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Other aggregative reviews (e.g. Meta-analyses, Critical reviews)

Title
Policy options for environmentally sustainable food consumption: protocol for a review of reviews

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environmental impacts, food policy, public policy, policy instruments, sustainable consumption

Background
The global food system is causing significant environmental damage. It has become increasingly clear that to reduce these impacts, supply-side mitigation options, e.g. transitioning to renewable energy, will not suffice. Demand side changes, i.e. dietary change, including reductions in the consumption of animal products and reductions in food waste, are necessary if environmental targets are to be reached [1,2]. Despite the large potential to reduce impacts through demand-side changes, the adoption and implementation of public policy interventions on food consumption to reduce the environmental impacts of food systems are rare and tend to be limited to the inclusion of environmental considerations in dietary guidelines in some countries [3]. In comparison, public policy on the supply side is substantial in many countries, including agricultural support payment schemes and legislation regarding the use of chemicals and the spreading of manure [4]. However, a growing body of literature suggests there are several policy instruments available to policymakers that could be implemented to steer food consumption in a more environmentally sustainable direction, including financial policy instruments such as taxes and subsidies [5], regulation of marketing, and a range of information-based interventions including labelling and information campaigns [6,7]. Some of these have already been implemented but mostly for public health reasons, rather than environmental objectives [3]. When designing and implementing public policies, evidence of the effectiveness of different policy instruments is crucial. As yet, there is no comprehensive study that synthesizes the evidence in terms of policy instruments for more environmentally sustainable food consumption.

Theory of change or causal model
The review of reviews (RoR) will assess the evidence for the extent to which public policy interventions aimed at regulating food consumption (including purchasing, eating, and wasting) will contribute to a change in behaviours among consumers. The changed consumer behaviour (e.g., eating less meat and more plant-based foods or reduced food waste) is assumed to ultimately affect climate change, biodiversity, and nutrient or chemical pollution. To guide this assessment, and the identification of contextual factors of confounders mediating the outcomes of policy interventions, we will use the behavioural change wheel [8] which provides a framework for explaining how different interventions can produce behavioural changes.

Stakeholder engagement
Stakeholders were consulted during the systematic mapping process (see the map protocol [9] for details) that preceded this RoR. During the presentation of preliminary mapping results, stakeholders requested findings related to the effectiveness of different policy interventions. This request was one of the motivators for this RoR.

Objectives and review question
The primary question of this review of reviews is: What are effective policy instruments for a change in food consumption that can result in reduced environmental impacts? This RoR builds on and is an extension of a related systematic mapping exercise, previously published in Environmental Evidence (see [9]). The original scope is extended to include policies for the reduction of food waste. Moreover, this RoR focuses on the reviews published in English only. We aim to collate state-of-the-art evidence on the topic to increase the policy relevance of this work. Therefore, we include reviews published in the last 5 years (from 2018). We do not set time limitations on primary studies included in reviews, however.

Definitions of the question components
Populations and settings: Any geographic or economic setting. Interventions: Any adopted or suggested public policy instrument that was intentionally designed to change food consumption to reduce environmental impact. Comparator: No intervention (including before intervention), alternative intervention. Outcomes: Any change in food consumption that is expected to result in a change in environmental impact.

Search strategy
This RoR will include evidence from three main sources: 1) relevant reviews found in the mapping exercise (outlined in the protocol [9]), 2) update of searches done for mapping exercise [9], specifically for the year 2022, 3) bibliographic searches for food waste reviews. We will limit our searches to the period 2018-2022. We will search Scopus and Web of Science Core Collections (WoSCC), using English language terms. See Annex 1 for a detailed search strategy.

Bibliographic databases
The search update and bibliographic searches for peer-reviewed reviews on food waste will be conducted in Scopus and WoSCC (consisting of the following indexes: SCI-EXPANDED, SSCI, AHCI, CPCI-S, CPCI-SSH, BKCI-SSH, EXPANDED, IC and ESCI) using English language search terms (with the access via the library of Swedish University of Agricultural Sciences). Searches will be conducted on title, abstract and keywords. The search string is available in Annex 1.

Web-based search engines
We will not conduct searches on web-based search engines due to resource constraints.

Organisational websites
We will not search organisational websites due to resource constraints.

Comprehensiveness of the search
During the scoping phase, search results were screened against a benchmark list of 7 review articles on food waste (see Annex 1). The list was assembled through snowballing and consultation with subject experts on the team. In cases where relevant articles from the benchmark list were not found with a search strategy, the search strings were examined to identify why articles were missed and were amended accordingly. This process was iterative. The final search string captures all articles from the benchmark list. The comprehensiveness of the search update was not tested as this was done for the original search during the mapping exercise (see [9]).

Search update
The searches for the map [9] were conducted in Dec 2021 and Jan 2022. The search string published in the map protocol [9] will be amended by adding a string that limits search results only to reviews published during 2022 (see Annex 1 for details). We will conduct the update on WoSCC and Scopus.

Screening strategy
The screening will be done by at least two reviewers and at two levels: at title and abstract (screened concurrently for efficiency) and at full text. Full texts of records with relevant abstracts will be retrieved, tracking those that cannot be located or accessed and reporting these in the final report. Retrieved records will be screened at the full text, with each record being assessed by one experienced reviewer. The final report will include a list of articles excluded at the title and abstract, and the full text, with reasons for exclusion.

Eligibility criteria
Eligible populations: Any geographic or economic setting Eligible interventions: Any intervention that has been (or could be) implemented by a public policy actor with the explicit aim to change consumption patterns (eating and wasting) or that shifts consumption between product groups of food and non-alcoholic beverages for environmental or public health reasons. We exclude interventions related to the intake of alcohol and tobacco as these are related to a specific type of addictive behaviours. Review studies that did not have a clear end goal of directly or indirectly influencing consumer choice through public policy interventions towards more sustainable foods will not be considered. Eligible outcomes: Change in food consumption (purchasing, eating, or wasting) that either has a clear link to at least one environmental outcome (e.g., climate change, biodiversity, nutrient, or chemical pollution etc.), or an overall reduction in food waste. Eligible types of study design: literature reviews, including systematic reviews published in academic journals that synthesise qualitative, quantitative and mixed methods data. We exclude configurative reviews that only collate and describe studies, but do not synthesize study findings (e.g. systematic maps). Primary research studies that experimentally tested, measured or directly assessed the effects of policy interventions on sustainable food consumption are not considered. Time limitation: Studies published before 2017 will not be considered. Language: English

Consistency checking
Before commencing screening, consistency checking will be performed on a subset of records at both title and abstract and full-text levels. Specifically, up to 240 title and abstracts and 20 full-text records will be independently screened by all reviewers. The results of the consistency checking will then be compared among reviewers and all disagreements will be discussed in detail. Where the level of agreement among reviewers is low (below 80%), further consistency checking will be performed on an additional set of articles. This will be repeated until the agreement level reaches at least 80%.

Reporting screening outcomes
Screening outcomes will be reported using the ROSES flow diagram. The final report will also include a list of eligible articles and a list of excluded full-text articles with reasons for exclusion.

Study validity assessment
For critical appraisal, we will use the AMSTAR 2 tool [10], including all 13 criteria for assessment of the review reliability. Studies will be categorised as high, medium, low, and unclear validity as the result of this study validity assessment exercise. These overall study ratings will be used in the synthesis. Each study will be assessed by two reviewers and disagreements will be resolved through discussions.

Consistency checking
To assure the repeatability of this stage and to test the appraisal tool, consistency checking will be performed on a subset of records (5) independently assessed by all reviewers. All disagreements will be discussed in the team, and assessment criteria will be clarified if needed.

Data extraction strategy
Apart from bibliographic information, we will extract information on review aims, scope, method and review findings data. Please see the details in Annex 2. For missing or incomplete data related to the outcome, we will aim to contact study authors directly if necessary. Our extracted data records will be made available as additional files.

Meta-data extraction and coding strategy
See the previous section.

Consistency checking
The repeatability of the extraction process will be tested on a subset of studies (5) independently assessed by all reviewers. All disagreements will be discussed among the team, and the extraction sheet criteria will be clarified if needed. The rest of the data will be extracted by two reviewers.

Potential effect modifiers/reasons for heterogeneity
Potential effect modifiers to be considered in the review are listed below. The list will be extended during the review process and in potential consultation with stakeholders. - Study design and sample - Type of policy - Socio-economic context: country, income level, and similar

Type of synthesis
Narrative

Narrative synthesis methods
We expect large heterogeneity in data due to differences in review studies. We will therefore only narratively synthesize extracted findings on the effects of policies for sustainable consumption and present them as tables and figures. We will focus on the existence, nature and direction of effect, identify patterns and provide explanations for variations in effects. For each intervention type, where possible we will devise a theory of change to visualize links between different interventions, and intermediate and final outcomes.

Quantitative synthesis methods
NA

Qualitative synthesis methods
NA

Other synthesis methods
NA

Assessment of risk of publication bias
The risk of publication bias will not be possible to assess due to the type of data collected in this review.

Knowledge gap identification strategy
The knowledge gaps will be identified through cross-tabulations of different variables (e.g. interventions vs outcomes, and similar).

Demonstrating procedural independence
Reviewers who have also authored articles to be considered within the review will be excluded from decisions regarding the inclusion, data extraction and critical appraisal of their work.

Competing interests
J.C. is a member of the Dutch Council on Animal Affairs and a member of the supervisory board of the Transitiecoalitie Voedsel Foundation. Other authors declare no competing interests.

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Author's contributions
All authors wrote the manuscript and approved the final version.

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