



From Waste to Resource: Boosting Domestic RcP Collection by Learning from Mature Markets

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- Global recovered paper market experts
- Based in Atlanta, worldwide practice
 - Market Research/Analysis
 - Recycling Business Strategy
 - Pricing Analysis
 - Recovered Paper (RcP) Purchasing Optimization Assistance
 - Innovative Supply Sourcing and Development
 - Sustainability Analysis and Support

Some Nomenclature

- RcP – Recovered Paper – prefer not to call it wastepaper, as it is a resource/raw material for the paper industry
- MSW – Municipal Solid Waste: includes all residential and commercial wastes – often referred to as garbage or trash.
- Industrial Waste – includes non-hazardous (sometimes disposed of with MSW) and hazardous waste
- EPR – Extended Producer Responsibility legislation

All ASEAN Countries are Major Importers of RcP

- The lowest cost recovered fiber is what is disposed of in one's home country
- But paper recovery rates in the ASEAN countries are below the world average
- Part of the reason is that region exports a lot of goods in boxes that can't be recovered – but it's not the whole story
- The two main drivers of paper recycling in a country are (and they are really linked):
 - Cost of disposal
 - Recycling legislation/regulations
- The ASEAN countries have below world average disposal costs

Disposal vs. Recycling: Fundamental Relationship



Typically environmental and recycling legislation increases when landfill availability becomes scarce.

This relationship applies globally to countries and regions, as well as to regions within a country.

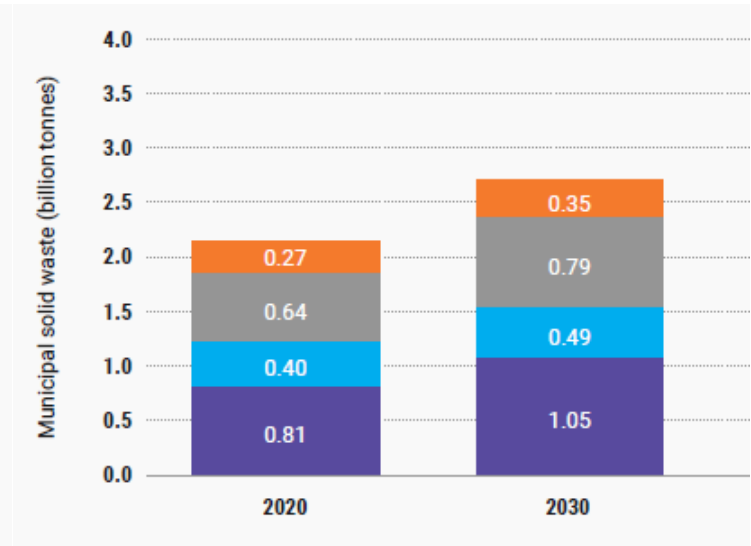
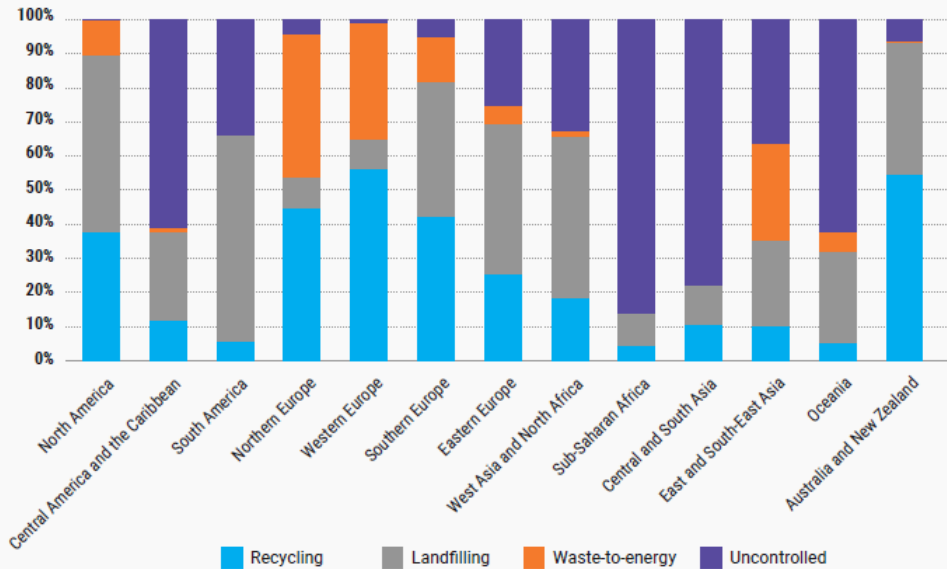
Disposal costs are growing globally – and the volume of waste is increasing.

The Link Between Disposal Costs and Recycling

- One need only look around the world at the highest cost disposal countries that not surprisedly have the highest recycling rates:
 - Japan, Germany, Taiwan, parts of the US, & the Benelux countries
- Moderate disposal cost and average recycling rates:
 - US (as a whole), UK, France, & Spain
- Low cost disposal = low recycling rates:
 - India and almost all emerging and frontier countries

Regional Distribution of Solid Waste

- Globally, approximately 19% of MSW is recycled. The UN expects the volume recycled in 2020 to expand by 22.5% by 2030. Most growth would be in regions with low rates of recycling at present.



What is Extended Producer Responsibility?

- Manufacturers (called 'producers') should be responsible for their products and packaging through the entire life-cycle.
- Shifts the 'end-of-life' burden to manufacturers and retailers and away from consumers.



EPR Impact on Recycling



Benefits of EPR:

- Greater access to recycling and increased participation
- Big increases in residential recycling
- More recycled content in packaging due to greater availability from more recycling
- More stable funding for residential recycling
- The need for new types of packaging spurs innovation in:
 - Product design
 - New materials
 - Manufacturing processes

Downsides of EPR:

- Market disruption due to new needs: recycled content, new labeling, improved recyclability, design for reuse, etc.
- End-of-life cost shifts to producers -- will producers pass costs on to consumers?
 - Or, do households no longer have to pay local providers for recycling services.
- Waste and recycling industries want to ensure existing infrastructure is used, not duplicated.
- Recovered materials must be sold to Responsible End Markets, adding complexity for MRFs.
- What if EPR decisions based on current recycling processes stifle innovation...?

Impact of EPR on Recycling Rates

- A recent Recycling Partnership (TRP - US based) publication shows the impact of EPR programs in Europe, Canada, and S. Korea where programs are in place.
- The potential impact for US states is estimated by TRP.

	Pre-EPR	With EPR
British Columbia	50-57%	81%
Belgium	10%	89.8%
Spain	4.8%	80.7%
Netherlands	70%	82%
South Korea	64%	78%
Quebec	28%	64%
Portugal	38%	60.4%

'Estimated Impact'

	Recent Recycling Rate	With EPR
Washington	52%	75%
Connecticut	50%	74%
Wisconsin	34%	66%
Maryland	31%	70%
Colorado	21%	70%



Other Countries' Experience Increasing Paper Recovery Levels: Japan, Korea, Spain, & UK

Japan RcP Exports & Domestic Use – 2024 (tonnes)

- Exports – 2 million – down 10% from 2023
- Domestic mill consumption 14.8 million – down 1.3% from 2023
- Japan's domestic consumption of RcP has been declining for a number of years, with exports increasing
- Japan's RcP supply has some of the world's lowest level of contaminants
- The Japanese society has a 'recycling ethic' that has been fostered for over 50 years now
- The ASEAN countries' paper industry knows Japan well as they are a large supplier of RcP to the region



RCP & Recycling Stats for Japan, Last 15 Years

- Domestic Paper & Board Production

- 2000~31.8 million tonne
- 2024~21.6 million tonne

- RcP Domestic Use

- 2000 ~18 million tonne
- 2024 ~15 million tonne

- Recycled Content Utilization Rate in Domestic Production

- 2024 – 61.7% (highest in the world)

- Paper Recovery Rate

- 2000 – 58%
- 2024 – 82% (highest in the world)

- RcP Exports

- 2000 ~372,000 tonne
- 2024~2 million tonne

Increasing Recycling in Japan – Early Years

- The first comprehensive environmental management and disposal legislation were put into place in the early 1970s
- Disposal costs rose rapidly in the late 1970s into the 1980s, as Japan increased incineration of MSW
- The Clean Japan Center was formed in 1975 to promote better disposal practices and encourage recycling
- In the 1970s and into the 1980s Japan was a significant net importer of RcP



Key Japanese Recycling Legislation, 1990s & Beyond

- Japan accelerated emphasis on recycling in the 1990s
- Container and Packaging Recycling Law – enacted in 1997 – obligated municipalities to conduct separate paper collection
- Japan Paper Association established the Paper Recycling Promotion Center which led campaigns to increase recycling in the late 1990s
- Additional waste management and recycling legislative initiatives continued into the 2000s, up to 2015
- Key among them was the year 2000 - Basic Act for Establishing a Sound Material Society.

South Korea RcP Supply/Demand Evolution

- Through the mid-1990s, S. Korea was a net RcP importer
- In the 1990s, the country embarked upon a successful program to raise the paper recovery rate
- The increase in recovery rate coupled with a downturn in paper produced (S. Korea was a sizable producer of newsprint) swung the country to being an RcP exporter in the 2000s



S. Korea's Key Policy for Increasing Paper Recycling

- **Volume-Based Waste Fee (VBWF)** system was implemented nationwide in 1995.
- “Pay-as-you-throw” creates a strong economic incentive for consumers to recycle. It included:
 - **Financial incentives:** Pre 1995, households paid a fixed fee for waste collection regardless of volume. With VBWF, households are required to purchase special government-certified bags for trash while all recyclable materials, including paper, can be disposed of for free.
 - **Encouraging recycling:** The cost of the trash bags creates a direct financial motivation for households to limit trash and divert as much waste as possible to the recycling stream.
 - VBWF led to a dramatic increase in recycling rates.
 - **Mandatory separation:** Compulsory for households to separate recyclables (paper, plastic, glass, and cans) from other waste. Local governments set up neighborhood recycling stations, making proper sorting an easy and efficient process.
 - **Fines for non-compliance:** To ensure compliance, fines were imposed on individuals caught disposing of waste in uncertified bags. Closed-circuit televisions (CCTVs) were installed in some areas to catch and deter violators.

Additional S. Korean Recycling Initiatives

- **Policy Support:**

- The *Act on Resource Saving and Recycling Promotion* was enacted in 1992, providing the legal foundation for the VBWF and other initiatives.
- The government implemented related strategies like EPR along with the VBWF

- **Public Engagement:**

- Extensive public awareness campaigns were key to the program's success. The government used television and radio to promote the new system and educate citizens on proper separation.
- Accessibility increased: As recycling rates grew, cities and neighborhoods bolstered the system by installing more recycling stations and bins throughout communities, making it easier for households to participate.

- **Early Signs of Success:**

- The nationwide launch of the VBWF was preceded by a pilot program in selected areas, with positive results reported, including a 40% reduction in waste and a doubling of the recycling rate in Seoul.

The 'Bottom Line' on Increasing Recycling in S. Korea

Economic Incentive:

- Recycling efforts lead to household savings, a powerful motivator.

Addressing the “Garbage Crisis”:

- Rapid economic growth, increased consumption, and limited landfill space created a visible and urgent problem that prompted public support for waste reduction measures.

Incremental Implementation:

- The VBWF was implemented after years of smaller-scale pilot tests. This allowed the government to refine policies and ease the transition for households.

Shift from Disposal to Minimization:

- The government's strategic pivot from focusing on maximum waste treatment to minimizing waste generation was a fundamental shift that drove the new policies.



Spanish Paper Industry: Increased Paper Recycling

- In Spain, more than 80% of paper production depended on 'paper for recycling' as secondary raw material.
- ASPAPEL, the Spanish Association of Pulp, Paper, and Cardboard Manufacturers, made efforts to improve the collection of paper and cardboard. Key dates:
 - **2003:** An analysis of paper and cardboard recovery was carried out across the value chain, and determined that municipal collection was low, with rates below 40%.
 - **2004:** Pilot tests were implemented at the municipal level: containerization, collection from small businesses, and offices.
 - **2005 – 2017:** The *Tu Papel 21* certification was launched.
 - **2017 – 2025:** The program was renewed, creating the *Blue Birds (Pajaritas Azules)*. In 2024, the collection rate is 71.6%.



Recycling in Spain: the Bring Bank



‘Bring area’ containers for 5 types of waste with a unified color throughout the country:

- **Green: Glass packages**
- **Blue: ONLY Graphic Paper and Paper & Board packages**
- **Grey: Mixed waste**
- **Yellow: lite weight packaging (plastics, metals and liquid cartons)**
- **Brown: Organic waste**

Blue Birds Program

Main Objective: to increase paper collection at municipal level (collection from households, small shops, municipal markets, small hotels, small offices and schools) for better quality and quantity.

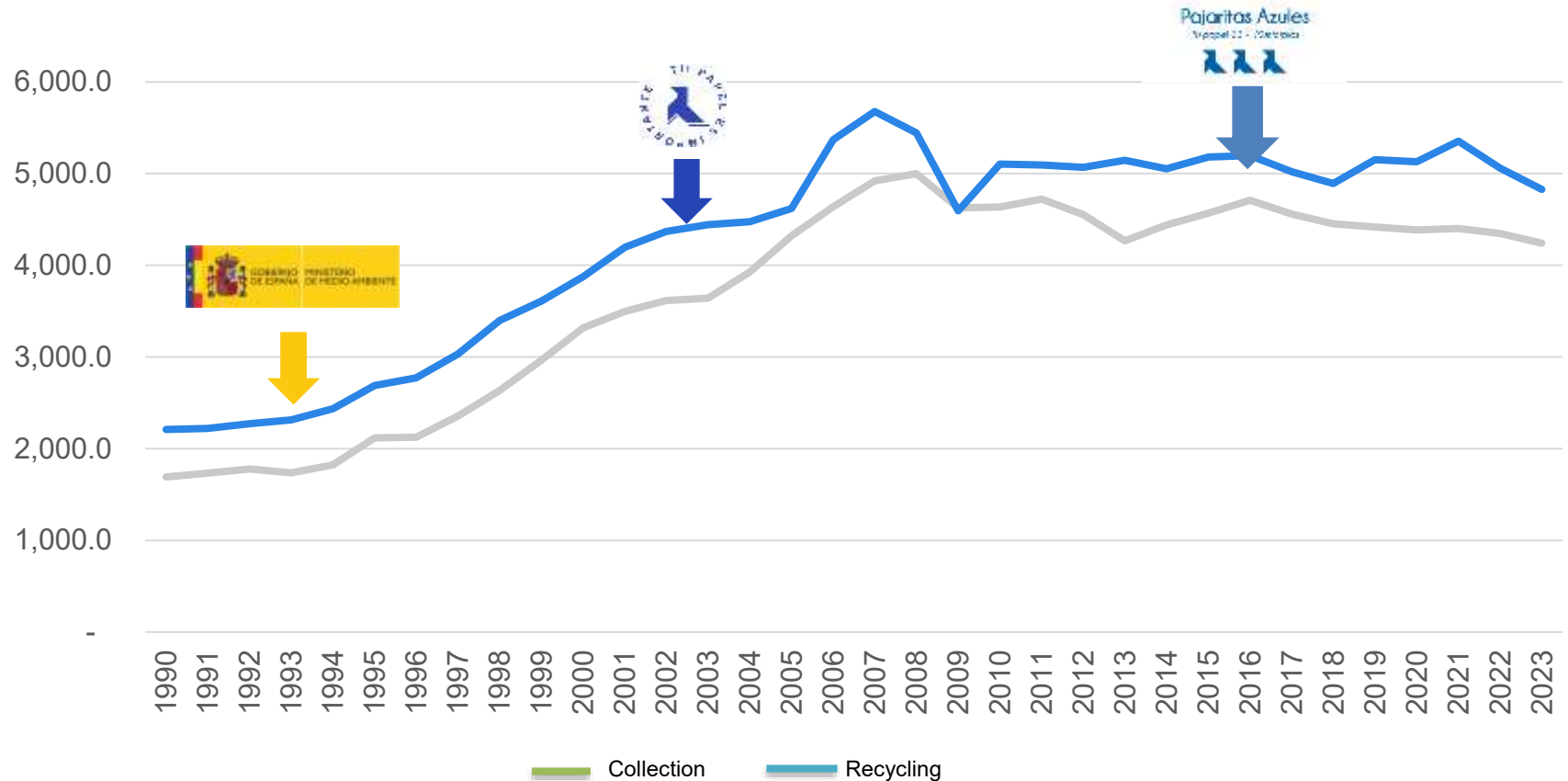
Financing: All the relevant paper industry companies in Spain using 'paper for recycling' as raw material.

Scope: 58 municipalities participate, equivalent to 26 million inhabitants.

Who is Involved: All Paper & Board Stakeholders



Paper & Board Collection & Recycling, Spain, 1990 +

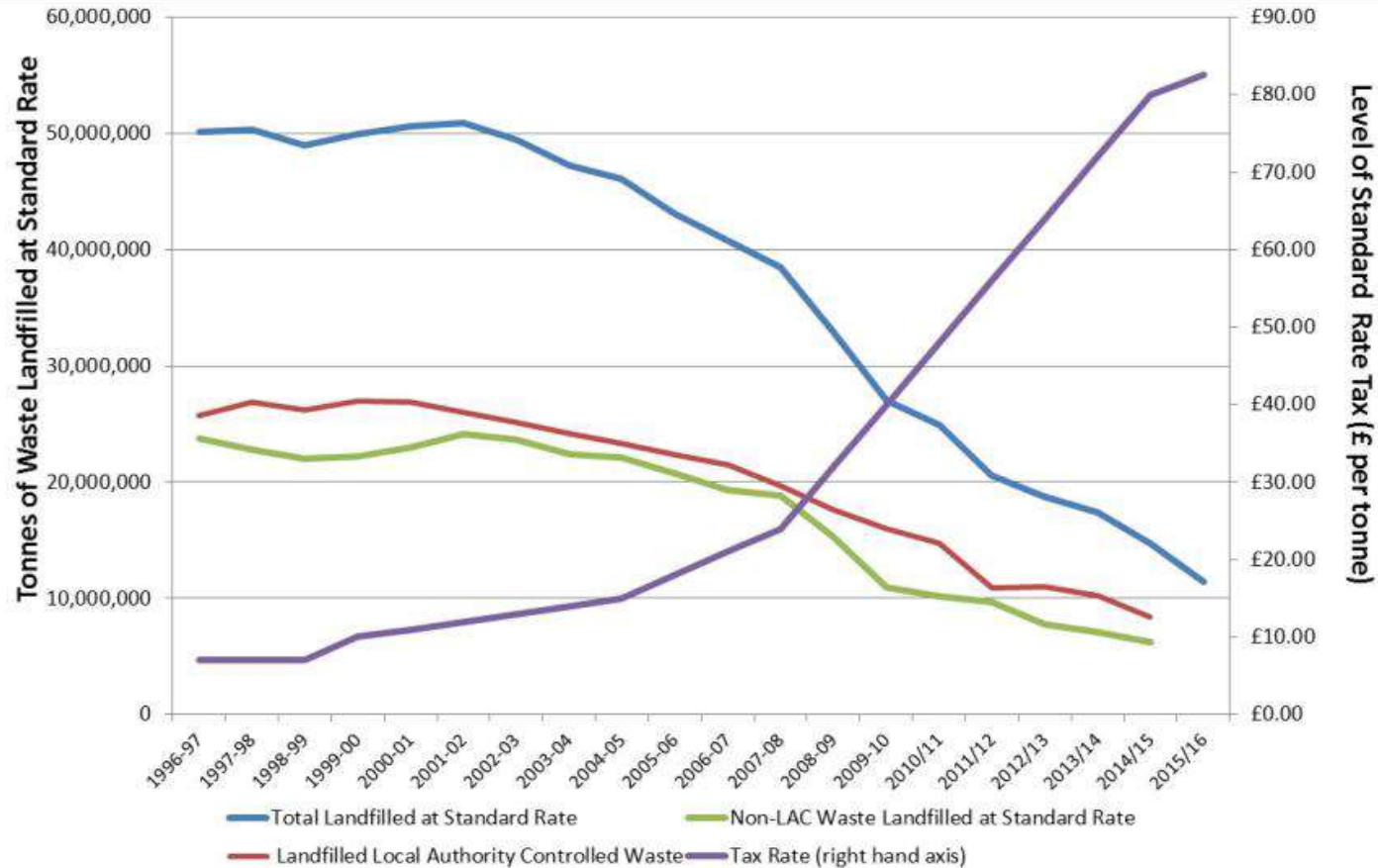


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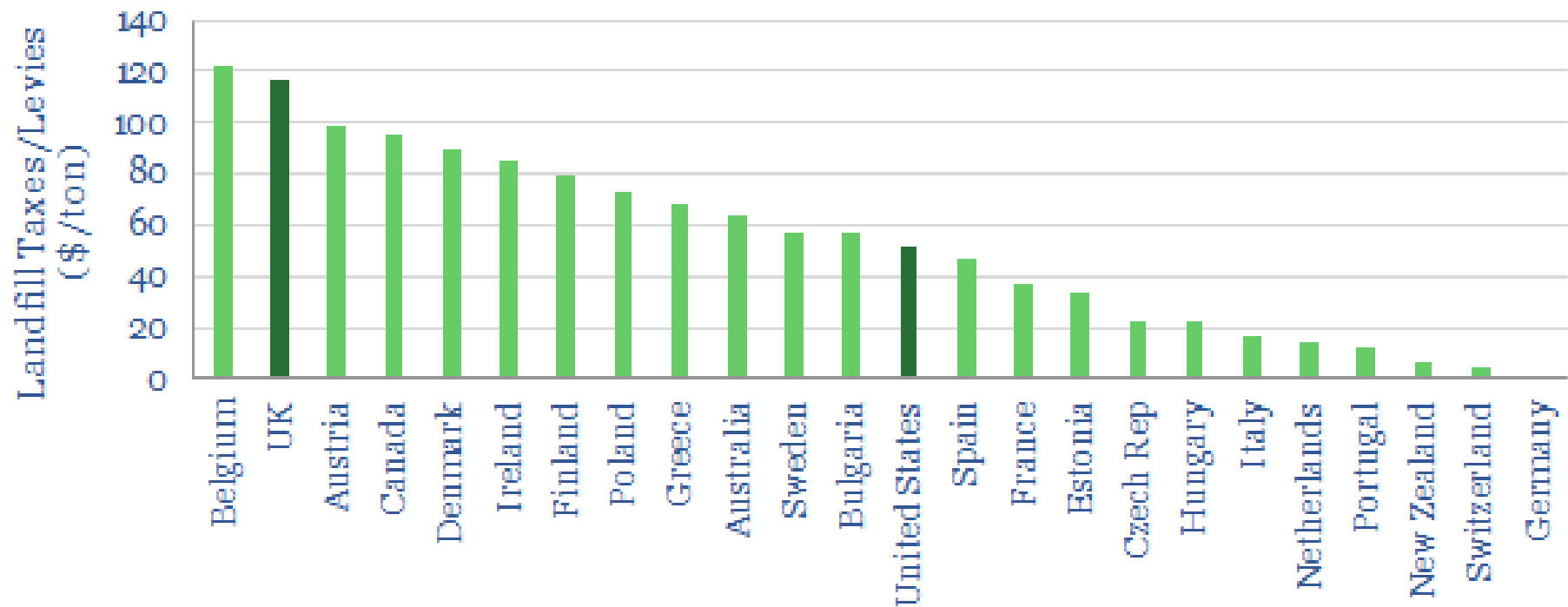
- A cornerstone of this country's move to increase recycling in the 1990s was a significant tax on disposed waste:
 - Began in 1996 as a minor assessment - \$7 USD/tonne
 - Ramped steadily over the next 28 years
 - Today the tax is an astounding \$170 USD/tonne!
- A key strategy with the tax was to make disposal more expensive and spur recycling
- The proceeds from the tax were used to support expanding recycling programs, through collection program subsidies and promotional campaigns



Effect of the UK Landfill Tax Over Time



Landfill Taxes to Spur Recycling are Used Extensively in Europe, but Elsewhere Also (2020 data)



Common Threads to Increasing Recycling

For all countries discussed:

- Waste disposal became more expensive through various mechanisms
- Countries used multiple levels of recycling legislation/regulation:
 - Mandatory commercial recycling ordinances
 - EPR schemes
- Promotional programs are aimed directly at local governments and citizens





Opportunities for Increased Paper Recovery in Southeast Asia

What are the Drivers of Paper Recycling in a Country

- Strong demand and high prices for RcP – the ASEAN countries already have these, as do many other emerging Asian economies
- Higher disposal costs:
 - Outside developed countries of the world (such as Western Europe, the US, Canada, Japan, etc.) much disposal is uncontrolled landfills, without state of the art environmental controls, leading to low disposal costs
- A government regulatory climate that favors recycling:
 - This frequently is linked to the above bullet on disposal costs
 - But also can involve policies that support more recycling
 - Will advancing ASEAN environmental laws foster better recovery rates?

Ways to Increase Paper Recycling in a Country

- The paper industry can get involved proactively with the government to raise peoples' awareness on recycling and pro-environment awareness
- Encourage a system of 'paper only' collection from businesses and industry – Spain took this approach some years back to raise their paper recovery
- As mentioned earlier in this presentation, Korea is a good example of a country that was an importer of RcP through the 1980s, and raised their paper recovery in the 1990s, using volume-based disposal costs. They are now a RcP exporter.
- Regulations requiring businesses to recycle
- Various approaches to making disposal more costly than recycling: better environmental disposal practices, disposal taxes, volume-based disposal rates, and legislation/regulations to encourage more recycling

Finally...

- The paper industry should engage with governments at all levels (country, provincial, & local) to foster, more environmentally sound disposal practices and more paper recycling – not something the paper industry in emerging countries generally does.....
- It would have the dual effect of lowering RcP costs to your mills and sending an 'environmentally friendly' message from the paper industry.
- The plastic packaging industry is facing huge problems on environmental issues. Team up with them on recycling.....? Normally thought of as competitors, on recycling they could be allies.



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