

Research demonstrates an apparent consumer demand for PEF bottles

Consumers show a willingness to pay more for products in PEF bottles

AMSTERDAM, 8 June 2023 – How do consumers perceive and respond to biobased plastics, such as Avantium’s 100% plant-based and circular plastic material PEF (polyethylene furanoate)? In her PhD research for the Chemistry and Psychology departments of the University of Amsterdam, environmental psychologist Maria Zwicker found that consumers consistently have a positive attitude towards bottles made from the biobased plastic PEF. Consumers clearly indicate that they would prefer the PEF bottle over a bottle made from conventional, fossil-based plastics and are willing to pay up to 40% more. Maria Zwicker will defend her PhD thesis on Thursday 8 June 2023 at the University of Amsterdam.

Understanding consumer attitudes is crucial for the widespread adoption of sustainable products, since brand owners are more likely to invest in such products when they are confident that consumers will purchase them. Green purchasing behaviour is however very complex and influenced by a range of psychological and situational factors. With her research, Maria Zwicker helps to better understand consumers’ attitudes towards two types of sustainable alternatives: biobased plastic (PEF bottles) and a modular smartphone (Fairphone 4).

Her findings indicate that people generally have a positive outlook on green alternatives and are willing to pay a higher price for them. She found that consumers report being willing to pay up to 40% more for products in a PEF bottle compared to products in a PET bottle. The strongest preference among consumers was for the bottle that looked visually distinct from conventional plastic bottles, for instance a paper bottle consisting of a fibre outer shell and a PEF liner. This finding suggests that designs that signal pro-environmental behaviour through their visual appearance might be effective in promoting sustainable purchasing choices.



PET plastic

PEF plastic

PEF paper

Maria Zwicker also found that consumers often lack knowledge about sustainable alternatives, leading to misconceptions about their properties. For example, participants in her research tended to overestimate the biodegradability of PEF and underestimate the importance of recycling, which

could result in disappointment in the product. When participants were given clear information about the characteristics of PEF, they maintained their positive attitude and willingness to pay more.

Maria Zwicker will defend her PhD thesis 'The Complexity of Consumer Attitudes Towards Sustainable Alternatives' (<https://www.sciencedirect.com/science/article/pii/S2352550922002895>) on Thursday 8 July 2023 at 13:00 at the Agnietenkapel in Amsterdam.

PhD thesis details

Maria Zwicker (2023), 'The Complexity of Consumer Attitudes Towards Sustainable Alternatives'. Supervisors are Prof. F. van Harreveld and Prof. G.J.M. Gruter. The co supervisor is Dr C. Brick.

About Avantium

Avantium is a leading technology development company and a frontrunner in renewable chemistry. Avantium develops novel technologies based on renewable carbon sources as an alternative to fossil-based chemicals and plastics. The company currently has three technologies at pilot and demonstration phase. The most advanced technology is the YXY[®] plant-to-plastics-technology that catalytically converts plant-based sugars into FDCA (furanicarboxylic acid), the key building block for the sustainable plastic PEF (polyethylene furanoate). Avantium has successfully demonstrated the YXY[®] Technology at its pilot plant in Geleen, the Netherlands, and has started construction of the world's first commercial plant for FDCA in 2022, with planned large-scale production of PEF in 2024. The second technology is Ray Technology[™] and catalytically converts industrial sugars to plant-based MEG (mono-ethylene glycol) and plant-based MPG (mono-propylene glycol): plantMEG[™] and plantMPG[™]. Avantium is scaling up its Ray Technology[™] and the demonstration plant in Delfzijl, the Netherlands opened in November 2019. The third technology is called the Dawn Technology[™] that converts non-food biomass into industrial sugars and lignin in order to help transition the chemicals and materials industries to non-fossil resources. In 2018, Avantium opened the Dawn Technology[™] pilot biorefinery in Delfzijl, the Netherlands. Avantium also provides R&D solutions in the field of sustainable chemistry and is the leading provider of advanced catalyst testing technology and services to accelerate catalyst R&D. Avantium works in partnership with like-minded companies around the globe to create revolutionary renewable chemistry solutions from invention to commercial scale.

Avantium's shares are listed on Euronext Amsterdam and Euronext Brussels (symbol: AVTX). Avantium is incorporated in the Euronext Amsterdam SmallCap Index (AScX). Its offices and headquarters are in Amsterdam, the Netherlands.

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