How Machine Learning Can Save the Recycling Industry

Recycling is a Business in the United States

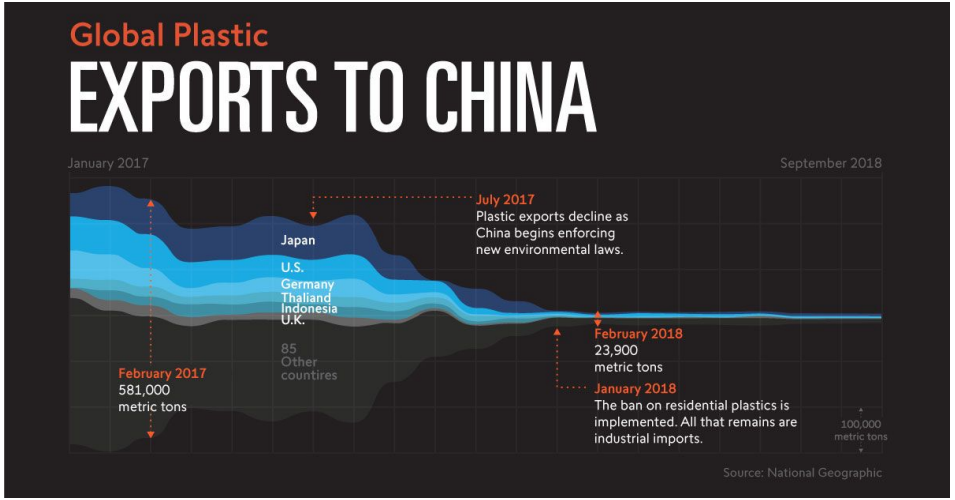
The United States exported 16 million tons of recyclables to China in 2016.

This mass of paper, metal, and plastic was sold and recycled to support China's growing manufacturing sector.

The Ban

Of the exported recycling sold to China, 30% was sent to the ocean or China's landfills due to contamination: the mixing of recyclable and non-recyclable material that makes a batch of trash unable or more expensive to be recycled.

In 2017, a chain of bans on recyclable exports began that prevented the US from selling its recyclables, in part, due to contamination.



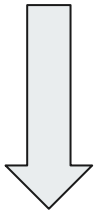
Result of the Ban

As a result, the market for recycling disappeared in the US:
"U.S. processing facilities and municipalities have **either had to pay more to recycle or simply discard the waste."**

US City	Profit from Recycling Before the Ban (2017)	Profit from Recycling After the Ban (2018)	Loss in Profit by Recycling: 2017 to 2018
Stamford, CT	$95,000	-$700,000	-$795,000
Bakersfield, CA	$65/ton	-$25/ton	-$90/ton
Franklin, NH	$6/ton	-$125/ton	-$131/ton

Sorting is the Key to Saving Recycling

“The key to fixing recycling in the U.S. is developing the domestic market. This means improving the technology for sorting and recovering materials, incorporating more recycled material into products, getting these products into the marketplace and creating demand for them.”



The goal: to lower the cost of recycling by eliminating contamination

Machine Learning is the Key to Sorting

Creating a model that can classify trash can solve the contamination issue by eliminating human error and/or guesswork in sorting.

A Win-Win

Given the choice between recycling at a loss vs sending recycling to landfills or incineration at less of a loss, many municipalities in the US chose the latter.
There was a choice between environmentalism and profit.

There does not have to a choice with machine learning.

Trash can be sorted at a low cost, allowing recyclables to be sold and/or upcycled straight from sorting without contamination.

ML Recycling Results

Recycling based on an ML model would:

1. Eliminate human error or inability to sort different recyclables and recyclables from trash
2. Reduce and eventually eliminate contamination in recyclicables
3. Allow profits from recycling to increase (more recycling to sell and/or upcycle) and losses to decrease
4. Save recyclicables from ending up in the landfill or being incinerated due to more, non-contaminated recycling per unit of trash

Sources

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