



Business Viewpoints:

Emerging trends in solid waste



Alternative fuel vehicles solid

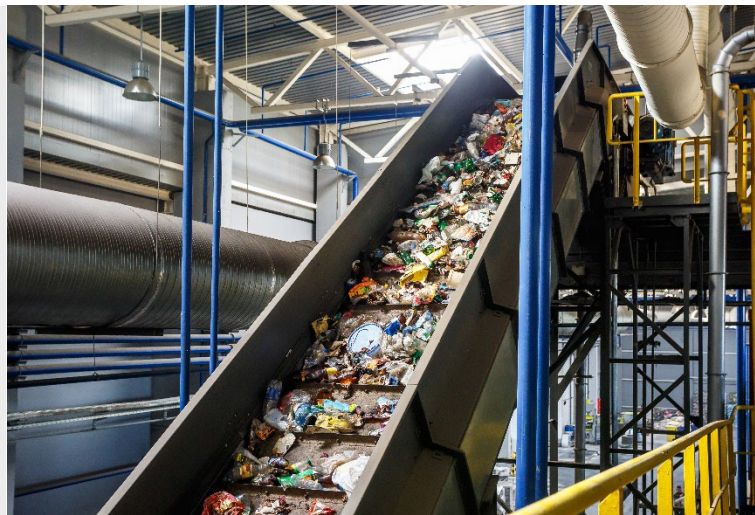
- Solid waste-led Compressed Natural Gas (CNG) is the next evolution in eco-friendly vehicles (EV)
- EVs are expected to overtake CNG if cost can be more competitive than CNG and Diesel

>20% ↓

The number landfills in the U.S. is expected to drop from **1,280** to **below 1,000** over the next decade, due to the lack land available for expansion and rising cost of managing leachate¹

Advances in technology will change the industry

- A digital connection to all stakeholders has become a minimum requirement
- New technology/AI has been increasingly used to replace low skilled/repetitive tasks to help with labor pool constraints



Technology may automate more collection, drive dynamic routing, and pick-up on demand

While above average pace of M&A persists with lots of tuck-ins and some new market entries for the consolidators, eventually some consolidation, at the top, is likely

The U.S. has allocated **\$10B** for per- and polyfluoroalkyl substances (PFAS) action²

Many countries are adopting or changing regulatory requirements related to PFAS



Solid waste generation has gradually increased over time to **~5 pounds/person³** with growing use of single-use products coupled with population growth, and is expected to continue to increase in the years ahead



Extended Producer Responsibility (EPR) programs

Several states including CT, OR, and ME have implemented their own legislations, with 13 states expected to be under consideration in 2022



Landfill Gas to Energy (LFGTE)/ Organics

Convert legacy high-volume sites and new high-volume sites to Hi-Btu facilities that produce renewable natural gas



Recycling business model

Major industry players are moving away from commodity-driven business models and toward a processing fee model, prompted by China's National Sword in 2018⁴

1. Bloomberg Feb 26, 2021
 2. U.S. Government Build Back Better Agenda 2022
 3. epa.gov
 4. China's policy that has banned the importation of certain types of solid waste, as well as set strict contamination limits on recyclable materials