Circular Economy and Extended Producer Responsibility
Moving Towards Circular Economy

Circular economy. In a circular economy, the value of products and materials is maintained for as long as possible. Waste and resource use are minimized, and when a product reaches the end of its life, it is used again to create further value. (EC)
Circular economy solutions can have economic, social, and environmental co-benefits through reduced demand for natural resources, reduced emissions, job creation and fostering innovation (UN).

Circular Economy entails gradually decoupling economic activity from the consumption of finite resources and designing waste out of the system (Ellen McArthur Foundation).

Material recovery vs. recovery
Global Plastics Production
1950-2015

Recycling Rates in Selected High Income Countries

![Graph showing plastics recycling rates for EU, USA, Australia, and Japan from 2005 to 2015.](source)

Estimated Global Market Share
Virgin and Recycled Plastics

Note: Data are for resins only.
Cost of Recycled vs Virgin Plastics

![Cost of Recycled vs Virgin Plastics Chart](chart.png)

- PCR CHDPE*: $0.250
- PCR CHDPE: $0.200
- PCR NHDP**: $0.200
- PCR NHDP**: $0.250
- Virgin HDPE Spot Price: $0.510

* Color Sorted
** Food Grade

Note: extreme variation based on quality & processing levels.
Circular Economy is a Policy Choice
(and for the most part is not market driven)
Relative energy intensity of virgin and recycled plastics

Note: Data is for plastic resins only.
Marine Plastics

PLASTICS IN THE GLOBAL MARINE ENVIRONMENT:
WHERE DO THEY COME FROM? WHERE DO THEY GO?

TOTAL PLASTIC ENTERING THE MARINE ENVIRONMENT GLOBALLY
13.5 million tons per annum

BEACHES
11,400 lbs / sqmi (5% of total)

OCEAN SURFACE
102 lbs / sqmi (1% of total)*

SEA FLOOR
400 lbs / sqmi (94% of total)

*Peak concentration found in North Pacific Gyre. Average concentration globally is 45 lbs per sqmi.

LAND BASED - INLAND
0.95 Mtn pa

LAND BASED - COASTAL
10 Million tons per annum

AT SEA
1.93 Mtn pa

FISHING LITTER
1.27

SHIPPING LITTER
0.66

PRIMARY
MICROPLASTIC
1.05 Million tons per annum

(Thousand tons)
18
39
88
143
209
254
298

MARINE PAINT
COSMETICS
ROAD PAVEMENT
BUILDING PAINTS
PLASTICS
VEHICLE TIRE DUST

10
Efficient resource management tool whereby producers take over the responsibility for the environmental impact of their products throughout their life.

Includes products’ ‘upstream’ impact linked to the selection of materials, product design and production processes as such, as well as ‘downstream’ impact relating to the products’ use and end of life management of used products.
Typical EPR product categories

- Packaging
- Batteries and accumulators
- Electrical and electronic appliances
- End-of-life vehicles
- Newspapers and magazines
- Motor oils
- Tyres
- Batteries and accumulators
EPR instruments

Product take back requirements
recycling and recovery targets

Economic and market based instruments
e.g. product taxes, deposit refund schemes

Regulations and performance based standards
e.g. minimum recycling content

Information based instruments
e.g. labeling of products, public awareness, reporting
EPR purpose
Packaging waste

- to guarantee achievement of recycling and recovery targets
- to provide additional financial stream and incentives for separate collection, sorting (and recycling)
- to avoid temporary interruptions in the collection processes in case of negative trends in recyclable waste prices
- to support incorporation of prevention, re-use and recycling issues into product design
- verify the data and reporting of obliged companies.
- report to national authorities

Economic stakeholders within the packaging chain (manufacturer, packer/filler, distributor, importer) are responsible for packaging waste management

Foundation of operating Producer Responsibility Organization, run on behalf of obliged industry
EPR benefits

- Providing incentives for ecodesign, design for environment innovations
- Sustainable production and consumption policy
- Development of recycling and recovery channels and reducing landfilling
- Reduction of public spending on waste management and overall waste management costs
## EU recycling and recovery targets for packaging waste

<table>
<thead>
<tr>
<th>Preparation for reuse and recycling for packaging waste</th>
<th>2001</th>
<th>2008*</th>
<th>2025</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>All packaging</td>
<td>25% (max 45%)</td>
<td>55% (max 80%)</td>
<td>65%</td>
<td>70%</td>
</tr>
<tr>
<td>Paper and cardboard</td>
<td>15%</td>
<td>60%</td>
<td>75%</td>
<td>85%</td>
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<tr>
<td>Glass</td>
<td>15%</td>
<td>60%</td>
<td>70%</td>
<td>75%</td>
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<tr>
<td>Plastic</td>
<td>15%</td>
<td>22.5%</td>
<td>50%</td>
<td>55%</td>
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<tr>
<td>Ferrous metals</td>
<td>15%</td>
<td>50%</td>
<td>70%</td>
<td>80%</td>
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<tr>
<td>Aluminum</td>
<td>15%</td>
<td>50%</td>
<td>50%</td>
<td>60%</td>
</tr>
<tr>
<td>Wood</td>
<td>-</td>
<td>15%</td>
<td>25%</td>
<td>30%</td>
</tr>
</tbody>
</table>
Obliged producers alternatives to implement obligations

**Individually**
Providing by themselves the collection of packaging put on the market by establishment of deposit systems or by providing places for return acceptance of packaging waste at the place of sale.

**Collectively**
Transferring their responsibility to approved by the competent authorities collective compliance scheme (Producer Responsibility Organization) against payment of fee.

**Payment of tax to the state fund**
Payment of product tax shall not be considered as alternative.
EPR model

State Authorities
Defining national legislation and policy
Permitting of activities

Local Authorities
Organization of separate collection

Waste Management Companies
Operate separate collection and sorting

Clients
(Obliged producers/importers of goods)
Transfer of obligation and financing

Citizens
Participation in separate collection systems, Public awareness

Recycling Companies
Guarantee the recycling of collected and sorted

PRO
Planning, organization, contracting and financing
1. PRO has full responsibility for the implementation

PRO is financing the full costs. No direct payments to local authorities

2. PRO and municipalities have shared responsibility for the implementation

PRO is financing only the incremental (extra) costs
Contribution per tonne + incentives paid to local authorities
Organizational alternatives
packaging waste management
Major factors influencing the implementation costs

- Existing collection and recovery infrastructure in the waste management sector.
- The source of waste used to meet national recycling quotas (e.g. household or all packaging).
- Household packaging waste is more expensive to collect and recover than packaging waste arising at industry’s back door.
- The proportionate share of costs which industry bears. Some schemes meet 100% cost of collection and recovery, while others only pay a share thereof.
- National recycling targets and the effect of derogations.
- Collection system used affect charges - bring systems are generally less expensive than kerbside collection.
- Geographic location and population density.
- Enforcement - the more companies who participate in the scheme, the greater the spread of the cost base.
- Labour costs and general overheads differ depending on the prevailing local economic conditions.
Licensing fees charged by PROs

- All of the systems have licensing fees per quantity of material.
- Different system use different fee per material structure.
- Some systems have different fees for household (sales) packaging and commercial/industrial (group, transport) packaging.
- Some systems have different fees depending on the packaging size and volume (e.g. ARA in Austria, Gront Punkt Norway).
- Some system have additional fees per unit of packaging (e.g. HERRCO in Greece) or minimum fee per packaging unit (e.g. Fost Plus in Belgium).
- Some of the systems charge participation fee as a flat fee per tonne (e.g. Repak in Ireland).
Some challenges

- Free riders
- Reliable and comparable data
- Creating awareness
- Cross material subsidies
- Involvement of informal sector
Thank you