



Institute for  
European  
Environmental  
Policy

23 August 2019

## How to implement extended producer responsibility (EPR)

A briefing for governments  
and businesses

**By:**

Emma Watkins  
Susanna Gionfra

Funded by



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**The report should be cited as follows:** E. Watkins and S. Gionfra (2019) How to implement extended producer responsibility (EPR): A briefing for governments and businesses

**Corresponding author:** Emma Watkins

**Acknowledgements:**

We thank Xin Chen and Annika Lilliestam of WWF Germany for their inputs and comments during the preparation of this briefing.

**Cover image:**

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**Institute for European Environmental Policy AISBL**

Brussels Office  
Rue Joseph II 36-38  
1000 Bruxelles  
Belgium

Tel: +32 (0) 2738 7482  
Fax: +32 (0) 2732 4004

London Office  
11 Belgrave Road  
IEEP Offices, Floor 3  
London, SW1V 1RB

Tel: +44 (0) 20 7799 2244  
Fax: +44 (0) 20 7799 2600

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## List of acronyms used

ADF	Advance disposal fee(s)
CEPS	Centre for European Policy Studies
CPR	Collective producer responsibility
DRS	Deposit refund system/scheme(s)
EEA	European Environment Agency
EEE	Electrical and electronic equipment
ELV	End-of-life vehicle(s)
EPR	Extended producer responsibility
EU	European Union
EUR	Euro (currency)
HDPE	High-density polyethylene (type of plastic)
IPR	Individual producer responsibility
MS	Member State(s) (of the EU)
NGO	Non-governmental organisation
NOK	Norwegian krone (currency)
OECD	Organisation for Economic Co-operation and Development
PE	Polyethylene (type of plastic)
PET	Polyethylene terephthalate (type of plastic)
PRO	Producer responsibility organisation
SME	Small and medium sized enterprise(s)
US	United States of America
USD	United States dollar (currency)
WEEE	Waste electrical and electronic equipment
WRAP	Waste & Resources Action Programme (UK)
WWF	World Wide Fund for Nature
ZWE	Zero Waste Europe

## Executive Summary

### The concept of EPR

**Extended producer responsibility (EPR)** aims to ensure that product manufacturers are made financially responsible for various parts of the life cycle of their products, including take-back, recycling and final disposal at the end of their useful life. In this way, it aims to apply what is often referred to as the ‘polluter pays principle’. EPR is typically used for **specific waste product streams** such as small consumer electronics, packaging and batteries.

EPR can be implemented in various **different forms**, including product take-back requirements, economic and market-based instruments, regulations and performance standards, and information-based instruments. This briefing gives an overview of the **key design elements** of EPR schemes, such as defining the products covered, the producers affected, the form of EPR, the obligations imposed on producers, the setting of targets and fees, the provision of information to stakeholders, and effective monitoring and enforcement of the functioning of EPR schemes.

EPR can create various **environmental, economic and social benefits**, including improved waste collection and treatment, higher rates of waste reuse and recycling, incentivising greener products, helping to finance waste collection and processing, ensuring higher quality secondary raw material, job creation, and reduced health risks from mismanaged waste.

### The role of different stakeholders in EPR

Several stakeholders must be involved for EPR to be successful. **National governments** need to set the policy and legislative framework. **Local municipalities** often undertake household and business waste collection. **Producers and businesses** must meet waste management targets, and typically create, run and pay fees to EPR schemes, for example through collective producer responsibility organisations (PROs). **Waste management companies** collect and manage waste, and can receive financial support from the fees paid by producers to EPR schemes. In developing countries, the **informal sector** (e.g. waste pickers) should be given the opportunity to participate in EPR, for example by contributing to the collection of recyclable waste. Finally, **consumers, citizens and households** need to support EPR by returning waste products at the end of their useful life, using the infrastructure provided.

### Businesses and EPR

By implementing EPR, businesses can make an important contribution to the transition to a circular economy by reducing their products’ and services’ environmental impacts, and helping to address the problems associated with trade in waste to developing countries with inadequate waste infrastructures. The benefits to business of participating in EPR schemes include: enabling them to meet mandatory national **recycling and collection targets**; shifting towards **more circular and more competitive business models**; potential for **cost savings** by creating cost-effective solutions for the collection and recycling of end-of-life products; and supporting the development and improvement of **waste and recycling industries**, which are also associated with high employment potential.

Some businesses are introducing **voluntary actions** to minimise the environmental impacts of their products and services. These are not as powerful as mandatory measures, but can create a platform from which to launch formal EPR schemes.

## EPR for packaging

This briefing uses the example of packaging to further illustrate some of the details and benefits associated with the implementation of EPR.

In the EU, 26 countries have EPR in place for packaging waste. Most countries feature a mix of both **collective and individual producer responsibility** for packaging. Some EPR schemes take on only simple **financial responsibility**, whilst others also take on operational responsibility for waste collection and treatment. The **type of packaging** covered also varies: some schemes deal with only household and equivalent packaging, some only commercial and/or industrial packaging, and others both. All packaging EPR schemes in the EU include some basic **fee modulation**, with different producer fees for each packaging material. Some also charge specific fees for different types of plastic packaging, and others go further, varying fees based on specific characteristics of packaging that influence its environmental impact.

The benefits of EPR schemes for packaging can include improvements in **waste prevention, reuse and recycling**, reduced use of virgin/primary material, increased **availability and use of recycled material**, and **generation of economic value** from materials that would otherwise be thrown away or cause damage to the natural environment. Reuse and recycling also **saves energy use and reduces emissions of CO<sub>2</sub>** associated with virgin material processing and use, and helps to **reduce the energy recovery or incineration** of plastic waste. It can also provide **financial benefits**, with fees paid by producers helping to reduce the cost to governments of waste collection and management.

## Potential steps for governments and businesses in developing countries to implement EPR

This briefing proposes some suggestions for actions that governments and businesses in developing countries can take to begin the implementation of EPR systems in their countries:

Steps for governments	Steps for businesses
Undertake research/feasibility studies including on the benefits and opportunities of establishing EPR	
Begin to develop legislation to support the introduction of EPR	Familiarise themselves with the key objectives and principles of EPR
Begin to support the necessary waste collection infrastructure	Discuss with national governments what governments and companies can do to support the introduction of EPR
Consider how to support the development of markets for recycled material	Create a network or communication between like-minded businesses keen to participate in EPR
	Create a PRO, in cooperation with key stakeholders

## 1 Introduction and context for this briefing

Plastics pollution has been recognised as a global crisis touching on several of WWF's conservation priorities, including the protection of oceans, freshwater, and wildlife. Marine habitats are particularly endangered, with an estimated 8 million tonnes of plastic waste being leaked into the oceans annually<sup>1</sup>, threatening both ecosystems and human livelihoods.

By 2050, the amount of plastic being produced globally is estimated to quadruple<sup>2</sup>, at which point there will be more plastic than fish in the oceans<sup>3</sup>. This surge in plastic production will lead to rising CO<sub>2</sub> emissions and plastic leakage into nature. At current rates recycling capacities will only cover about 1/3 of global plastic waste by 2050<sup>4</sup>.

WWF has set a vision of “No Plastic in Nature by 2030” to change the tide and stop this plastic flood. It aims at stopping the flow of plastics into nature by eliminating unnecessary plastic items; doubling reuse, recycling, and recovery; and ensuring the remaining plastic is sourced responsibly. These goals are milestones on the pathway towards the transformation to a circular economy in which people can live in harmony with nature.

Over a third of all plastic produced globally is used for packaging which is usually designed for immediate disposal. However, only 14% of plastic packaging is recycled, of which only 2% is reused as packaging<sup>5</sup>. The remaining 86% is landfilled (40%), incinerated (14%) or leaked into the environment (32%)<sup>6</sup>. Creating solutions to packaging waste is therefore key to solving the plastic crisis.

Extended Producer Responsibility (EPR) has generally been recognised as a critical policy tool to combat plastic pollution. By holding manufacturers accountable for their plastic products' and packaging's end-of-life impacts, it helps increase collection and recycling rates, as well as encouraging the reduction of plastic packaging at the design stage.

EPR can enable governments to solve a multitude of environmental issues while promoting economic development, ensuring social safeguards, and removing the financial burden of running waste management systems from municipalities. Businesses can gain a head start in the transition towards the circular economy, thus mitigating reputational and regulatory risks while ensuring the roll-out of cost-efficient waste management systems.

This report is designed as guidance to WWF network offices in engaging businesses and governments to promote the introduction of EPR schemes and legislation. It aims at giving strong arguments for EPR schemes as a tool for the construction of functioning waste management systems and showing the feasible next steps towards these schemes.

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<sup>1</sup> Ellen McArthur Foundation (2016), p. 76

<sup>2</sup> World Economic Forum (2017)

<sup>3</sup> Ellen McArthur Foundation (2016), p. 21

<sup>4</sup> World Economic Forum (2017)

<sup>5</sup> Geyer, Jambeck and Law (2017)

<sup>6</sup> Ellen McArthur Foundation (2016), p. 27

## 2 Introduction to extended producer responsibility (EPR)

This section provides an introduction to the concept of EPR in general, the main types of EPR, and briefly discusses some of the strengths and potential weaknesses of EPR as an approach to waste management.

### 2.1 The concept of EPR

The concept of extended producer responsibility (EPR) aims to ensure that the manufacturers of products are made responsible for various parts of the entire life cycle of their product, including take-back, recycling and final disposal at the end of a product's useful life<sup>7</sup>. In this way, EPR aims to apply the 'polluter pays principle' by shifting the responsibility for, and the financial cost of, the negative environmental impacts of products from public bodies and tax payers to producers.

EPR has two primary environmental goals, and if used well, it can be a key element of the transition towards a circular economy<sup>8</sup>. Firstly, it aims to incentivise producers to design more resource efficient products with lower environmental impacts (often referred to as green design or 'eco-design'), for example in terms of the type or amount of material used. Secondly, it aims to ensure effective end-of-life collection and environmentally-sound treatment of collected waste products, and to create higher rates of reuse and recycling. In this way, EPR schemes can help to address issues related to resource consumption and growing waste generation<sup>9</sup>.

EPR is typically used for specific waste product streams. The products most commonly covered by EPR systems are small consumer electronics (sometimes known as waste electrical and electronic equipment or WEEE, 35%), followed by packaging (17%), tyres (17%), vehicles/auto batteries (11%) and other products (20%)<sup>10</sup>.

The EPR approach was first adopted in the European Union (EU) in the early 1990s, and is now very widely used in the EU (in particular in response to EU legislation requiring it to be introduced for WEEE, end-of-life vehicles (ELV) and batteries, and encouraging its use for packaging waste). It is also increasingly being used in other countries around the world, with over 400 EPR schemes now believed to be in use globally<sup>11</sup> (see Figure 1).

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<sup>7</sup> Lindhqvist (2000)

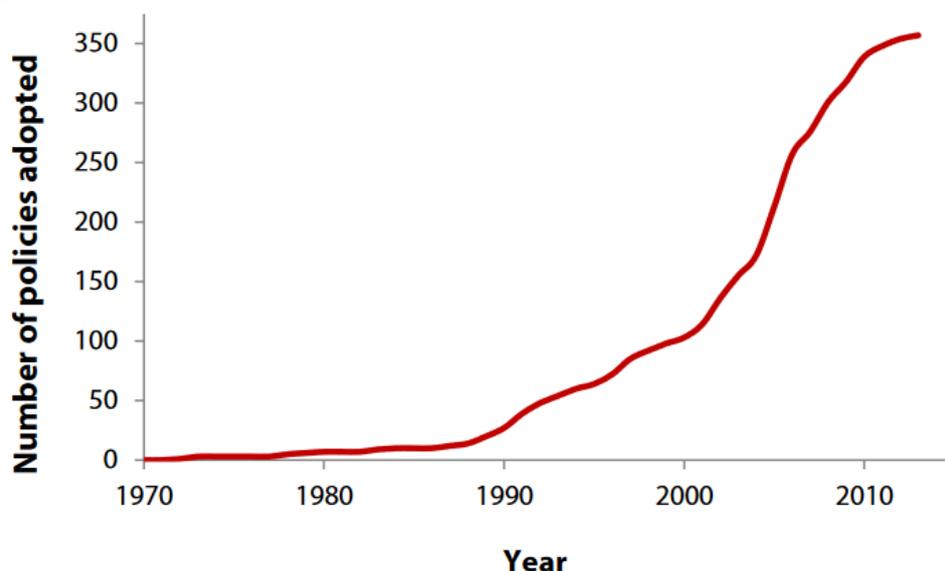
<sup>8</sup> Zero Waste Europe (2017)

<sup>9</sup> Rezero (2017)

<sup>10</sup> Kaffine, D and O'Reilly, P (2015)

<sup>11</sup> OECD (2016)

Figure 1: Cumulative global EPR policy adoption over time<sup>12</sup>



EPR can be implemented through several different types of instrument, as outlined in Table 1 below. These instruments are often applied in combination, since this may be more efficient than adopting a single instrument policy<sup>13</sup>.

Table 1: The main types of EPR

Type of EPR instrument	Description
<b>Product take-back requirements</b> (almost three-quarters of all schemes globally)	Producers must <b>take back their products</b> from consumers when they become waste and are made responsible for their <b>end-of-life management</b> . Requirements often involve <b>mandatory or voluntary recycling and collection targets</b> for specific products or materials.
<b>Economic and market-based instruments</b> (most of the remaining schemes)	Examples include: <ul style="list-style-type: none"> <li>• <b>Deposit refund schemes (DRS)</b>: consumers pay a deposit when they purchase an item, which is refunded when they return the waste item</li> <li>• <b>Advance disposal fees (ADF)</b>: consumers pay a fee at the point of purchase, based on estimated collection and treatment cost, which is used to finance end-of-life management of the products<sup>14</sup> (OECD, 2016)</li> </ul>
<b>Regulations and performance standards</b>	Examples include <b>product standards</b> , such as requirements for minimum recycled content
<b>Information-based instruments</b> (in conjunction with another type of instrument)	The provision of <b>information to consumers and/or producers</b> to support the implementation of EPR

<sup>12</sup> OECD (2013)

<sup>13</sup> Kaffine and O'Reilly (2015)

<sup>14</sup> OECD (2016)

If well-designed and implemented, EPR can provide significant environmental, economic and social benefits. This is because producers are in the best position to make the changes necessary to reduce the environmental, social and economic impacts of their products. Some of the key potential benefits are summarised in Table 2 below.

**Table 2: Key potential benefits of EPR**

Area of benefit	Key potential benefits
<b>Environmental</b>	<ul style="list-style-type: none"> <li>• Supporting effective <b>end-of-life collection</b> and <b>environmentally-sound treatment</b> of collected waste products</li> <li>• Helping to <b>boost waste reuse and recycling rates</b></li> <li>• Incentivising producers towards <b>green design or eco-design</b>; creating more resource efficient products with lower environmental impacts e.g. using less or less harmful materials</li> <li>• Contribution to the <b>transition towards a circular economy</b></li> </ul>
<b>Economic</b>	<ul style="list-style-type: none"> <li>• Fees paid by producers to EPR schemes can be <b>finance waste collection and processing</b>, reducing waste management cost to governments (for waste collection) and citizens (for waste-related charges)</li> <li>• <b>Reduced cost of using recycled material</b> relative to virgin materials, by ensuring more effective collection of sorted waste materials and thereby providing higher quality secondary raw material</li> <li>• <b>Job creation</b>, e.g. in Germany, around 290,000 people work in the waste management and secondary raw materials sector<sup>15</sup></li> </ul>
<b>Social</b>	<ul style="list-style-type: none"> <li>• Places greater <b>social responsibility on producers</b> by applying the polluter pays principle</li> <li>• <b>Reduces potential health risks</b> from mismanaged waste, including hazardous waste such as WEEE and batteries (e.g. pollution of water sources, health risks from pests attracted to dumped waste)</li> </ul>

Of course, EPR should not be considered as a ‘silver bullet’ to solve all the problems of waste management. Firstly, it should be used in conjunction with other waste management policies, and tends to be more effective at meeting reuse and recycling targets when coupled with other economic instruments such as landfill and incineration taxes, disposal bans for certain products or materials, packaging taxes and pay-as-you-throw schemes<sup>16</sup>. Secondly, if not well designed and implemented, various problems can occur with EPR. These can include, for example: lack of adequate waste management infrastructure to support the functioning of EPR; the failure of fees paid by producers to fully cover the costs of waste management; lack of transparency in how the EPR schemes function and lack of adequate monitoring; and so on. Design features to help to counteract these potential problems are outlined in Table 4 in the following section. In addition, some of the economic benefits of EPR for plastic products, including packaging, can be counteracted by fluctuations in global oil prices. For example, a drop in oil prices can lead to a lower comparative value for recycled plastic materials, effectively creating an incentive to produce new plastics from virgin rather than recycled material (see e.g. WRAP, 2016<sup>17</sup>).

<sup>15</sup> Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (2018)

<sup>16</sup> One example mentioned in Zero Waste Europe (2015) is the Norwegian tax on one-way packaging. On top of a basic fee of NOK 1.1 (EUR 0.12), a graduated fee of a maximum of NOK 6,44 (EUR 0.68) (for cans) and NOK 4,32 (EUR 0.46) (for plastic bottles) can be reduced proportionally to the recycling rate of the packaging

<sup>17</sup> WRAP (2016)

## 3 EPR and governments

Governments, at both the national and regional/local level, have an important role in supporting and promoting EPR. Crucially, by developing the necessary policy and legislation they can create the right conditions for well-functioning EPR schemes. Governments are also well-placed to engage and support other stakeholders, including businesses, waste management companies, the informal sector and the public, in the implementation of EPR to ensure its success.

Introducing EPR can also lead to benefits for governments. This includes the potential to support the transition to a circular economy by increasing waste collection, reuse and recycling at a low cost to government, since EPR ensures that producers and businesses contribute financially to (or in some cases cover the whole cost of) the management of the waste created by their products.

This section discusses the role of governmental bodies and other stakeholders in EPR, as well as some of the key features of EPR schemes which governments can help to shape to ensure that they are implemented effectively. It concludes with some suggestions of first steps that governments in developing countries can take to implement EPR.

### 3.1 Stakeholder roles in EPR

For EPR schemes to be created and function effectively, several stakeholders need to be involved. Table 3 below summarises the key stakeholder groups and the key aspects of their roles within EPR schemes.

**Table 3: Stakeholder roles in EPR<sup>18</sup>**

Stakeholder	Role(s)
National government	<ul style="list-style-type: none"> <li>• Setting the <b>policy and legislative framework</b>, including:               <ul style="list-style-type: none"> <li>○ Defining the <b>producers and products</b> concerned</li> <li>○ Setting the actual <b>responsibilities</b> for the producers, e.g. <b>quantified targets</b> for take-back, collection and recycling of waste</li> <li>○ Defining the <b>roles of other actors</b>, e.g. local municipalities, information waste sector. Dialogue with these actors is important</li> <li>○ <b>Accreditation/approval and monitoring of EPR schemes</b>, to ensure good functioning and enforce compliance</li> <li>○ Taking steps to combat <b>illegal imports</b> of packaging or packaging waste</li> </ul> </li> </ul>
Local municipalities	<ul style="list-style-type: none"> <li>• Typically responsible for <b>waste collection</b> from households and businesses, including providing readily accessible infrastructure</li> <li>• Provision of <b>information to the public</b></li> </ul>

<sup>18</sup> Drawing on: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (2018)

Stakeholder	Role(s)
<b>Producers / business</b> (including manufacturers, consumer goods companies and retailers/distributors)	<ul style="list-style-type: none"> <li>Responsible for <b>meeting responsibility and targets</b> set by government, including: <ul style="list-style-type: none"> <li><b>Creation of EPR schemes</b>, including setting up non-profit or for-profit producer responsibility organisations (PROs) in the case of collective EPR</li> <li><b>Administering and running EPR schemes</b>, which may include: setting registration and product fees, collecting fees (typically from consumer goods companies), relationships with waste collectors/processors, reporting of collection and recycling rates, and possibly take-back of waste packaging (retailers/distributors)</li> <li><b>Paying fees to EPR schemes</b> based on the packaging material they place on the market</li> <li>Providing <b>information to producers and consumers</b> on how to use EPR schemes</li> </ul> </li> </ul>
<b>Waste management companies</b>	<ul style="list-style-type: none"> <li><b>Collection and management</b> of waste, through contracts with either local municipalities, PROs or individual producers. Should receive funds from EPR schemes for handling packaging waste</li> </ul>
<b>Informal sector</b> (e.g. waste pickers)	<ul style="list-style-type: none"> <li>Any existing informal sector actors should be given the <b>opportunity to participate in EPR schemes</b>, for example by contributing to effective collection of recyclable waste</li> </ul>
<b>Consumers / citizens / households</b>	<ul style="list-style-type: none"> <li><b>Returning waste products</b> at the end of their useful life, using the infrastructure provided</li> </ul>

### 3.2 Key features of EPR schemes

There are various aspects to take into consideration when designing EPR schemes. Table 4 below provides an overview of these aspects, and could provide a useful checklist to governments who are considering the introduction of EPR of the elements that must be considered. When setting up a new EPR scheme, governments can usefully review existing experiences with EPR to identify successes (and failures), and the current state of waste management and related infrastructure. Feasibility studies and pilot projects may also be helpful to identify what will work in a specific national context.

**Table 4: Key design elements of EPR schemes<sup>19</sup>**

Design element	Description	Options
<b>Product definition</b>	<ul style="list-style-type: none"> <li>The product(s) to be covered by EPR must be <b>clearly defined</b></li> </ul>	<ul style="list-style-type: none"> <li>Definitions should include e.g. the <b>type of product</b>, categories/sub-categories if appropriate, <b>materials</b> and <b>type of consumer</b> (e.g. household and/or commercial/business waste)</li> </ul>
<b>Producer definition and registration</b>	<ul style="list-style-type: none"> <li>All affected producers should be registered and <b>treated equally</b></li> </ul>	<ul style="list-style-type: none"> <li>All producers should face the same requirements/obligations, whilst not adversely affecting small and medium-sized enterprises (SME)</li> </ul>

<sup>19</sup> Drawing on: UNEP (2017)

Design element	Description	Options
Individual vs collective schemes	<ul style="list-style-type: none"> <li>Schemes can be either <b>individual producer responsibility (IPR)</b> or <b>collective producer responsibility (CPR)</b></li> <li>There may be one single collective scheme or competing schemes</li> </ul>	<ul style="list-style-type: none"> <li><b>IPR:</b> individual producers take responsibility for their own products – direct link between producer and waste management</li> <li><b>CPR:</b> producers join a collective <b>producer responsibility organisation (PRO)</b> that takes on the responsibility of all its members</li> <li>Collective schemes tend to be more efficient and cost effective<sup>20</sup> (due to pooled resources, economies of scale etc.)</li> </ul>
Type of producer responsibility (obligations)	<ul style="list-style-type: none"> <li>The <b>obligations placed on producers</b>, i.e. their responsibilities, should be clearly defined. Various approaches can be taken</li> </ul>	<ul style="list-style-type: none"> <li><b>‘Simple’ financial:</b> obligation only to finance existing waste management</li> <li><b>Financial with municipal contracts:</b> producers set up waste management contracts with municipalities</li> <li><b>Financial and partial organisational:</b> e.g. municipalities still responsible for waste collection but with financial support from producers, producers responsible for other activities (e.g. sorting, secondary material sales)</li> <li><b>Financial and full organisational:</b> producers have direct contracts with waste operators, or may own (parts of) the waste infrastructure</li> </ul>
Setting targets and responsibilities	<ul style="list-style-type: none"> <li>Realistic, but also reasonably ambitious, and measurable <b>targets</b> should be set for waste collection and management, and periodically reviewed</li> <li>Targets should take into account <b>mandatory (legislative) targets</b> set by governments, <b>technical and economic feasibility</b>, existing/needed <b>infrastructure</b>, <b>geographic and demographic characteristics</b>, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Targets are most often set based on <b>product weight</b>, since it is relatively easy to measure how much by weight producers place on the market</li> <li>Targets should be in line with the <b>waste hierarchy</b>, e.g. where possible prioritising reuse and recycling over recovery</li> <li>Targets may also be set on <b>eco-design</b>, e.g. use/non-use of certain materials, to promote waste prevention and minimisation</li> </ul>
Setting fees and cost coverage	<ul style="list-style-type: none"> <li>PROs should ideally set fees to <b>cover the full net costs of waste management</b> for their</li> </ul>	<ul style="list-style-type: none"> <li>Fees may include a <b>fixed element</b>, effectively a producer membership fee, typically paid annually</li> </ul>

<sup>20</sup> EEA (2017)

Design element	Description	Options
	<p>products<sup>21</sup>, including separate collection, transport, disposal, administrative and communication costs.</p> <ul style="list-style-type: none"> <li>Any <b>revenue from sales</b> of secondary materials or reusable products should be subtracted from the costs</li> </ul>	<ul style="list-style-type: none"> <li><b>Product-related fees</b> should also be established <b>per product, per category/sub-category</b> and/or <b>per material</b>, as appropriate. Again, they are typically paid annually, based on the amount each producer places on the market</li> <li>Fees can also be <b>modulated, i.e. varied</b>, according to certain product features e.g. recyclability, hazardousness. Schemes that directly target product characteristics in this way provide the most direct incentives for eco-design changes<sup>22</sup></li> </ul>
<b>Information provision</b>	<ul style="list-style-type: none"> <li>Adequate information must be provided by governments and/or PROs to <b>consumers and stakeholders</b> to support the good functioning of the EPR scheme</li> <li><b>Dialogue among stakeholders</b> (PROs, producers, government, local municipalities, waste companies, consumers, NGOs) should be encouraged</li> </ul>	<ul style="list-style-type: none"> <li>Information to consumers can include <b>labelling</b> on products, and <b>publicity</b> (posters, leaflets, TV/radio media spots)</li> <li>Information to stakeholders can include <b>guidance documents</b> on participation in EPR schemes, provision of <b>information on responsibilities</b>, etc.</li> <li>Governments and/or PROs can facilitate <b>networking platforms/events</b> between stakeholders</li> </ul>
<b>Transparency, monitoring and enforcement</b>	<ul style="list-style-type: none"> <li>Much <b>information should be made publicly available</b>,</li> <li>EPR schemes should be <b>adequately monitored</b>, and rules <b>enforced</b>, by public authorities and the obligated producers</li> </ul>	<ul style="list-style-type: none"> <li>Publicly available information (e.g. in annual PRO reports) can usefully include: <b>collection, recycling and reuse rates</b> achieved by EPR schemes, <b>fees</b> charged to producers, <b>costs incurred</b>, <b>revenues</b> from resale etc.</li> <li><b>Monitoring and enforcement</b> should include: <b>detecting ‘free riders’</b> (producers who do not pay fees but still benefit from an EPR scheme); identifying <b>anti-competitive practices</b> by producers, PROs and waste management companies; monitoring <b>compliance with targets</b>; ensuring <b>sound financial management</b> of EPR schemes; <b>compliance with legislation</b> by all stakeholders involved</li> </ul>

<sup>21</sup> Zero Waste Europe (2017)

<sup>22</sup> Kaffine and O'Reilly (2015)

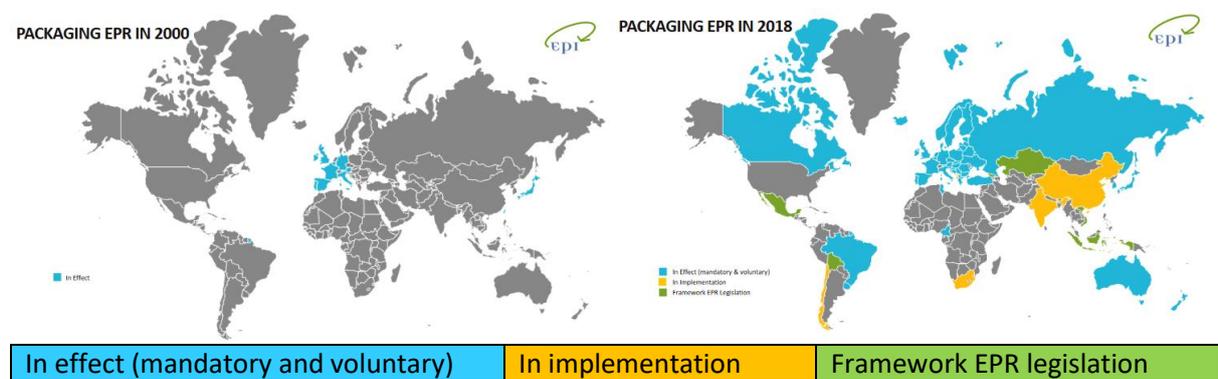
### 3.3 Existing EPR – focus on packaging

This section focuses on packaging, to further illustrate some of the details and benefits of implementation of EPR. Packaging has been chosen as a focus since a significant amount of waste packaging, and in particular plastic packaging, ends up in the environment and in the oceans each year<sup>23</sup>. Plastic production, use and waste continues to increase, both globally and at the European level<sup>24</sup>. Plastic waste in the world’s rivers and oceans creates significant impacts on aquatic biodiversity, ecosystems and water quality. In beach clean-ups around the world, plastic beverage bottles are the second most commonly found item, and five of the top ten items are plastic packaging<sup>25</sup>.

#### 3.3.1 Existing EPR schemes for packaging

Figure 2 below shows how packaging EPR has become significantly more prevalent around the world over the past two decades.

**Figure 2: Development of Packaging EPR schemes worldwide, 2000-2018<sup>26</sup>**



In the EU, 26 countries have some form of EPR in place for packaging waste, as recommended by the EU Packaging and Packaging Waste Directive. Many of these schemes were implemented in the 1990s (with Germany the first, followed by France, Austria, Belgium, Luxembourg, Sweden, Spain, Portugal, Hungary, Finland, Ireland and the UK), with others being put in place in the early 2000s<sup>27</sup>. The schemes in EU countries have certain similarities but also some important differences. These are briefly outlined below.

Packaging EPR in most EU countries feature a mix of both **collective and individual responsibility**. Nine countries have more than one packaging EPR scheme, meaning there is competition between PROs, whereas 12 countries have only one scheme, i.e. there is no competition<sup>28</sup>.

<sup>23</sup> Jambeck et al. (2015)

<sup>24</sup> Plastics Europe (2016)

<sup>25</sup> Ocean Conservancy (2017)

<sup>26</sup> Environmental Packaging International (EPI) (2018)

<sup>27</sup> European Commission (2014)

<sup>28</sup> European Commission (2014)

The **type of responsibility** taken on by PROs also varies. The Belgian VAL-I-PAC scheme for industrial packaging involves only simple financial responsibility. The Czech EKO-KOM scheme, Dutch Afvalfonds Verpakkingen PRO and French CITEO scheme exercise their financial responsibility through direct reimbursement contracts with municipalities and/or sorting plants<sup>29</sup>. The Austrian ARA scheme and German schemes have full operational responsibility<sup>30</sup>.

The **categories of packaging** covered by EPR schemes varies. Some EPR packaging schemes deal with only household/equivalent packaging (Fost-Plus in Belgium, CITEO in France, Der Grüne Punkt - Duales System Deutschland in Germany, and ECOEMBES in Spain). The Belgian VAL-I-PAC scheme covers only commercial and/or industrial packaging. The majority of others cover both categories of packaging, with examples including ECO-KOM in the Czech Republic, Finnish Packaging Recycling RINKI Ltd, CONAI in Italy, Rekopol in Poland, and FTI in Sweden.<sup>31</sup>

All packaging EPR schemes in the EU include some **basic fee modulation**, by charging differing fees to producers for each packaging material they place on the market. Fees for plastic and for composite packaging materials tend to be significantly higher than fees for other packaging materials such as paper, card, glass and metals<sup>32</sup>. Some specific examples of fees charged in EPR schemes in the EU are included in **Error! Reference source not found.** in Annex 1. Within schemes that cover both household and commercial/industrial packaging, the fees for the latter tend to be either the same or lower than those for household packaging.

Some schemes also charge **specific fees for different types of plastic packaging**. The most commonly differentiated plastic packaging materials being PET/HDPE, expanded polystyrene, bio-plastics/bio-degradable plastics and plastic bags. PET/HDPE fees may be lower, higher, or the same as for other plastics, perhaps reflecting the sorting and recycling infrastructure available in each country for different plastics. A handful of schemes have **lower fees for bio-plastic or biodegradable plastic**<sup>33</sup> than other plastics (e.g. Austria, Germany, Latvia and the Netherlands). Some schemes also have **specific fees for plastic bags**; in Portugal the fee is the same for plastic bags and general plastic packaging, whilst in Croatia and Hungary the fee for bags is higher (in Hungary the bag fee is extremely high if the plastic bag features advertising). The majority of schemes also have **specific fees for beverage cartons** (which tend to be made of mixed or 'composite' materials including paper/card, plastic and/or aluminium foil) and other composite materials. In most cases, the beverage carton fee is lower than the fee for general plastics, likely because recycling processes for them are reasonably well-established. Other interesting examples of fee modulation include the Czech Republic scheme applying **no fee to reusable packaging**, and the various bases for **more detailed eco-modulation** within the French CITEO scheme and the Italian CONAI scheme (see Box 1 in Annex 1).

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<sup>29</sup> European Commission (2014)

<sup>30</sup> European Commission (2014)

<sup>31</sup> Pro-Europe (2017a); Pro-Europe (2017b); and Pro-Europe (2017c)

<sup>32</sup> Pro-Europe (2017d)

<sup>33</sup> 'Bio-plastics' are either bio-based, biodegradable, or both. Bio-based materials are derived (or partly derived) from biomass (plants). Biodegradable materials can be converted by microorganisms available in the environment into natural substances such as water, CO<sub>2</sub> or compost (European Bioplastics, 2017).

### 3.3.2 Key benefits of EPR for packaging

EPR schemes for packaging can help to effectively collect more plastic waste and prevent it from reaching rivers and oceans, thereby reducing the environmental impacts outlined above.

The development of EPR in Europe has contributed to improvements in **waste prevention, reuse and recycling**<sup>34</sup>. In 2014, 30% of the 25.8 million tonnes of post-consumer plastic waste generated was recycled and 40% was incinerated with energy recovery<sup>35</sup>. 40% of plastic packaging was recycled in Europe in 2015<sup>36</sup>, although this is a low figure when compared with the 65% recycling rate achieved when all packaging materials are taken into account<sup>37</sup>. To take the specific example of PET bottles, around 1.8m tonnes were collected for recycling in 2015 (a 5% increase from 2014), and 59% of PET resin was recycled in the same year (a 2% increase from 2014)<sup>38</sup>. In 2014, bottle-to-bottle use became the main end market for recycled PET in Europe (previously it was more commonly used to make textiles), and the average recycled content in PET bottles in Europe is currently 11.7%<sup>39</sup>.

To give some specific examples, EPR has contributed to increasing the packaging waste recycling rate in France from 18% in 1993 to 68% in 2016<sup>40</sup>. Italian recycling rates for plastic packaging have increased from 9.6% in 1997 to 38% in 2014, and for all packaging from 3% to 65.4% over the same time period<sup>41</sup>. In 2016, the Belgian Fost Plus scheme achieved a recycling rate of 80.6%<sup>42</sup>. The Korean scheme set up in 2003 helped to increase packaging recycling by 74%<sup>43</sup>.

Through increasing reuse and recycling of material, the **use of virgin/primary material is reduced**, including the oils used to produce plastics. By encouraging separate collection and processing of materials, EPR schemes **increase the availability and use of recycled material**, and **generate economic value** from materials that would otherwise be thrown away. Reuse and recycling also saves energy use and reduces emissions of CO<sub>2</sub> associated with virgin material processing and use. In addition, it helps to **reduce the energy recovery or incineration** of plastic waste; although energy recovery can be beneficial, unless it is done using sophisticated technology it can lead to pollution and health risks from toxins and other harmful compounds.

As outlined above, packaging is one of the waste streams for which the use of varied or 'eco-modulated' fees is becoming more widespread. When the fees paid by producers are varied according to criteria that have potential environmental impacts and impacts on how easy they are to deal with at the end of their life, EPR can contribute to **promoting eco-design** in packaging. Weight-based fees can help to promote the use of less material, and differences

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<sup>34</sup> OECD (2016)

<sup>35</sup> Plastics Europe (2016)

<sup>36</sup> Plastics Europe (2016)

<sup>37</sup> Eurostat (2016)

<sup>38</sup> European PET Bottle Platform (2017)

<sup>39</sup> European PET Bottle Platform (2017)

<sup>40</sup> Eco-Emballages (2015)

<sup>41</sup> Eurostat (2017)

<sup>42</sup> Fost Plus (2016)

<sup>43</sup> Heo and Jung (2014) and OECD (2016)

in the fees charged for certain materials can promote the use of more environmentally sustainable material.

In addition, EPR can also provide **financial benefits**, by moving financial responsibility for (parts of) waste management away from public authorities and onto producers<sup>44</sup>. The fees paid by producers to participate in EPR schemes can be used to help to make waste collection and management infrastructure and processes more efficient. For example, since the creation of the French packaging EPR scheme (formerly Eco-Emballages, now CITEO), producers have paid EUR 8 billion in fees to support the functioning of the scheme, and resold recycled materials have generated EUR 193 million of revenue for local authorities<sup>45</sup>.

### 3.4 Potential next steps for governments to implement EPR

A number of initial actions can be identified for developing country governments to take to begin the implementation of EPR systems in their countries. The following list suggests some potential immediate steps for governments to consider:

- **Undertake research/feasibility studies** including on the benefits and opportunities of establishing an EPR scheme in their country, including investigating examples of well-established EPR schemes in other countries;
- Begin to **develop the necessary legislation** to support the introduction of EPR, in consultation with key stakeholders (business/producers, local governments, waste companies, informal sector and NGOs);
- Begin to **support the necessary waste collection infrastructure** (depending on the country context, this may be done in cooperation with local governments and/or the informal sector);
- Consider how to **support the development of markets for recycled material** (this may be done in cooperation with business/producers, waste processors and/or the informal sector).

Some examples of actions already undertaken in some developing countries with regards to EPR, which could provide inspiration for other countries, are included in Box 1 below.

#### Box 1 EPR in developing countries

Many developing countries have either implemented EPR schemes or other policies and regulations based on the principles of EPR, as a way of dealing with different types of waste. E-waste appears to be the most widely addressed type of waste in these countries to date.

In 2011, **China** introduced the 'Regulation on the Administration of the Recovery and Disposal of WEEE' under which producers and importers are responsible for their products. Through the regulation, a fund was set up to subsidise formal e-waste collection and treatment, to overcome the

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<sup>44</sup> See e.g. Bonnet (2017), OECD (2014)

<sup>45</sup> Eco-Emballages (2015)

role played by the informal sector. An EPR framework is expected to come into place in the country by 2020, followed by laws and regulations by 2025<sup>46,47,48</sup>.

In **South Korea**, an EPR scheme for e-waste was introduced in 2003. In 2014, the scheme covered 27 electronic products<sup>49</sup>. Each year, the Ministry of Environment announces the rates specific to each product, based on the recycling performance of the producers, and sets weight-based recycling targets for each product. Nevertheless, producers appear to have focused on reaching the recycling targets, dedicating less attention to the promotion of eco-design<sup>50</sup>.

**Singapore** currently has several voluntary initiatives for e-waste recycling. Based on these, an e-waste management system, based on an EPR framework, is expected to come into place by 2021. Through the system, responsibilities will be assigned to the key stakeholders involved in the e-waste value chain<sup>51</sup>.

In addition, a mandatory packaging reporting framework will be established in **Singapore** in 2020, setting the basis for an EPR framework for packaging waste. The reporting system will require businesses to report the types and amounts of packaging placed on the market in the previous year, together with details on their reuse, reduce and recycle plans<sup>52</sup>.

In **Indonesia**, the government plans to introduce a new regulation applying EPR in 2019. The regulation will be part of the country's Roadmap Towards 2025, which aims to reduce Indonesia's waste output by 30% by 2025<sup>53</sup>. The EPR will require producers to bear the responsibility for the management of waste from their products, and will incentivise their redesign to increase the percentage of recycled content. The stakeholders which will be most affected will include producers of processed food and beverages, due to their reliance on plastic packaging<sup>54</sup>.

In **India**, e-waste management rules came into play in 2021. These rules are also based on the EPR principle as the producer is to bear both the financial and physical responsibility of WEEE management<sup>55</sup>.

A common issue in developing countries dealing with e-waste is the central role played by the informal sector. The presence of more efficient informal collection and recycling leads to a lack of e-waste supply. Moreover, in the presence of a grey market, the identification of producers becomes a challenge<sup>56</sup>.

In **Chile**, law 20.920, enacted in 2016, established a legal framework for waste management and introduced EPR schemes for six priority products: lubricating oil; car batteries; electrical and electronic products; tyres; batteries; wrapping and packages. In June 2019, the proposed draft decree for packaging was published for consultation and its entry into force is expected in 2021<sup>57</sup>.

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<sup>46</sup> Liu (2014)

<sup>47</sup> Cao et al (2016)

<sup>48</sup> Gupt & Sahay (2015)

<sup>49</sup> OECD (2014b)

<sup>50</sup> Gupt & Sahay (2015)

<sup>51</sup> TowardsZero (2019)

<sup>52</sup> Zengkun (2019)

<sup>53</sup> Hajek (2019)

<sup>54</sup> Gokkon (2018)

<sup>55</sup> Gupt & Sahay (2015)

<sup>56</sup> Gupt & Sahay (2015)

<sup>57</sup> Thornton (2019)

#### 4.1 Business and its impacts

All businesses, to a certain extent, depend on and impact natural capital, generating significant environmental damages through their processes<sup>58</sup>. In particular, the production stage is associated with negative environmental impacts through the use of materials and energy. In addition, the main features of products determined at this stage can have implications downstream and generate negative environmental externalities when products become waste. A study by Trucost estimates that primary production and processing sectors are associated with natural capital costs of USD 7.3 trillion, due mostly to greenhouse gas emissions, water and land use, pollution and waste<sup>59</sup>.

At the same time, companies represent important players in the transition to a circular economy and can introduce business models which rely less on the use of natural resources and promote more sustainable products<sup>60</sup>. For this reason, producers are best suited to integrate the required changes in the production process which are crucial to minimise the environmental, social and economic impacts of their products. In line with the polluter pays principle, producers are to take over the financial responsibility for the end of life management of the products they place on the market<sup>61</sup>.

The European Commission estimated that 80% of product-related environmental impacts are determined during the design stage<sup>62</sup>. In fact, it is during this phase of the life cycle that decisions on the reusability, recyclability and reparability of products can be made. Such features, which are in line with key principles of circularity, can lead to changes at the end-of-life and influence treatment of products. For instance, in the context of plastic packaging, several design features such as chemical composition and shape can create obstacles for waste management, hampering the recycling or reuse of packaging<sup>63,64</sup>.

EPR provides a powerful tool which can support businesses in reducing the environmental impacts associated with their products and services<sup>65</sup>. The rationale behind the introduction of EPR schemes lies behind the need to establish feedback loops, so as to incentivise improvements in products' design and, as a consequence, minimise the costs associated with their waste management<sup>66,67</sup>.

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<sup>58</sup> Natural Capital Coalition (n.d.)

<sup>59</sup> Trucost (2013)

<sup>60</sup> CEPS (2017)

<sup>61</sup> Watkins et al. (2017)

<sup>62</sup> European Commission (2018)

<sup>63</sup> EEA (2017)

<sup>64</sup> Plastics Recyclers Europe (2016)

<sup>65</sup> Watkins et al. (2017)

<sup>66</sup> Zero Waste Europe (2017)

<sup>67</sup> Watkins et al. (2017)

## 4.2 Why EPR is important for businesses

The introduction and uptake of market-based instruments such as EPR schemes by businesses derives from the political context in which they operate. More precisely, recent trends in transboundary movements of waste have given rise to environmental and economic concerns which have emphasised the potential role of policy instruments of this kind.

The global volume of trade in waste has increased considerably over the years, leading to increasing economic and environmental concerns in export destinations. High-income countries are the primary exporters of waste globally, with the EU representing the top exporter. Exported waste is generally directed towards developing or emerging countries with less stringent environmental regulations. However, importing countries are often associated with a lack of proper waste management capacity<sup>68</sup>.

As a result of increasing trends in trading waste, some countries have introduced import restrictions on certain types of waste. For instance, in 2018 China introduced a ban on the import of 24 types of solid waste, including plastic waste. Developed exporting countries which rely significantly on China's recycling industry, such as the EU and the US, are foreseen to be highly affected by the introduction of the ban, and indeed some implications are already visible. EU exports of plastic waste to China dropped by 95% between 2017 and 2018, and waste paper exports experienced a similar trend<sup>69</sup>. Many exporting countries have responded to the ban by shifting their waste exports to surrounding developing countries in South-East Asia, such as Thailand, Vietnam and Malaysia, the latter of which has rapidly become the world's biggest importer of plastic waste<sup>70</sup>. At the same time, the waste crisis that followed is increasingly putting pressure on the EU and similar exporting countries to find solutions to manage their waste domestically<sup>71</sup>. The current waste problem, and plastics waste in particular, is increasingly posing threats to the environment and, as a consequence, to the processes deemed responsible. This makes it crucial for businesses to start addressing their polluting practices, especially in view of increasing legislation. It is in this political context that policy instruments such as EPR find increasing application, presenting opportunities to develop domestic circular economy strategies to contribute to addressing the current waste crisis.

The implementation of EPR schemes can in fact trigger the required innovations in businesses to support the placing on the market of more circular-economy related products. It can also contribute to the development and improvement of waste and recycling industries. In particular, a number of substantial **benefits to businesses** can be identified as arising from a proper implementation of EPR schemes, from boosting their reputation, to ensuring their compliance with legislation, or leading to substantial cost savings.

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<sup>68</sup> OECD (2018a)

<sup>69</sup> Eurostat (2018)

<sup>70</sup> Hook and Reed (2018)

<sup>71</sup> Tamma (2018)

### *Circular economy*

The objectives of EPR, intended to improve the environmental performance of products throughout their lifecycle, are in line with the objectives of a transition to a circular economy. For instance, schemes using eco-modulation of fees provide incentives for producers to integrate eco-criteria in the design of their products. Such systems can significantly contribute to helping businesses reach environmental and circular economy objectives. This will enable them to meet recycling and collection targets in line with national or European legislation, by ensuring effective end-of-life collection and treatment and promoting reuse and recycling<sup>72</sup>.

### *Competitiveness*

The incentives created by EPR schemes can support businesses in shifting towards more circular models. In view of changing markets and increasing consumers' awareness and preference for sustainable products, circular economy is increasingly seen as an economic opportunity for businesses<sup>73</sup>. This will in fact enable them to gain a competitive advantage over those businesses which still rely on linear models of production and consumption. Over time, increasing competitiveness will stimulate other companies to make the same changes<sup>74</sup>. As a matter of fact, EPR schemes, if properly implemented, can be a powerful tool to drive the transition to a circular economy<sup>75</sup>.

### *Cost savings*

The structure and implementation of EPR schemes should ensure that producers bear the costs of collection, sorting and processing of waste. This structure, which by definition is based on the shift of responsibility to producers, encourages them to find the optimal, cost-effective solution for the collection and recycling of end-of-life products. This is achieved by changing the production process, reducing the amount of resources and rethinking the design of products, making sure that the materials used do not hamper their recyclability or reusability downstream. As a consequence, the introduction of such changes, triggered by EPR, can reduce waste management costs for producers<sup>76</sup>.

### *Efficient waste management*

In addition to generating cost savings to businesses, EPR schemes may contribute to the development and improvement of waste and recycling industries, which are also associated with high employment potential<sup>77</sup>. Whilst revenue generated through other environmental taxes can potentially finance environmental projects<sup>78</sup>, the fees paid by producers to EPR schemes directly provide financing for waste management infrastructure.

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<sup>72</sup> Watkins et al. (2017)

<sup>73</sup> CSR Europe, University of Malta (2018)

<sup>74</sup> CEPS (2017)

<sup>75</sup> Zero Waste Europe (2017)

<sup>76</sup> OECD (2014)

<sup>77</sup> OECD (2016)

<sup>78</sup> Eurostat (2019)

EPR schemes have been successful in improving separate collection schemes, reducing disposal, and increasing the cost-efficiency of collection and recycling<sup>79</sup>.

Several schemes have been introduced so far in the EU, especially in the context of packaging. As discussed in the previous chapter, EPR fees are often based on material type or weight. However more recently the introduction of eco-modulation of fees, that is the differentiation of fees based on eco-criteria, has gained increasing attention. Such fee systems can have important implications on design, something which has not been achieved to a significant extent so far. By introducing fees based on eco-criteria, producers are encouraged to place on the market products which are more respectful of the environment, therefore preventing damage at the end-of-life phase. Such systems can trigger business innovation, provided that the fees and criteria are properly defined and the difference large enough to trigger change<sup>80</sup>.

### 4.3 The role of business in EPR

The introduction of EPR schemes makes businesses accountable for the products they place on the market throughout their life cycle. Producers can take the lead in setting up and managing their EPR schemes, to ensure compliance with collection and recovery targets. A provisional list of next steps for businesses to promote the uptake of EPR is provided at the end of this chapter.

The responsibility placed on producers is often delegated to a third-party organisation – a Producer Responsibility Organisation (PRO)<sup>81</sup>. Through this type of collective entity of companies, the obliged industry collects funding, cooperates with local authorities and ensures cost-efficient recycling<sup>82</sup>. In order to ensure proper functioning of the scheme, close partnership between producers and local authorities is envisaged. By liaising with local authorities, so as to agree on the most appropriate collection schemes, producers can also have a say on take-back and recycling schemes<sup>83</sup>.

So far, several businesses have implemented alternative models to the standard linear system, contributing to the transition to a circular economy. However, a number of challenges can be identified which warrant the integration of an ambitious policy mix<sup>84</sup>. EPR, if in line with ambitious targets and based on a properly defined incentive mechanism, can provide a powerful policy tool to incentivise businesses to shift to more circular models and improve the environmental performance of their products and services. Nevertheless, up to now changes in products' design have mostly been the result of product policy enforcement, such as the EU Eco-design Directive<sup>85</sup>. This indicates that EPR schemes have not been used to their full potential and suggests a need for more appropriate structuring and implementation of schemes which better integrate the role of and impact on businesses. In this regard, several **opportunities for improvement** can be identified.

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<sup>79</sup> Watkins et al. (2017)

<sup>80</sup> Watkins et al. (2017)

<sup>81</sup> Perella (2017)

<sup>82</sup> Expra (2016)

<sup>83</sup> Perella (2017)

<sup>84</sup> CEPS (2017)

<sup>85</sup> Zero Waste Europe (2015)

### *Market demand for circular products*

For the transition to circular models to happen, businesses need to make sure that a market for circular and sustainable products exists. While EPR schemes can help in creating incentives for this market to arise, demand for circular products is often lacking, generating significant obstacles for businesses to innovate their models, as well as their materials and products.

The lack of a harmonized approach across EPR schemes applied across geographies is also an obstacle to the creation of markets and may generate market distortions<sup>86</sup>. EPR is in fact generally applied at the national level. While this is the case for several policy approaches in the context of a circular economy, national policies may fail to take into account global implications, resulting in less effective results than if a common approach were adopted.

### *Waste management infrastructure*

The functioning of EPR schemes is, to a certain extent, reliant on the available waste management infrastructure as the latter determines end-of-life treatment. On the one hand, EPR can support the improvement and development of proper waste management infrastructure, especially the recycling industry, by helping to finance the development of waste management infrastructure. However, an absence of suitable infrastructure or technology for waste collection, sorting and recycling may result in EPR schemes proving ineffective in delivering their objectives<sup>87</sup>. In fact, the absence of suitable technology may lead to adverse effects, as illustrated by the case of textiles presented in Box 2 below.

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<sup>86</sup> Watkins et al. (2017)

<sup>87</sup> OECD (2018b)

### **Box 2: Factors to consider when implementing EPR – the case of textiles**

The only EPR scheme currently in place for textiles in the EU is the French ECO-TLC scheme. The scheme has led to a threefold increase in textile collection and recycling rates since 2006. In addition, the scheme introduced financial incentives to promote eco-design, for instance through the use of recycled content. Despite these benefits, some factors warrant consideration in order to make the case for EPR to be widely adopted in this sector.

The textile sector operates on an **almost entirely linear model**, with less than 1% of products being recycled into new textiles. The **market demand** for recyclable textiles is currently limited. In addition, the textile sector lacks the necessary **sorting and recycling technologies**. The lack of such advanced technology implies that any EPR scheme incentivising collection for recycling will result in an increasing amount of textile waste being accumulated without the possibility of it being recycled.

The introduction of an EPR scheme in the textile sector can contribute to increasing the demand for circular alternatives, through the application of higher fees on textiles lacking circular design. However, for such implementation to be successful, the abovementioned challenges need to be taken into consideration and overcome<sup>88</sup>.

#### *EPR as part of a policy mix*

It is worth noting that EPR as a market-based instrument does not work optimally on its own, and that it is therefore crucial to include it as part of a wider policy mix where regulations and binding targets, as well as financing and investments, also play a role in driving change at the industry level. So far, EPR schemes have largely focused on recycling, but have been much less successful in driving significant changes at the design stage. This calls for further development of these schemes and ensuring better implementation of the waste hierarchy. One way to do so is through the introduction of the aforementioned eco-modulation of fees, along with the improvement of the technology and infrastructures needed for efficient waste management.

#### **4.4 Examples of voluntary commitments**

Industries are increasingly introducing voluntary actions, with the objective of minimising the environmental impacts of their products and services. While not as powerful as mandatory measures, voluntary commitments can also trigger significant changes across the value chain.

Policy makers also play an important role in stimulating environmentally sound actions and ambitions from industry, such as commitments to boost the uptake of recycled plastics<sup>89</sup>. A recent example is the European Commission creating, in 2018, the Circular Plastics Alliance. With the plastics industry being set under the spotlight due to the negative environmental implications associated with its final products, commitments are needed to make the plastic model shift from a linear to a circular one. The Alliance gathers key stakeholders of the plastics value chain with the overarching objective of reaching 10 million tonnes of recycled plastics

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<sup>88</sup> Ecopreneur.eu (2019)

<sup>89</sup> OECD (2018b)

in European products by 2025<sup>90</sup>. Nevertheless, this objective results rather ambitious and current industry's commitments are far from reaching this goal.

A similar collective initiative is the New Plastics Economy Global Commitment led by the Ellen MacArthur Foundation and UN Environment, and signed by more than 250 organisations to eliminate plastic waste and pollution at source. The targets in the commitment include ensuring 100% of plastic packaging to be easily and safely reused, recycled, or composted by 2025<sup>91</sup>.

Other examples of individual voluntary commitments are outlined in Table 5 below.

**Table 5: Examples of voluntary commitments by business<sup>92</sup>**

Firm(s)	Commitments
IKEA	All plastics used in IKEA products are 100% renewable and/or recyclable by August 2020
LEGO	Use only sustainable materials in LEGO products by 2030
Unilever	All plastic packaging is designed to be reusable, recyclable or compostable by 2025
McDonalds	Source 100% of packaging from renewable, recycled or certified sources by 2025
Nestlé & Danone	Develop a 100% bio-based plastic bottle

Voluntary commitments from the industry sector indicate growing interest and acceptance from both businesses and consumers to take into consideration concerns on environmental sustainability. However, while in principle these commitments represent a step forward in the transition to a circular economy, their potential role should not be overestimated. The strongest case for the transition to a circular economy is made by the introduction of a policy mix which includes regulatory and mandatory measures alongside the voluntary commitments, as well as binding targets, market-based instruments and adequate investment and financing plans.

#### 4.5 Potential next steps for businesses to implement EPR

A number of initial actions can be identified that businesses can take to begin the implementation of EPR schemes in the countries in which they operate. The following list suggests some potential immediate steps for businesses to consider:

- **Undertake research/feasibility studies**, including on the benefits and opportunities of establishing an EPR scheme, including investigating examples of well-established EPR schemes in other countries, or drawing on their experiences of EPR in other countries in which they operate;
- Familiarise themselves with the **key objectives and principles of EPR**;

<sup>90</sup> European Commission (2019)

<sup>91</sup> EMF (2018)

<sup>92</sup> OECD (2018b)

- **Discuss with national governments** what they can do to support the introduction of EPR;
- **Create a network or communication between like-minded businesses** who are keen to participate in EPR schemes; and
- **Create a PRO**, in cooperation with other stakeholders including governments, waste management operators and, where appropriate, the informal sector.

**Table 6: Fees charged to producers in selected packaging EPR schemes in the EU (€/tonne)**

Packaging type	Belgium <sup>93</sup>	France <sup>94</sup>	Italy <sup>95</sup>	Netherlands <sup>96</sup>	Spain <sup>97</sup>
Paper	€22.30	€162.80	€20	€22	€68
Glass	€31.10	€14	€27	€56	€22.80 (plus a unit charge)
Beverage cartons	€354.10	€249.70	€40	€380	€323
Plastic bottles	€346.30	€346.30	-	-	-
All (other) plastics	€510.30	€346.30	€150 - €263	Easily recyclable: €380 Other: €640	PET/HDPE: €377 Other: €472
Non-recyclable plastics	-	€692.60	€369	-	-
Steel	€52.90	€45.60	€3	€20	€85
Aluminium	€33.90	€110.40	€15	€20	€102

The fees charged to producers for a specific packaging material vary between countries. There can be different reasons for this. Differences in fees may be a reflection of the actual net cost for the collection and/or treatment of waste, taking into account factors such as the available waste management infrastructure in each country, population density or geography. In some EPR schemes, the fees cover a greater proportion of the waste collection and treatment costs than in others. Certain types of recycled material may have a higher market value in some countries, which may be factored in to the fees charged to producers. Finally, since EPR is only one of several possible waste policy instruments, the presence of other complementary instruments (e.g. pay-as-you-throw schemes or waste disposal taxes) may also lead to differences in the fees charged, reflecting a country's overall approach to waste management.<sup>98</sup>

<sup>93</sup> Fost Plus (2019)

<sup>94</sup> CITEO (2018)

<sup>95</sup> CONAI (2019)

<sup>96</sup> Afvalfonds verpakkingen (2018)

<sup>97</sup> Ecoembes (2018)

<sup>98</sup> European Commission (2014)

**Box 3: Comparison of fees and fee modulation in CITEO (France) and CONAI (Italy)<sup>99</sup>**

CITEO is the collective EPR scheme for household packaging waste in France. CONAI is the Italian scheme covering both household and commercial/industrial packaging. They are amongst the more advanced schemes with regards to fee modulation; their approaches are described below.

**Table 7: Comparison of fee modulation in CITEO and CONAI schemes**

	CITEO <sup>100</sup>	CONAI
<b>Basic fee modulation</b>	Based on <u>weight</u> and <u>type</u> of packaging material:  Plastic, glass, paper/cardboard, steel, aluminium, cartons, and other materials.  + fee based on <u>number of packaging units</u> <sup>101</sup>	Based on <u>weight</u> and <u>type</u> of packaging material:  Plastic, glass, paper/ cardboard, steel, aluminium, wood, and glass.
<b>Eco-modulation</b>	Bonus/malus system for <u>all</u> packaging:  <i>Total fee = (weight fee + units fee) x bonus/malus</i>  <b>Bonus:</b> fee can be reduced by between 4% and 24%; and 50% for PE packaging with at least 50% recycled material content  <b>Malus:</b> fee can be increased by between 10% and 100%	Differentiated fees for <u>plastic</u> packaging:  A. Sortable/recyclable commercial/industrial: €150/t B1. Household, with established sorting/recycling infrastructure: €208/t B2. Other sortable/recyclable: €263/t C. Non-sortable/recyclable: €369/t

CITEO applies eco-modulation to all packaging materials. Reductions in fees (bonus) are provided for efforts to: reduce packaging (8-12%), increase packaging recyclability and sortability (8-12%), include 50% or more recycled material in polyethylene (PE) packaging (50%), and/or provide guidance and awareness-raising on material sorting (4-12%). Fees are increased (malus) for packaging that: disrupts recycling by reducing the quality of recycled material (50%), cannot be recycled/recovered (100%), or for certain opaque PET plastic (100%). From 2020, a malus will also apply for paper/cardboard packaging that uses mineral oil inks (10%).

CONAI first introduced differentiated fees for plastic packaging in 2018. Fees vary depending on whether the packaging is from households or commerce/industry, its recyclability and sortability, and whether there are established technologies and recycling chains for the packaging.

<sup>99</sup> Summary of information from Watkins et al. (2017)

<sup>100</sup> CITEO (2018)

<sup>101</sup> E.g. A four-pack of yogurts counts as one 'UVC' (unité de vente consommateur, i.e. unit as sold to the consumer) but may be comprised of 9 packaging units: 4 pots, 4 lids and one carton.

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