

Phase 2 Internalising Externalities

Examples of Policy Concepts:

- Introduction of take-back scheme
- Recycling Fund
- Minimum sustainability quality standards for recyclables
- Zero waste factories
- Eco-industrial parks
- Green public disposal
- Product replacement campaign

Phase 3 Focus on design for the environment (DfE)

Under a fully-fledged EPR scheme, DfE, which aims at easier and safer dismantling and resource recovery, should be promoted in countries with large e-product manufacturing sectors. This stage is also applicable to industrialised countries with EPR systems already in place. The following are examples of possible policy tools.

Phase 3 Reconsideration of Product System and Social Infrastructure

Examples of Policy Concepts:

- Greening of supply chain
- Green purchasing
- Restrictions on throwaway products
- Introduction of virgin material tax
- Introduction of individual producer responsibility

Phase 4

Regional and international collaboration towards better governance for resource circulation

Eventually, addressing the full scope of e-waste management in developing countries will call for improved governance of resource circulation at the global level. With standards for second-hand e-products loosely defined, the (sometimes illegal) flow of e-waste from industrialised to developing countries remains a problem. Even if well designed, national EPR systems in developing countries can be easily overwhelmed and rendered ineffective by the sheer volume and complexity of imported e-waste. As a result, improving e-waste management necessitates better management of international flow.

Phase 4 International Collaboration

Examples of Policy Concepts:

- Multilateral financial mechanism for sustainable resource management and resource circulation
- Ban of waste flows from rich to low-capacity countries
- Increased monitoring and enforcement responsibility for high capacity countries

Conclusion

A developing country needs to take its own policy priorities as the starting point and then adjust implementation of EPR according to factors such as level of economic development, degree of environmental policy development and institutional and administrative capacity for law enforcement, paying particular attention to producer identification and the role played by the

informal sector. Strengthening EPR as a policy tool for developing countries aiming at a green economy requires incorporation of more context-specific characteristics.

The phase-in approach to EPR and prospects for developing countries are discussed in more detail in the following scientific and policy papers:

- IGES Policy Brief no. 14: "EPR Policies for Electronics in Developing Asia: A Phase-in Approach", September 2011. Download: <http://enviroscope.iges.or.jp/modules/envirolib/view.php?docid=3347>
- Akenji Lewis, Hotta Yasuhiko, Bengtsson Magnus, Hayashi Shiko (2011) EPR policies for electronics in developing Asia: an adapted phase-in approach. Waste Management and Research, September 2011 29: 919-930.

* See: OECD, 2001. *Extended Producer Responsibility: A Guidance Manual for Governments*. Organisation for Economic Co-operation and Development, Paris, France

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March 2012



IGES Proposal for Rio+20

IGES Rio+20 Issue Brief vol.3

Applying EPR in developing countries

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Key Messages

- 01 In a green economy, responsibilities of producers should extend to the post-use phase of products they place on the market. However, in developing countries, the challenges of implementing extended producer responsibility (EPR) undermine its potential in greening supply chains. Part of the issue is that many developing countries are trying to apply the EPR model that was developed for and by industrialised countries.
- 02 A phase-in approach would enable developing countries to adjust EPR application to the level of national economic development, capacity for environmental policy enforcement, and market structure for products and recyclables. EPR implementation should progressively go from a basic focus on improved waste management to finally achieving design for the environment.
- 03 Regional collaboration is needed to address trans-boundary flows of waste/recyclables - to place more effective controls on the export of e-waste from industrialised to low-capacity, developing countries, thereby helping to ensure that harmful recycling and treatment is avoided.

EPR policy objectives

The basic idea behind EPR is that: the burden of responsibility for the end-of-life treatment of products placed onto the market should be taken by the producers. EPR is usually conceived as a comprehensive policy package, combining various instruments to simultaneously achieve three distinct objectives:

- Improved waste management and resource recovery: to establish effective collection of end-of-life (EoL) products from consumers, promote environmentally sound treatment and efficient recycling, and reduce the amount of wastes for final disposal;
- Integrating environmental externalities into production and consumption: to transfer the financial burden for waste management from the public sector to the manufacturers;
- Design for the environment: to provide economic incentives for producers to incorporate product design that enables easier reuse and recycling of products.

These three objectives, and the comprehensive character of EPR schemes, are emphasised in the work published by the OECD, which has become a reference model for EPR policy development in advanced countries. Most attempts at implementing EPR in developing countries have followed the OECD model as a baseline and assume that all above three EPR objectives should be met simultaneously. The result is a large gap between the full scale model and the limited implementation capacity of developing economies.

EPR policy instruments

EPR-type legislation has been implemented across a broad mix of product types, most notably for packaging, but also for household hazardous wastes, medications, batteries and accumulators, EoL vehicles, and for electrical and electronic equipment (e-products).

Below are some of the policy instruments used to implement EPR programs:

- *Product take-back requirements.* Producers assume the responsibility of taking back their products (in whole or part) at the post-consumer stage.
- *Performance standards* determine the extent to which producers are required to recycle their post-consumer products. Standards provide incentives for producers to choose production processes and/or products that are easier to reuse and recycle.
- *Deposit/refund schemes* involve the consumer paying a deposit when purchasing a product and then receiving a refund when returning the post-consumer product, the container, or the packaging. The aim is to facilitate product take-back.
- *Advance disposal fees (ADF)* involve charging consumers at the point of purchase for the cost of treating and recycling post-consumer products

(including the cost for take-back). This system can also influence consumer product choice by adding fees to product prices.

- *Material taxes* are usually imposed on raw materials that have high environmental risks to encourage a shift towards use of more environmentally-friendly materials in products. Tax revenues could also be used for the collection, separation, proper treatment and recycling of such products.
- Other measures for strengthening EPR systems include regulating the disposal of waste (e.g., landfill taxes imposed at a metered rate, stiffer punishments for illegal dumping) and promoting environmentally friendly designs and products through tax benefits and subsidies; eco-labels and awareness-raising to expand markets for environmentally-friendly products; and promotion of innovative business models, such as toward dematerialising the economy.

Status of EPR in Asia

Developing economies are increasingly having to cope with rising amounts of waste that is difficult to treat, the associated health, social and environmental risks, as well as rising demands for resources. Many have introduced or are considering EPR-based legislation, particularly that targeting electronic waste (e-waste) management - e-waste is the case study for this brief

Table 1: Recently introduced or draft EPR-based legislation on e-waste in Asian developing countries

Country	Specific legislation or draft legislation
China	Rules on the Administration of the Recovery and Disposal of Discarded Electronic and Electrical Products (promulgated in 2009, effective in 2011)
India	E-waste Management and Handling Rules (promulgated in 2010, effective in 2012)
Indonesia	Specific article on EPR is under preparation under Solid Waste Management Act 2008.
Malaysia	Specific article on take-back and deposit refund in Solid Waste and Public Cleansing Management Act 2007. Draft Regulation on Recycling and Disposal of End-of-life Electrical and Electronic Equipment.
Thailand	WEEE Strategic Plan in 2007 and Draft Act on Economic Instruments for Environmental Management (under development)
Viet Nam	Draft regulations on the reclamation and treatment processes for disposal products (under planning; draft released in 2010)

EPR challenges in developing countries

The challenges for policy makers trying to implement EPR in developing countries get bigger as one moves from developing economies to least developed ones. A major challenge is the ambiguity surrounding the producer: unbranded and counterfeit products are common; during

product repair, which is very widespread, original components often get replaced with those of other brands or generic parts; product smuggling; and producers sometimes go out of business.

Other challenges are the limited knowledge of and poor physical infrastructure for waste collection and treatment. Substantial investments in infrastructure and human and institutional capacity are needed if a comprehensive EPR system is to be introduced. Waste collection in developing countries often involves harmful health and environmental practices carried out within the context of an informal waste collection and recycling sector. Where official, qualified recyclers exist, access to the waste they are expected to process is often difficult.

Compounding the problem is a major loophole in the current governance system (i.e., Basel Convention) for transboundary movement of e-waste, which enables e-waste to be traded under the guise of non-hazardous mixed metal scrap and second-hand electronic products due to the ambiguity between usable second-hand electronics and e-waste (from which valuable metals can be extracted). Poor international import/export governance of e-waste has led to waste ending up in countries improperly equipped to process it.

A phase-in approach to EPR in developing countries

Based on current EPR legislation, countries are categorised as: a) having national EPR-based e-waste legislation that is fully implemented; b) having draft EPR-based e-waste management legislation in the early stages of implementation or not yet started; or c) having no officially developed EPR-based legislation for e-waste management. These categories reveal a pattern corresponding respectively to industrialised, emerging, and least-developed economies.

As is evident in the analyses above, the application of EPR in any one country should be adjusted to its level of economic development, capacity for environmental policy design and enforcement, market structure for products and recyclables, and stakeholder interrelationships (central and local government, private sector, community, and the informal sector). As illustrated by the above challenges, although EPR-based policies have had positive effects in OECD countries, they are not necessarily suitable models for transplanting into developing countries. Developing countries must therefore evaluate their capacity in light of resource needs and set priorities that reflect local and national characteristics.

We therefore recommend a **phase-in approach**. Accordingly, components for each of three major objectives

of EPR would be introduced in phases, starting with the most basic elements and moving on as institutional capacity develops. EPR in a country would thus progress from the first phase—focused on improved waste management and resource recovery (the 3Rs), to the second phase—in which environmental externalities are integrated into consumption and production, and then to the third phase—aimed at achieving design for the environment (DfE) of the product and product systems.

Planning and policy-making

We recommend that each country, as a part of its EPR policy design process, set up a multi-stakeholder panel, e.g. a national e-waste expert review (NEWER) panel. Such panel would consist of experts, policy makers, researchers, relevant industrial associations and consumer groups. The panel would provide an opportunity to examine country-specific circumstances, and develop or adapt any of the tools and instruments available for shifting towards better e-waste management. It would also provide more objectivity, and based on the research gleaned could advise the government on priorities and best policies for achieving its objectives via EPR.

Phase 1 Focus on improved waste management and resource recovery

After implementation of sound waste management and resource recovery policies, a mechanism for integrating environmental externalities into production and consumption needs to be established. Here, a country can start to consider how to share the financial burden of waste treatment and resource recovery among stakeholders. A possible first step for this phase is a pilot or voluntary initiative of take-back and recycling by relatively large producers or retailers.

Phase 1 Improvements in Resource Recovery and Capacity of Actors

- Examples of Policy Concepts:
- Public awareness campaigns
 - Development of basic waste separation and collection infrastructure
 - Creation of interface organization to mediate between the informal sector and resource recovery facilities
 - Licensing for proper repairers
 - Certification for recyclers and recycling centres

Phase 2 Focus on integration of externalities into consumption and production

After implementation of sound waste management and resource recovery policies, a mechanism for integrating environmental externalities into production and consumption needs to be established. Here, a country can start to consider how to share the financial burden of waste treatment and resource recovery among stakeholders. A possible first step for this phase is a pilot or voluntary initiative of take-back and recycling by relatively large producers or retailers.