

Quantifying the **Socioeconomic Impacts** of Food

A Review of True Cost Assessment Methods



Members of the research Consortium:



ACKNOWLEDGEMENTS

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3. True Price Foundation

4. Virginia Tech

5. Access to Nutrition Initiative

6. Netherlands Food Partnership

7. Cornell University

DECLARATION OF INTERESTS

Estefania Marti Malvido is employed by the True Price B.V (KVK number: 70048959). All other members of the core research team have no competing interests to declare.

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RATIONALE AND OBJECTIVES

- ❑ While some studies have provided methods and examples for assessing and valuing food system-related socioeconomic impacts, these have not yet been comprehensively reviewed.
- ❑ **First structured review** of existing frameworks, approaches, methods, and data sources for quantifying and monetising **both positive and negative** socioeconomic externalities of **foods and diets**, across the **entire value chain**.
- ❑ Aims to identify critical evidence gaps and provide recommendations to guide future research and applications.

METHODS: Process overview (1/2)

- ❑ Chose a structured literature review over a scoping / systematic review because **the field is nascent** with **limited evidence**.
- ❑ Followed a **pre-developed protocol** based on adapted versions of the PRISMA Extension for Scoping Reviews and Campbell Collaboration materials.

(1) SEARCH STRATEGY

- Searched for relevant records published between **January 1, 2008 & April 30, 2025**
- Comprehensive search strategy comprising 3 key concepts: **TCA; socioeconomic externalities; foods & diets**
- Searched **3 academic & 8 grey literature databases**

(2) EVIDENCE SELECTION

- Used **Covidence** systematic review software
- Assessed record eligibility against predefined **inclusion & exclusion criteria**
- **Title/abstract & full-text screening** conducted by a single reviewer, with 15% cross-checking by a second reviewer

(3) DATA CHARTING

- Employed a **standardised data charting form**
- Variables captured: (1) **Study scope** & context; (2) **Assessment level** & types of foods or diets analysed; (3) **Socioeconomic externalities**; (4) **Monetisation methods** & data sources; (5) Author-stated **strengths, limitations, & recommendations**.

(4) EVIDENCE SYNTHESIS

- **Descriptive statistics:** Frequencies and percentages to map the evidence distribution
- **Qualitative synthesis:** Thematic analysis to classify and summarise frameworks, approaches, methods, and data sources used.

METHODS: Eligibility criteria

Aspect considered	Inclusion criteria	Exclusion criteria
Population & Context	Records on production, processing, packaging, distribution, retail, consumption, and/or waste treatment of single foods, food groups, meals, or whole diets, across any geographical/population settings	Records focusing exclusively on non-food systems/sectors, or on non-socioeconomic externalities
Concept	Records discussing methods to quantify and monetise socioeconomic externalities (positive and/or negative) of single foods, food groups, meals, or whole diets	Records not including a monetisation component, or that do not explicitly report their methodology for quantifying and valuing socioeconomic impacts
Evidence sources	Academic manuscripts in scientific journals, working/discussion papers, reports, methodological guidelines & tools, books & book chapters from academic publishers	Publication types other than those listed under the inclusion criteria Records for which the full text is not accessible through institutional subscriptions, open-access platforms, or Interlibrary loan services
Timeframe	Records published between January 1, 2008, and April 30, 2025	Records published prior to 2008
Language	English-language records	Records published in languages other than English

METHODS: Data charting form

Section 1: Record details

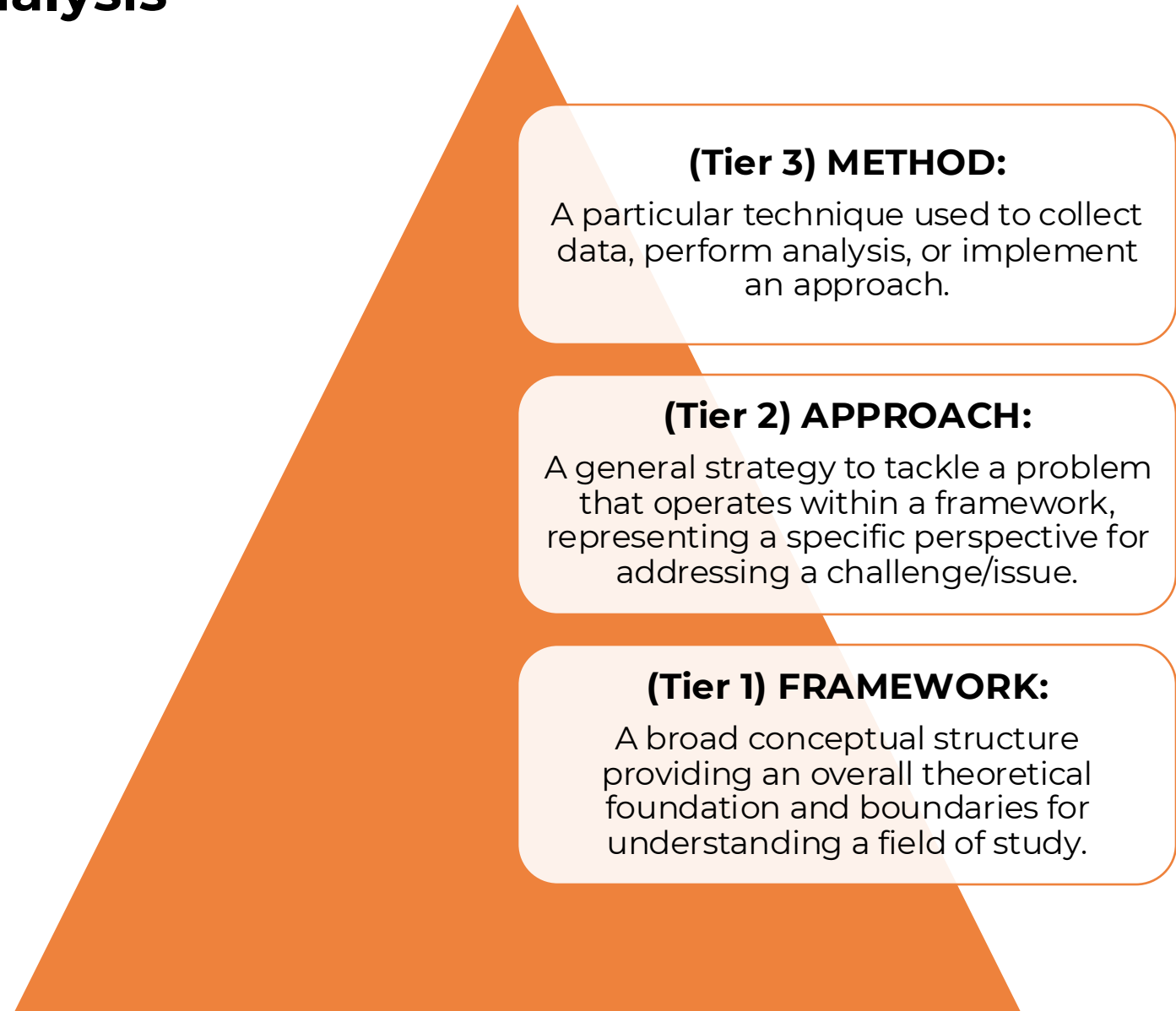
Full citation in Harvard style	Publication type	Geographic focus	Country income group(s)	Value chain stage(s)	Reference period(s) of input data	Primary research question(s)	Secondary research question(s)	Assessment level(s): foods, food groups, meals, whole diets	Food/meal/diet type(s)

Section 2: Key variables of interest

Positive socioeconomic externalities	Negative socioeconomic externalities	Monetisation methods	Data sources used (impact quantification)	Data sources used (monetisation factors)	Author-stated strengths of the approach	Author-stated limitations of the approach	Author-stated research recommendations

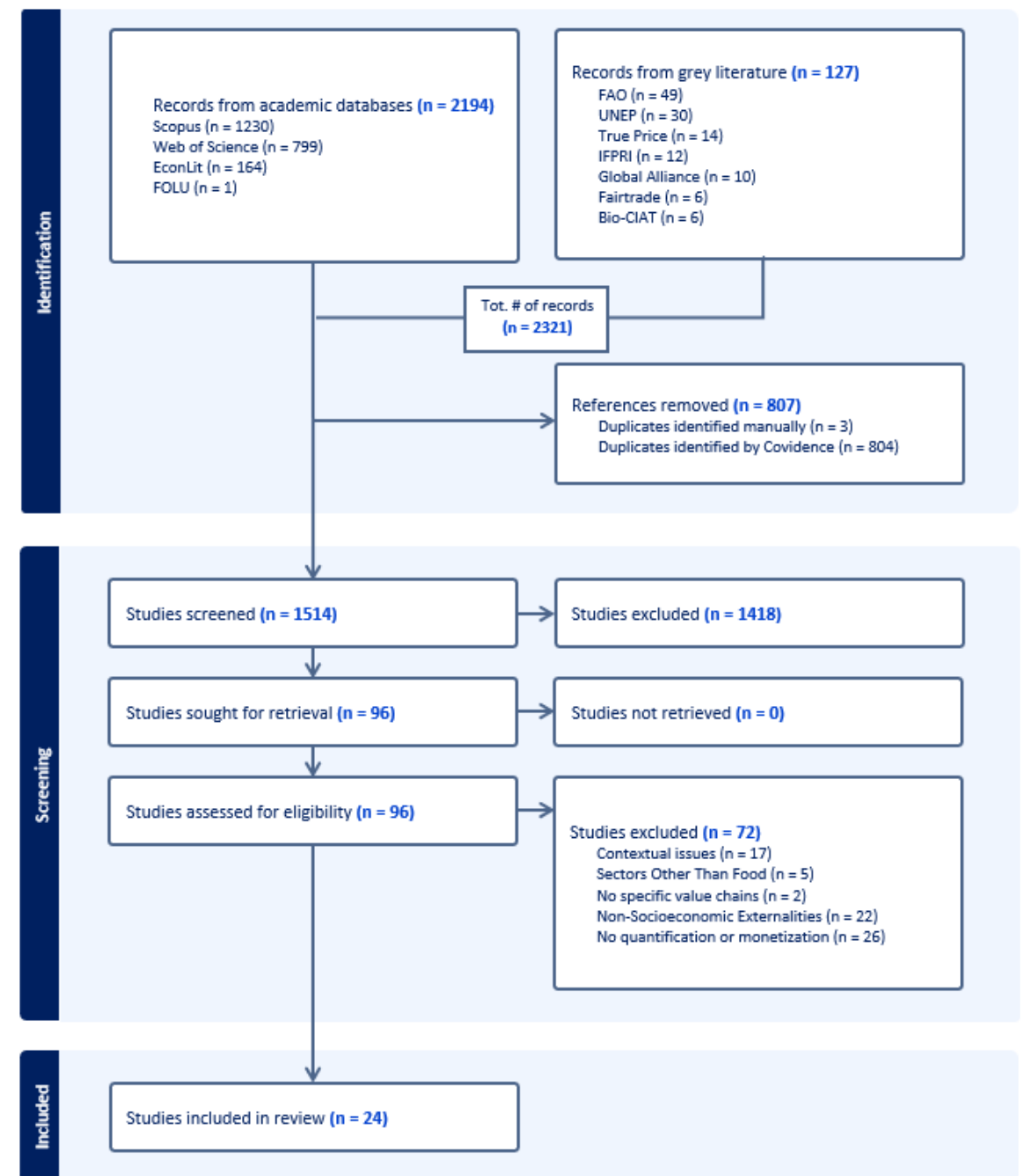
METHODS: Qualitative analysis

Each study was thematically categorised against three levels of analysis

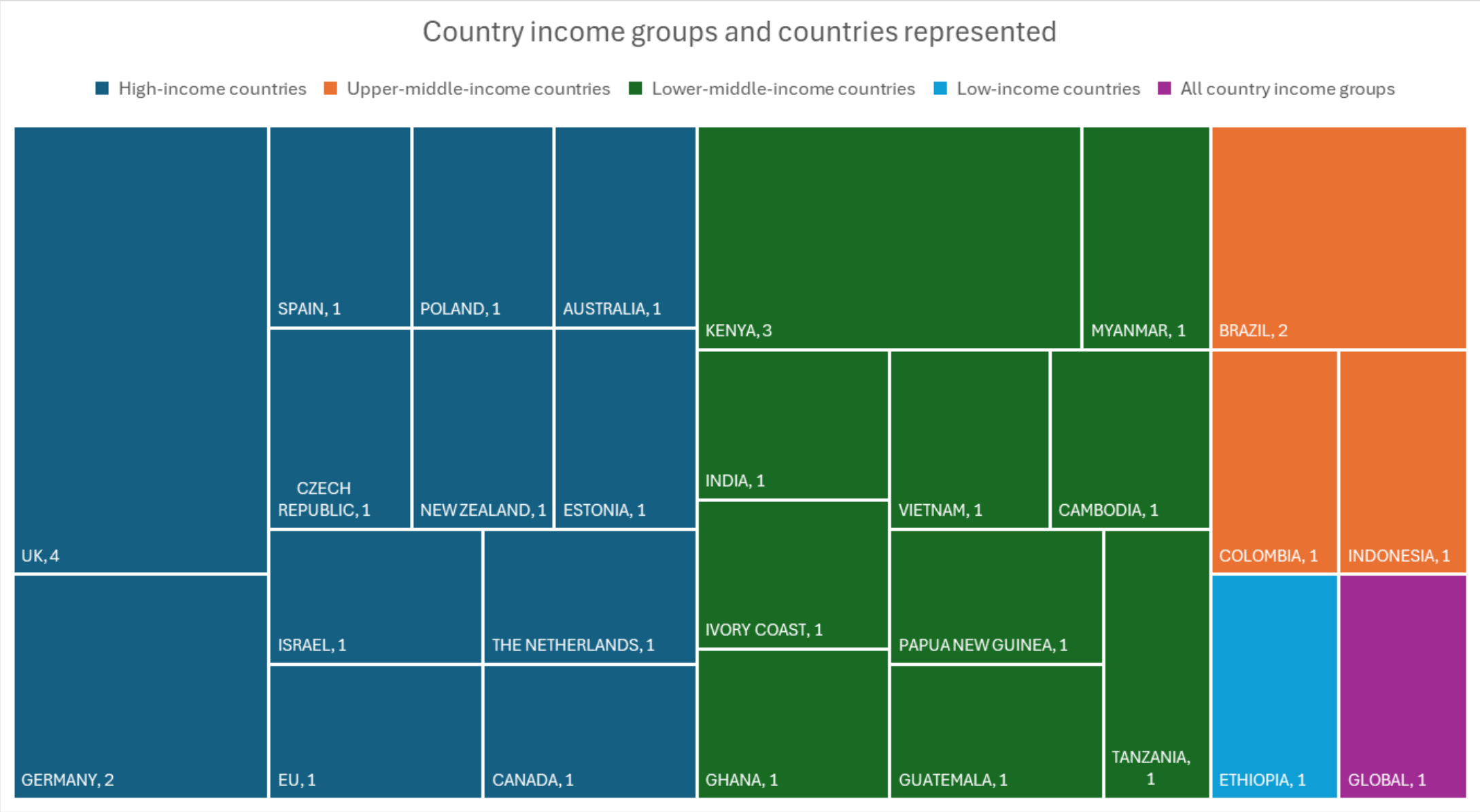


PUBLICATION TYPES & DATA AGE

- ❑ **Small body of literature**, characterized by **high heterogeneity**.
- ❑ Socioeconomic externalities were the **primary research focus** of 79% of studies.
- ❑ **Publication types:** Most records were **peer-reviewed primary research studies** (58%), followed by reports (29%), and methodological guidelines (13%).
- ❑ **Data age:** Almost all studies (92%) relied on data from **2000–2015**. About one-third (29%) used input data collected **>10 years prior to publication**.

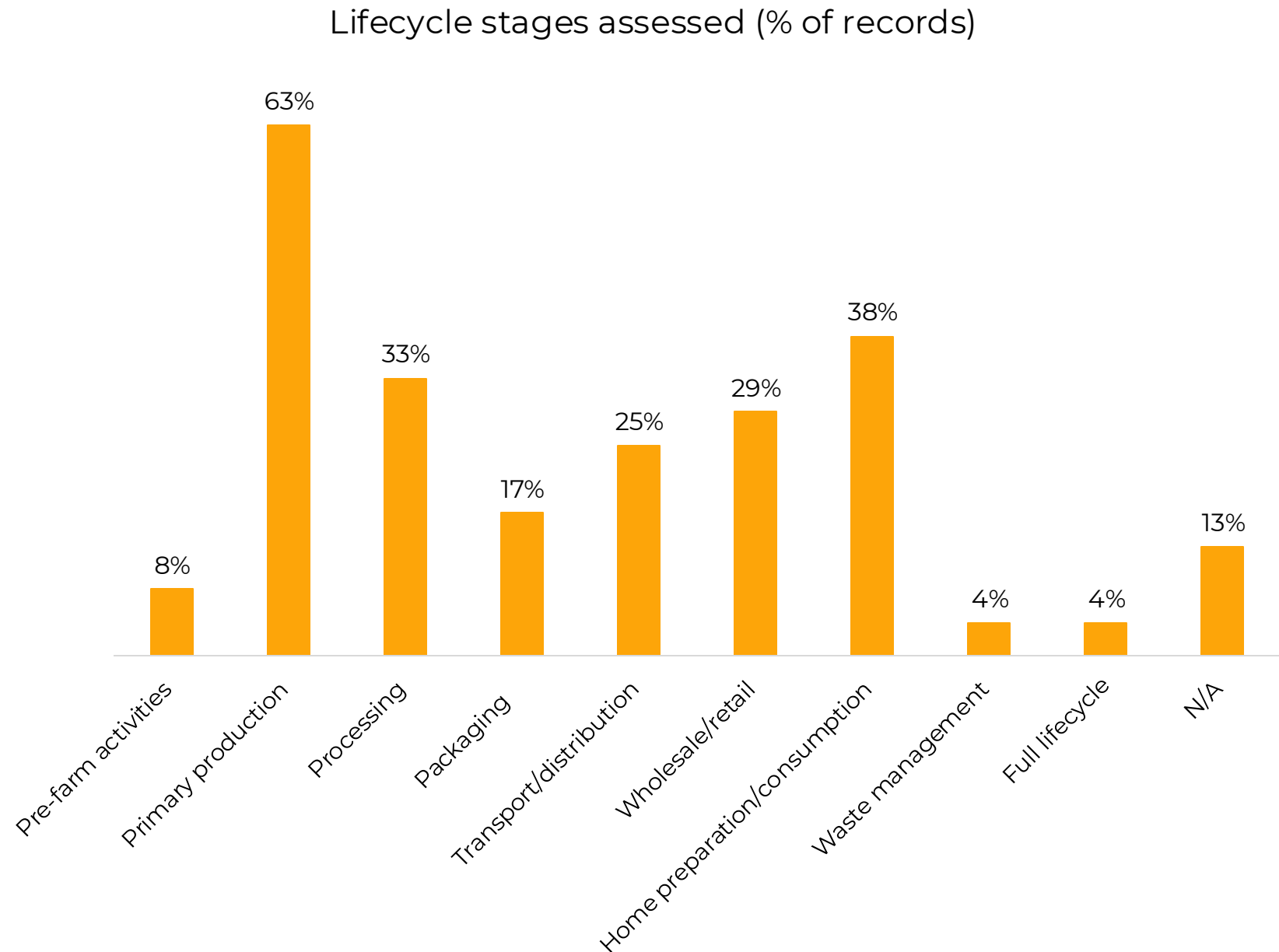


GEOGRAPHIC & INCOME DISTRIBUTION



FOOD SYSTEM SEGMENTS

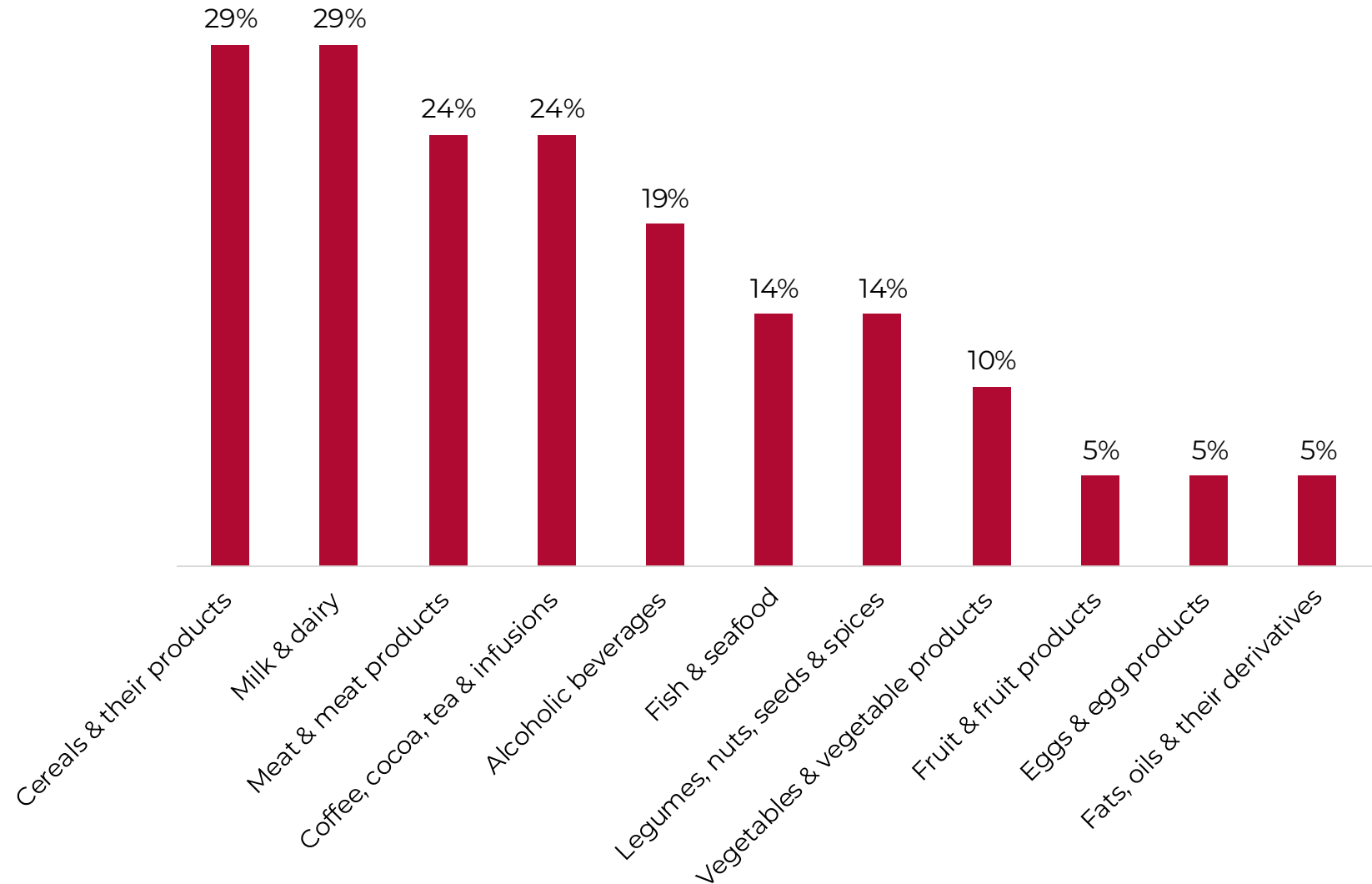
- ❑ **Primary production** was the most frequently analyzed lifecycle stage (63%).
- ❑ Other common lifecycle stages: **home preparation/consumption** (38%), **processing** (33%), and **retail** (29%).
- ❑ **Only one study considered the full lifecycle** ('cradle-to-grave'), revealing a fragmented view of food systems.



FOOD GROUP CATEGORISATION

Food groups assessed (% of records)

- ❑ **Assessment level:** Most records quantified externalities at the **individual food (71%) or food group (17%) levels.**
- ❑ **Most frequent: cereals and cereal-based products (29%); milk and dairy products (29%); meat and meat products (24%); coffee, cocoa, tea, and infusions (24%).**
- ❑ **Limited attention:** vegetables (10%), fruit, eggs, fats & oils (5% each).



SOCIOECONOMIC COSTS & BENEFITS

- ❑ Most studies focused on **negative socioeconomic externalities**, while positive impacts were less often investigated.
- ❑ **Inadequate working conditions** were the most frequently assessed category (42%), particularly unfair compensation practices (33%).
- ❑ Other key issues: **Rights violations** & systemic abuses, and **poverty/income-related impacts** (each at 21%).
- ❑ Among positive externalities, local **economic & community development**, and **income generation** (each at 17%) were most common.

Negative externalities			
Main categories	%	Sub-categories	%
Inadequate working conditions	42%	Unfair compensation practices	33%
		Lack of worker protection and health & safety risks	21%
		Work overload	17%
		Productivity loss	8%
Rights violations and systemic abuses	21%	Forced/child labour	17%
		Discrimination	17%
		Lack of union rights	17%
Poverty and income-related impacts	21%		
Animal welfare below acceptable standards	13%		
Economic losses from food waste	8%		
Reduced wellbeing	8%		
Costs to employers/public institutions	8%		
Crime and legal infractions	8%		
Positive externalities			
Main categories	%	Sub-categories	%
Local economic and community development	17%	Local economic development	8%
		Community development	8%
Income-related benefits	17%	Income generation	8%
		Income distribution	8%
Job creation and employment	8%		
Improved food security and reduced poverty	8%		
Animal welfare meeting acceptable standards	8%		
Social inclusion	4%		
Cultural preservation	4%		

FRAMEWORK CATEGORISATION

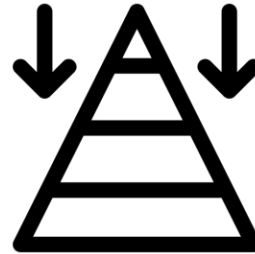
Framework typology	Theoretical foundations	Perspective	Primary objective	Proposed solutions
MARKET-ORIENTED (71%)	Neoclassical and welfare economics	Externalities as market failures caused by missing or distorted price signals	Internalise externalities into market prices, to make a product's hidden costs and benefits visible to decision-makers	Work within existing growth-oriented economic systems
RIGHTS-BASED (0%)	International human rights law and social justice theory	Human rights are non-negotiable , non-substitutable, and cannot be traded for economic gains	Address structural inequalities , power imbalances, and governance failures	Aim for fundamental systemic change to prevent rights violations at their root
HYBRID (28%)	Combination of market-oriented and rights-based frameworks	Certain rights violations are non-negotiable and must be eradicated at their source Other impacts can be compensated economically via monetisation	Internalise externalities into market prices and address structural inequalities at the same time	Work within existing economic systems , while simultaneously pursuing systemic transformation

APPROACH CATEGORISATION



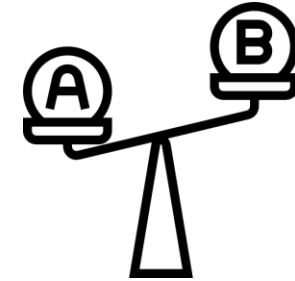
BOTTOM-UP (42%)

- **Primary collection of context-specific data** through e.g., household/farm surveys, workplace or health facility records.
- Geographic coverage: **subnational or national**.
- Primary datasets are **rarely made publicly available**, often due to confidentiality or use of proprietary data collection instruments.



TOP-DOWN (29%)

- Reliance on **secondary data sources** for impact quantification, e.g., national accounts, labour statistics, health expenditure databases.
- Geographic coverage: **national, regional, or global**.
- Use of published/**pre-defined monetisation factors**, adjusted to a given country context and reference year.



COMPARATIVE (29%)

- Combined use of **primary and secondary data sources**.
- Comparison of **different production, consumption, or policy/intervention scenarios**, to assess costs and benefits under various conditions.
- Geographic coverage: **from subnational to global**.
- Can be used for **foresight modelling**.

METHOD CATEGORISATION

Cost of socioeconomic impacts (67%)



- Estimates the **economic costs and/or benefits** associated with the occurrence of negative and/or positive externalities.
- **Impact-based methodology** that quantifies and monetises effects on individuals, communities, and/or society **after externalities have occurred**.

Restorative cost valuation (13%)



- Estimates the **cost of measures** required to **return an affected condition to its original or an acceptable state** after damage has occurred.
- Applicable to negative externalities only.

Cost-benefit analysis (13%)



- **Compares the total costs** of a product, policy, or intervention to its **total benefits**, both expressed in monetary terms.
- Allows to determine whether an action/measure is **economically justified**.

Preventive cost valuation (8%)



- Estimates the **cost of measures taken in advance** to prevent a negative externality from occurring or minimise its potential impacts.
- **Prospective methodology** that focuses on the resources required for prevention.

DATA SOURCES USED

Category	Main purpose or use case	Impact quantification: % of records	Monetisation factors: % of records
National/regional institutional databases and resources	To obtain official (sub)national and/or regional statistics on demographics, dietary patterns, economic indicators, food systems performance, and environmental impacts.	75%	33%
Academia and research institutes	To obtain parameters like relative risks, dose-response functions, emissions, characterisation factors, and economic values from scientific literature, published studies and datasets.	75%	46%
Resources by United Nations (UN) agencies	To use technical reports, guidelines, conceptual frameworks, and standardized databases produced by UN agencies to obtain methodological guidance and internationally comparable data across sectors.	33%	21%
Social impact databases (non-LCA)	To source specific data on socioeconomic externalities from specialised databases.	33%	0%
Primary data	To collect new, context-specific information directly from target populations or entities through surveys, interviews, or direct measurement/observation.	38%	21%
Datasets for foresight modelling/simulations	To obtain specific input data and parameters for running future-oriented simulation models.	33%	21%
Market data and consumer insights	To obtain data on market prices, consumer behaviour, and industry trends from market research firms and commercial data providers.	8%	4%
True Cost Accounting (TCA) and True Pricing (TP) databases and inventories	To use pre-existing socioeconomic impact data and monetary values from established TCA and TP frameworks and initiatives.	8%	25%
Non-governmental (NGOs) and civil society (CSOs) organizations	To use methodological guidelines, conceptual/theoretical frameworks, programmatic reports, datasets, and other resources published by NGOs and CSOs, including on specific local contexts and target population groups.	29%	0%

AUTHOR-STATED STRENGTHS, LIMITATIONS, & RECOMMENDATIONS

Strengths	%	Limitations	%	Research recommendations	%
Ability to compare different options/scenarios	46%	Limited availability and/or quality of data	71%	Improving data availability & quality, modelling approaches, and research infrastructure	56%
Conversion of externalities into monetary terms	38%	Narrow scope/coverage of externalities, geographic settings, lifecycle stages, reference periods, foods or diets	63%	Systematically conducting uncertainty/sensitivity analyses	44%
Disaggregation of costs by lifecycle stages	29%	Reliance on methodological assumptions and/or simplifications	58%	Expanding scope/coverage, by assessing a larger variety of foods/diets, lifecycle stages, and/or externalities	28%
Analysis of system-wide (inter)connections	13%	Absence of uncertainty/sensitivity analyses	38%	Methodological standardisation to enable cross-study comparability	16%
Assessments grounded in real-world data and contexts	13%	Use of non-representative samples	29%		
No author-reported strengths	38%	Challenges in converting non-market impacts into monetary terms	21%		

DISCUSSION: Main challenges in the field

1. METHODOLOGICAL IMMATURITY

- The TCA literature on food system-related socioeconomic externalities is in its infancy.
- Considerable heterogeneity in approaches, methods, and data sources.

2. ETHICAL CONCERNS

- The monetisation of certain social impacts, particularly human rights, raises significant ethical questions.
- Market-based frameworks suggest that these harms can be 'offset' by economic compensation rather than eliminated at the source.

3. PERSISTENT TECHNICAL BARRIERS

- Data and modelling constraints are the most significant challenge, reported in 71% of studies.
- These include issues with data availability/quality, reliance on proxy measures, and lack of transparency.

4. REACTIVE OVER PROACTIVE

- The prevalence of damage assessment methods over preventive ones may reflect practical constraints rather than deliberate choice.

5. STATIC MODELS

- Current methods often fail to capture the dynamic impacts of complex, adaptive food systems, which are constantly changing due to policy shifts, market dynamics, and global crises.

DISCUSSION: A Path Forward

1. PRIORITISE METHODOLOGICAL DEVELOPMENT

- Focus on strengthening existing and developing new, more robust methodologies before scaling up data collection and standardization efforts.

2. ENGAGE WITH A RIGHTS-BASED FRAMEWORK

- The field must grapple with the fundamental ethical questions of whether and how to monetise socioeconomic externalities impacting basic human rights and dignity.

3. IMPROVE DATA QUALITY AND TRANSPARENCY

- Using data of acceptable quality, preferably context-specific, and publishing it alongside analytical outputs is essential to increase confidence in the results and enable study replication and validation.

4. EMBRACE PROACTIVE METHODS

- Move away from reactive damage assessment and invest in methods that focus on prevention and restoration.

5. BROADEN SCOPE AND CONTEXT

- Future research needs to cover a wider range of value chains, lifecycle stages, externalities, and geographic/population settings.

CONCLUSION:

Take-home messages

- ❑ The field of TCA of food system-related socioeconomic impacts is in its infancy, with a **small and heterogeneous** evidence base.
- ❑ **Current methods are preliminary** and may require a fundamental reconceptualization before they can be effectively used to inform decision-making.
- ❑ Future research should prioritize methodological development, **address ethical concerns**, broaden its scope, and increase transparency.
- ❑ The path forward requires a **collaborative effort** to provide more robust evidence for a sustainable and equitable food system transformation.

