

A Framework of Economic Instruments to facilitate implementation of E-Waste Management and Handling Rules (2011)



Introduction

India is experiencing rapidly increasing rates of consumption of electrical and electronic products. This, accompanied with high obsolescence rates, has led to higher rates of generation of electronic wastes. Based on the e-waste national level assessment study, conducted by GIZ and MAIT in 2007, it is estimated that a total of 3, 82, 000 metric tonnes of e-waste is generated annually in India. E-waste in India is expected to touch 8, 00, 000 metric tonnes¹ by the year 2012. In view of high refurbishment and re-use of electrical and electronic products, only small quantities of e-waste are channelized for recycling.

In this context, the government of India notified the E-waste (Management and Handling) Rules in 2011 based on the principle of Extended Producer Responsibility (EPR). The rules cover all stakeholders involved in e-waste handling including the consumers, collectors, dismantlers and recyclers; however the prime focus of the rules is on producers. Under E-waste rules, as notified by the government, the producer is *physically responsible* i.e. the producer is required to set up collection centres or take back schemes (either individually or collectively) for physical management of products, *financially responsible* i.e. he is required to finance and organize a system to meet the costs involved in the environmentally sound management of waste, and is also entrusted with *informative responsibility* which requires him to supply information on the environmental properties of the product. The producers are required to take *ownership* of their products throughout the life cycle. These rules came in effect from 1st May

¹ The figure is based on CPCB 2008 guidelines for ESM of e-waste. This waste is only on account of computers, mobile phones, and televisions.

2012. This one year time period between the notification of the Rules in 2011 and its implementation in 2012 was provided by the government to enable the stakeholders to prepare and put in place the mechanism for implementing these rules. However, many challenges have been recognized in the implementation of these rules.

In this brief, we outline the potential economic instruments which could be introduced at various stages of the life cycle of E-Waste Management to facilitate the implementation of the Rules. The brief is an outcome of a larger TERI-GIZ-MoEF project on Environment Fiscal Reforms in India. The specific objective of the



brief is to examine how economic instruments can help facilitate the implementation of the E-waste (Management and Handling) Rules 2011.

Economic Instruments

Economic Instruments are tools which influence the behaviour of consumers/producers by altering the price of a particular product/behaviour and making it more or less expensive. Traditionally, environmental policy in most countries has mainly used direct administrative instruments to achieve its objectives and waste

policy is no exception to this convention. In recent years, however, the interest in and application of economic instruments has been growing, reflecting the need to diversify the 'policy toolbox' as well as the increasing awareness of their potential cost-effectiveness. On one hand, some of these instruments are able to contribute to financing waste management activities and on the other hand, they have the capacity of persuading households and producers to strive towards diverting waste from landfills, recycle more waste and optimize use of resources.

In other words, economic instruments refer to a set of tools that make use of economic incentives and deterrents in addition to market measures in order to influence waste management behaviour. Given their characteristics, these instruments can be categorized under three broad heads namely 'Revenue-generating' i.e. instruments which raise a source of income for the government, 'Revenue-providing' i.e. instruments which provide incentives/benefits to the public and 'Revenue-neutral' i.e. instruments which do not have either of the earlier two effects. Some of the most widely used economic instruments are listed in Table 1:

Table1: Types of Economic Instruments

Revenue Generating	Revenue Providing	Revenue Neutral
Advance Recycling Fees	Subsidies and Incentives	Deposit Refund System
Product Taxes	Loyalty Card Scheme	Tradable Recycling Credits
Waste Charges		Upstream Combined Tax and Subsidy
Landfill Tax		Green Public Procurement

Economic Instruments and E-waste (Management and Handling) Rules 2011

Implementation of rules can be facilitated through the use of policy instruments. Economic instruments as mentioned above are now increasingly being used across various countries to influence the behaviour of the individuals. In the context of waste management in India also, therefore, these instruments hold a huge potential to influence the consumers/producers and to incentivize them to adopt measures to ensure effective management of waste including e-waste. TERI in partnership with GIZ undertook this study under the Indo-German Environment Partnership Programme being implemented jointly with the MoEF. The study examined these instruments and how they can help facilitate the implementation of the E-waste (Management and Handling) Rules 2011. Under this study the current e-waste management scenario in India was studied, the gaps were identified and some of the possible economic instruments that can fit in to meet these gaps and facilitate implementation of e-waste rules in India were analyzed. We studied the international best practices and analysed how the instruments are being levied in other countries and the effectiveness of the same in the respective countries. The instruments are further assessed in the context of the India and their potential applicability and impacts have been discussed with respect to the current situations in the Indian e-waste management sector.

The E-waste scenario in India

The economic instruments studied have been examined and analysed to assess to what extent it can help address the gaps that exist in the current Indian e-waste management system. The

major gap that exists in the e-waste management chain is at the collection stage where there is lack of organized collection systems. The value chain in this sector i.e. from collection to recycling is highly dominated by the informal sector which makes it difficult to track the flow of e-waste and ensure that it's being managed in a desired manner. The e-waste being generated at the household or small and medium enterprise level enters the second-hand or re-use market from where it is channelized to the informal sector. Even bulk consumers such as businesses and government institutions do not have a proper disposal policy to ensure that the e-waste flows to the formal sector. It is a well-established fact that consumers in India, both individuals and bulk consumers, opt for disposal alternatives which prove to be more convenient and offer them higher monetary value^{2 3}. The literature highlights that the informal sector is better able to meet both these criteria and hence most of the e-waste is channelled to this sector. This in turn also leads to underutilization of the capacity of the formal recycling facilities. The instruments studied under this study therefore aim to create incentives to enable the formal sector to gain a footing in the industry and at the same time enable co-existence of both the sectors in a co-operative manner.

Applicability of instruments

The impact and applicability of the instruments was studied across various categories including the environmental impact, administrative and implementation costs, social impact, market

impact, and political acceptability. Some of the instruments are said to have higher administrative costs because of higher monitoring and institutional set up costs associated with them. However, the different possibilities to design these mechanisms or combine these with other complementary instruments have also been explored. It was also realised that though there is a need to introduce instruments that offer incentives to formalize and organize the entire e-waste management chain, there is also a need to incentivize creation of requisite infrastructural capacity and introduction of capacity building or training programmes. A major factor which forms the base for the success of any instrument to facilitate organized e-waste management in India is awareness amongst the consumers/producers. In India lack of awareness and knowledge gaps pose as a major problem in this sector. Therefore, a substantial amount of attention needs to be given to creation of awareness and knowledge amongst the people about the incentives available and the impacts associated with inefficient e-waste disposals.

The Indian government has already started taking some steps towards incentivizing organized and effective waste management. This can be seen with the focus of the government on having a Green Public Procurement policy to ensure that the government institutions who are one of the bulk consumers of electronic products procure environment friendly and recyclable products. Also, there is a subsidy scheme which the new or existing registered players in e-waste management can avail. However, there are numerous issues with regard to the feasibility of the scheme with no effective disbursement being made under it till now. The government order states that assistance will be made available for the new or for expansion of

² Toxics Link, GTZ, EMPA, "Models for E-waste Management", http://www.aseindia.com/upload/publications/Pdf/Publications_pdf_e-Waste%20Management%20Models%20for%20India.pdf, last accessed on July 15th 2012.

³ ELCINA, 2009, "STUDY ON STATUS AND POTENTIAL FOR E-WASTE MANAGEMENT IN INDIA", Department of Scientific and Industrial Research (DSIR), Government of India

existing integrated e-waste recycling and treatment facilities, however, no such integrated facility exists in India or in rest of the world. There is a need to bring in more clarity in terms of the provisions being made in the government order. A re-orientation of the existing scheme in order to clearly define the target audience and to make the procedure simpler is required to attract players or make the existing players in e-waste management take advantage of the scheme. Further, there are companies which on a voluntary basis are taking back their products and making efforts to collect the e-waste generated, however, there is no clarity with respect to how and what percentage of the e-waste collected is recycled. Hence, there is a need to have a monitoring and auditing system in place by the government or a third party to ensure the e-waste is collected and recycled/processed in a formal organized manner. A separate detailed study to examine the existing policies and the government schemes can help in identification of gaps and addressing the deficiencies. Therefore, taking into account the above constraints and factors, the challenges confronted by existing schemes; and assessing the feasibility of the instruments across the product life cycle the following framework was developed to facilitate implementation of the e-waste rules using economic instruments in India.

The framework

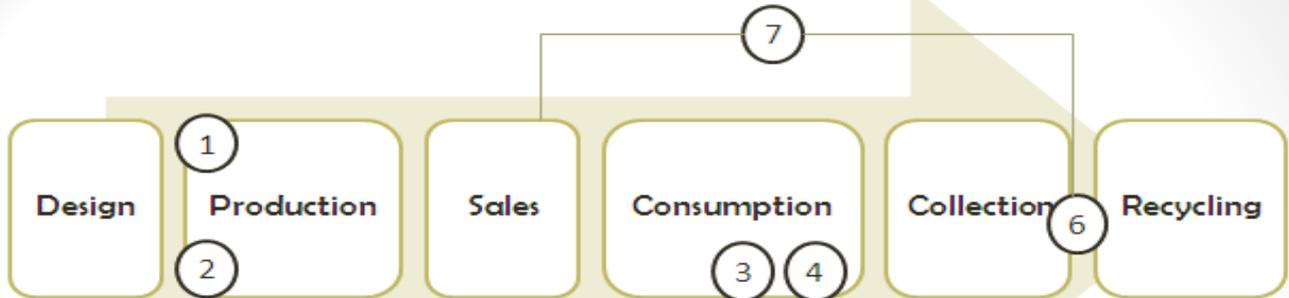
The proposed framework is developed with the intention to help achieve the objective of reduction and effective management of e-waste in India. The entire life cycle of an electronic product is studied and instruments are suggested across its various stages to incentivize environment friendly product design and to fill the gaps that exist in the Indian e-waste management system. A product life cycle in the

context of this study entails all the stages right from production to the disposal of the product. The first and foremost is the product design which involves designing the product and deciding the materials that go into its production. This is followed by the production of the product which is then introduced to the market and finally consumed by the end-consumers. At the end of its life, the product is disposed which is collected and recycled or re-used. Figure 1 gives the proposed framework i.e. the instruments recommended across the product life stages to influence the behavior of the stakeholder at each stage to facilitate effective e-waste management.

Green Labeling

At the beginning of the life cycle, the framework proposes to introduce **mandatory green labeling**, which the producers will have to procure for the products they manufacture. These labels will be assigned to the products based on factors such as RoHS compliance, recyclability and impact on the environment. The factors such as type of materials used, the complexity of the product design i.e. if it can be easily dis-assembled, the removability and standardization of the material used, etc., which makes it easier for the recycling agency to recover and re-use the material may be considered. For instance, EPEAT's recyclability criteria take into account factors such as reduction/elimination of environmentally sensitive materials, material selection and declaration, design for end of life, etc. The criteria and labeling of the products can be set by a committee of stakeholders including BEE, producers, MAIT, etc. This will incentivize the producers to alter their product design and produce goods which will have substantially lower costs at the end of its life stage.

The Framework



1. Mandatory green labeling
2. Budgetary Allocation
3. Green Public Procurement
4. Disposal policy for bulk consumers
5. Deposit refund system
6. Subsidies/Incentives to informal collectors/recyclers:
 - a. monetary incentive upon registration,
 - b. land at concessional rate,
 - c. security benefits,
 - d. capacity building/training programmes, etc.
7. Cess on Excise/additional customs duty

Budgetary Allocation

Along with labelling, the framework proposes that the producer will be required to earmark a certain percentage of its revenue towards awareness activities and will also be required to maintain records and disclosures with regard to the utilization of the said amount.

Green Public Procurement

Along with the instruments that incentivize the producers to manufacture environment friendly products, the need was also felt to create demand for such products. In this regard the framework proposes introduction of **Green Public Procurement Policy** through an

administrative order. This order could mandate the government institutions to procure a minimum percentage of electronic products that are green i.e. of environment friendly products. The Government of India, including agencies such as Defense, Railways, and Public Sector

Undertakings (PSUs), makes an annual procurement of about 15-20 percent of GDP i.e. about INR 12-15 lakh crore per annum. Of these public procurement the energy equipment such as televisions, air conditioners, computers, etc. form the major part^{4,5,6}. Such government

⁴ India is developing its green public procurement (GPP) policy, which will be important to create aggregate demand for environmentally friendly goods and services. The product categories as per its environmental impact (in production, use or

institutions therefore form one of the bulk consumers of the electronic products under study and therefore, this instrument can substantially reduce the waste management costs. The expansion of the scope of this policy to other private institutions can also be considered in future. The producer group supported the idea of having a green procurement policy and to begin with to apply it to the public institutions. They said that Green Procurement policy will create market for green products and will incentivize consumers to procure products that are labeled and rated as green. This policy will therefore, create demand for green products and will also serve as an added incentive to procure green labels.

Disposal Policy for Bulk Consumers

Further, at the consumption stage under the proposed framework, the bulk consumers could also be mandated to have a Disposal Policy. This will structure out the way in which the e-waste generated by these bulk consumers' should be disposed and through what channels. For instance, if the computers or laptops be returned to the manufacturer or should be sent to a registered recycler. This is an attempt to ensure that the e-waste generated by these bulk consumers flows to an organized and formal e-waste management chain.

disposal), volumes in use, and significant share of public spending include public works, electric appliances, IT equipment (computers & peripherals, photocopier, telecoms), etc.

⁵ International Institute for Sustainable Development, 2012, "Procurement, Innovation and Green Growth: The story so far", IISD, ISBN: 978-1-894784-53-5.

⁶ K Saurabh, April 2012, "Energy savings in public procurement", Business Line, The Hindu, <http://www.thehindubusinessline.com/opinion/article3336442.ec>, last accessed on September 13th 2012.

Deposit Refund System

To counter the issues confronted at the collection and recycling stage, the proposed framework recommends introduction of Deposit Refund System and subsidies and incentives for the informal collectors and recyclers respectively. The Deposit Refund System (DRS), will levy a charge at the point of sale on the consumer which will be refunded once the product is returned to the producers. The charge can be a flat rate which will be the same for different kinds of products within each product category or can be linked to the price of the product. In the case of former, the argument against it can be that different products will have different compositions which may have different effects at the end of life stage. However, in the case of latter, if we link the rate to the price of the product, then it will call for estimating the price of the product again and again at the points it is sold in the second-hand/re-use market, which will lead to huge administration costs. Though this instrument has the potential to increase collection rates and ensure an organized and effective management of waste there are substantial administrative and implementation costs associated with it. The framework proposes a set-up which will try to minimize these associated costs to the maximum possible extent. The framework suggests setting up of an independent collection centre which will be responsible for collecting the e-waste and returning back the consumers the amount deposited by them at the time of purchase. The producers will provide the collection centres with a list of products and the rates assigned to it. This will reflect the amount the collection centre will return to the person bringing back that particular product to the collection centre. For the historical products as well, the producer will provide the rate chart and the deposit collected from sale of new products will be

utilized to finance the return that will be given for historical products. This is because the new products will become waste only after a few years i.e. after the life of the product is over and till then the amount collected will be used to finance the collection of historical waste.

The collection centre will maintain a fund to make the payments to the person returning the e-waste. This fund will draw money from the producers who will transfer the deposit money collected by them at the point of sale of the product. The framework suggests a flat rate to be charged across the product i.e. a standard rate for all laptops or a fixed rate for all television sets, etc. This scheme will incentivize the end consumer (who may not be the same as the one who bought the product) to bring back the product to the collection centre at the end of its life as he/she will get a value in its return. This will therefore, ensure that the e-waste generated is channeled to the collection centres, which will then pass on the e-waste to formal registered recyclers. To meet the logistic and transport requirements, tie-ups with the local informal collectors and municipalities can also be explored. The functioning of this collection centre and the entire mechanism maybe monitored and governed by a committee of government officials, producers, recyclers, etc.

Subsidies to Formalize Informal Sector

Further, in an attempt to incentivize the informal collectors and recyclers to register and be part of the formal sector, the framework proposes that the local government should introduce subsidy and incentive schemes. The local government/municipalities can offer some form of monetary incentives to informal collectors/recyclers upon registration. There could also be additional benefits for the registered collectors such as security benefits,

capacity building/training programmes, etc.



Further the local government can offer land at concessional rates for setting up of collection centres and provide other forms of subsidies such as soft loans for setting up collection centres. This instrument will incentivize the informal collectors, and recyclers to register themselves and derive the additional benefits by being a part of the formal system.

Potential Revenue Sources

The provision of subsidies and incentives may result in additional burden to the local government. However, in order to make sure that the additional burden is not excessive, a mix of revenue generating, revenue neutral and revenue providing instruments must be used. Further, in order to finance the revenue providing instruments, the framework recommends that the centre or the state government can finance these schemes by making a provision for e-waste management in its budget and transferring the same to the local governments. For instance the central government can levy a cess on excise duty the revenue from which will be transferred to the local government for financing e-waste

management. The Central Board of Excise and Customs, which is responsible for administration and collection of excise duty will also be responsible for collection of the additional excise duty and transferring the same for e-waste management. Similarly, the state can levy an additional VAT, a certain percentage of VAT which will be transferred to the local government and set aside for managing e-waste in the locality. The central government as it acts as a facilitator or guiding body for implementation of VAT will also look at the implementation of the additional charge to be collected and transferred for better e-waste management.

However, an effective and transparent system for monitoring the collection and transfer of collected revenue will form the base for this system to be successful and to protect it from corruption and other illicit activities.

The proposed framework, as also endorsed by various stakeholders will therefore work towards incentivizing the producers to manufacture environment friendly products and will also help create demand for the same. It will also work towards filling one of the major gaps i.e. of lack of awareness by ensuring that the manufacturers take up the responsibility of spreading awareness. It will make the entire collection system organized and will ensure flow of e-waste to registered recyclers. Further the framework also encourages the informal collectors/recyclers to register themselves and function in an organized manner.

About TERI and GIZ

The Energy and Resources Institute (TERI)

TERI (The Energy and Resources Institute) is a leading science and policy research institution committed to working for global sustainable development, with particular application to the diverse challenges faced by India, focusing on equity, efficiency, and optimal utilization of natural and human resources. Founded in 1974, TERI is a unique developing-country institution (not-for-profit) with a global vision and local focus. The genesis of TERI's activities in the field of energy and environment lies in its firm belief that efficient utilization of energy, sustainable use of natural resources, large-scale adoption of renewable energy technologies, and reduction of all forms of waste would move the process of development towards the goal of energy security and sustainability. In this world of increasing globalization and buoyed by optimism generated by the success of the Indian economy TERI moves forward to meet the challenges of the future through the pursuit of excellence embedded in its visionary charter. With a staff of more than 1000 employees, drawn from a range of disciplines and experience, and supported by infrastructure and facilities, which are world class and distinctively state-of-the-art. TERI has grown to establish a presence in different corners and regions of India as well as in North America and Europe, and on the Asian continent (in Japan, Malaysia, and the Gulf). The Institute continues to grow in size, spread and intensity of work undertaken.

Gesellschaft für Internationale Zusammenarbeit (GIZ)

The services delivered by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH draw on a wealth of regional and technical expertise and tried and tested management know-how. As a federal enterprise, we support the German Government in achieving its objectives in the field of international cooperation for sustainable development. We are also engaged in international education work around the globe. GIZ currently operates in more than 130 countries worldwide.

GIZ in India

Germany has been cooperating with India by providing expertise through GIZ for more than 50 years. To address India's priority of sustainable and inclusive growth, GIZ's joint efforts with the partners in India currently focus on the following areas: Energy - Renewable Energy and Energy Efficiency; Sustainable Urban and Industrial Development; Natural Resource Management; Private Sector Development; Social Protection; Financial Systems Development, and HIV/AIDS – Blood Safety

About IGEP

The Indo-German Environment Partnership (IGEP) is a joint programme of the Ministry of Environment and Forests (MoEF) Government of India and the German International Cooperation (GIZ) on behalf of the Federal Ministry for Economic Cooperation and Development, Germany, focusing on urban and industrial environmental management in India. IGEP builds on the experience of the predecessor Advisory Services in Environment Management programme but at the same time strengthens its thematic profile in the urban and industrial sector, up-scales successful pilots and supports the environmental reform agenda and priority needs of India. The overall objective of IGEP is that the decision makers at national, state and local level use innovative solutions for the improvement of urban and industrial environmental management and for the development of an environment and climate policy that targets inclusive economic growth decoupled from resource consumption.

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