

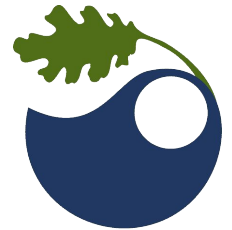


Making Recycling Work

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NCRA – Recycling Update 2019 – Berkeley, CA



Recycling is having a hard time at the moment



Recently, my own former PhD student said life on CNN that he doesn't recycle and tells his students not to.

What's going wrong?



Reminder: Why recycling is good for the environment

The only environmental reason for recycling is to reduce virgin material production. *)



How do we know recycling is reducing virgin material production?
We don't.

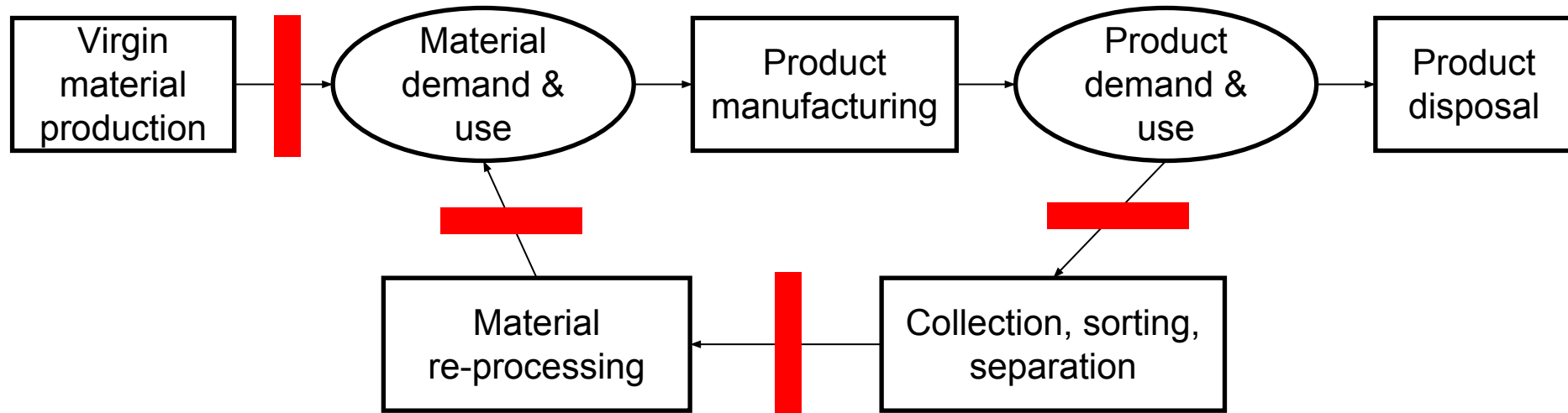
What needs to happen for recycling to reduce virgin material production?
A lot.

*) Recycling and the Myth of Landfill Diversion

T Zink & R Geyer, Journal of Industrial Ecology, <https://doi.org/10.1111/jiec.12808>



There are at least 4 things that need to happen *)



1. Recyclables need to be collected and pre-processed
2. Collected recyclables need to be reprocessed into secondary materials
3. The secondary materials need to have a market demand
4. The secondary materials need to reduce virgin material production

*) Supply Loops and Their Constraints

R Geyer & T Jackson, California Management Review, 2004, 40(2), 55-73



How do we measure those 4 necessary conditions?

1. Recyclables need to be collected and pre-processed

Collection rates

2. Collected recyclables need to be reprocessed into secondary materials

Recycling rates

3. The secondary materials need to have a market demand

Recycled content

4. The secondary materials need to reduce virgin material production

?????



Doesn't recycling automatically displace virgin material?

Short answer: No

Longer answer: Circular economy rebound *)

Recycling is likely to lead to increased total material use.

Reasons:

- Insufficient substitutability between virgin and secondary material
- Recycling leads to reduced material prices, which grows demand
- Recycling makes us feel less guilty about buying stuff

*) Circular Economy Rebound

T Zink & R Geyer, Journal of Industrial Ecology, 2017, 21(3), 593-602



What needs to be done to make recycling work?

1) Measure and advocate for what matters

Out: Diversion targets and collection rates

In: Recycled content, reduction in virgin production volumes

2) Remember the waste hierarchy

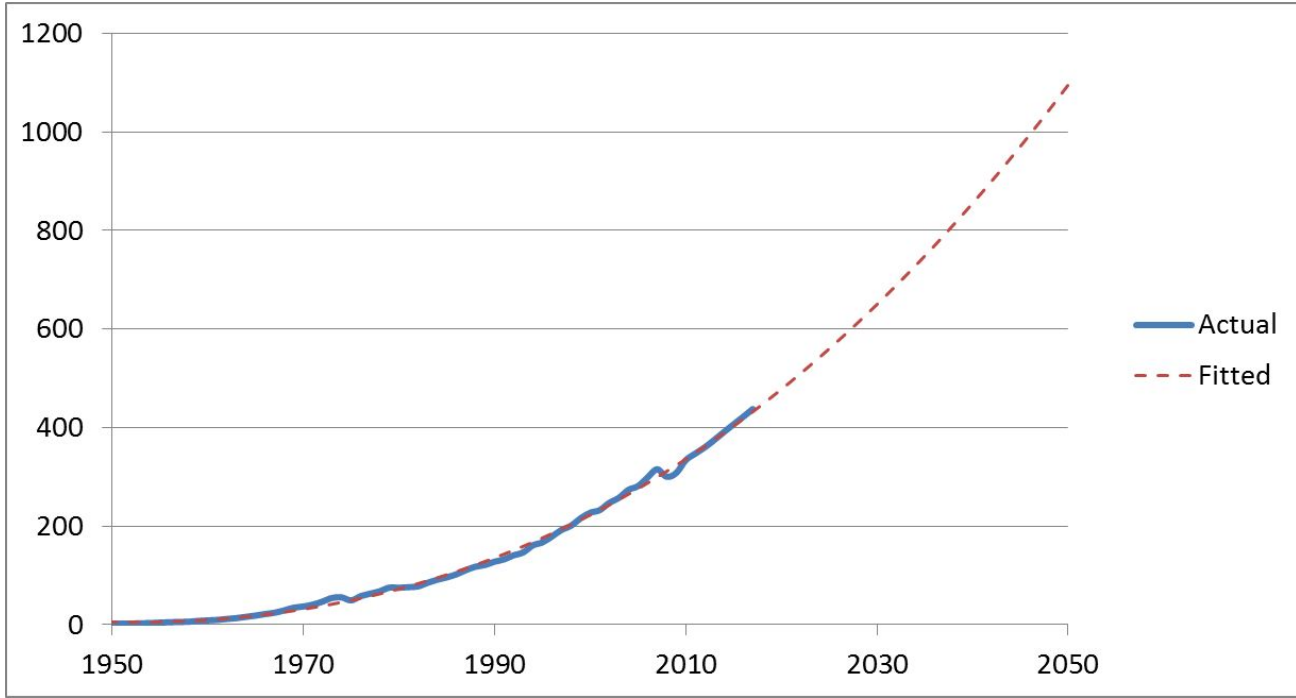
Reduce, Reuse, Recycle

Recycling comes third.



Recycling's only job is to reduce virgin material production.
It currently doesn't look like it's doing that.
And even if it is, it's not doing enough of it.

Global virgin plastic production (resins, fibers, additives, in million metric tons)



Source: Geyer et al. 2017

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