



## Center for Climate Integrity Plastics Report: Fact Check

Plastics are essential materials, unrivaled for affordability and flexibility in their uses in healthcare, transportation, food preservation, and other vital applications. Advanced recycling breaks down post-use plastics at a molecular level so they can be transformed into virgin-quality raw materials for making a wide array of valuable new products. With collaboration among municipalities, consumers, industry, and government, advanced recycling can help create a more circular economy, in which plastics are used again and again, instead of discarded.

The Center for Climate Integrity's [February 2024 report](#) attacking the plastics industry broadly, and advanced recycling specifically, relies on a poor understanding of the current state of technology. Based on documents that are more than fifty years old, the report does not consider multiple innovations and investments in advanced sorting and recycling technologies. Like many innovations, advanced recycling has benefitted from scientific study, investment, and smart policy focused on responsibly managing discarded plastics. In addition, independent third-party certification systems, such as ISCC PLUS, have emerged that provide auditable, transparent processes for attributing post-use plastic inputs to certified circular product outputs from advanced recycling.

With many brands shifting towards circular plastic for packaging, there is an increasing demand to be met by advanced recyclers. This increasing demand will help drive economies of scale for advanced recycling operations in line with consumer and brand requirements. Although advanced recycling technologies are still scaling, it is estimated that the United States [could support](#) 150 advanced recycling facilities and process 12 million metric tons of post-use plastic.

**Claim:** "Certain types of plastics have no end markets (i.e., businesses that buy and use recyclable materials to make new products), and therefore are impossible to recycle. To date, viable markets only exist for polyethylene terephthalate (PET) and high-density polyethylene (HDPE) plastic bottles and jugs" (2).

- **Fact:** Multiple companies are using advanced recycling to break down different types of plastics including [Eastman](#), which uses PET renewal technology, and [LyondellBasell](#), which turns plastic waste into polyethylene and polypropylene. With a market made up of the largest chemical manufacturers themselves in addition to smaller businesses looking for materials to convert using their evolving technologies, there is reason to see that a market exists to transform plastic waste into new products. Further, consumer demand for recycled plastics is growing, largely in part due to growing consumer awareness and desire for recycled products. Research [projects](#) that the market for recycled plastic globally will reach \$141.9 billion by 2032.
- **Fact:** According to the Ellen MacArthur Foundation's [Global Commitment 2022](#), companies representing 20% of all plastic packaging produced globally have committed to targets to increase the share of post-consumer recycled content, among other actions to reduce plastic waste and promote circularity. This represents a voluntary shift that brands are making which will increase demand for both mechanical and advanced recycling operations.

**Claim:** "The thousands of different plastics and the variation among them further limit recyclability" (3).

- **Fact:** Companies are also investing in new polymers to improve packaging design for ease of recycling. For example, new polymers support direct printing on the package for a 100 percent plastic design, versus a composite that is more difficult to recycle.
- **Fact:** Advanced recyclers already [have](#) technologies in place that are able to break many mixed plastics down at a molecular level into virgin-quality raw materials for making a wide array of valuable new products. Further, sortation technology has been [developed](#) and should [continue](#) to evolve to separate materials to enable more effective recycling for plastics.



**Claim:** “The quality of plastic degrades as it is recycled, limiting both the use of recycled plastic and its continued recyclability” (3).

- **Fact:** One immense benefit of advanced recycling is that a wider scope of plastics can be [recycled again and again](#). In certain instances, the virgin-quality raw materials from advanced recycling can be used to make fuel products, but these raw materials can also be used to make [plastic packaging](#), [building materials](#), [furniture](#), [clothing](#) and [shoes](#), to name just a few applications. Here’s what’s important:
  - For every ton of certified-circular plastic sold, more than a ton of post-use plastic avoids ending up in other end-of-life dispositions such as landfill or incineration.

**Claim:** “The toxicity of plastic and its chemical additives limits the recyclability of plastic” (4).

- **Fact:** Plastic manufacturing and outputs are tested at multiple points throughout the production process, and facilities are subject to government oversight. Recycled plastics are also subject to [rigorous testing](#) and complying with robust regulations.
- **Fact:** The benefit of advanced recycling is that this set of technologies can process plastics with additives by [breaking down additives](#) to the molecular level and remove them from the process in many cases.

**Claim:** “Finally, the cost of producing recycled plastic is much higher than producing virgin plastic, and therefore plastic recycling is not economically viable” (4).

- **Fact:** Large players in the plastics industry including [Dow](#), [Eastman](#), [ExxonMobil](#), [Shell](#), and many more, have made investments in advanced recycling based on their analysis of its economic viability and demonstrated market value for the products from advanced recyclers. Beyond partnering with technology companies and others to develop advanced recycling technologies, these companies are finding solutions for scaling advanced recycling. Further, certified circular polymers help attribute value to post-use plastics which, in turn, incentivizes more effective collection and sortation of discarded plastics.
- **Fact:** Demand for recycled plastics is growing, largely in part due to growing consumer awareness and desire for recycled products, and research [projects](#) that the market for recycled plastic globally will reach \$141.9 billion by 2032.
- **Fact:** The EU’s [Circular Economy Action Plan](#) includes a [Plastics Strategy](#) that sets a framework for investment in advanced recycling as a viable option to manage plastic waste, increase plastic recycling rates, and drive market demand for recycled content. The Strategy aims at making recycling profitable for business, increasing the demand for recycled content, improving the collection of plastic waste and making recycling processes more efficient.

**Claim:** “Advanced recycling... pyrolysis, gasification, hydrolysis, methanolysis, and more...are not ‘recycling,’ because they do not result in the manufacture of new plastic products” (23).

- **Fact:** Methods of advanced recycling return discarded plastic to the economic stream by breaking plastics down at a molecular level and converting them into virgin-quality raw materials that can be used in making a wide array of valuable new products. Here’s what’s important:
  - For every ton of certified-circular plastic sold by an advanced recycler, more than a ton of post-use plastic avoids ending up in other end-of-life dispositions such as landfill or incineration.
- **Fact:** The European Union is investing in advanced recycling projects [through grants](#) from the European Union Innovation Fund, which invests in low-carbon technologies.
- **Fact:** In line with the EU’s endorsement of advanced recycling, [25 states](#) have enacted helpful legislation for the ongoing increase in advanced recycling investment.



→ **Fact:** Advanced recycling is also expanding in Asia, with Petronas Chemical Group taking a final investment decision to construct what is projected to be [Asia's largest](#) advanced recycling facility, which expects to be operational in the first half of 2026.

**Claim:** "Industry advertising often implies that all types of plastic can be chemically recycled together—but as with mechanical recycling, the output only has value when the plastic is uniform" (24).

→ **Fact:** This is simply not true. The industry has extracted value from complex mixtures of feedstocks for decades. Advanced recycling is a complement to mechanical recycling because it can recycle various types of plastics together. [Advanced recycling technologies](#) in operation today can handle many mixed plastics, making these technologies a great option to fill in the gaps where mechanical recycling cannot operate as efficiently.

**Claim:** "Analyses have consistently shown that plastic-to-plastic chemical recycling is not taking place at scale" (26).

→ **Fact:** ExxonMobil has [implemented](#) its Exxtend technology for advanced recycling. The technology breaks down plastic at a molecular level into virgin-quality raw materials for making a wide array of new products.

→ **Fact:** [Nexus Circular](#) has operated an advanced recycling facility in Atlanta that has seen continued growth each year of its operation in the state of Georgia.

→ **Fact:** Eastman is operating a commercial scale facility in Kingsport, Tennessee and has been supplying its Tritan™ Renew and Cristal™ Renew polymers to the market for several years.

→ **Fact:** While companies continue to work on building technologies for advanced recycling on a larger scale, the forecasted demand for products from advanced recycling is [soaring](#), incentivizing government and industry to continue to identify opportunities to further scale this type of recycling.

**Claim:** "The plastics industry established—and continues to establish—unachievable plastic recycling targets, misleading consumers and policymakers" (29).

→ **Fact:** CCI's reporting uses a very U.S.-centric viewpoint and doesn't take into account the major achievements globally that demonstrate how plastic recycling is currently working and can work in the United States with the appropriate policies and investments. While the U.S. recycling rate for plastics is [around 8%](#), Germany set a record-high plastics recycling rate of 67.5% in 2022, demonstrating that the right policies and actions can lead to success.

→ **Fact:** Targets set by the plastics industry are ambitious but achievable with the right public policies and investments. For example, ExxonMobil [developed](#) a large-scale advanced recycling facility in Baytown, Texas, which has been operating since 2022 and has the capacity to process 80 million pounds of used plastic per year. With the success of this facility and demand from buyers in the United States, Canada, Thailand, Australia, and more, the company aims to increase its capacity to 1 billion pounds per year by the end of 2026 by opening more facilities around the world.

**Claim:** "The plastics industry falsely promoted—and continues to promote—plastic recycling as a means to achieve a 'circular economy'" (30).

→ **Fact:** Plastics manufacturers and recyclers follow the [U.S. EPA's definition](#) of a circular economy as a model that "reduces material use, redesigns materials and products to be less resource intensive, and recaptures 'waste' as a resource to manufacture new materials and products."