Circular Economy for EPS

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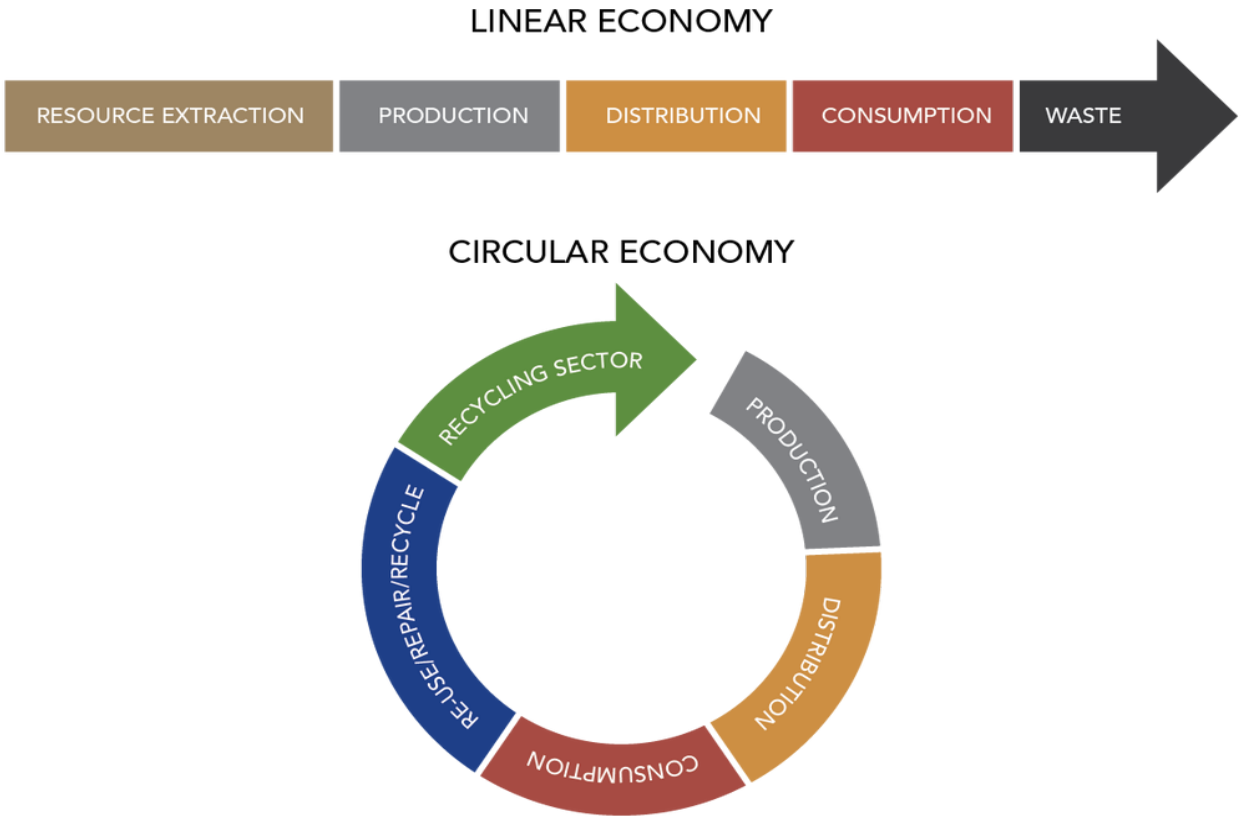
Topics:

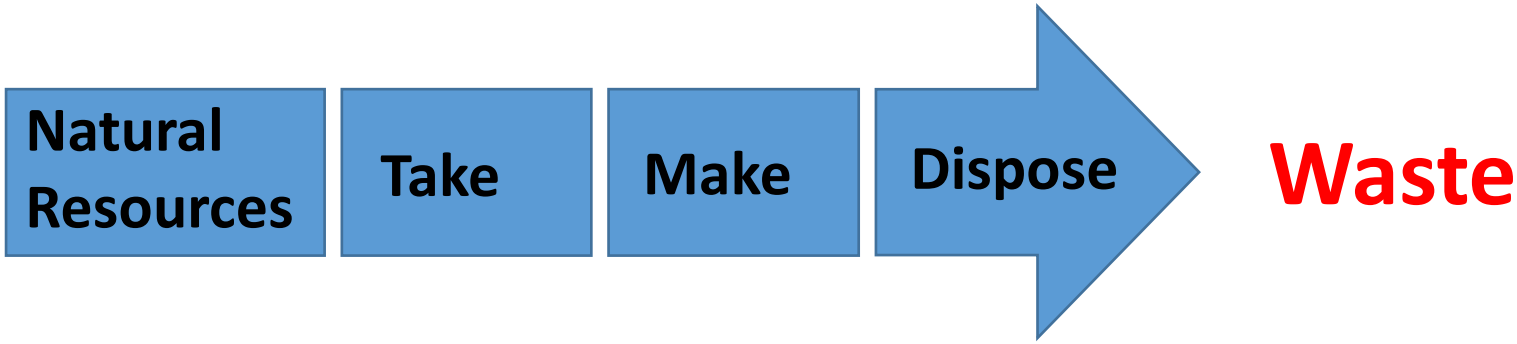
- Legislative Background
- Key themes for the EPS Industry
- Understanding the EPS waste streams
- Solutions for EPS insulation
- Public commitment – A Voluntary Pledge
- Requests to the legislators
- Last word

Linear vs. Circular Economy



Linear Economy

- lost value of materials and products
- scarcity of resources, volatile prices
- waste generated, environmental degradation & climate change
- disconnected



Linear Economy

- Natural resources treated as cheap disposable material
- Generates litter at End of Life
- Ruthless marketing without pointing out to harm to the environment if not properly handled
- Disposed in landfills = in the oceans
- Incineration looks clever for the naive
- *Encourages design for early obsolescence*
- No repair, no upgrade, *short life*, hazardous additives, not recycling friendly
- Radically expansive production (cosmetics/irrational and ignorant uses)

EU Drivers for a Circular Economy

- Reduced dependence on imported raw materials – security of supply
- Growth and job creation:
  - 170000 jobs in waste management by 2035
  - 600 billion € in savings – 8% of annual turnover
  - Up to 7% GDP growth
- Economic and environmental resilience
- Encouraging Innovation
- Reducing greenhouse gas emission by 2-4%
- Global leadership

Closing the loop – An EU action plan for the circular economy

"The transition to a more circular economy, where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimised, is an essential contribution to the EU's efforts to develop a sustainable, low carbon, resource efficient and competitive economy. Such transition is the opportunity to transform our economy and generate new and sustainable competitive advantages for Europe."

December 2015

Closing the loop – An EU action plan for the circular economy

"It includes comprehensive commitments on ecodesign, the development of strategic approaches on plastics and chemicals, a major initiative to fund innovative projects under the umbrella of the EU's Horizon 2020 research programme, and targeted action in areas such as plastics, food waste, construction, critical raw materials, industrial and mining waste, consumption and public procurement."

December 2015

Closing the loop – 5 key areas

- Plastics
- Construction and Demolition
- Critical raw materials
- Bio-mass and bio-based materials
- Food waste

Three EC identified interrelated issues

- **High dependence on virgin fossil feedstock**
  - Alternative feedstock
  - Technical barriers to feedstock recycling
  - Incentives for feedstock diversification
- **Low rate of recycling and reuse of plastics**
  - Weak incentives for a market for secondary plastics
    Low recyclability of plastics
- **Significant leakage of plastics into the environment.**
  - Negative impacts on marine-related bio-diversity, human health and economy
  - Lack of a clear sustainability framework for biodegradable plastics
  - Low levels of consumers' awareness

Plastics – an EC Perspective

- Circular plastics are required
- Plastics where they make sense (no abuse of LCA)
- Non-toxic environment. Precautionary principle against risk based approach
- Only recyclable plastic (no oxo-degradable plastic)
- Plastic is too valuable to be burnt
- Responsible producers:
  - Warn
  - Inform
  - Collect and enable recycling not burning

The challenge for EPS insulation

- Plastic (packaging) is currently in the forefront of public discussion and legislative measures
- The attention will expand to other sectors with a defined focus on Construction and Demolition
- This is a challenge for the plastics industry but for EPS insulation not negative:
  - EPS has a history of environmental awareness
  - EPS is one of the easiest materials to recycle
  - Many current examples of managing B2B waste
  - Acts as a catalyst to accelerate our programmes

Key Themes for the EPS Industry

- Circular Economy and related legislation drives our future
- Legacy additives need to be managed.
- Extended Producer Responsibility – control “leakage” and prove circularity
- Opportunities for ecodesign and innovation
- Need to engage with legislators and local authorities to find solutions on a product, application, locality basis

Understanding current EPS waste streams

European EPS Waste Streams Developments 2009 – 2017

Total EPS Waste (Construction and Packaging)

498 kt 2009

527 kt 2017

Energy Recovery

179 kt Rate 2009: 35%

216 kt **Rate 2017: 40%**

Recycling

103 kt Rate 2009: 20,6%

139 kt **Rate 2017: 26%**

Disposal

216 kt Rate 2009: 43%

172 kt **Rate 2017: 32%**

Source: Conversio Study 2018

Best Practice Example: EPR scheme in Norway

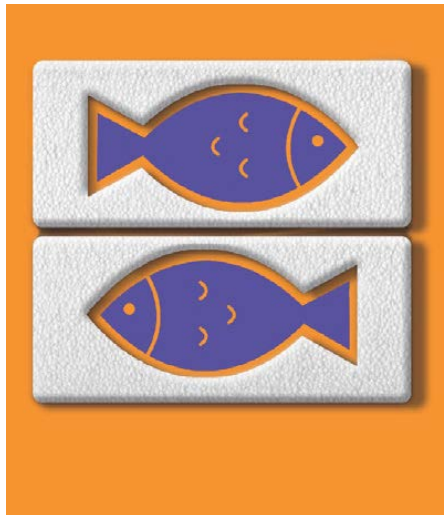
- Norway has a voluntary EPS collection and recycling scheme in place since 1995 as part of the Grønt Punkt Norge (GPN) system
- Both industry and municipalities participate in this collection system.
- GPN facilitates collaboration with several regional entrepreneurs and municipalities with collection at manned recycling stations
- Financially self-supporting

Best Practice Example: Innovative collection in Belgium

- Recycling rates in Belgium are above the European average but the industry is always looking for ways to improve on this
- To reduce logistics costs for collection, the industry is putting a new collection opportunity on trial which could potentially be implemented at 20,000 businesses
- Tests with woven collection bags and a communication package for businesses have proved successful

Best Practice Example: Recycling food grade EPS in Spain

- Fish boxes represent 50% of EPS packaging in Spain, which is similar to other European countries with a large fishing industry
- There are opportunities to improve collection, pre-treatment and recycling of EPS fish boxes to produce a high value, food grade end product
- A cross-industry pilot project, with investment of 1.3 million €, with EU LIFE funding, is running from 2017 -2019 to develop a solution to close the loop



Managing EPS insulation from demolition

Overall Picture 2009-2017
EPS Construction Waste Streams

Total: 136 kt /139 kt

+ 2%

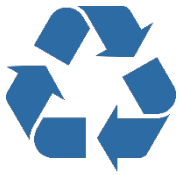
Installation: 29 kt / 40 kt + 37%

Demolition: 107 kt/ 98 kt - 8%

Energy Recovery

71kt / 81 kt

52% 58%



Recycling

10/ 12 kt

7,6% 8,6%

Disposal

55/ 45 kt

40% 32 %

Source: Conversio Study 2018

PolyStyreneLoop – Managing legacy additives

- Major industry investment in innovative technology to recycle EPS waste
- Supported by the EU Life program
- Partnership with the entire value chain
- Technology accepted in the UNEP Basel Convention technical guidelines
- Recognised as a best practice in the EU Plastics Strategy and in the Chemicals, Products Waste (CPW) discussion
- Demonstration plant due to start operation in 2019
- More info: https://polystyreneloop.org/

Separate collection at municipalities

Deconstruction of roofs

Cleaning bitumen contamination

Before

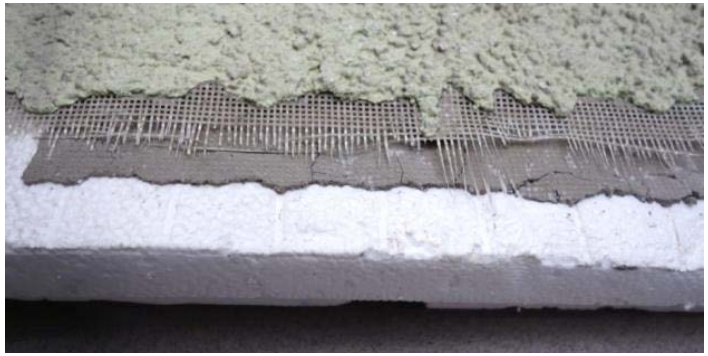
After powerbrushing

Methodical deconstruction of ETICS

Mobile ETICS separator

Separation of ETICS components

ETICS



EPS particles

Small particles

Netting

Plaster, adhesive

Compaction for transport

Our Commitment the EU Voluntary Pledge

The EU Voluntary Pledge

Object	Polymer	Baseline	Pledge	Quantities		Quality	Comment
				Market	Recycle		
Insulated Packaging	EPS	Conversio Study 2017	50 %	140,000	70,000	High quality EPS	Food grade quality potential (EPS SURE)
Protective Packaging	EPS	Conversio Study 2017	50 %	230,000	115,000	Standard EPS	
Building Deconstruction	FR-EPS	Estimated 2025 market	27 %	150,000	40,000	High quality EPS	PolyStreneLoop – removal and recycling of Bromine
New build and renovation	FR-EPS	Conversio Study 2017	80 %	40,000	32,000	Standard EPS	
Civil Engineering	EPS		90 %				
TOTAL			46 %	560,000	257,000		

Requests to the Political World

- Fiscal and regulatory framework supporting a level playing field for all materials with an equal opportunity for all materials to demonstrate circularity.
- Time to give industry a chance to find solutions for recycling logistics and technologies where they do not currently exist.
- Recognised benefits of plastics for many applications (e.g. energy efficiency of buildings with associated mitigation of greenhouse gas emissions, seismic insulation, food preservation, transport damage protection).
- Objective environmental impact considerations (e.g. LCAs) as key driver for material choice in any application. Current recycling levels should not be taken as the selection criteria.

Requests to the Political World

- Understanding of the need for customised solutions by material, by application, by country/region.
- Requirement and support of Member States and local authorities to work with industry to provide adequate logistics and technologies for collection, sorting and recycling of all materials, including foamed plastics.
- Implementation of collection, separation and recycling schemes with the requirement that everyone contributes equally, both financially and practically.
- Encouragement and support for industry to invest in new technologies and innovations for recycling.
- On-going education of society about correct behavior for not littering and disposal of materials at end of use.

Summary of the support needed

- Different materials have different functions. You can't simply substitute one for another
- Alternatives to plastics are not necessarily better for the environment
- Environmental impact assessment should drive the agenda, not purely recyclability or recycled content
- A stable environment for investment and innovation
- Humans, not plastics, are the key problem
- Don't settle for second best

Last word

- No industry is immune, we all have environmental or health issues to manage
- Industry supply chain acting together to protect joint interests
- Early engagement with authorities
- Actions speak louder than words