

## Report

# **Boosting Plastics' Image? Communicative Challenges of Innovative Bioplastics** <sup>[1]</sup>

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**Abstract:** Image-boost versus green washing – are bioplastics able to overcome the negative image and drawbacks associated with petroleum-based plastics? Qualitative research through focus groups reveal a skeptical consumer perception on topics related to bioplastics such as land use and genetic engineering as well as a general lack of knowledge about bioplastics.

**Keywords:** *bioplastics, bio-based plastics, biodegradable, fossil-based resources, genetically modified organisms, green-washing, organic, littering, petroleum-based resources, public discourse, plastics communication, plastics image, raw materials, recycling, sustainability.*

## Introduction

*“I sometimes think that there is a malign force loose in the universe that is the social equivalent of cancer, and it's plastic”.* With these words, Norman Mailer criticised modern society's fixation on the material in question over thirty years ago”.<sup>[2]</sup> In the 1950s plastics had been celebrated as a trend-setting, material of the future that would replace a host of other ones. It became the central group of materials of modern society: a modern

miracle, perfect for multiple applications and highly practical, being easily formable, light-weight, clean and inexpensive.<sup>[3]</sup>

Later, in the 1970s, critical responses related to environmental issues started to rise against the petroleum-based class of materials. Indications of health problems linked to the use of plastic and an alarming increase of waste production caused a significant loss of image.<sup>[4]</sup>

Today, many millions of tons of plastic waste in the world's oceans are generating

intense public attention due to their substantial impact on marine life.<sup>[5-6]</sup>

Contributing negatively to the image of plastics is the fact that it is based on fossil resources and therefore limited. At the same time, however, the demand for this inexpensive, extremely versatile synthetic group of materials remains high – roughly 300 million tons of different classes of plastics are produced each year – while the fossil-based resources, used to manufacture plastics among other things, continue to disappear at an alarming rate.<sup>[7]</sup>

For this reason, *bioplastics* - whether biodegradable or not - would appear to present a twofold solution: They are based on renewable resources and comprise either biogenic polymers (mostly plant-based polymers) or ‘bio-based’ polymers (mostly plant-based starting compounds for synthetic polymers).

### Plastics and *bioplastics* reputation

But are *bioplastics* really able to overcome the negative image and communicative drawbacks associated with petro-based plastics?

Analysis of media coverage and information found on company and other organisations’ websites show widely varying evaluations of *bioplastics* from different stakeholders such as the *bioplastics* industry, scientific and political bodies, environmental NGOs (Non-Governmental Organisations) and the waste management industry.<sup>[8,9]</sup>

As shown by recent studies from two research projects at the Hochschule Hannover, the perception of *bioplastics* amongst the German public itself poses additional challenges relevant to the image of the material. Funded by BMBF<sup>[10]</sup> and BMEL,<sup>[11]</sup> these projects have surveyed the public perception of *bioplastics* as well as the input exhibited by *bioplastics* stakeholders and their specific patterns of product communication in the public

discourse.

The findings are based on qualitative research models such as literature reviews, focus groups and guided interviews as well as on a representative online survey of the public’s associations with and attitudes towards *bioplastics*. The basis of the following findings and conclusions draw upon the discussions of nine focus groups of 71 participants in total, which took place in Hannover in April and May 2016.

### Communication challenges

The first challenge for strategic communication is the general lack of awareness of *bioplastics*. The impression of insufficient familiarity with *bioplastics* given by the focus groups was quantified by a recent online survey.<sup>[12]</sup> According to the representative data, 56.7 % of the German public has never even heard of *bioplastics*. Only around 7 % claim to know exactly what *bioplastics* are.

Even though lacking awareness and knowledge, people associate specific characteristics with the term *bioplastics*. The prefix “*bio*” leads consumers to assume *bioplastics* to be completely plant-based. Furthermore, ‘*bio*’ (from “*biological*”, in this context ‘*ecological*’) may imply that the raw materials are ‘*organically*’ cultivated. Other similar associations may be the recycling of residual material and the economisation of oil reserves.

A further general expectation derives from the association of *bioplastics* as often being biodegradable and thus contributing to the reduction of waste through composting.

These associations and expectations towards the *bioplastics* material result in specific product requirements, like those of being non-toxic, environmentally friendly, being sustainably produced by carefully managing natural resources and eco-systems, and being manufactured under

fair working conditions.

It appears that consumer concerns about petro-based plastics turn into a set of expectations regarding the potential of *bioplastics* to fulfil more general requirements through mostly plant-based and biodegradable products.

But what happens, if consumers are informed about the actual status quo of the development, production and disposal options of *bioplastics*?

### Enthusiasm turning into uncertainty

Confronting people with the fact that the raw material stems mainly from corn or sugar cane resulted in concerns about competition with food.

Stating that corn as raw material most likely is produced with GMO (Genetically Modified Organisms) as well as *bioplastics*' LCA (Life Cycle Assessment) not necessarily representing ecological advantages compared to petro-based plastics led consumers to suspect *green washing*, i.e. 'green marketing' by deceptively product promotion.

The aforementioned focus groups showed that the actual timeframe a product needs to biodegrade totally differs from what consumers assume. Marine littering – as stated above – had been addressed as one of the major concerns about petro-based plastics.

Some participants hoping *bioplastics* promised to provide a solution to marine littering were shocked and disappointed to learn that not all bioplastic products – actually most of them – are biodegradable or biodegrade outside of a composting facility.

### Low expectations

Just as challenging are low expectations associated with negatively connoted prejudices regarding *bioplastics*: While a low price is one of the positive characteristics of plastics attributed by

consumers, *bioplastics* are expected to be expensive due to the association with or indication of being "*organic*".

Interestingly enough, biodegradability also leads to negative expectations among some participants: Biodegradable materials are expected to be short-lived and correspondingly less visually appealing on the product level. Here, disappointing experiences regarding *bioplastics* products could potentially lead to even greater uncertainty.

### Summary

The image of plastics has been negatively impacted by littering and environmental problems.

From a consumer's point of view bio-based and biodegradable plastics promise a more sustainable alternative to petro-based plastics.

But while '*bioplastics*' – whether or not biodegradable - seem to elicit a positive image at first glance, other issues evolve which may quickly turn into further image loss for the plastics industry. Especially land use for the production of the raw material provokes intense consumer fear of food competition.

Furthermore, high expectations of the ecological and economical potential of *bioplastics* turn out to be problematic if there is no sufficient short or long-term capitalisation. All stakeholders of *bioplastics* are thus challenged to create the right conditions for the further development of *bioplastics* production, usage, recycling and disposal leading towards a truly environmentally friendly alternative.

Within this systemic development, strategic communication can fulfil a supporting as well as mediating function along the value chain of *bioplastics* – from producers of the raw material to those who are in charge of disposal, and of course by addressing political objectives, like setting standards, by public authorities and

administration.

The focus groups also indicated possible solutions to communicative challenges:

Above all, consumers expect communication not conveyed in an exaggerated, sermonising way but in a positive and emotional form.

There were also many requests for more detailed information on the ecological impact of *bioplastics*.

The term *bioplastics* may also need to be reconsidered. Firstly, it is perceived by many to be self-contradictory. Secondly, the prefix 'bio' may lead the public to assume an *organic* origin.

Furthermore, the findings indicate that

the central message "*without crude oil*" should be put more into the focus of all communication tools.

Finally, the provision of more product experience may also present an opportunity to dispel prejudices (e.g. look and feel, stability).

In conclusion, *bioplastics* still have a certain way to go to salvaging the image of plastics. Carefully surveying public perception is fundamental to developing communication strategies, to increasing levels of knowledge, and establishing realistic expectations and acceptability.

## References

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*Wege, Strategien, Geschäfts- und Kommunikationsmodelle für Biokunststoffe als Baustein einer nachhaltigen Wirtschaft.*

URL 1: [www.biokunststoffe-nachhaltig.de](http://www.biokunststoffe-nachhaltig.de)

URL 2: <http://ifbb.wp.hs-hannover.de/bina>

- [11] BMEL: (German) Federal Ministry of Food and Agriculture. FNG: Forschungsnachwuchsgruppe – *Systematische Identifizierung sowie praktische Umsetzung von Synergien im Bereich der Biopolymere, Biopolymerfasern und Verbundwerkstoffe.*

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