

Mixed Plastics

What is it, how does the UK perform
and what should be done?

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Outline of presentation



1. Used plastics, origin and quantities across Europe
2. Which waste streams are recycled and how is their performance
3. Mixed plastics
4. Zoom in on UK, BE, GE, SE and AT
5. Learning and way forward for the UK

Outline of presentation



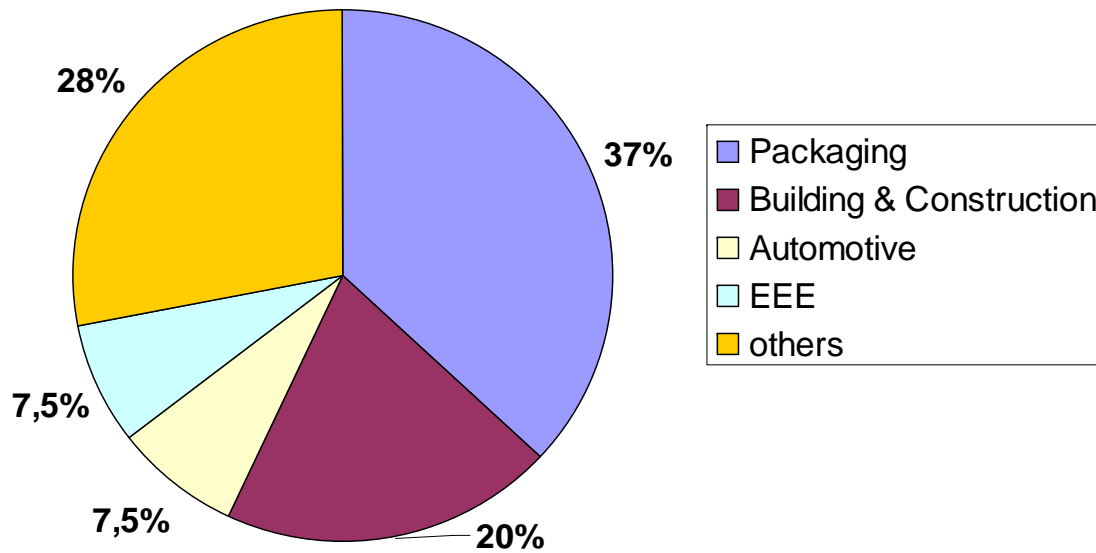
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EU 15 + N/CH 2005



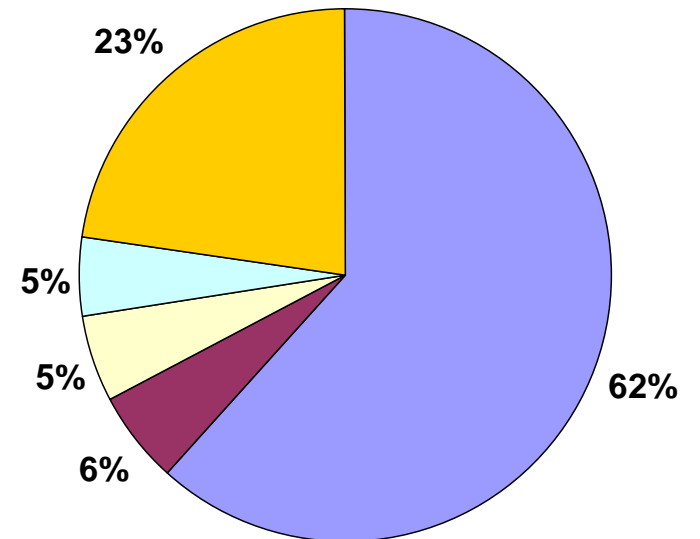
45Mtonne

Structure of Plastic Demand 2005 in EU 15 + 2

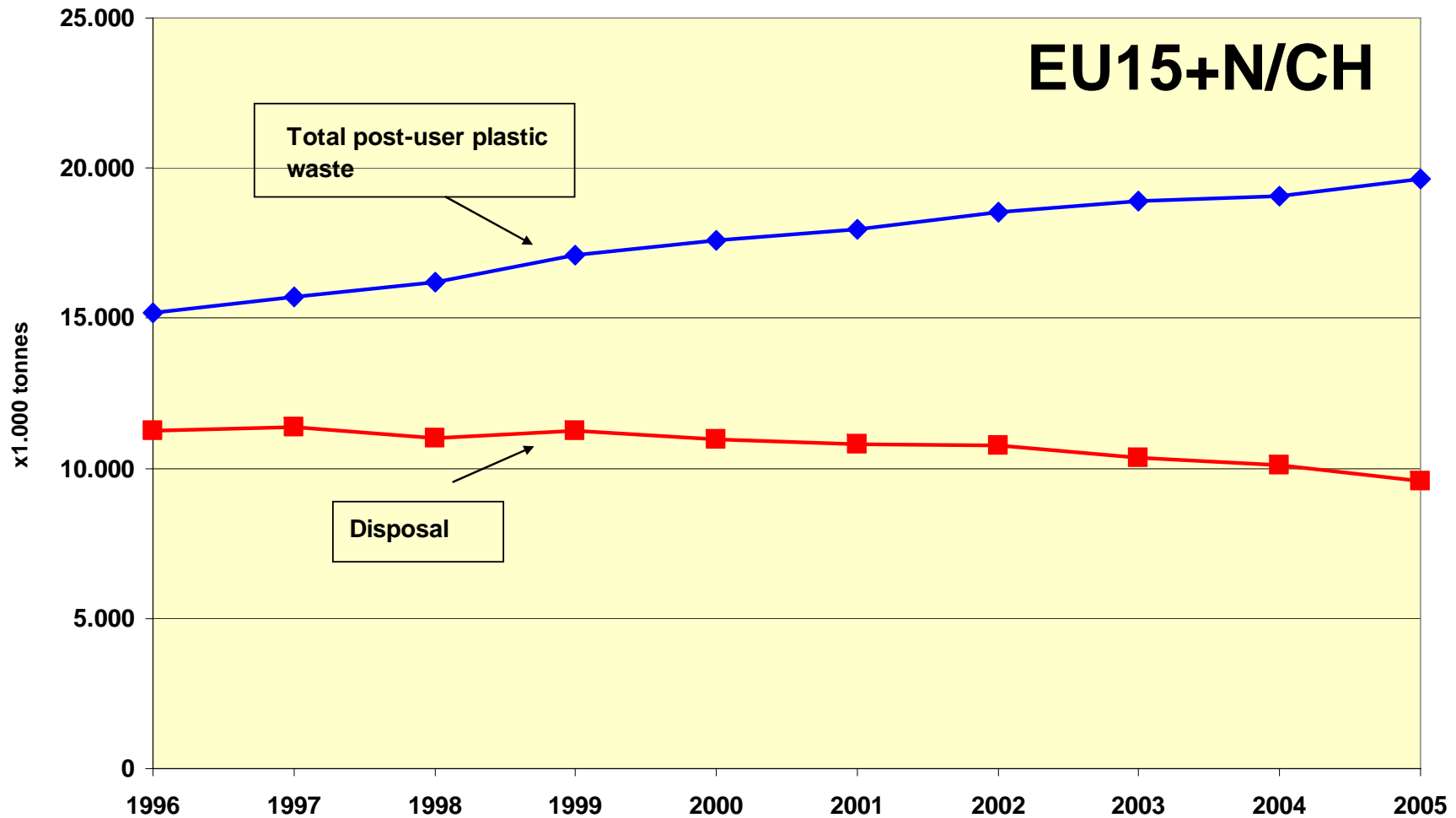


19.6Mtonne

Structure of Plastic Waste 2005 in EU 15 + 2

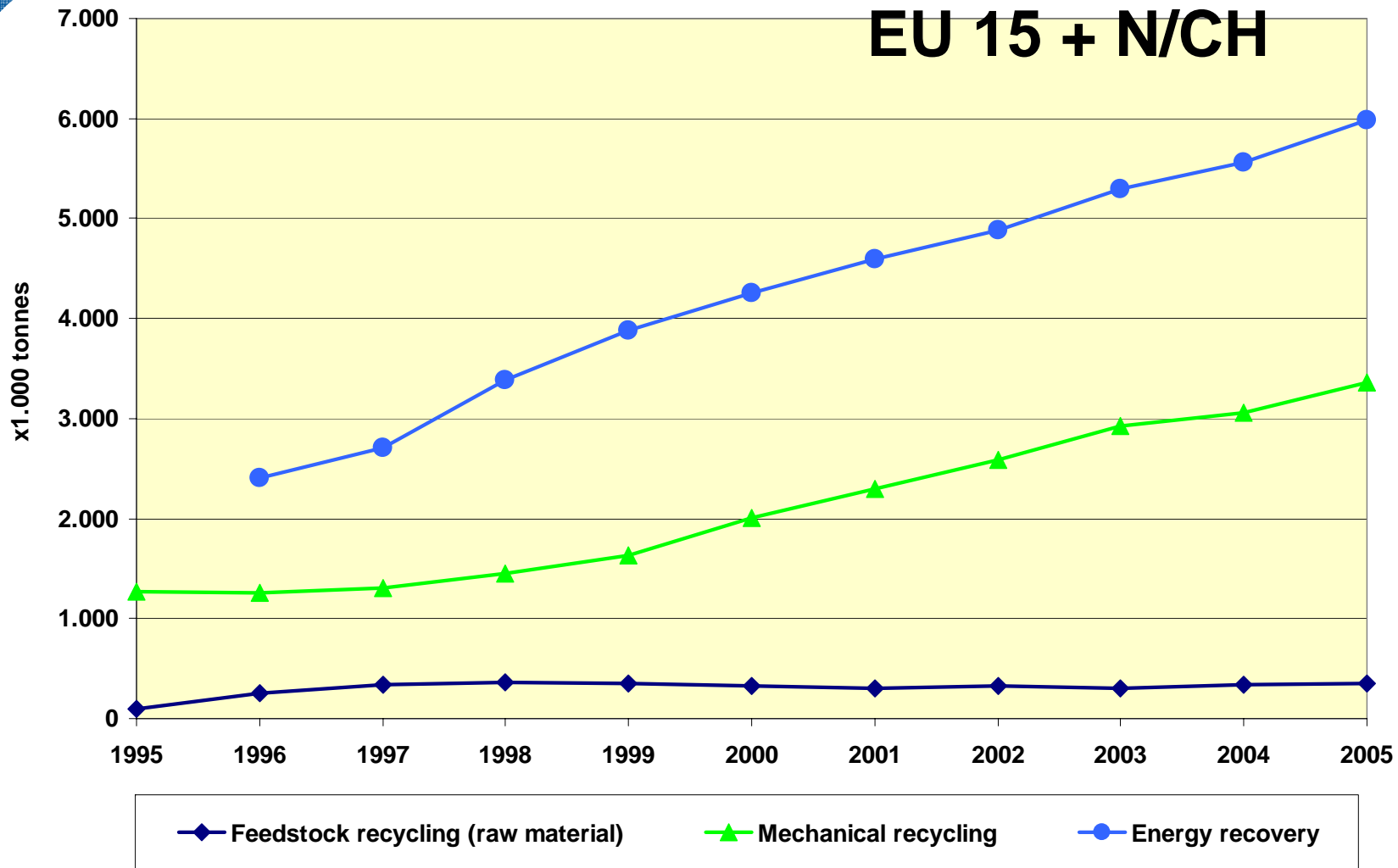


Continued decoupling of plastics waste and landfill in 2005



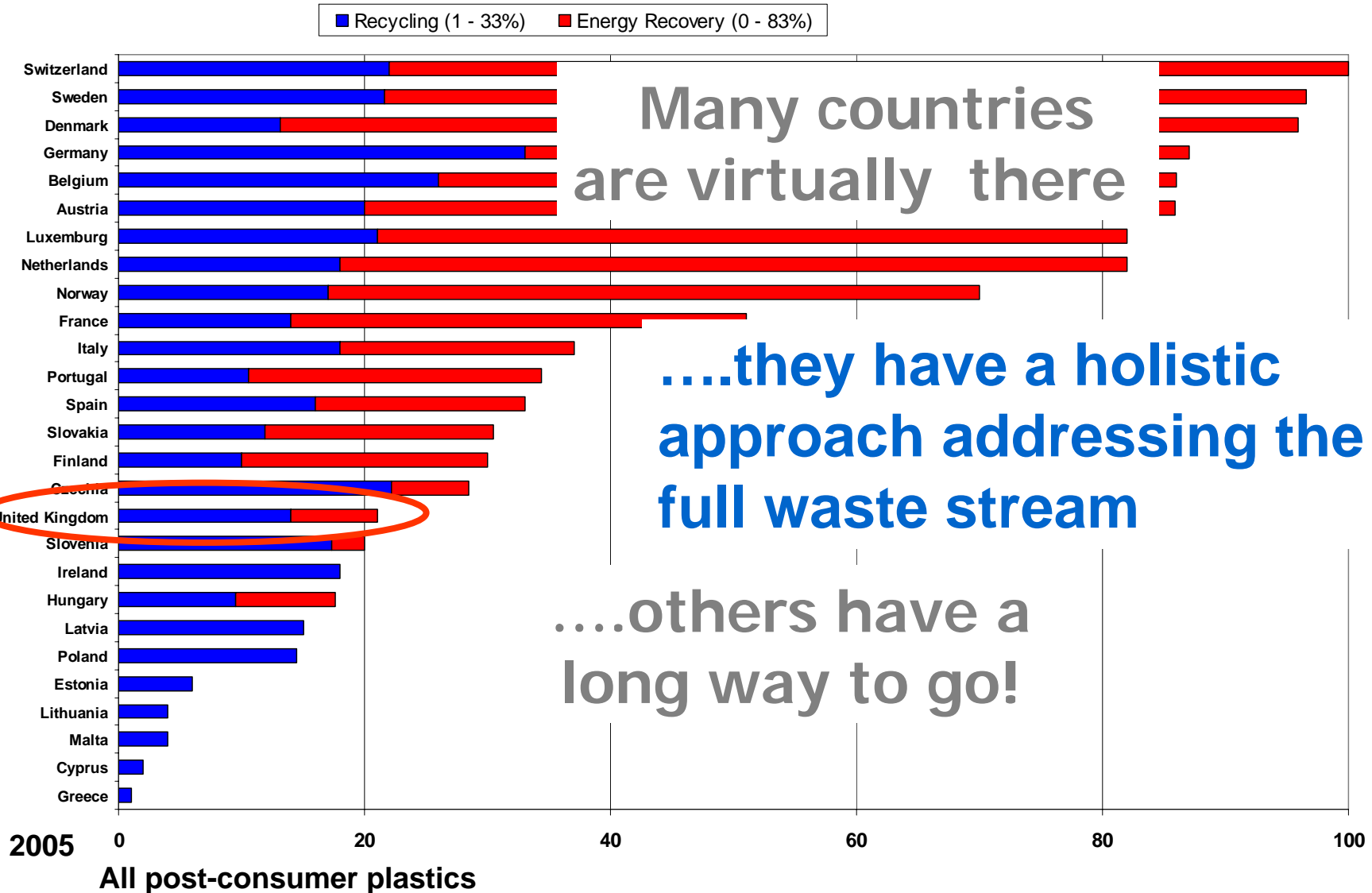
All post-consumer plastics

Continued growth of recycling and energy recovery in 2005



All post-consumer plastics

Nothing is more important than diverting from landfill...



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The suitable streams for recycling ●●●

Bottles (PET and HDPE)

1.05 million tonnes recycled/y
kerb site & bring systems
recycling rate ~36% (10-90%)



Industrial film (PE)

1.5 million tonnes recycled/y
collected by recyclers
recycling rates ~43% (25-65%)



Crates and boxes (PE and PP)

0.1 million tonnes recycled/y
recycling rate ~97%



Still not reached the full potential for these streams, 1-2 MT/y to capture

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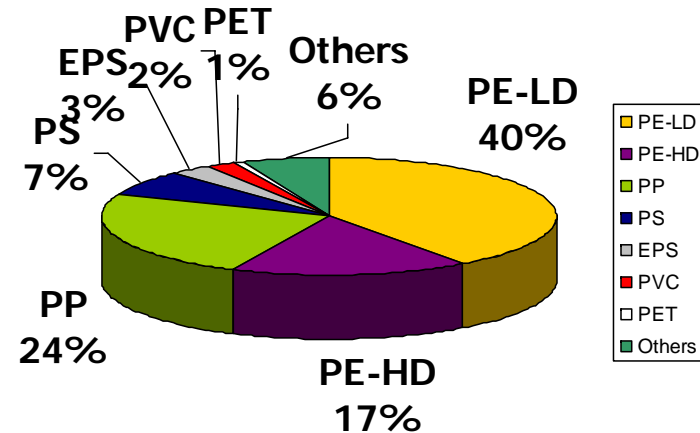


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Mixed plastics (domestic waste excluding bottles)



- ~5 million tonnes/y across EU25, 5% recycling...
- 80% polyolefins
- Microwave-, diary-, meat-, drinks packaging, bags...
- Complications – low weight per article, mix of polymer types, multilayer, residual contained material



Mixed plastics are resource efficient....



- They use less material for the packaging itself
- They waste less energy for transport
- They reduce waste from farm to kitchen
- They reduce waste by extending shelf-life



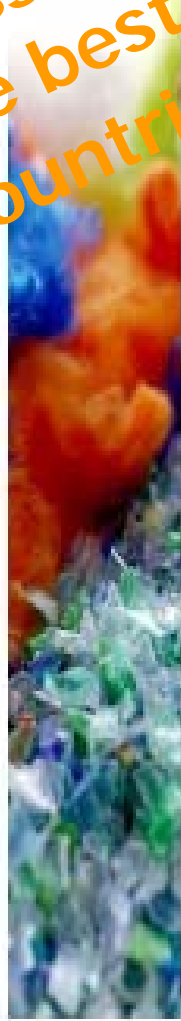
Let us not forget the benefits in the use phase when we look at end of life phase!

Mixed plastics are demanding to mechanically recycle...



- Low-weight articles, eg cucumber wrapping is <2 gram
- Many different types and versions of same type of polymer
- Often combination of several polymers for best performance eg 5 layer film for MAP for meat
- Often left with residual food or other product
- Complex streams could jeopardise recycling of eg bottles

Message from one of
the best performing
countries



Sorting of plastic packaging

- For all recycling systems (glass, paper, plastic, etc.), the purity of the material is the top priority.
- Essential requirements for the mechanical recycling of plastics are:
 - Homogeneous stream of 1 plastic type.
 - Limited amount of contaminating elements.
 - Efficient sorting of contaminating elements.
 - Critical mass & continuity in supply
 - Reliable end market for flakes and/or granulates.
- Colour sorting can add value to the plastic waste stream.

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Stable picture with deviations (basis 2005)



Application	Total EU 25+N,CH	UK	GE	BE	SE	AU
Pack waste						
kton/y	13.500	1860	1980	265	192	238
% mech. recycled	24	22	31	38	32	31
Bottles						
kton/y	2.900	500	340	79	22	39
% mech. recycled	36	13	71	65	91	64
Ind film						
kton/y	3.900	600	550	75	70	55
% mech. recycled	43	45	41	48	55	50
Mixed plastics						
kton/y	5.000	636	860	87	75	130
% mech. recycled	5	3	19	6	5	6

Learning from the studied countries



- All do well on industrial packaging film >>> The UK in top Q
- Surprisingly big differences on the bottle –which is suitable for recycling... >>> Huge upside, not least in the UK
- Limited success in mechanical recycling other than bottle and industrial film – even at high investments, eg Germany >>> The UK no worse than others
- Germany is the only country separating the mixed plastics in a big scale

Drill down into German system



Use 2/3 of the green dot fee!

"Yellow bag"

All plastics packaging
Green dot fee 1.3€/kg

Collection and pre-treatment

Collection and taking out non-plastics by contractors

MSWI
25% or 218kT/y

Separation
860kT/y* in 6 units

Mechanical recycling
19% or 165kT/y

Refused derived fuel
19% or 167kT/y

Feedstock recycling
36% or 310kT/y

PO rich, mostly
Wood composites
Park benches
Road pigs

* Ex bottles

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German mixed plastics learning relevant for the UK



- Seek to selectively widen the mechanical recycling window
 - focus on big volume polymers, mainly Polyolefins and perhaps PET
 - work with end market to produce the right streams
 - address how to collect - which is very costly
 - secure big scale, cost effective, fully fledged separation units
 - the economics must be right.....

and.....

- Explore full set of complementary options
 - fuel, feedstock recycling, SRF or substitute in cement production
 - not everything is eco-efficient to recycle

Learning and way forward for the UK



- Maintain full focus on Bottles until full potential reached
 - stimulate local market for recycle, eg bottle2bottle
- Continue and secure industrial film have good competitive situation – if so it will drive itself
- Migrate to new products when critical mass reached, technology evolve and markets are identified
 - PP bottles, clean PP or PET trays, used carrier bags etc added to kerb site bags?
- Explore chemical recycling options and refined EfW options eg SRF where recycling is not eco-efficient
 - We must address the residual mixed plastics resource to be credible
- Drive towards larger regions and “promote” best practice



Thank You!