Alternatives to single-use plastics: Methodology

A rapid evidence assessment was conducted to develop an understanding of the alternatives to single-use plastics in food packaging and production. Research tools and deliverables were co-produced with our academic advisor and our expert panel.

4.1 Project initiation

A project initiation meeting was held with the FSA project team on 21st December 2022. At this meeting, the following was agreed upon:

- Research approach
- Project plan
- Project management arrangements
- Reporting plan
- Risk management procedures
- Mapping relevant stakeholders to invite to join the expert panel

4.2 Literature searching, screening and extraction

4.2.1 Literature search

A targeted literature search was carried out in conjunction with University of Birmingham Library Services, according to the search terms set out in the search protocol (Appendix B). Two academic databases were searched: Web of Science and SCOPUS. Literature was also gathered through the following methods:

- FSA project team (N=2)
- Academic advisor and call for evidence amongst expert panel (N=23).

An iterative approach to screening was undertaken. Title screening was conducted, followed by abstract screening of included texts. Texts included following the abstract screening were reviewed for quality and information relating to the research questions was extracted. Following the extraction of all texts, gaps in evidence were identified. A second, purposive search was conducted to fill any evident gaps in evidence for each research question. However, these articles were only used to address the emerging gaps in the literature review rather than conducting a full quality review and extraction of information.

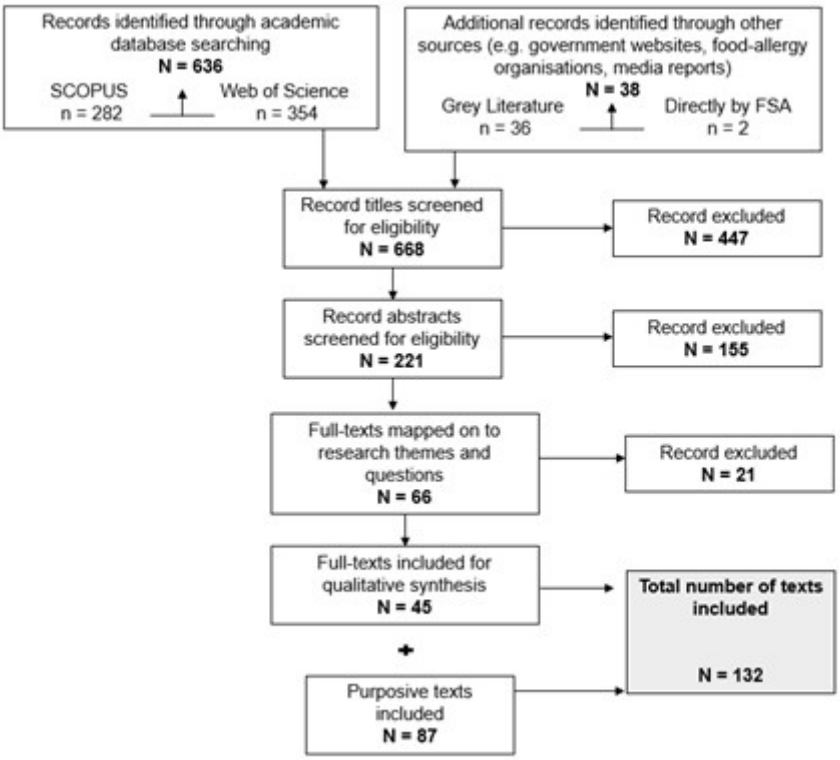
Co-production: A workshop was held with the expert panel on 25th January 2023. Experts were identified in collaboration with the FSA project team and represented a range of sectors (for example, academia, retail, manufacturing, policymakers; see Appendix E for a list of experts). Experts provided feedback on the draft search protocol (including search terms) to ensure the most relevant research in the field was captured. At this workshop, experts also highlighted key materials which should be included in the review (including academic articles and grey literature).

Where experts could not attend the workshop at the specified date/time, individual consultations were accommodated.

4.2.2 Screening and extraction

In total, the search resulted in a longlist of 668 articles which were rigorously screened as detailed in Figure 1. At each stage, three reviewers were involved in screening and any discrepancies were resolved through discussion and consensus development.

Figure 1 PRISMA style reporting of records at each stage of screening



This resulted in a shortlist of 45 articles as listed in Appendix C. Gaps in evidence were supplemented with 87 articles from the purposive search following the workshop. In total, 132 texts have been used throughout this research.

4.3 Analysis and reporting

Findings from the literature review were summarised according to the four research questions. Using the populated data extraction spreadsheet, the extracted data was analysed to provide a narrative synthesis of findings. This included information on the volume and quality of evidence base per single-use plastic alternative technology/solution as well as overall information on the identified literature, in terms of types of studies/articles, their location and what the research base is focused on. An assessment of the overall quality and coverage of literature is summarised in Section 5.1.

This final research report was produced in collaboration with our advisor, the FSA project team and the expert panel.

Co-production: A workshop was held with the expert panel on 14th March 2023. The expert panel provided feedback on the draft findings and identified gaps. This workshop was also used to discuss how the existing research highlights priority areas of focus for the FSA in terms of

innovations in alternatives to single-use plastics.