

Plastics Are Essential to Meeting Climate & Sustainability Goals



To accelerate progress toward UN Sustainable Development Goals, lightweight and efficient plastic materials will play an essential role. Plastics contribute directly to multiple SDGs, most notably goals on climate action, affordable/clean energy, and water/sanitation. As nations deliberate over a global agreement on plastic waste, it's critical to recognize the role and contributions of plastics to SDGs.

Sustainability Goals & Plastics

Plastics are lightweight and efficient materials that allow us to do more with less material, which contributes to sustainability and helps drive down greenhouse gas emissions. Plastics contribute to multiple SDGs, most notably:

Climate Action (SDG 13)

- **Help Drive Down Greenhouse Gas Emissions** – Life Cycle Analyses (also see below) typically find that use of plastics in consumer products and packaging can significantly reduce greenhouse gas emissions compared to alternatives, primarily because strong yet lightweight plastics require much less material to perform similar functions. This means that plastics are playing a key role in lowering our carbon footprint and are helping combat climate change.
- **Increase Vehicle Fuel Efficiency** – Carmakers use durable, lightweight plastics to decrease the weight of car parts, which reduces our fuel use and greenhouse gas emissions. In fact, most of today's cars are made of about 50% plastics by volume but only 10% by weight. Light-weighting also is critical to increasing the range of low-carbon electric vehicles.
- **Increase Home/Buildings Energy Efficiency** – To drive down energy use and greenhouse gas emissions, energy-saving plastic building materials improve insulation performance (R-value) and limit unwanted airflow. Plastic building products – foam insulation, house wrap, window frames, and caulks/sealants – play crucial roles in sealing a building envelope against heating and air conditioning losses, which saves energy and reduces greenhouse gas emissions.

Affordable/Clean Energy (SDG 7)

- **Help Expand Wind Energy** – To expand wind power as a low-carbon energy source, we need an expanded supply of strong yet lightweight wind turbine blades, most made from various lightweight plastic composites, such as carbon fiber-reinforced plastic. Engineers continue to create lighter, more efficient blades to drive down greenhouse gas emissions further, most of which involve modern polymer composites/plastics.
- **Help Expand Solar Energy** – Plastics improve efficiencies and cost effectiveness of solar energy, supplying essential films/sheets that help protect glass and silicon panels from the environment, plus electrical insulators, pipes, valves, and fittings. Advances in plastic solar cells could usher in more affordable, flexible, lightweight, and durable solar energy panels.
- **Improve EV Batteries** – Specialty plastics help protect the battery pack and guard against fire hazards from EV batteries, contributing to safety. Plus, advanced plastic-based battery separators for lithium-ion batteries can boost battery power by up to 30%, enhance temperature stability and extend EV range under a single charge.

Water/Sanitation (SDG 6)

- **Upgrade Water Delivery/Infrastructure** – Durable plastic pipes can upgrade aging water infrastructure, improve its resiliency, and cut energy use. Plastic pipes typically are more economical to install and maintain and often can retrofit crumbling and rusting pipes without digging massive trenches. They also save substantial energy by significantly reducing drag of moving water through old fashioned pipes.

Zero Hunger (SDG 2)

- **Reduce Food Waste** – According to FAO, nearly 1/3 of the world's food is lost or wasted every year. Plastic packaging keeps perishable foods like meat and bread fresher for longer, reducing spoilage and helping to curb food waste. Plus, sanitary packaging can play a critical role in helping prevent foodborne illness.

Life Cycle Analyses – Essential to Policy Making

Policymakers are increasingly relying on life cycle analyses (LCAs) that study the environmental impacts of consumer goods, from extraction of raw materials to final disposition. For example, UN Environment hosts [The Life Cycle Initiative](#), a public-private, multi-stakeholder partnership enabling the global use of credible life cycle knowledge by private and public decision makers.

LCAs can lead to better decision making, often by comparing the multiple environmental impacts of materials and products. For example, based on decades of life cycle analyses (LCAs) that study the environmental impacts of consumer goods, multiple researchers have concluded:

- The use of plastic packaging and products can significantly reduce greenhouse gas emissions compared to alternatives such as steel, paper, aluminum, glass, etc. ([Trucost, 2016](#))

In other words, plastics in use today are helping combat climate change, and they are key to a lower carbon future.

These LCAs help recognize the role plastics play in reaching multiple SDGs and meeting climate contributions (Nationally Determined Contributions). LCAs must be considered when deliberating over a global agreement on plastic waste.

Commitment to Move Toward Net Zero in Production Emissions

ICCA, the global voice of the chemical industry, fully supports the Paris Agreement's goals and the ambition to achieve a climate neutral world by mid-century. ICCA chemicals and materials manufacturers are committed to being part of the solution to global climate change in two ways:

1. By working to reduce greenhouse gas (GHG) emissions associated with our own operations; and
2. By enabling the entire manufacturing value chain including the building and construction, energy, transportation and consumer goods sectors and even individual consumers, to reduce their own GHG footprints through energy-saving and emissions-reducing technologies and materials produced or made possible by chemical innovations.