Getting to Zero on a National Scale

Zero Waste, Zero Landfill, Zero Packaging: Industry & Government Perspectives

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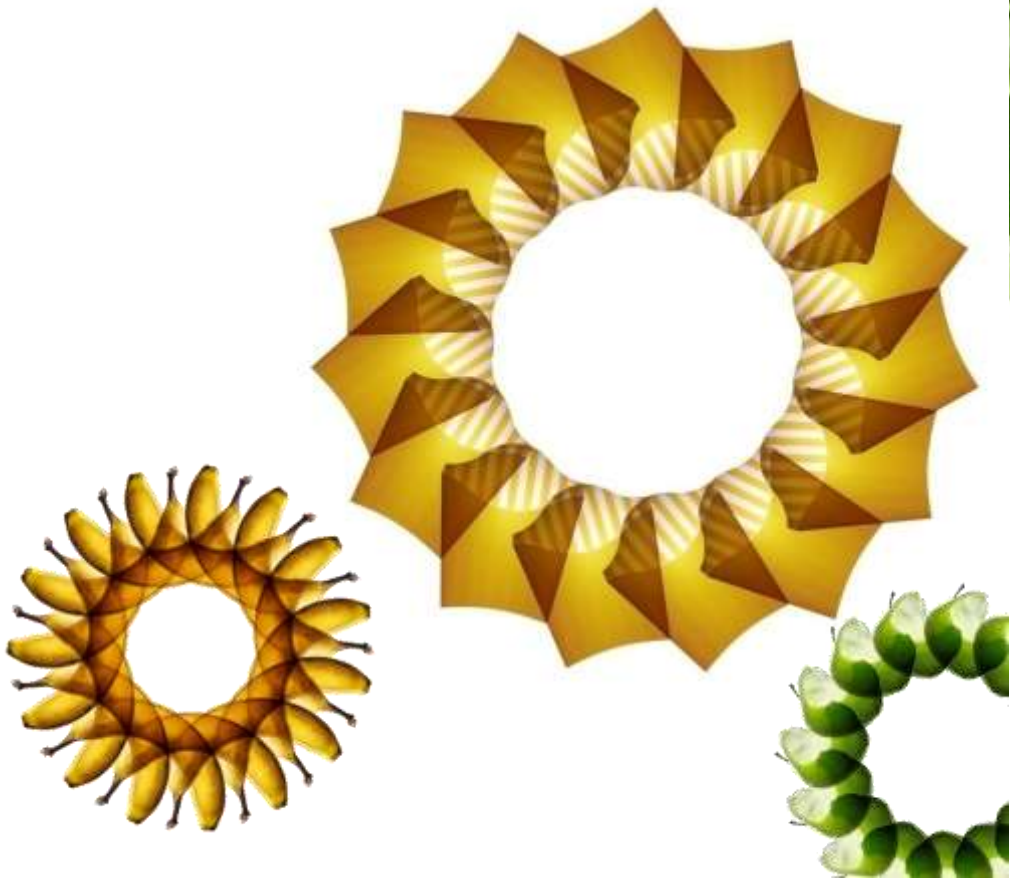
WASTE MANAGEMENT



WM is North America's leading environmental service provider

Overview: Recycling in the U.S.

Getting to Zero Waste: What works?

Summary

Getting to Zero Waste: Who is doing what?

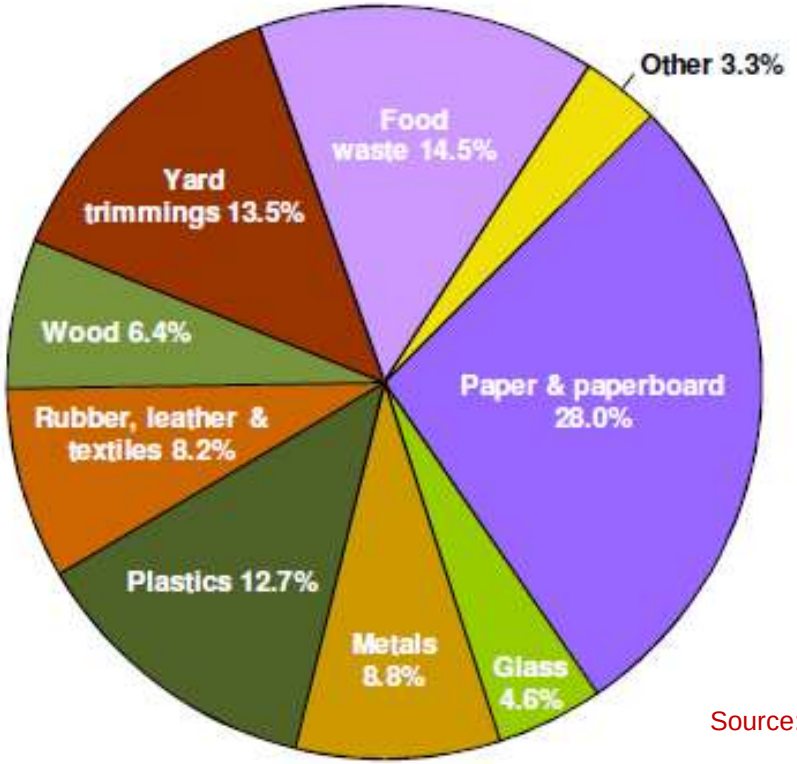
- **Government**
  - ✓ **Federal** – Limited ability to drive change at a national level
  - ✓ **States** – States generally set policy
  - ✓ **Local** – Primary responsibility for implementation and local policies that drive individual behavior

- **Producers/Brand Owners**
  - ✓ **Trade organizations** – Coordinating efforts
  - ✓ **CPG companies** – Making strategic investments

- **Recycling Industry**
  - ✓ Recognizing need for collaboration
  - ✓ Making investments in public education and outreach

Materials Generation

Figure ES-3. Materials Generation in MSW, 2011
250 Million Tons (before recycling)



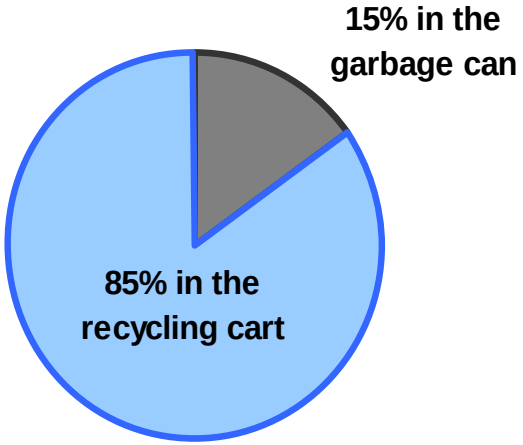
Source: US EPA, 2011

- Roughly 50% of all materials generated is included in our curbside programs
- Assuming that we could recycle all of this, we'd still have to recycle another 50% of the waste stream to recycle to reach a Zero Waste Goal.
- This is why organics recycling is so important: **YW + FW = 28%; Wood = 6.4%**

Examples of effective program impacts

Seattle, Washington (70% residential recycling rate)

- 88% of paper recycled
- 81% of all eligible curb recyclables recycled

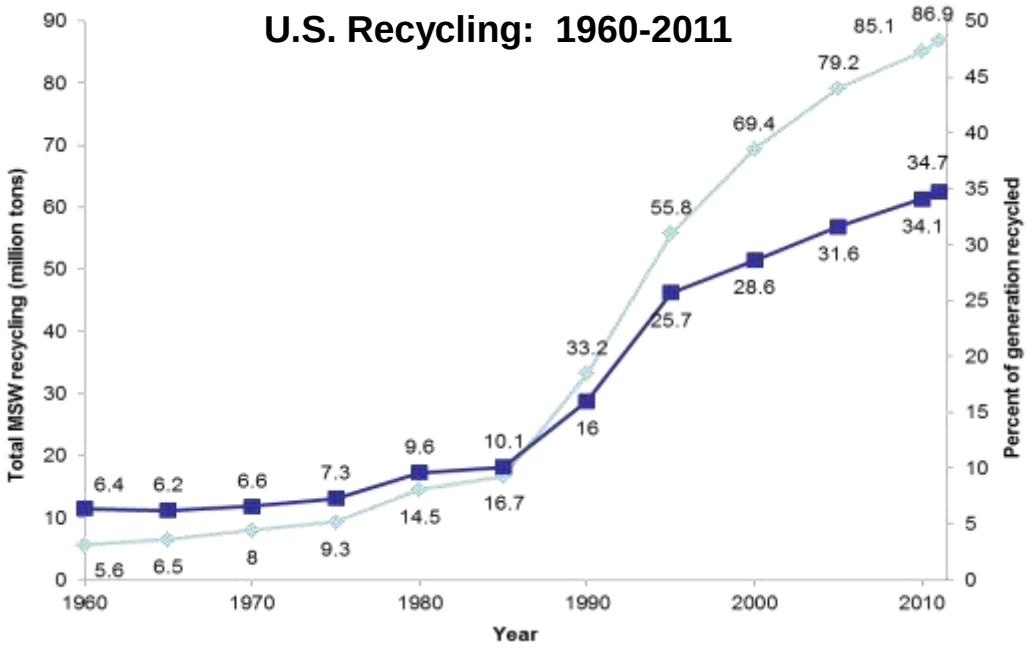


Portland, Oregon (70% residential recycling rate)

- Portland, Oregon households recycle 85% of eligible material

2000-2011 U.S. EPA Recycling Statistics

- Product & packaging <u>generation</u> is flat
- Although light weighting of packaging has reduced weights by as much as 10%, <u>packaging recycling</u> is up 7.8 million tons or <u>26%</u>



Source: Environmental Protection Agency, MSW Generation, Recycling and Disposal in the U.S.: Facts and Figures for 2011

Overview: Recycling in the U.S.

Getting to Zero Waste: What works?

Summary

Research and statistical analysis

Private industry has completed several studies to understand how best to increase recycling.

- **Ameripen completed a full year research project**
- **Waste Management hired SERA Consulting** to complete a nationwide survey to understand the impact of various policies and program on recycling rates
- WM asked SERA to completed **a review of PAYT variations in 36 cities** in Washington State

Factors analyzed in these studies:

1. Single Stream/cart based recycling
2. Unit Based Pricing / Pay-As-You-Throw
3. Mandatory Recycling and Disposal Bans
4. Landfill Taxes / Surcharges
5. Container Deposit Legislation
6. Public Education/Outreach
7. Extended Producer Responsibility

1. Convenient Cart Based Recycling

- Cart based recycling increases overall diversion by **3.1-4.0%**
- Increases recycling by an average of 40%
- Customer convenience is paramount. For example, single stream recycling w/o carts increases overall diversion by only 1.5-3.2%

2. Pay-as-You-Throw (PAYT)

- Looked at cities across the U.S. for impact of PAYT. **PAYT increases diversion by 3.6-4.9%**

- Also completed a deep dive into 3 dozen service areas
  - ✓ Reviewed price differential by container size (small variables up to linear rates)
  - ✓ Reviewed the number of customers signed up for each container size by city
  - ✓ Reviewed basic rates and services by city
  - ✓ Contemplated impact of public education programs

PAYT /Variable rate programs have the single largest impact on recycling rates

Pay-as-You-Throw (cont.): Examples

Recycling in all programs:

Kirkland - 70% recycling rate

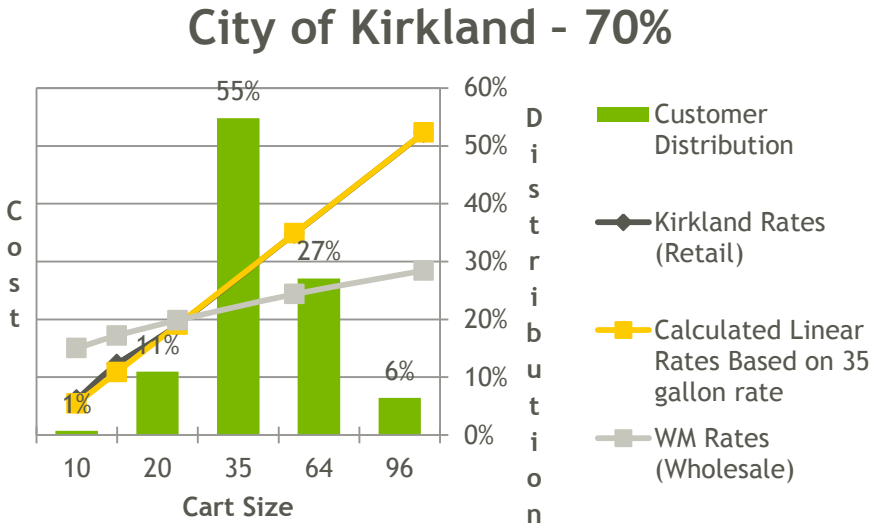
- High linear rates (35 gal cart=$22/mo
- Recyclables - 45%, YW/FW – 25%
- Extensive public education and outreach

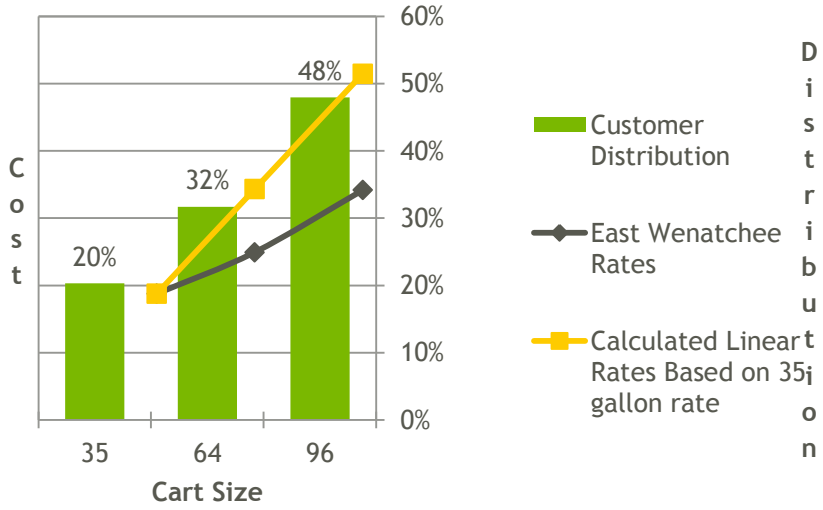
Duvall - 61% recycling rate

- High variable rates (35 gal cart=$28/mo
- Recyclables – 24%, YW/FW - 37%
- Emphasis on YW/FW

Wenatchee - 14% recycling rate

- Low, variable rates (35 gal cart=$12/mo
- Recyclables – 11%, YW/FW - 3%





Conclusions

- High rates drive diversion
- Linear rates work to a point
- Public education and outreach is critical for high recycling rates
- Organics recycling is important

3. High Disposal Fees/Taxes Drive Diversion

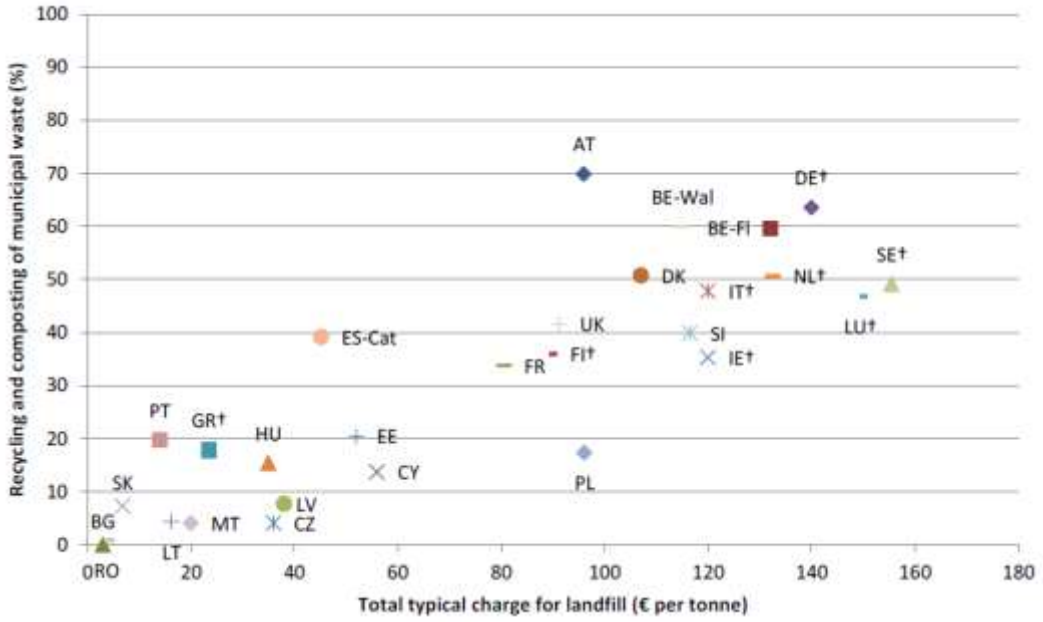
European Union

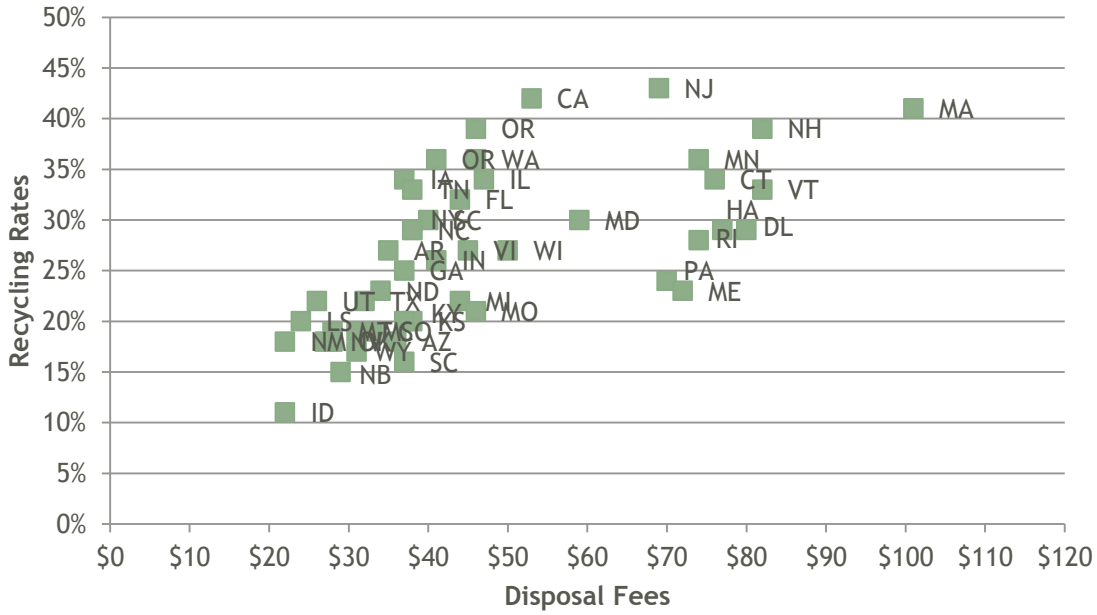
- The highest recycling in countries with $100 Euro/tonne disposal fees

U.S.

- The average tip fee in the U.S. is $43.20/ton (2010)
- There is a general correlation between landfill cost and recycling
- Price and policies impact recycling rates

High overall collection costs drive the same results





4. Landfill Bans & Recycling Mandates: Best "Bang for the Buck"

- SERA survey of U.S. cities found that bans of recyclables in trash resulted in an increase in overall diversion of **2.6-5.1%**

- Ameripen's research of bans shows that **cities with disposal bans combined with mandated recycling ordinances have 6% higher recycling rates** than those without disposal bans

- Bans are a low cost and effective way to increase diversion rates.

5. Container Deposit

- Container deposit programs generate high beverage container rates and high quality recyclables
- However, they target only a small portion of the total packaging and printed materials generated
- Bottle bills negatively impact revenue where there are already significant infrastructure investments
- Administrative fees can be very high
- Fraud negatively impacts container deposit programs and can affect recycling rates in adjacent states.

6. Public Education/Outreach

- Public education/outreach must be local
- Identify target audience and key characteristics
- Tactics must be based on audience characteristics to drive desired behavior

7. Extended Producer Responsibility for Packaging (PPP)

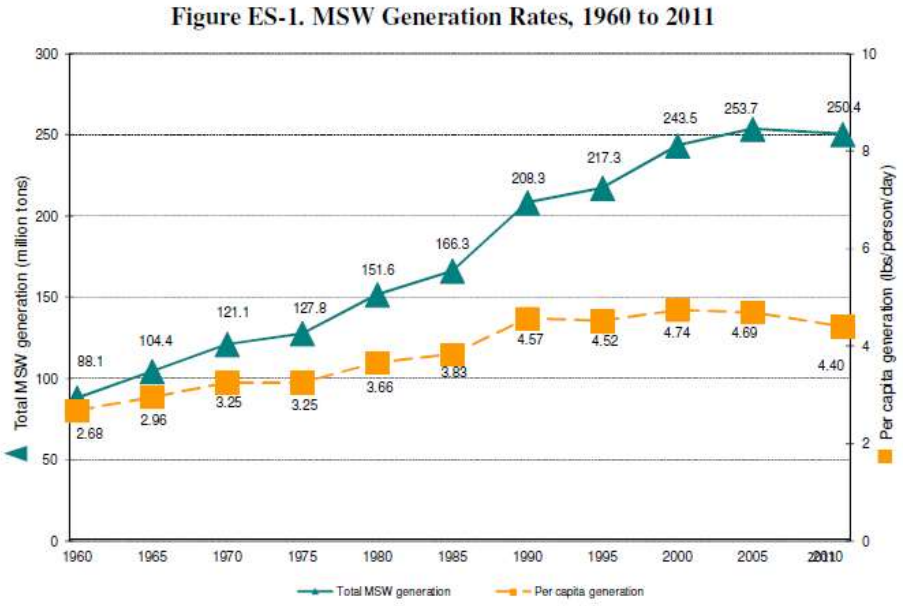
- EPR schemes are designed to make brand owners/ manufactures responsible for the recovery of packaging they place in the marketplace.
- The European Packaging Directive was implemented in 1994. All EU states have some sort of EPR program for packaging in place
- Australia's program is a voluntary producer responsibility program.

Where does EPR fit into Zero Waste goals?

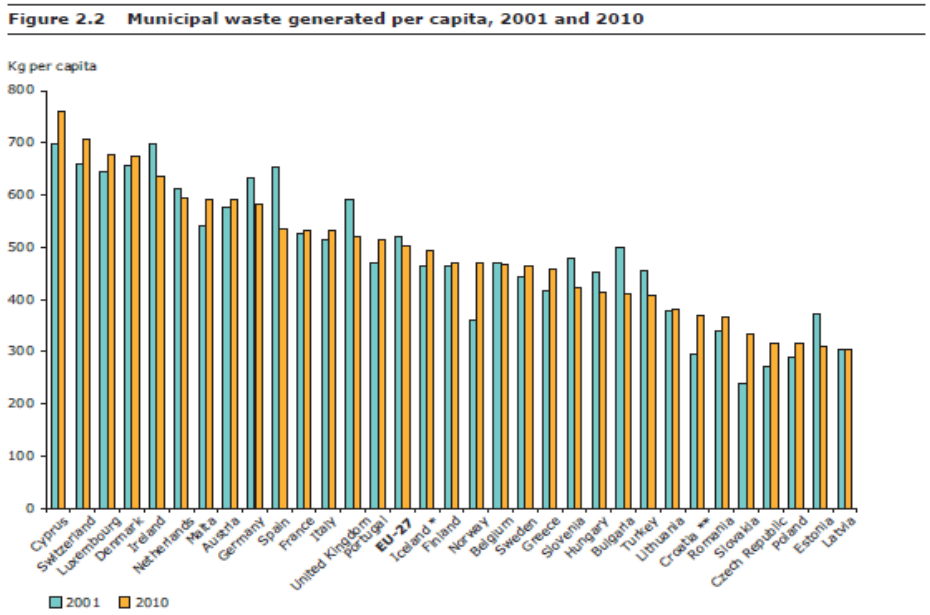
EPR (cont.): Does EPR impact packaging design?

- There is no evidence of packaging reduction since the Packaging and Packaging Directive was developed in 1994.
- Per capita waste generation **has increased in 20 EU countries and decreased in 11 countries**
- Per capita waste generation in the **U.S. has been falling since 2005**

US Per Capita Generation



EU Per Capita Generation



Source: Eurostat

EPR (cont): Does EPR increase recycling?

Programs with EPR

- **Ontario:** 25% recycling rate after years of EPR
- **Over half (60%) of EU countries have recycling rates <30%**
- **Countries with high recycling rates have high disposal fees, bans, mandates and PAYT.**
- **WTE** is an accepted disposal alternative in the EU

Programs w/o EPR

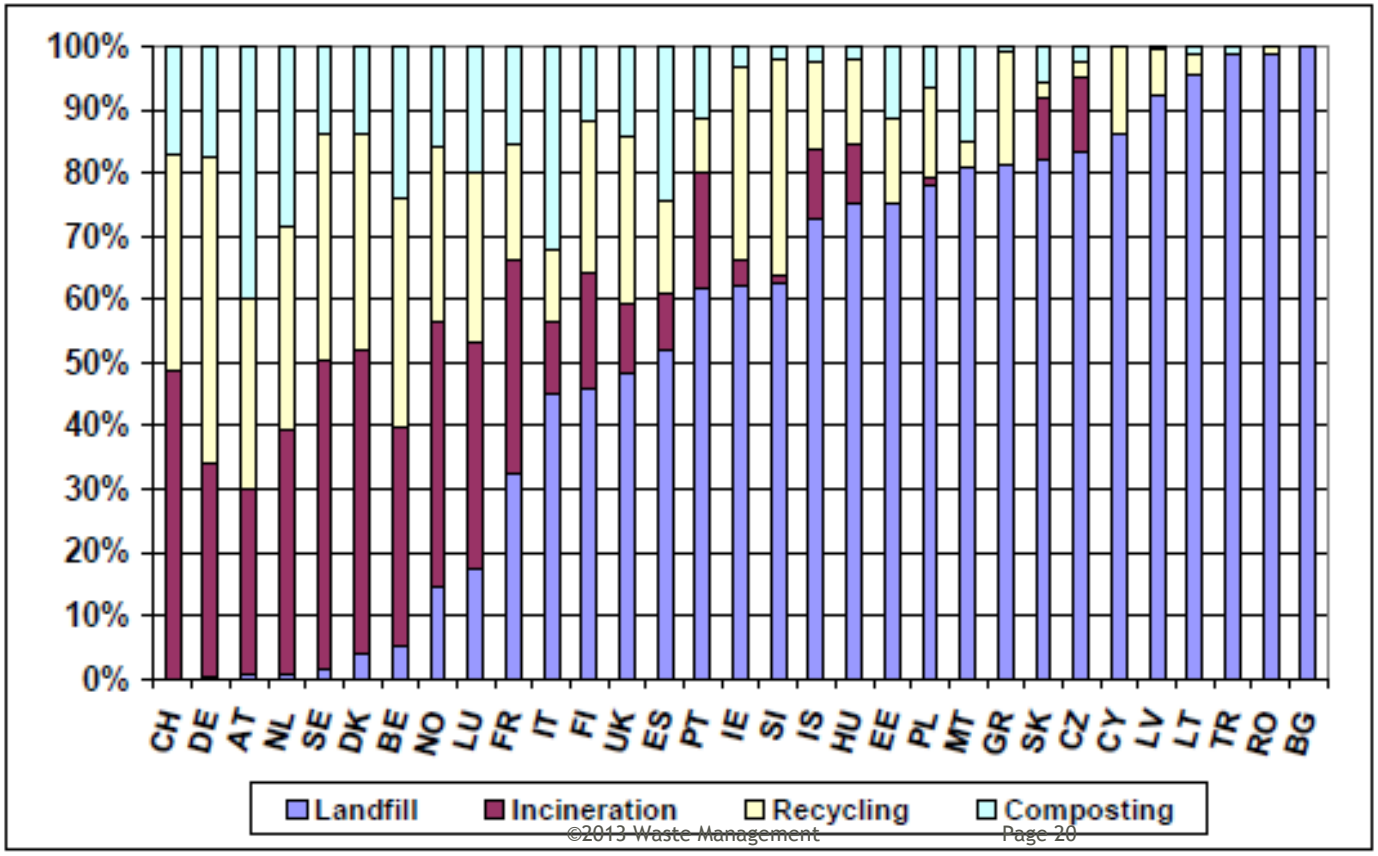
- Nanaimo, BC (**before EPR**) = **69-75+%** recycling
- Seattle, WA **without EPR** = **60% recycling (SF 70%)**
- Portland, Oregon = **70% recycling without EPR (SF)**
- San Francisco, CA = 70+% diversion + **without EPR**

Successful countries, provinces & states all have a combination of high solid waste rates, bans & mandates.

EPR (cont): Recycling analysis – by country

- While all EU countries have some sort of EPR program for packaging, over 50% send more than 70% of their waste to landfill
- However, all countries with high recycling rates have the policies include all of the policies we just discussed: PAYT, bans, mandates and high disposal fees and taxes

Figure 11 EU-27 municipal waste management (Eurostat, waste data centre 2010)



EPR (cont): Risks associated with EPR for PPP

Cost

- **Cost of goods will increase**
- **Duplicative costs.** Brand owner cost tracking duplicates efforts
- **Increased costs will be regressive.** The increased cost is born disproportionately by low income households

Service/Innovation

- Who will regulate customers service? Safety? Where is the incentive for environmental improvements?

Local Community

- There will be no distinction between cities and no control over individual city recycling programs.
- Local regulators and politicians will have no control over recycling programs.

In the U.S., local authority over essential services like sanitation and recycling are part of our DNA.
EPR will de-link all local control – that very control that is necessary for achieving high recycling rates.

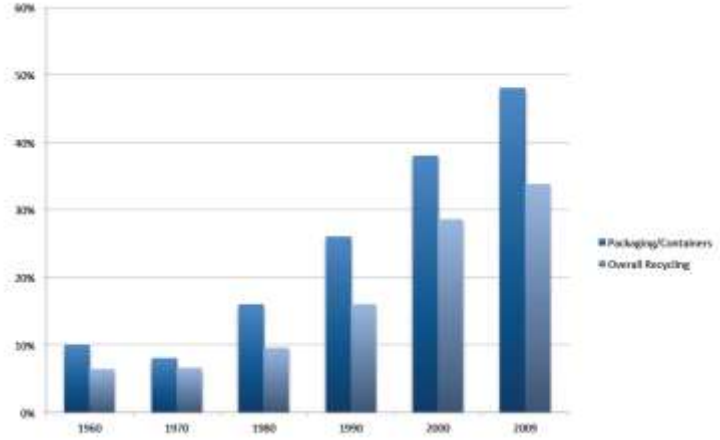
Overview: Recycling in the U.S.

Getting to Zero Waste: What works?

Summary

The grass is always greener, yet….

- **We know what works.** Communities and countries with successful programs throughout the world have the same policies in common:
  - ✓ PAYT
  - ✓ Convenient opportunities to recycle
  - ✓ High disposal fees & taxes
  - ✓ Variations of recycling mandates and/or landfill bans
- **U.S. cities are achieving high recycling rates through thoughtful solid waste policies and program development**



Successful recycling programs require multi-faceted solid waste policies and tactics to internalize Zero Waste behavior

Summary - There is no silver bullet

Overall solid waste policies drive to Zero Waste

- Aggressive recycling goals can be achieved with a combination of pricing incentives, convenient collection, material bans and community-based education.
- We cannot afford to scrimp on public education.
- Recycle Often, Recycle Right!

- Thank you -

Questions?

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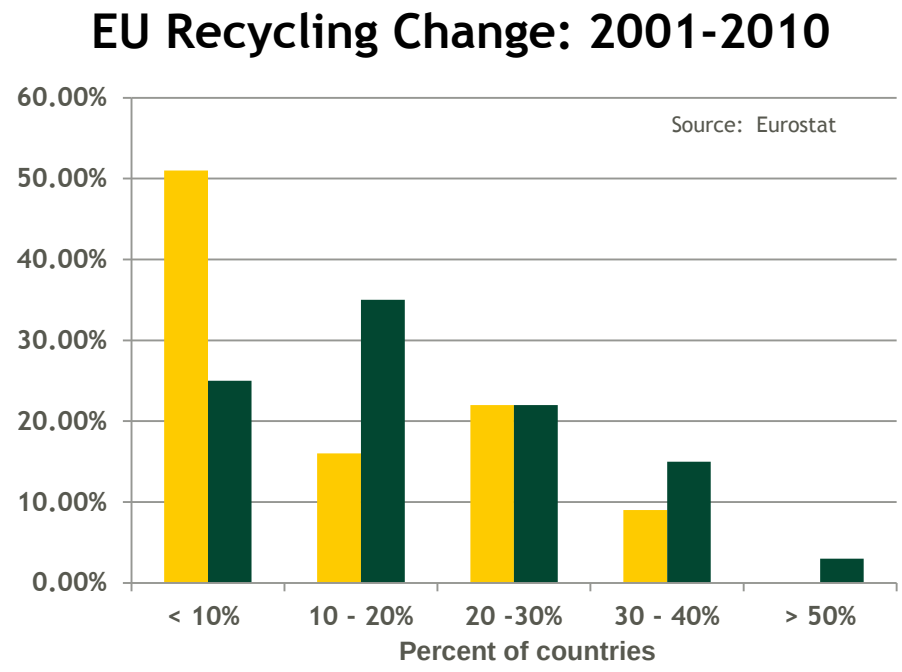
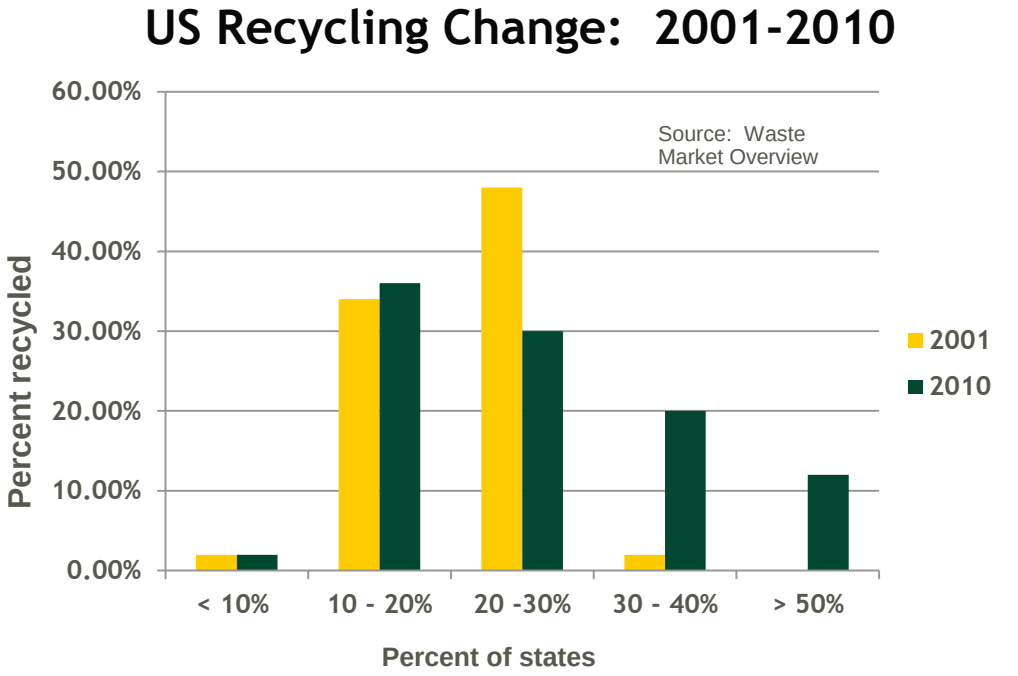
Change in landfilling from 2001 - 2010: Percentage of states at various recycling levels in the EU versus US





- EU countries with <10% recycling in 2001 increased their landfill diversion between 2001 and 2010
- 34 U.S. states have recycling goals. California is the only state with penalties
- States with goals are more likely to develop policies that lead to increased diversion
- EU Directives appear to be effective in driving more landfill diversion among the lowest performers. However, there has been less improvement at the higher levels.