Consumer Purchasing and Green Claims

Increasing the amount of biobased products available and broadening the availability of sustainable buying options is all well and good, but understanding how they are received by the public is key to their continued uptake.

To understand consumer purchasing decisions, there needs to be an understanding of what motivates people to shop sustainably, and how they make decisions about buying. If consumers are willing to spend a little extra money on biobased products, what do they need to see? Trying to shop more sustainably can be hindered by confusing descriptors and a lack of understanding or confidence in the product. The whole bioeconomy sector has an opportunity, and a responsibility, to understand how and why consumers spend their money on biobased.

Motivations for Green Purchasing

People increasingly want to be able to make sustainable choices. There can be many reasons why consumers want to use their hard-earned cash to buy more sustainable products. Perceived consumer effectiveness is one of the most studied variables – which is the extent to which the consumer believes they are influencing positive change with their purchase. There is also a correlation between the ethical values of the consumer and their attitudes towards green products. In addition, social norms help to change purchasing behaviours – friends or peers buying greener is a motivator to do the same.

Nova-Institute has conducted multiple market studies[i] on biobased products and consumer perception, demand and green premium prices. The research found that the most important reason to buy biobased was the green image that the purchase gives the consumer – a feeling of positivity and being able to demonstrate a higher social status.

'Green Premium'

Genomatica develops biobased process technologies and recently conducted a survey[ii] on sustainable buying choices in the US. Key findings include that 26% of consumers say they'd look for ways to spend more money with their favourite brand if their favourite brand increased their sustainability.

As a result of these additional motivators for green products, there is the potential to attach a premium price tag to products able to demonstrate some additional green quality, irrelevant of any potential improvements to technical performance. 'Green premium' is defined according to Nova Institute in 2014 as 'the additional price a market actor is willing to pay for the additional emotional performance and/or the strategic performance of the intermediate or end product the buyer expects to get when choosing the bio-based alternative compared to the price of the conventional counterpart with the same technical performance'.

Looking at biobased plastics, for example, Nova has found that green premium prices exist – altogether almost 85% of experts they surveyed report that there are green premium prices for biobased plastics – and has explored to what extent there is a price increase. Most of the participants considered the green premium to range between an additional 10-20%, while 20% indicated a price premium of 20-40%. The remaining 6% reported even higher premium margins of 50% or more for bio-based plastics.

As for other sectors where biobased feedstocks might be used, consumer goods, which can mean any end-product like sofas or glasses, appear to command less of a green premium. Nova found that the share of 'no green premium' was the largest for this category. On the other hand, agricultural and gardening, as well as packaging, has the potential to earn the largest premium as 'more than 50% green premium' was only mentioned by survey respondents referring to these categories.

There are multiple examples of a green premium being applied to biobased products. Neste produces biobased naphtha and estimate they can charge double that of fossil-based naphtha. Braskem, who produce biobased PE, can increase the price for their biobased equivalent by around 50%. For the consumer there are many examples of more sustainable products with a higher cost, from biobased surfactants in detergents to innovative fibres in the clothing industry.

Resistance to the Uptake of Biobased Products

Of course, there are difficulties with the market uptake of biobased products. According to the Genomatica survey, 95% of Americans say sustainability is a good goal — but many are finding it difficult to put into practice.

A review[iii] of factors affecting green purchasing gives some examples of reasons for the resistance of green purchasing. Price and availability of biobased products is a significant barrier, and can even contribute towards a negative association with biobased products. As discussed, a green premium can sometimes be expected, which understandably will put many consumers off. If there aren't many sustainable options available, the consumer may also be put off by the effort required to source them. Sustainable buying choices have to be accessible to everyone, both in terms of price and convenience.

On an individual level, there is a negative influence of habit, with past preferences making it harder to change. Consumer knowledge was found to be the most studied variable – overall, more in-depth knowledge of environmental issues results in more green purchasing and conversely, less knowledge reduces green purchasing. Trust is also a significant barrier. Consumers don't always have confidence in the quality of biobased products on a technical level or trust the green claims a product may be making. Negative feelings with the term biobased were expressed when consumers are not familiar with the term and hence can perceive the term as a marketing trick.[iv]

Importance of Communication and Accreditation

To increase the uptake of biobased products, there has to be successful communication to the consumer to avoid some of these hurdles of lack of trust and confidence in the product. Attracting consumers who are willing to pay extra too requires strong marketing. As there is often no visible difference between fossil-based and biobased products (by design, they are often seamless replacements), distinguishing between them can be a struggle especially without clear communication.

Confusion over terms must be addressed. 'Biobased' as a term isn't widely understood, as it can be linked to being organic for example. If it is understood to be made out of biomass, then it's often wrongly assumed it is biodegradable by default. In some cases where this assumption is made for biobased single-use plastics, end-users can dispose of the plastic in the environment thinking it will degrade, which is detrimental to the sector and what it tries to achieve. Even just 'biodegradable' as a description – there are many variables affecting biodegradability meaning that clear and concise disposal instructions must be conveyed for effectiveness.

Consumers want to buy more sustainably, but they want greater transparency. A simple, official and trustworthy label or certificate could help them identify where they can make informed and easy choices when trying to be greener. According to preliminary results of a BIOBRIDGES[v] survey, 79.9% of respondents indicated that labels would help them to choose biobased products over fossil-based products. An effective label should be multi-criteria as opposed to a single criterion, with sufficiently strict requirements to prevent greenwashing, as well as the opportunity for harmonization. It should also involve the consumer, as involvement will help to make certification an informative tool for consumers to encourage them to make green purchases.[vi]

Some examples of current labels include:

- DIN – the German Institute for Standardization, is an independent platform for standardization in Germany and worldwide.
- USDA Bio-preferred Program – aims to expand the market for biobased products with mandatory buying from federal agencies in the US. Gives certificates to products with biobased content.
- TUV Austria – certifies compostable/biodegradable/biobased products, specifically plastics.

Biomass Proportions and Feedstock

There is also a discussion to be had around the type of feedstock, and whether this can evoke an emotional response from the consumer. Interestingly, the way different feedstocks for biobased materials are portrayed tends to fluctuate. The use of food crops for biofuels and bioproducts has in the past been a hot topic, but less so currently. Concerns now tend towards plastic pollution and microplastics, which is a debate geared towards end-of-life rather than production concerns.

Second generation biomass is less likely to trigger green premium. This could be more of a political discussion than a discussion on sustainability or could be explained by a lack of awareness. Virgin wood is an example of a feedstock that consumers widely wish to protect as a result of deforestation concerns, which means the use of virgin wood for industrial use is undesirable. On the contrary, recycled wood is seen in a very positive light from an environmental standpoint as it can reduce deforestation, however, is tainted with perceptions of lower quality.

Biobased products are not always 100% biobased. As part of the BIOBRIDGES project, research was conducted on how products with differing amounts of biobased content are viewed. Introducing partially biobased material into a product does not always result in increased appeal for a brand. If there is a price premium, it's found to increase linearly with biobased content. Over a quarter of consumers say that they consider the amount of biobased contents in a product as the most important information that they would like to see on such a label.

Bio-based products, in contrast to fossil-based products, are at a disadvantage when it comes to their market uptake. Sustainable supply chains need to be built up, but small volumes and comparatively expensive feedstocks can make transitioning uncompetitive and the business risk can be too high. Using the mass balance approach can help to mitigate this. Used in this context, mass balance allows for the allocation of renewable content to specific products when biobased content is integrated into production alongside fossil-based. A link is made between product and raw material, which highlights the amount of fossil feedstock that has been displaced and allowing manufacturers to make a meaningful product claim.

A good example of this approach is in green electricity tariffs. According to Ofgem's energy market survey in 2020[vii], 20% of respondents chose their energy supplier because they offered green energy.

Consumers want green energy and are actively choosing to pay a premium because of it. However, the energy they actually receive to their homes isn't necessarily 'green', but they have used their money to displace that same amount of unsustainable power elsewhere in the grid. Global warming and the effects of unsustainable power is a topic at the forefront of many peoples' minds. Most energy providers have provided an easy and green tariff option for those who want it, and the industry has generally provided a feeling of trust in their offerings of green energy, a result as well of effective communication from third party organisations.

Conclusions

The public still largely remains uninformed about the bioeconomy and requires more information and background knowledge to form an opinion on it. Effective marketing and communication are key, with labels and certificates being a popular approach. For the bioeconomy sector, confidence in green consumer purchasing allows for further developments and investments over the longer term. Attracting a green premium on prices can enable new technologies to grow until they become competitive with fossil-based feedstocks.

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[i] Collective Nova Institute research conducted as part of a EU-funded research project BIOFOREVER (BIO-based products from FORestry via Economically Viable European Routes) run under the umbrella of the Bio Based Industries Joint Undertaking (BBI JU) and active from 2016-19.

[ii] Genomatica Survey. 'Consumers Agree: It's Too Hard to be Sustainable'. September 2019. https://www.genomatica.com/consumers-surprised-everyday-products-made-from-crude-oil/

[iii] Joshi et al. Factors Affecting Green Purchase Behaviour and Future Research Directions. *International Strategic Management Review*. 2015. **3.** 128-143

[iv] Sijtsema et al. Consumer perception of bio-based products—An exploratory study in 5 European countries. *NJAS - Wageningen Journal of Life Sciences.* 2016. **77.** 61-69

[v] Research conducted as part of the BIOBRIDGES project under the umbrella of the Bio Bioased Industries Joint Undertaking (BBI JU). Published 2020. https://www.ecologic.eu/sites/default/files/publication/2021/2813-Improving-the-public-acceptance-of-bio-based-products-and-processes.pdf

[vi] Morone et al. Consumer willingness to pay for bio-based products: Do certifications matter? *International Journal of Production Economics.* 2021. **240.**

[vii] Ofgem Survey. Consumer Perceptions of the Energy Market. Q3 2020. https://www.ofgem.gov.uk/publications/consumer-perceptions-energy-market-q3-2020