

Market and safety analysis of alternatives to plastic food packaging

Area of research interest: [Emerging challenges and opportunities](#)

Study duration: 2020-10-01

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Background

This project was undertaken to investigate the health and economic implications of plastic food packaging alternatives. It is designed to facilitate an evidence-based, coordinated response to the proliferation of plastic alternatives, one that considers balancing consumer safety with innovation.

This project was undertaken as part of the Work Placement Programme for the award of M.Phil. in Public Policy Degree from the University of Cambridge.

Objectives and Approach

The remit of this project is to investigate the health and economic implications of plastic food packaging alternatives. These materials are less researched and potentially risky to health, directly and indirectly (e.g. decreasing shelf life).

Further, the market for bio-based food contact materials is growing, spurred by advancing research in the field, consumer interest in plastic alternatives, and governmental incentives to reduce plastic use, such as a tax on virgin plastic packaging. Their use comes with potential direct and indirect economic impacts. For instance, new materials come with new production and disposal costs, and the plastic packaging tax could result in increased prices for consumers, though this outcome is not seen as very likely.

This project articulates the state of the research by analysing academic and 'grey' literature and conducting expert interviews.

A systematic literature scan was used using ScienceDirect for recent (2015-present) studies to understand the current landscape of research on plastics alternatives. It employed as search terms: 'bioplastics'; 'bio-based plastics'; 'plastic alternatives'; 'bio-based food contact materials'; 'bio-based food packaging'; 'safety'; and 'compostable food packaging'.

Results were filtered for 'review articles', 'research articles', or 'other'. The 35 results underwent a title then abstract review. Articles were excluded that did not mention food contact applications for bioplastics or focused on a different application, such as medical. Fourteen articles were ultimately included, half of which studied one type of plastic alternative, while the remainder discussed multiple polymers.

Interviews were conducted with FSA members as well as experts outside the Agency. (See appendices in the report for review findings and an interview list.)

Results

If only one theme has emerged from the research and analysis on alternatives to plastic food packaging, it would be that the subject matter is more complex than common sustainability rhetoric would suggest. The transition away from traditional plastics is accompanied by a host of potential unintended consequences, such as health hazards, allergic reactions, shorter shelf life, and a possibly worse environmental impact.

The report makes the following recommendations to help enable the FSA to support a safe transition to secure and sustainable food packaging:

- Facilitate a joined-up approach between government agencies overseeing the UK food supply chain
- Partner transparently and share knowledge between the public, private, and academic sectors
- Develop clear, evidence-based regulations for plastic alternatives
- Participate in consumer education

Research report

England, Northern Ireland, Scotland and Wales

PDF

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