



Toray Composite Materials America, Inc.



Toray CMA Sustainability Vision

A Progress Report on the Goals and Targets We Committed to for 2021



Toray Composite Materials America, Inc.

WHAT IS SUSTAINABILITY?

- Ensuring future generations have the natural resources available to live an equal, if not better, way of life as current generations.
- The capacity to improve the quality of human life while living within the carrying capacity of the earth's supporting ecosystems.
- Stabilizing the relationship between human culture and the environment.





ACTIONS THAT DRIVE VALUE

Toray CMA believes in our sustainability philosophy of “Actions that drive value.” Just saying these words is not enough – taking the necessary actions to ensure we make sustainable products that benefit society is our top priority.

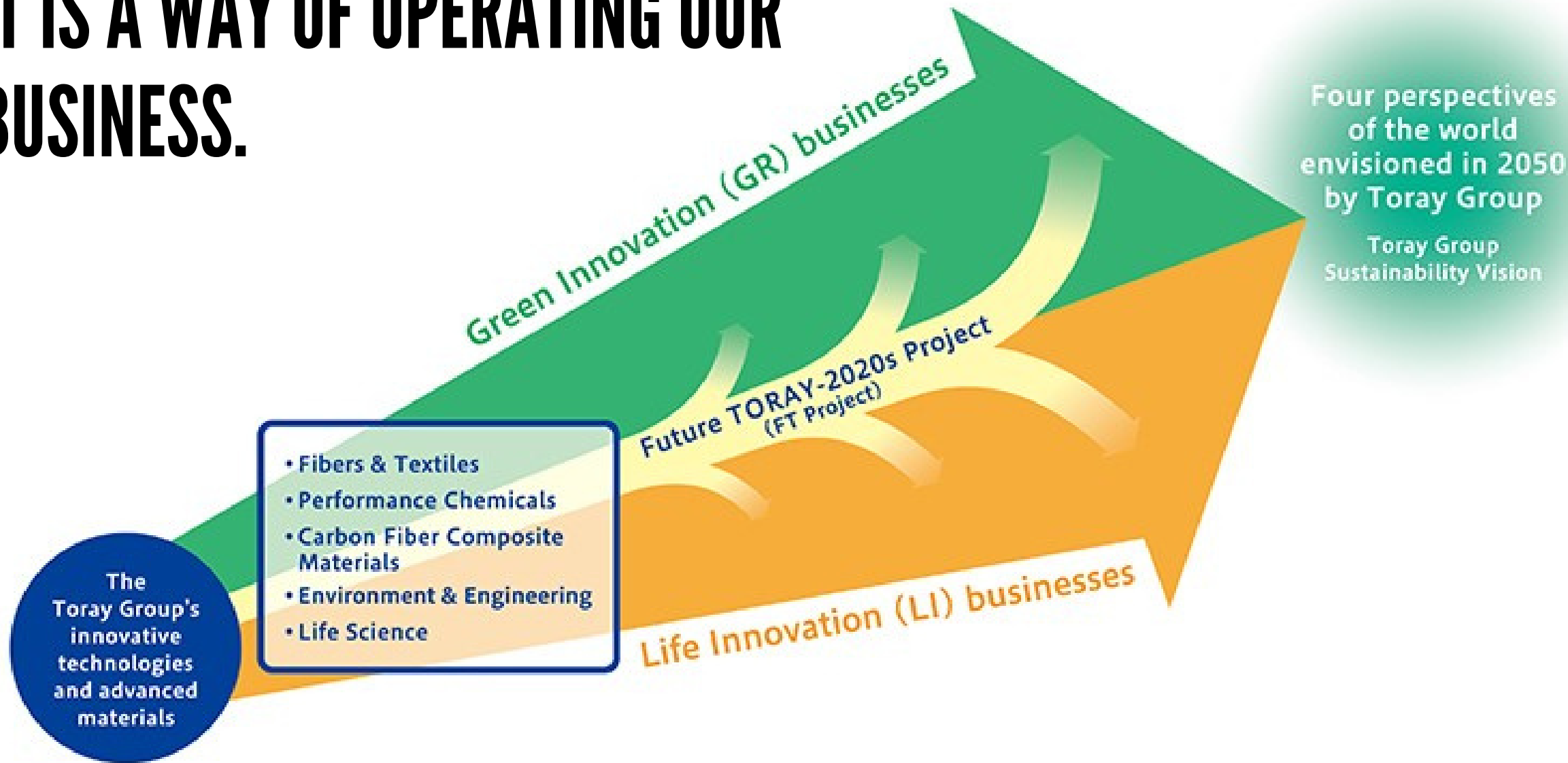
These actions include reuse of consumable products during our manufacturing process, reduction of energy consumption and use of renewable energy sources, and recycling prepreg waste into new products.

In addition to the light weight benefits our carbon fiber composites give to the transportation industry, Toray is doing its part to make sure these products are made sustainably.

Dennis Frett



SUSTAINABILITY IS NOT JUST A TAGLINE, IT IS A WAY OF OPERATING OUR BUSINESS.



Toray’s Corporate Philosophy is “Contributing to society through the creation of new value with innovative ideas, technologies and products.”

At Toray Composite Materials America (CMA), we align with this vision not just by what products we create – but also by who we are as a responsible corporate citizen.

Our products help create a world that is less-dependent on fossil fuels. They push technology to reduce, and eventually eliminate, Greenhouse Gas (GHG) emissions that contribute to global climate change.





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WHO WE ARE:

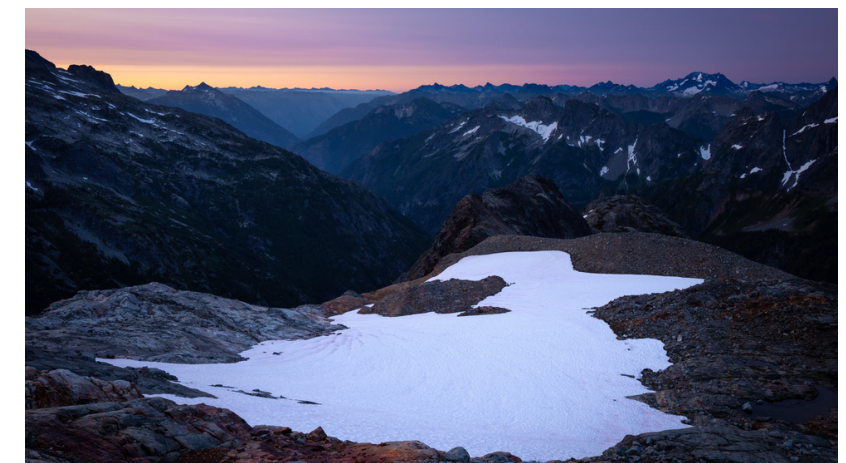
Toray CMA promotes sustainability through our outreach in education and environmental stewardship.

These fall into three broad categories:

- Education
- Wildlife Conservation
- Preserving Wild Spaces



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WHAT WE DO:

Our corporate policies reflect our place in the world. We manage our responsibility in business to a changing world, an aging population, technological innovation, and transformative environmental challenges.

Goals established to facilitate this transformation are listed below. We target 2030 in our long-term vision and work tirelessly to accelerate the changes necessary to achieve these goals.

Goals:

- Reduce greenhouse gas emitting energy usage by 30% and replace energy with renewable energy resources
- Reduce carbon emissions of transport aircraft and cars through lightweight materials by 22 million tons



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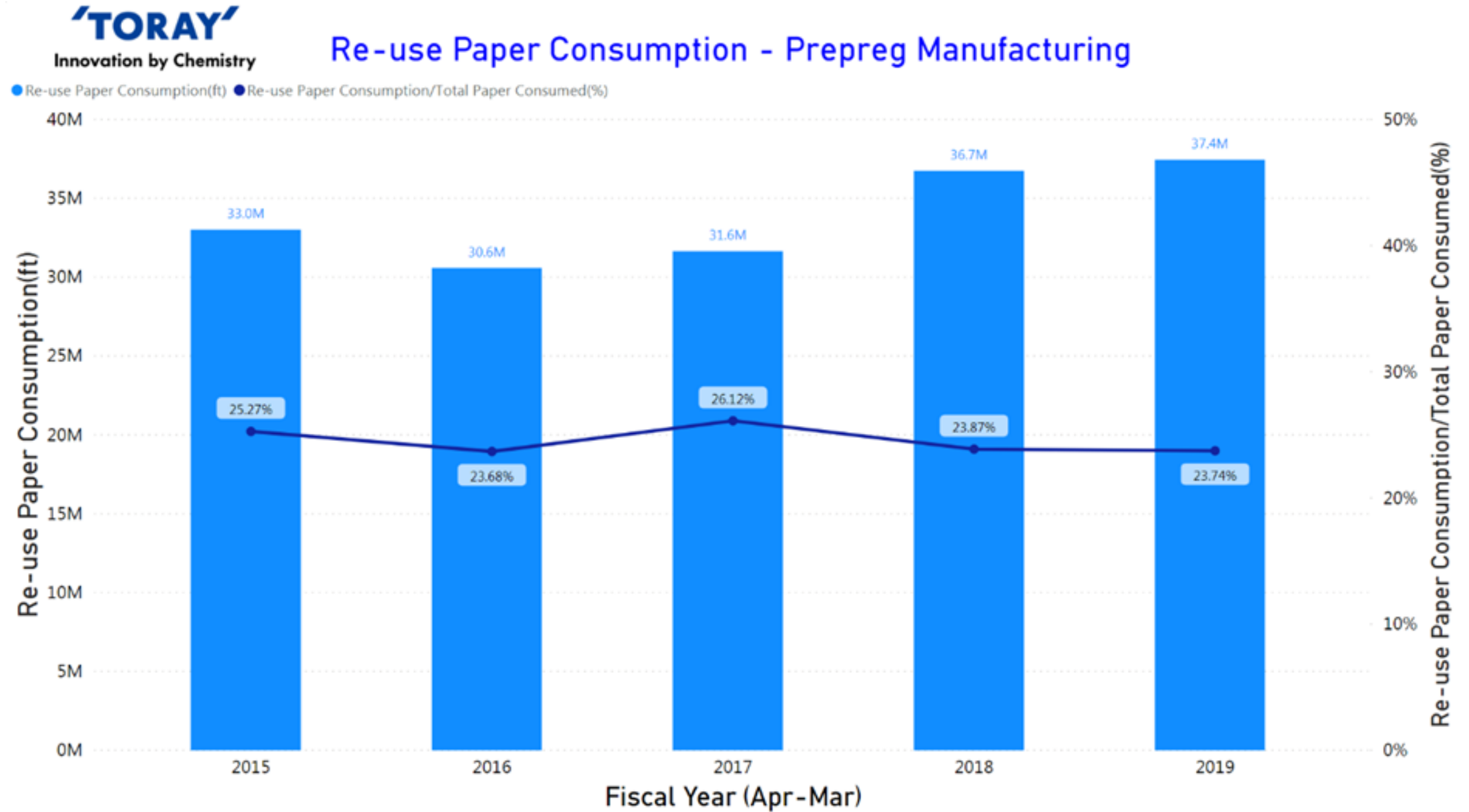


Paper Reuse

As part of the carbon fiber prepreg manufacturing process, paper is used as a sacrificial reinforcement.

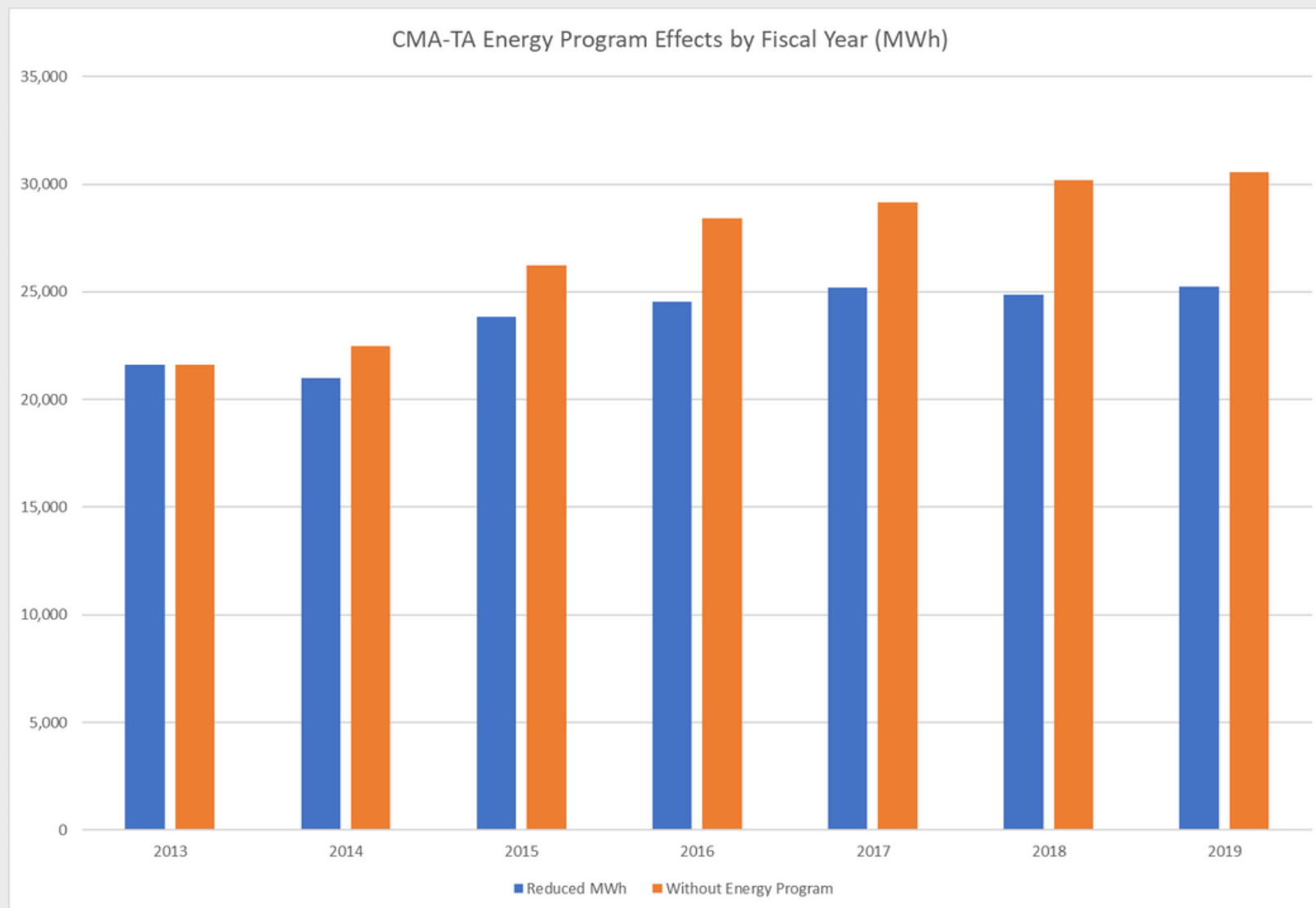
Toray CMA developed a unique cleaning process to reuse ~25% of paper reducing the energy required to recycle ~37 million feet of paper per year.

Paper at the end of its useful life is recycled preventing landfill waste.

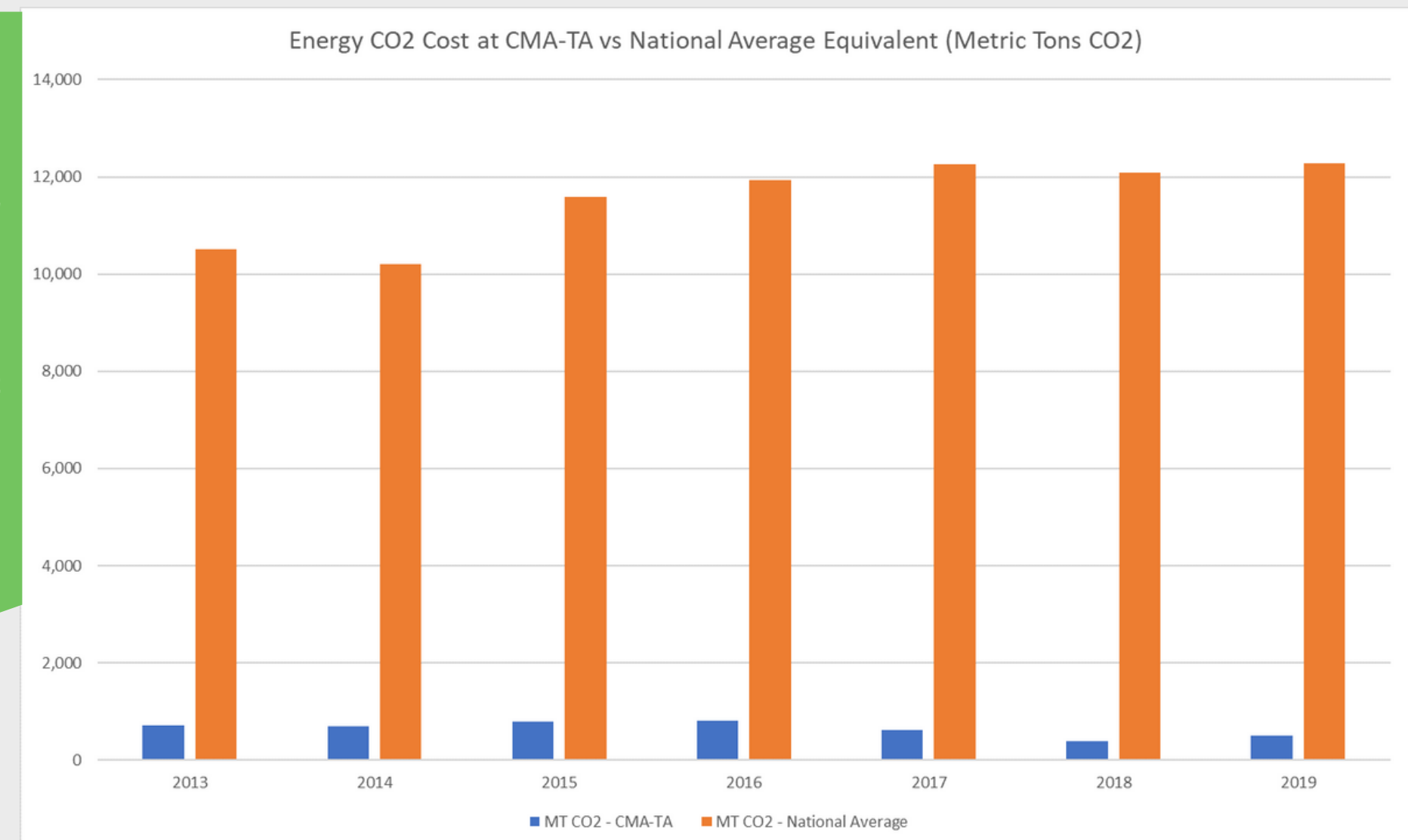


Energy Savings Initiatives

Prepreg operations are mainly supplied with renewable hydroelectric power. In 2014-2015, Toray CMA received an energy rebate of \$200k from its energy provider, which was donated to protect salmon habitats in the Pacific Northwest. Toray CMA has made energy savings improvements such as replacement of light bulbs with energy efficient LEDs, and the installation of a steam turbine generator to harness and reuse wasted process energy for the generation of electricity, offsetting facility energy usage. **Toray CMA electrical savings initiatives have reduced energy consumption by 17% from 2013-2019:**



Compared to the US national average for industrial companies, Toray CMA operates at 95% below the average:





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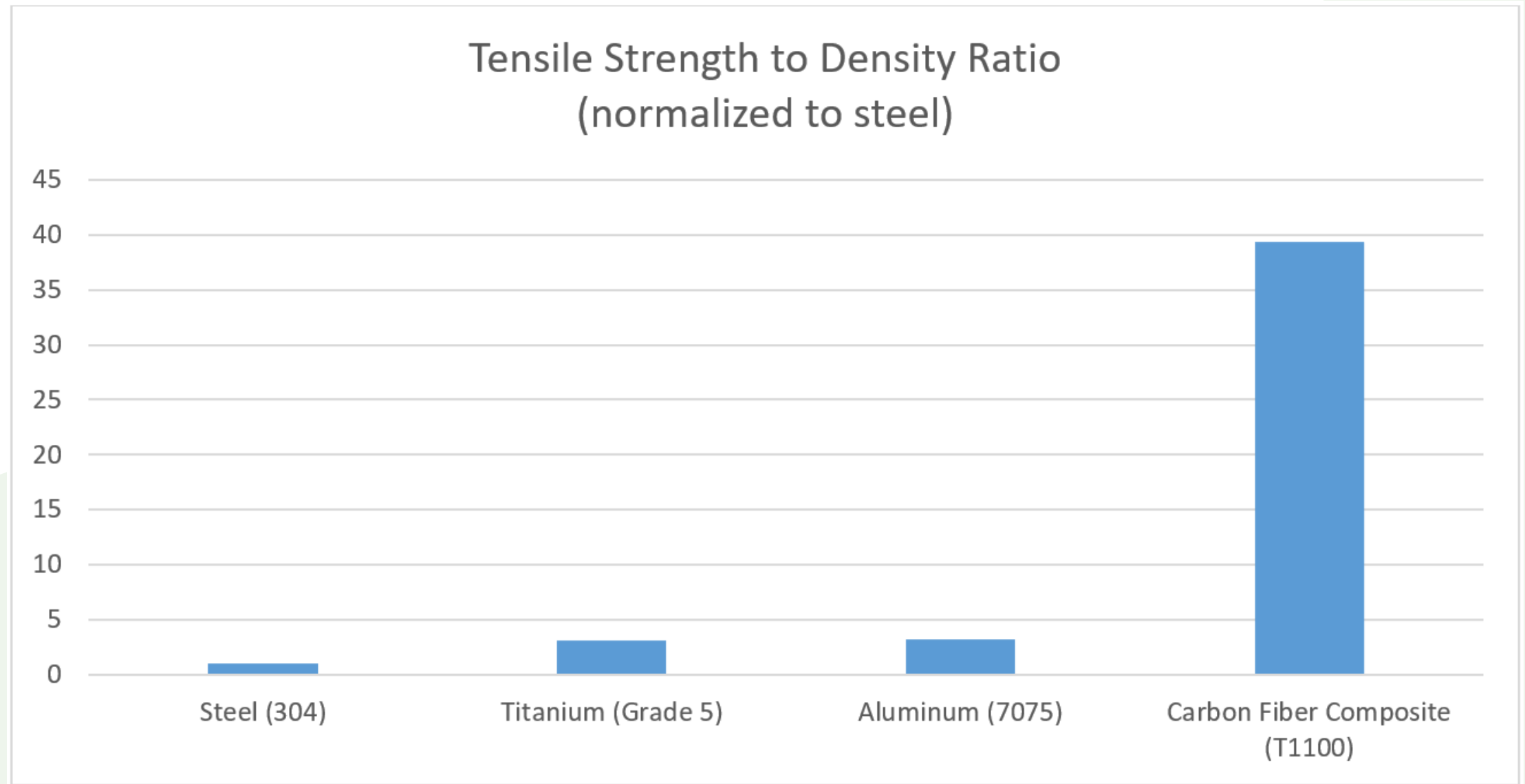
SUSTAINABLE MATERIALS

Not only does the process to create materials need to be sustainable, but the materials need to provide a sustainable solution for the end user.

When compared to other materials used to manufacture transportation vehicles, carbon fiber composites exceed in tensile strength to density ratio, meaning they provide higher performance with lighter weight.

For example, Torayca T1100 intermediate modulus fiber has 12 times the strength to density ratio when compared to aluminum or titanium.

Carbon fiber composites enable aircraft to be built with less material and weight, thus reducing the amount of fuel consumed and greenhouse gasses emitted into the air.

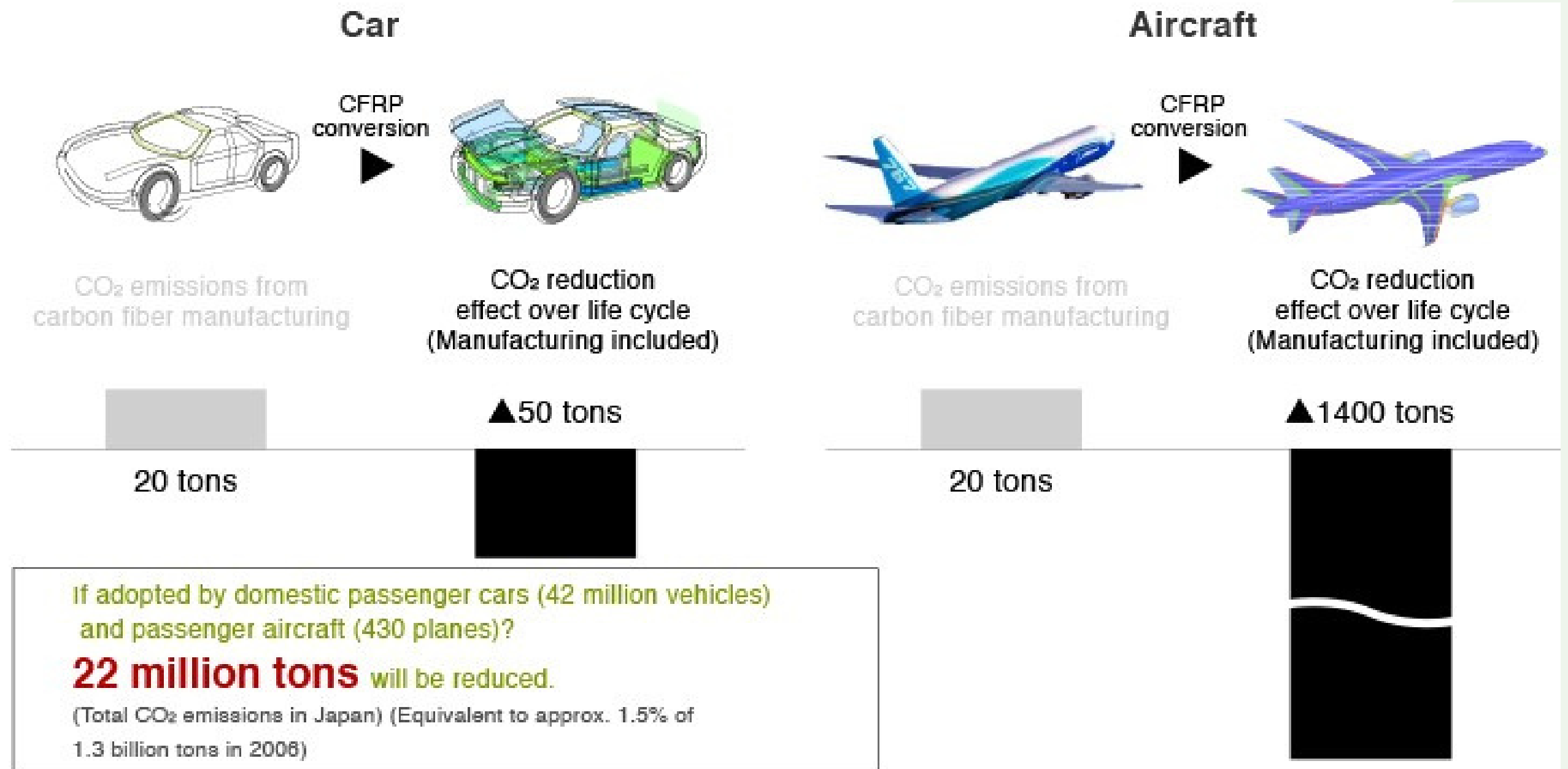


Carbon fiber contributes significantly to curbing of global warming.

The environmental impact of carbon fiber was evaluated using the LCA (Life Cycle Assessment) method over its life cycle from digging of material to use and scrapping of carbon fiber product.

The result is as follows:

When the body structure of a car is made 30% lighter using carbon fiber, 50 tons of CO₂ will be reduced per 1 ton of carbon fiber over a life cycle of 10 years; when the fuselage structure of aircraft is made 20% lighter using carbon fiber, on the other hand, 1400 tons of CO₂ will be reduced under the same condition.





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PREPREG RECYCLING

During the process of manufacturing prepreg or using prepreg to make parts, some material is discarded as scrap. Instead of the scrap ending up in a landfill, it can be recycled into new products.

Toray CMA partnered with the Composite Recycling Technology Center (CRTC) in Port Angeles, WA to repurpose scrap prepreg materials into new products.

CRTC has succeeded in converting scrap prepreg into park benches and locker room doors. Toray Vice President and Senior Technical Fellow, Nobuyuki Odagiri, serves as board member for the organization.



Thank you!

Contact us if there are any questions.



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