EPR Toolbox | Know-how to enable Extended Producer Responsibility for packaging

"A circular economy aims to maintain the value of products, materials and resources for as long as possible by returning them into the product cycle at the end of their use, while minimising the generation of waste."[1]

Preface

The global supply of goods has changed drastically over the last 50 years. The number of different products on the market is increasing and individual items are being produced on an ever-increasing scale. Concurrently, innovation in packaging technology has opened up new distribution channels. These have reduced food waste and allowed goods to be stored for extended periods and be transported over long distances. Due to packaging, goods and valuable resources are protected while keeping costs under control. However, pollution caused by packaging disposed of incorrectly is an increasingly serious problem, and one that needs to be addressed urgently by designing products that are easier to recycle, and investing in collection and recycling systems.

These kinds of systems cannot be established without a strong coordinating body, backed up by transparent and stable sources of funding. Making packaging easier to reuse and recycle requires a combination of upstream initiatives and support, which in turn need to be complemented by downstream initiatives to deliver improvements to collection, sorting and recycling systems.

The supply of goods is organised and financed by the private sector. On the other hand, responsibility for waste disposal generally lies with the public sector which, particularly in low- and middle-income countries, is often underregulated and massively underfunded. The issue of who should bear the organisational and financial responsibilities associated with the arising packaging waste and who should be charged with delivering improvements to packaging and recycling infrastructure, is crucial for creating a circular economy.

Experience suggests that the principle of mandatory Extended Producer Responsibility (EPR) can have significant potential to achieve a range of policy objectives. These policy objectives encompass changes both upstream (e.g. design for recycling) and downstream (e.g. increased

[1] Eurostat (no year). https://ec.europa.eu/eurostat/web/circular-economy

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collection, higher overall rates of recycling and improved technologies for sorting and packaging recycling).

The concept of Extended Producer Responsibility was first devised for Germany's packaging industry in the late 1980s. It is an environmentally-focused approach based on the 'polluter-pays' principle, according to which whoever introduces packaging or packaged goods into a country's market remains responsible for it until the end of the packaging life cycle, including the time period after disposal. Besides packaging, EPR systems often cover electronic devices and batteries, but principally, the system could be applied to any product type.

Since the concept of EPR first emerged, a number of 'EPR systems' have been developed in a wide range of countries. A 2013 study conducted by the OECD stated that over 400 different EPR systems were already in operation.[2] However, not all of these supposedly EPR-based systems actually force producers to assume responsibility for their waste. In many cases, they consist merely of taxes levied on packaging or raw materials, and the revenue raised by the taxes is used to finance general spending. In some countries, EPR legislation is statutory, but it is not enforced.

The owners of many private companies have now recognised that an attitude of 'it was always so' is no longer acceptable, and are keen to help establish EPR systems themselves. This readiness to play an active role will be key to making significant and sustainable progress, and creating a system in which all those involved in the packing value chain assume their share of responsibility.

The EPR Toolbox contains detailed information about EPR, and provides a basic introduction to a number of distinct issues. As individual countries approach EPR from very different starting points, this introduction will have to be complemented by additional studies and discussions in the individual countries concerned. The keys to a successful EPR system are finding ways of bringing the relevant stakeholders together to form a leadership committee, as well as ensuring that the government is willing and able to lead the process.

Extended Producer Responsibility as part of sustainable waste management and a circular economy

All over the world, governments, the private sector, civil society representatives and academics are discussing ways to introduce the concept of the circular economy, with a view to encouraging more efficient use of resources, mitigating the effects of climate change and preventing pollution.

The circular economy is an economic model that promotes a more efficient use of resources by applying the three guiding principles of 'reduce', 'reuse' and 'recycle' to create a circular value chain. In contrast to the traditional model, in which resources are extracted, processed, distributed, consumed and, finally, disposed of, the concept of the circular economy encourages a circular life cycle for resources within the economy. **This helps to maximise the available supply of resources at the same time as minimising the impact on the environment.**

The circular economy is a promising concept for improving the way in which packaging, and particularly plastic packaging, is currently treated in many countries worldwide. Often, uncollected plastic packaging waste is burned, buried, or dumped in canals or at roadsides, which pollutes the air, soil, waterways and oceans. Moreover, while transporting collected waste, some of it leaks back into the environment. The same problem occurs when waste is gathered at dumpsites and landfill sites.

[2] OECD (2013), What have we learned about extended producer responsibility in the past decade? – A survey of the recent EPR economic literature, Paris

Photo 1: Most non-organic waste is packaging (© cyclos 2019)

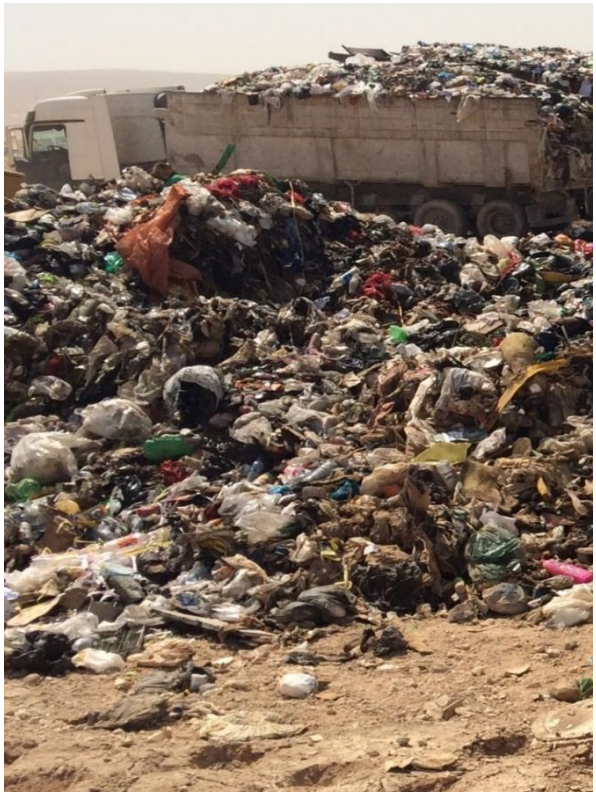

Photo 2: Most waste is simply dumped (© cyclos 2019)

Estimates suggest that around 2 billion people worldwide lack access to waste collection services, and that the waste generated by some 3 billion people is not treated in an environmentally sound

manner.[3] **The need to manage waste properly (including packaging waste), an issue addressed within the concept of the circular economy by ideas like Extended Producer Responsibility (EPR), has therefore become a key issue.**

Countries across Europe, along with other OECD Member States, already have extensive experience in using EPR systems for different types of waste, including packaging. Governments in several low- and middle-income countries have also started to introduce or draft regulations in this area. Besides, a number of companies and business associations have launched voluntary initiatives and committed to reducing the amount of plastic waste leaking into the environment. In some countries, consumer goods industries have formed associations to identify collective action they can take to prevent and manage plastic waste, and are drawing up plans to develop their own EPR-based systems.

The supply chain in a circular economy

The principle of the circular economy requires action at every step of the product value chain and, thus, has important implications for every step. The steps highlighted in green in Figure 1 are particularly important for transitioning towards sustainable waste management.

Figure 1: Packaging value chain in a circular economy

In practice, **there are losses at every step of the product value chain. Therefore, it is not possible to achieve a *perfect* circular economy.** However, if all products and packaging are recyclable, if the system for collecting them as waste works properly, and if demanding technical standards are in place for sorting and recycling waste, then it is possible to achieve an effective circular economy with high rates of recycling.

Organising and financing waste management in a circular economy

Achieving an effective circular economy has important implications for every step of the product value chain. The measures required to do so need to be implemented at a variety of levels and scales, and need to cover more than just waste management. Nevertheless, **sustainable waste management is an essential element in any effective circular economy**. A good waste management system should demonstrate all of the following features, among others:

- Nationwide collection systems

[3] UNEP, ISWA (2015) Global Waste Management Outlook.

- Well-developed recycling infrastructure
- Recovery at a high-quality level
- Environmentally-friendly disposal methods
- Market participants under obligations to carry out certain responsibilities
- High levels of knowledge, education and awareness among all stakeholders

The two prerequisites for sustainable waste management are reliable organisational structures and stable financing. There are a number of different approaches for meeting these requirements, which can be broadly summarised as follows:

- **The free-market economy-based approach.** This approach can be applied to managing waste where the market for the waste concerned generates enough revenue to cover the costs associated with collection, sorting and marketing it (*examples include scrap metals and metal packaging, such as cans).*
- **Voluntary initiatives** to finance waste management are usually initiated, implemented and funded by private companies, charitable organisations and/or NGOs. Given the need to make sure schemes are kept on a solid organisational and financial footing, the scope of voluntary initiatives is often limited, for example as a result of limited timeframes or a decision to focus solely on specific waste fractions.
- **Municipal fees** are sometimes used to pay for waste management services. Such charges are essential for financing the management of certain types of waste that cannot be attributed to any specific polluter.
- **Taxes** can have a steering function in several areas but are generally used as a source of funding.
- **Extended Producer Responsibility** (EPR) is an environmental policy approach based on **obliging producers to assume full responsibility for their products**, both during their useful life cycle (e.g. by stipulating compliance with certain health and safety standards) and **during the end-of-life phase** once the products and packaging become waste. EPR systems can be applied to a number of waste streams, but are not suitable for all types of waste.

The suitability of these different approaches depends on the waste stream concerned and the specific circumstances. With this in mind, a sustainable waste management system should encompass multiple approaches in order to cover the full spectrum of waste streams. **EPR is just one** (of several possible) **approaches aimed at creating sustainable organisational and financial structures for waste management.**

Assigning responsibilities among the various stakeholders is a key factor in the success of any EPR system. These responsibilities should be clear and unambiguous. Generally speaking, waste can be assigned to two different categories as follows:

- **Waste for which no single producer is responsible.** Specifically, this category includes residual waste, organic waste (compost), etc.
- **Waste that is introduced to the market by an identifiable party, who should then assume responsibility for its disposal** (for example, waste introduced by domestic producers or importers). This category includes waste like packaging, electronic devices, batteries, cars, etc. EPR can be successfully applied to this kind of waste, and brings major implications for waste disposal procedures.

Extended producer responsibility in a circular economy

As mentioned above, EPR is increasingly recognised as a key concept for 'closing the loop' in the packaging value chain, as it obliges producers to assume responsibility for their products.[4] The notion of producer responsibility is not new, and has already been incorporated into the overarching concept of 'Global Producer Responsibility'. However, EPR is founded on a broader approach:

- Global Producer Responsibility means that producers/importers are responsible for their products as far health and safety and environmental impact are concerned.
- On the other hand, Extended Producer Responsibility means that producers/importers are responsible for their products until the end-of-life stage, after their packaging and products become waste. It therefore extends to the work of collecting, sorting and recycling this waste.

The involvement of a third party, known as the Producer Responsibility Organisation (PRO) or system operator, is usually required in order to coordinate and operate collection, sorting and recycling systems for packaging under EPR. This name reflects the central role this third party fulfils in the system, as illustrated in Figure 2.

Figure 2: Transitioning to a sustainable waste management system for packaging

[4] EPR systems can be implemented using this general method for a number of different waste streams. However, the way in which each individual system operates in practice will differ. This example is based on an EPR system for packaging (using all possible types of materials).

Glossary

The glossary is based on the definitions of the UNEP/Basel Convention entitled 'Draft practical manuals on Extended Producer Responsibility and on financing systems for environmentally sound management' (2018).[5] Definitions directly quoted from the manuals are marked with a *.

Deposit-Refund System (DRS)	A system in which a surcharge is added to the purchase prices of certain products and containers. If consumers return these containers or products after use, the surcharge is refunded.
Disposal	Refers to any waste management operation not defined as recovery. Any activity that later results in secondary treatment in order to reclaim valuable substances or energy is also classified as disposal.
Energy recovery	A process in which energy (heat, electricity, fuel) is generated from the primary treatment of waste. The most common application of this process is in incineration. Energy recovery is not considered material recycling.
EPR fee	The price paid by a producer to the Producer Responsibility Organisation/system operator in return for carrying out the producers' responsibilities.
EPR system	Any system set up by one or several producers to implement the EPR principle. It can be an individual system (or individual compliance system) where a producer organises its own system, or a collective system (collective compliance system) where several producers decide to collaborate and thus fulfil their responsibility in a collective way through a specific organisation.*
Extended producer responsibility (EPR)	Environmental policy approach in which a producer's responsibility for a product is extended to the waste stage of that product's life cycle. In practice, EPR involves producers taking responsibility for the management of products after becoming waste, including: Collection; pre-treatment, e.g. sorting, dismantling or de-pollution; (preparation for) reuse; recovery (including recycling and energy recovery) or final disposal. EPR systems can allow producers to exercise their responsibility either by providing the financial resources required and/or by taking over the operational aspects of the process from municipalities. They assume the responsibility voluntarily or mandatorily; EPR systems can be implemented individually or collectively.*

[5] http://www.basel.int/Portals/4/download.aspx?d=UNEP-CHW-OEWG.11-INF-7.English.pdf

Fee	Price paid by a producer to the Producer Responsibility Organisation to deal with its responsibility.*
Feedstock recycling	The process of breaking down plastic polymers into monomers and other basic chemical elements. These monomers can be used as alternatives for virgin material for manufacturing new polymers. This process is particularly useful for plastics that are difficult to recycle because they are of low quality, of low economic value, or of composite construction. However, the process produces hazardous substances and requires high energy-input.
Free riders	Producers and importers that enjoy the benefits of the EPR system without paying the corresponding fees, including those that under-declare waste volumes.
Individual producer responsibility (IPR)	Each individual producer is responsible for the collection and disposal of waste originating from their own products.*
Material recycling	Describes a recycling process in which waste materials are mechanically reprocessed into products, materials or substances with equivalent properties (also referred to as closed-loop recycling) or a product that requires lower levels of these properties.
Manufacturer/Converter	A company that produces packaging by converting raw material.
Landfill	A location where municipal solid waste is disposed of. For a landfill site to qualify as a sanitary, proper environmental precautions must be in place, such as wastewater treatment facilities or sealed landfill. If these conditions are not met, the site is considered an unsanitary landfill.
Obliged companies	Companies that are obliged to pay a fee within an operational EPR system. In most cases, these companies are domestic producers and importers introducing packaged products into the market.
Orphan product	Products that are on the market and for which a producer can no longer be identified.*
Polluter pays principle	According to this principle, the waste producer or owner is the potential polluter and bears (financial) responsibility for any pollution it causes. The 'polluter pays' principle is designed to provide the necessary incentives for environmentally friendly conduct and to encourage the required investment in environmentally-friendly waste management.

Producer	The entity whose brand name appears on the product itself or the importer. In the case of packaging, the filler of the packaging is considered the producer*.
Waste prevention (measures)	Measures taken before a substance, a material or a product becomes waste. This includes the reuse of products and measures to extend a product's lifespan. Waste prevention reduces the quantity of waste produced and the amounts of hazardous substances in use, as well as mitigating the adverse impacts of the waste generated on the environment and human health.
Producer Responsibility Organisation (PRO)	Collective entity set up by the obliged companies or through legislation, which becomes responsible for meeting the waste collection and disposal obligations of the individual obliged companies.* The PRO is the most important stakeholder (organisation) in an EPR system and is responsible for setting up, developing and maintaining the system, as well as for the take-back obligations of the obliged companies. In some contexts, the PRO is also used as an abbreviation for Packaging Recycling Organisation. However, this Toolbox does not use it in this sense.
Recovery	Describes any activity in which waste serves a useful purpose, for example by replacing other materials or by leveraging its material properties (examples include preparing material for reuse, recycling as part of material or feedstock recycling, and energy recovery).
Recyclables	Materials that still have useful physical or chemical properties after serving their original purpose and can therefore be re-manufactured. Some also have a significant commercial value (e.g. rigid PE, PET bottles).
Recyclates	Products that have passed through a life cycle and a subsequent recycling process, meaning the product is made from used materials (e.g. plastic granules).
Recycler	A company that recycles pre-processed waste streams (e.g. sorted rigid PE plastics) by washing, flaking, agglomerating and regranulating them. In doing so, the recycler produces an economically marketable product.
Reducing	The practice of using less material and energy in order to minimise the amount of waste generated and to preserve natural resources. It includes measures designed to prevent materials from becoming

	waste before they are recycled, as well as reusing products (see below).
Reuse	The repeated use of a product in the same form for the same or a different purpose. A product being reused does not qualify as waste.
Single use plastic products	Single use plastic products are products that are made wholly or partly from plastic and that are not designed to go through multiple life cycles after their introduction to market, for example, by being returned to a producer to be reused for the same purpose for which they were originally designed.
Solid Waste Management (SWM)	The storage, collection, transportation and disposal of solid waste. Also describes a practice whereby multiple waste management techniques are used to manage and dispose of specific components of solid waste. Such waste management techniques include waste prevention, reduction, reuse, recycling, recovery and disposal.
Source separation	The segregation of specific materials at source for separate collection.
Stakeholder	All actors involved in the life cycle of a product including: Producers, retailers, consumers, local authorities, public and private waste management operators.*
System Operator	Synonym for Producer Responsibility Organisation
Waste hierarchy	A tool for ranking waste management options according to their environmental impact. It gives top priority to preventing waste wherever possible. Where waste is generated, the options considered for handling it are, in order by priority: preparing for re-use; recycling; recovery and, as a last resort, permanent disposal.
Waste management	The term waste management describes typical activities including (a) the collection, transport, treatment and disposal of waste, (b) the control, monitoring and regulation of the production, collection, transport, treatment and disposal of waste and (c) the prevention of waste via in-process modifications, reuse and recycling.

Overview of the EPR Toolbox: Know-how to enable Extended Producer Responsibility for packaging

The EPR Toolbox consists of three thematic modules with a total of 13 sub-topics. It begins by describing some general aspects of EPR schemes for packaging. This general information is followed first by descriptions of waste collection and sorting for packaging, and then by a discussion of how packaging is recycled. There is a separate set of materials for each subject. The materials

are based on factsheets, which the additional materials are designed to complement and build upon.

Module 1: General aspects of EPR schemes for packaging

Factsheet 01: How can roles and responsibilities in packaging value chains be defined?

This factsheet outlines the basic principles of EPR for packaging and describes the possible roles of stakeholders within the packaging value chain. It discusses a number of options for assigning responsibilities as well as the steps that need to be taken in order to build a consensus and prepare the ground for the establishment of an EPR system. It also identifies common pitfalls and conflicts within existing EPR schemes and suggests how they can be resolved.

Factsheet 02: How can a PRO be established?

This factsheet outlines the key elements of the process of setting up and developing a system operator (PRO). It describes the roles and responsibilities of a system operator, who the operating body's members should be, and how it should be organised (non-profit vs for-profit). It also sets out arguments for and against using a single system operator as opposed to setting up several competing system operators.

Factsheet 03: How can financial flows be managed and fees and payments be set?

This factsheet outlines how the system operator (PRO) should be managed from a financial standpoint in order to ensure accountability and transparency and to prevent corruption. It considers, amongst other things, how to set the fees 'producers' should pay to a system operator (PRO) and the payments made by a System Operator (PRO) to collectors and recyclers.

Factsheet 04: How can a register of obliged companies be established?

This factsheet sets out the role of a register for producers and how it should be organised. It covers aspects including how to collect, store and process data, such as information provided by companies on the amount of packaging they introduce to the market. The factsheet outlines who manages such data, what level of public transparency is required and how to avoid free-riding by companies not participating in the scheme.

Factsheet 05: How can a regulatory framework be designed?

This factsheet outlines the requirement for a legal framework at a national level (legislation, by-laws, decrees, ordinances etc. depending on the legal context in the country concerned) and the basic content that it should include. It describes the key policy instruments that form a part of an EPR system, such as collection and recycling targets, obligations for private sector companies and ensuring there is sufficient flexibility to form PROs, as well as for monitoring and evaluation.

Module 2: The collection and sorting of packaging waste

Factsheet 06: How can the collection of packaging waste be organised?

This factsheet outlines key aspects of the connection between EPR systems and packaging waste collection at municipal level. It describes how responsibility for collecting packaging waste is assigned, as well as the roles of public and private entities and community-based organisations in the collection process. It also shows how to link financing flows associated with the EPR scheme to funding packaging waste collection systems, and describes the systems required for effective collection. A good collection system will create new jobs.

Factsheet 07: How can sorting procedures for packaging waste be organised?

This factsheet outlines key elements of sorting processes and explains how they work. It also discusses ways in which the system operator (PRO) can carry out its responsibilities with regard to sorting packaging waste.

Factsheet 08: How can the informal sector get involved in the system?

This factsheet describes how informal waste workers and enterprises can be integrated into waste collection, sorting and recycling systems for packaging as part of the EPR concept. It considers aspects such as the part training for operatives can play, how to improve working conditions for informal waste pickers, increasing their income, providing access to healthcare and welfare initiatives, and how to deal with informal middlemen who buy and sell packaging waste.

Factsheet 09: How can citizens be incentivised to separate packaging waste at the source?

This factsheet addresses the need to obtain the support and co-operation of citizens when it comes to sorting waste. It covers issues such as the information that should be provided, raising awareness, and the incentive mechanisms that can be used to encourage citizens to separate packaging waste, as well as discussing the best collection methods, the role of deposit-refund schemes and how to run sustainable public campaigns to raise awareness.

Factsheet 10: How can deposit refund systems be set up?

This factsheet outlines the basic principles of deposit-refund systems as one potential element of an EPR scheme, and describes various forms of deposit-refund systems.

Module 3: Recycling packaging waste

Factsheet 11: How can high-quality recycling be ensured?

This factsheet outlines the key elements of plastic recycling systems, including the technologies required to recycle different types of plastic and packaging. It shows how packaging waste can be recycled in an EPR system.

Factsheet 12: How can the recyclability of packaging be increased?

This factsheet outlines the key factors that determine how recyclable packaging is, such as packaging design. It then goes on to describe how EPR schemes relate to packaging producers, fillers and recycling companies.

Factsheet 13: How can the market demand for recycled plastics be increased?

This factsheet outlines ways of identifying and approaching suitable markets for recycled materials, and discusses how to use policy instruments to increase market demand. It focuses particularly heavily on obtaining access to financial flows within EPR systems.

Key reading and websites

Basel Convention (2018). Draft practical manuals on Extended Producer Responsibility and on financing systems for environmentally sound management. http://www.basel.int/Portals/4/download.aspx?d=UNEP-CHW-OEWG.11-INF-7.English.pdf

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European Recycling Platform:	https://erp-recycling.org/position-papers/
EXPRA:	http://www.expra.eu/
PROsPA:	https://prospalliance.org/

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