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Plastic: A Sustainable Vision

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Why me?

Impact Laboratories

17025 accredited test lab

Research & development from reactor to recycle

Impact Recycling

Owns & runs a recycling plant in Newcastle

One of the technologies in Project Beacon.

SPRoE

Growing & supporting the recycling industry

Impact Certification

Notified body services to EU27


RAW MATERIALS
DESIGN
PRODUCTION
REMANUFACTURING
DISTRIBUTION
CONSUMPTION, USE,
REUSE, REPAIR
COLLECTION
RECYCLING
CIRCULAR ECONOMY
RESIDUAL
WASTE

Currently:

The Media is driving the agenda:

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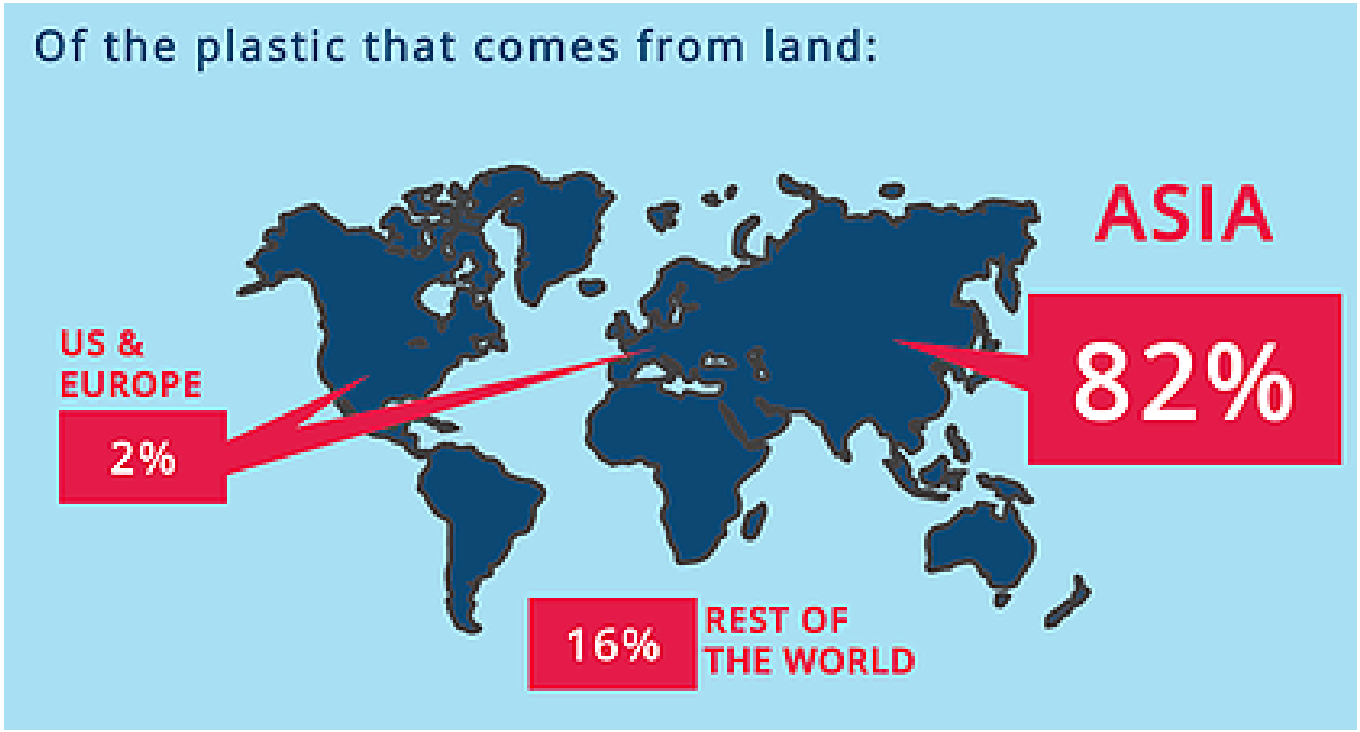
80% of marine based litter comes from the land



88–95% of plastic in the ocean comes from just 10 rivers

Yangtze River alone puts as much plastic in the ocean each year as Ineos Grangemouth produces

Driving brand decisions

Many are introducing Recycled content, using “green polymers” or Greenwashing

A TOY STORY

Lego wants to solve the world’s plastics problem with a biomaterial that can survive generations of play

UNCATEGORIZED

NESTE & IKEA take leadership in bio-based home furniture

Nestlé and Danone team up to produce green plastic

Food and drinks groups commit funding to develop plastic from waste such as sawdust

Your Big Mac will have greener packaging by 2025

McDonald's Corp., fresh off news that the company is discontinuing use of expanded polystyrene packaging in 2018, is now vowing to…

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* Offer **eco-friendly**, **ATEX-Certified** hand-protection options:
  - **100% Recyclable**
  - **Oxo-Biodegradable**
  - **Compostable**

nd Driving legislation & Politics

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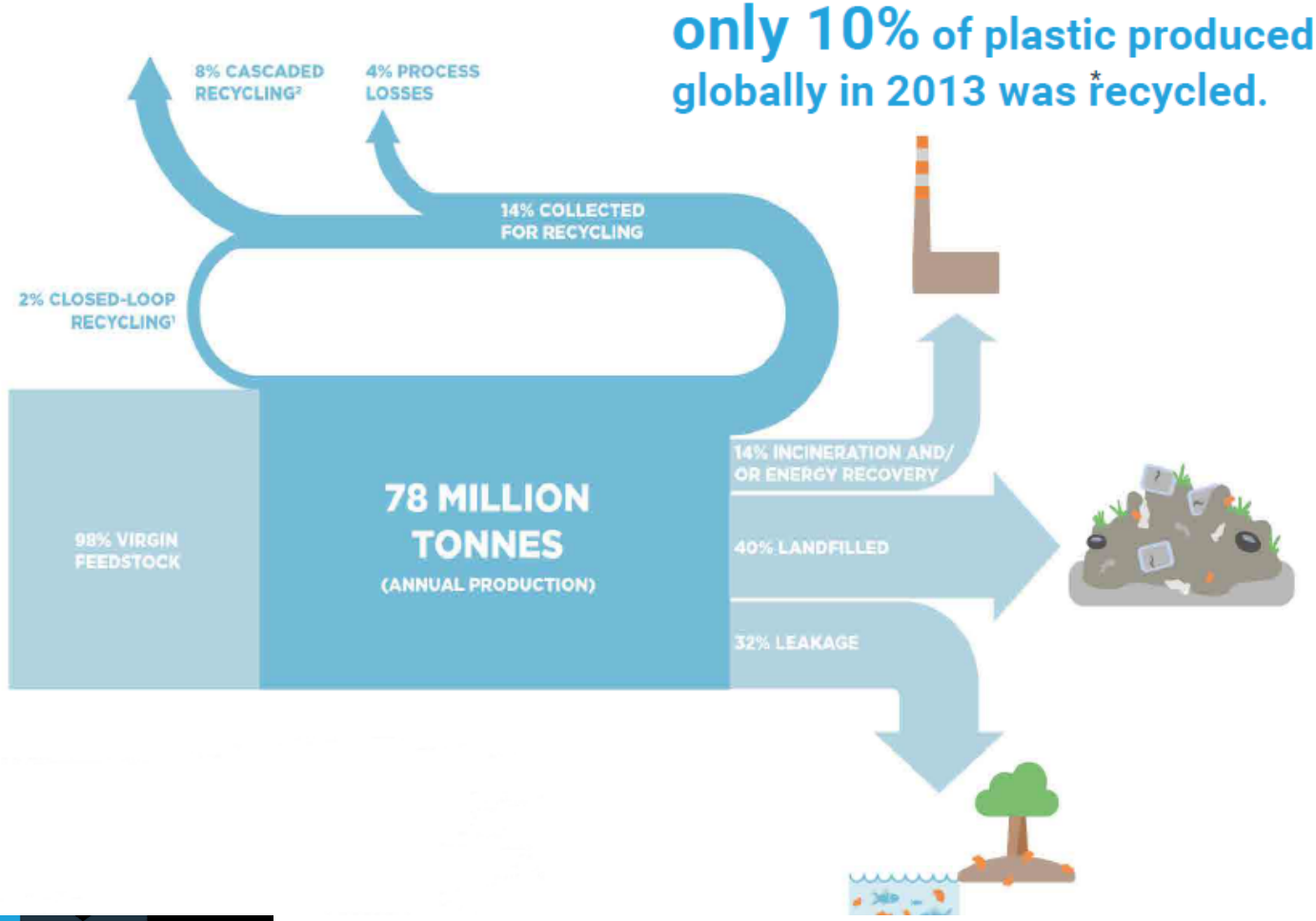
Ellen Macarthur Foundation



Should we be surprised at just 10%?

Post industrial – much simpler supply chain

- Either post process or end of Life
- Key is it known material & “reasonably clean”

“Waste” Plastic is often “traded” and can pass through several hands before it eventually ends up being reprocessed into a recycled plastic.

Post Consumer – Once mixed its can be difficult / expensive to separate

- Often scavenged eg bottles, window frames etc
- Often very dirty or food contaminated
- In reality limited to PET, PO and to a limited amount PS (PTT)
- Some UK LA have stopped collecting plastic

Why is so little plastic recycled?

Investment in recycling capability.

- Why bother when you can export it
  - PRN system – incentivises the export of waste

Polluter pays system which means that any manufacture that uses Packaging material needs to buy PRN to offset their use.

- PRN are generated by recyclers and manufacturers who turn packaging waste into products.
- Plastic PRN's are currently £70 Tonne, but is only generated on clean pure plastic – traditionally on 1st melt
- EPRN's are also £70 per Tonne but they are based on exported weight

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- Cost of recycling vs cost of virgin

Once plastic is mixed it is expensive to separate

Expectation is that recycled plastic is cheap

– Recycled plastic is not linked to oil price but is highly volatile

Recycled plastic is often a “mixture” giving slower cycle times

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- Cost of recycling vs cost of virgin
- Scale of recycling vs virgin – product pull

The Ineos Grangemouth site is no longer a world scale site at 1.5MTpA
Our Newcastle plant is a respectable size at 1.5TpH ie 5,500 TpA
Batch to batch variability is an issue for large moulders as one recycling plant cant keep up with supply

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- Scale of recycling vs virgin– product pull
- Inconstant feed stock – Collection Strategy
  - Household Recycling Charter – introduced in 2015 to produce a common collection strategy across Scotland
- Contracts – long term stifles innovation and entrants.

Why bother recycling?

EFW: Traditionally an outlet for dirty post consumer plastic which is similar in cost to landfill – PVC content critical
Is this the best use for a high spec polymer
With the growth in renewables does it have a future?

Chemical Recycling: Pyrolysis type plants – Plastic to Fuel / Feedstock
High gate fees and very high capital cost, but may be a solution to difficult to recycle plastic

What does the future hold?

Actually quite Rosy:

Deposit Return Scheme (DRS) will produce good quality feedstock

- The key question is how will this get into the market.
- How will it effect non DRS plastic recycling.

Pull from manufacturers & consumers for increased recycled content.

- Probably the biggest single difference

Resin producers are becoming vertically integrated

- Borealis purchased MTM a German recycler (30KTPA)
- Daplen : >50% PCR content marketed at the automotive market

New Technologies are starting to be commercialised to compete with Optical sorters