

Carbon Trust Endorses Braskem's Carbon-Negative Claims for Bio-based Plastic

São Paulo, 4 October 2018 – Brazilian chemicals company Braskem, producers of I'm green™ – a bio-based polyethylene made from sugarcane – has had its negative carbon footprint credentials strengthened thanks to an independent review by the Carbon Trust.

In a new report comparing I'm green™ with fossil-based equivalents, the Carbon Trust has endorsed the methodology used by Braskem to support claims that for every tonne of I'm green™ produced, the equivalent of around 3 tonnes of CO₂ are locked away by the sugarcane which provides the main raw material for its manufacture. This means Braskem's bio-based plastic is effectively carbon-negative.

Capturing CO₂ during its lifecycle, I'm green™ avoids emissions related to the production of fossil fuel feedstock, thereby providing a net saving of the equivalent of around 5 tonnes of CO₂¹ by the end of the plastic manufacturing process.

I'm green™ is 100% recyclable plastic currently being used in a range of applications from food packaging to personal care products, as well as more durable goods such as chairs and vases.

Brand owners are increasingly responding to climate change by reducing their carbon footprint, which requires investment in more efficient processes and using innovative, renewable materials. Braskem's I'm green™ is made from a renewable feedstock and can make a significant contribution to reduce carbon emissions.

John Newton, Associated Director at the Carbon Trust, said, "To address climate change we will need innovative materials that are radically lower in emissions compared to what is commonly used today. Products like I'm green™, which help lock away carbon emissions in their production, can be a real part of the solution."

Marco Jansen, Commercial Director Renewable Chemicals at Braskem, said, "We're delighted that credible association Carbon Trust further validates our calculations of I'm green™'s carbon footprint. Our customers know I'm green™ polyethylene is a smart and sustainable way to reduce a product's carbon footprint and we hope more brands will use it as a renewable solution in the future."

The LCA Summary is available [here](#). A one-page statement is available [here](#).

¹ 5 tonnes is the difference between the positive 2.1 carbon footprint of fossil-based PE and the negative 3.09 carbon footprint of I'm green™ polyethylene from Braskem

Q&A with Yuki Kabe, Braskem's Sustainability Lead

1. Please explain briefly the supply chain which Braskem relies on to produce its bio-PE.

In 2016, which is the period our primary data is focused on, 98% of our supply came from signatories of the "Sustainable Ethanol Purchase Framework", a framework which commits our suppliers to the best practices in sugarcane cultivation, such as:

- Rational use of fertilizers: vinasse, filter cake and ashes, all rich in nutrients are cycled back to the field reducing fertilizer use in 60% on average
- Use of biocontrol techniques, which reduce the use of pesticides to one of the lowest levels among commercial crops in Brazil
- Mechanized harvesting, which prevents field burning and preserves the soil and reduces GHG emissions
- Expansion into degraded pasture lands prevents deforestation

All signatories of this framework are audited by a third party at least once every two years to ensure a continuous improvement of our suppliers.

2. How is it possible for Braskem to accurately calculate the carbon footprint of bio-PE?

Our carbon footprint is calculated using primary data for 98% of our ethanol supply; industrial operations were also assessed based on primary data collected during the years of 2014-2016. All background data used derives from the most recognized databases (Ecoinvent v3.1) which is carefully adapted to better reflect Brazilian conditions. To further ensure the accuracy of data and methodology, ISO 14044 requires external reviews by third parties and this is where an independent verification such as the one performed by Carbon Trust is paramount.

3. Has working with the Carbon Trust improved Braskem's assessment of its own methodology?

The Carbon Trust has helped us to improve our methodology adding sensitivity analysis in our assessment of co-generation of electricity in the ethanol mills and all comments which can be seen in their assessment report will allow for improvement in the next update cycles in 5 years or so.

4. Why is LCA important for the transition to a bio-based industry, and what further improvements could be made to enhance this tool?

A bio-based industry is not in itself an assurance of better environmental performance. There are no burden-free human activities and a thorough assessment of the trade-offs between the traditional industry relying on fossil resources and a new economy based on renewable feedstock must be assessed to avoid burden shifting. LCA is also important to identify impact hotspots and focus scarce resources towards a more sustainable value chain. LCA has to evolve to cover all environmental impacts such as the impact of microplastics and macroplastics in marine ecosystems and a higher consensus level must be achieved between the different stakeholders to allow for comparison.

5. The Plastics industry is focusing on improving its sustainability - how is Braskem dealing with the challenges of SUPs, marine pollution and recycling?

We are called upon to act to preserve our environment reducing pollution caused by mismanaged plastic products. This has been a concern for us for quite some years now and we want to be part of the solution. The Wecycle Platform has the principle we believe is required to solve this problem: multi-stakeholder collaboration. No single actor in the value chain can be held as the sole responsible but neither can any part be exempted. We all share the burden: chemical industry, plastic transformation industry, brand owners, government and consumers have to act together for the benefit of humankind. We have taken the first steps, but there is a long way ahead of us.

Plastic products (or the results of their fragmentation) do not belong in the oceans or anywhere else in the natural environment. The take-use-discard model has failed. We have to redesign our systems to work in a circular way, reducing resource consumption and waste generation. But we also have to avoid other environmental impacts such as climate change which remains as a major challenge. We truly believe plastics and chemistry make people's lives better and our purpose remains the same: to make people's lives better by developing sustainable solutions with plastics and chemistry. We have shown that plastic solutions make an enormous contribution to a low carbon economy. However, the consequences of the mismanagement of post-consumer waste have to be dealt with and it is a major challenge.

6. What is the future looking like for bio-based plastics?

Braskem believes the chemical industry cannot remain dependent of fossil resources and the use of renewable feedstock (biomass) is part of our growth strategy. However, bio-based plastics - and the processes to produce them - have to evolve to a performance level competitive with existing products.

7. Lastly, what benefits do you see in working with The Carbon Trust moving forward?

We believe collaborating with institutions and organizations which promote sustainability should be an integral part of our strategy and The Carbon Trust, with all the credibility and expertise developed over more than 15 years, is among the thought-leaders in this field.

About Braskem

With a global, human-oriented vision of the future, Braskem's 8,000 members strive to improve people's lives by creating sustainable solutions in chemistry and plastics. It is the largest resin producer in the Americas, with an annual output of 20 million metric tons, including basic chemicals and petrochemicals, and R\$55 billion in revenue in 2016. It exports to Customers in approximately 100 countries and operates 41 industrial units, located in Brazil, the United States, Germany, and Mexico – the latter in partnership with Mexico-based company Idesa.

www.braskem.com.br

About I'm green™

I'm green™ polyethylene is a bio-based thermoplastic resin derived from sugarcane. Its greatest advantage is helping to reduce greenhouse gases in the air by capturing CO₂ during its production cycle. The world's first renewable, bio-based polyethylene to be produced on an industrial scale, Braskem's I'm green™ plastic has been produced since 2010 at the Triunfo Petrochemical Complex in Rio Grande do Sul, Brazil, the world's largest industrial plant making ethanol-based ethylene, with annual production capacity of 200 kilotons.

www.braskem.com/site.aspx/plastic-green

About Carbon Trust

Established in 2001, the Carbon Trust works with businesses, governments and institutions around the world, helping them contribute to – and benefit from – a more sustainable future through carbon reduction, resource efficient strategies, and commercialising low carbon businesses, systems and technologies.

We work with corporates and governments, helping them to align their strategies with climate science and meet the goals of the Paris Agreement.

We provide expert advice and assurance, giving investors and financial institutions the confidence that green finance will have genuinely green outcomes.

We provide independent insight and support the development low carbon technologies and solutions, building the foundations for the energy system of the future.

Headquartered in London, the Carbon Trust has a global team of over 30 nationalities based across five continents.

www.carbontrust.com