant improvement process and it is not a closed loop economy. And the loop may never be closed but making the system better is what is perhaps possible.

No needs of introducing any new formal collection processes. Importantly anyone must be welcome to join the collection stream. Ways must be found to bring the informal sector that is predominant into the main stream.

What many countries have done in collection is adopting a phased approach to collection; municipalities establish collection centres at some determined rate like 1 per 15000 consumers.

Participation List

Name	Organization
Abhishek Jee	NASSCOM
Affan Kolandaiveedu	SIMS Recycling Solutions
Amar Singh	Harit Recyclers Association
Amit Chadha	MAIT
Amit Jain	IRG System South Asia Private
Anand Narasimhan	SIMS Recycling Solution
Anant V. Naik	First Solar
Anil Mehta	RICOH
Ankita Shukla	Sustainability Outlook
Anwar Shipurwala	MAIT
Arun Agarwal	IFC
Arupendra Nath Mullick	TERI
Aseem Mohan	Whirlpool
B. C. Sabat	Dept of Environment
B. Sengupta	MoEF
B. Vinod Babu	СРСВ
Bhavesh Jha	AB Sustainabilityearth
Chandra Prabha	Unity content Services
D.K.Behera	Odisha Pollution Control Board
Deeksha Vats	PWC
Divye Kohli	Green World International
Er. S. Charles Rodriguez	ТЛРСВ
Federico Magalini	UNU
Gautam Chopra	IFC

G. Nagakumar	Unity content services.
Hari Shankar	E- Parisaraa Pvt. Ltd.
Inderjeet S. Basra	Sweden Embassy
Jasoda Chuwan	Sycom Projects Consultants Pvt. Ltd.
John Dunham	U.S. Embassy
Kamal sharma	СІІ
Lakshi Raghupaty	Consultant
Lalit Kumar Singh	Hitachi
Lars Eklund	Swedish EPA
Laura Burger Chakraborty	Sofies Online
M. Srinivasan	TES-AMM Recyclers
Natasha Sasan	Canon
Naina Peszka	ACCERIO
Neha Srivastava	NASSCOM Foundation
Nidhi Mishra	Chintan
Nitin Gupta	Attero Recycling Pvt Ltd.
Sanju Pakad	MSTC India
P. S. Hariharan	Consumer
Prateek Yadav	Green World International
Priya Ghose	U.S. Embassy
Raj Kumar Singh	Wipro
Rajeev Asija	Green Vortex
Rajesh Kumar Rana	Wipro
Rakeshwar Bhardwaj	Greenscape Eco Management
Raphael Veit	SAGIES
Robert Donkers	EU

Sachin Shukla	PwC
S. K. Kaul	MSTC India
Sandeep Chatterjee	Dept of IT
Sanjeev Nehraa	ELCINA
Sarojini Kaul	EU
Shahshank Kathuria	Whirlpool
Shalender Kumar	Dell
Shankar Sharma	Green Vortex
Shantanu DasGupta	Whirlpool
Shantha Hariharan	Consumer (Mahila Dakshata Samiti)
Shibani Ghosh	Centre For Policy Research
Shubhra Kumar	Greenscape Eco Management
Shyamlamani Krishnan	NIUA
Silje Johannessen	Norwegian Climate and Pollution Agency
Subir Bajaj	GreenTek Reman Pvt. Ltd.
Subrata Burman	IFC
Sumit Jugran	GreenTek Reman Pvt. Ltd.
Supriya Bhardwaj	Chintan
Suresh Kennit	Embassy of Switzerland
Suresh Khanna	СЕАМА
Upasana Choudhry	НР
Vincent Yearbury	
Vishal Verma	Samsung
Representative	Greenscape Eco Management
Representative	E Parisaraa Pvt. Ltd.