



Conceptualizing Sustainable Food Consumption: An analysis of 84 definitions

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Abstract

Sustainable Food Consumption (SFC) has become increasingly central to the sustainability and circular economy discourse, yet the absence of a universally accepted definition complicates effective interdisciplinary measurement and policy formulation. This study presents the first comprehensive conceptual analysis of 84 definitions of SFC and neighboring constructs drawn from both academic and grey literature published between 2006 and April 2025. Using thematic analysis and a structured coding framework of 25 dimensions grouped into six thematic clusters, namely Substantive Focus, Levels of Application, Systemic Framing, Actors Involved, Behavioral Mechanisms, and Meta-Labeling, we map the conceptual terrain of SFC. The analysis unveils recurring emphasis on dimensions such as environmental sustainability, health, and nutrition, while also identifying patterns of selective emphasis related to systemic interdependencies, governance structures, and behavioral pathways. We identify five definitional archetypes that clarify the diversity of conceptual orientations and highlight distinct ways in which sustainable food consumption is framed in different institutional contexts. To advance conceptual transparency and coherence, a new, integrative SFC definition is developed that addresses underrepresented yet critical dimensions and supports context-specific operationalization. This paper provides conceptual grounding and a structured typology to support interdisciplinary research, inform effective policymaking, and guide targeted interventions aligned with circular economy and global sustainability goals.

Keywords Sustainable food consumption · Conceptual analysis · Sustainable food systems · Sustainable diets · Typology of archetypes · Circular economy

Introduction

The global sustainability discourse has progressively turned its attention to food systems, recognizing that food consumption patterns are both a driver of environmental degradation and a potential lever for social, ecological, and economic transformation [1]. This shift is also prominent in the circular economy and sustainability literature, where food is increasingly

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treated as a priority domain for closing resource loops and enabling “circular food futures” through prevention, reduction, and better management of food loss and waste, alongside wider consumption-system change [2, 3]. Circular economy scholarship has further demonstrated that conceptual fragmentation, particularly in interdisciplinary fields, can impede cumulative knowledge development and policy coherence [4], a diagnostic that applies with equal force to the food consumption domain. In this context, Sustainable Food Consumption (henceforth: SFC) has emerged as a pivotal concept in debates on planetary health, climate mitigation, public health, equity, and economic resilience. SFC is also directly relevant to Sustainable Development Goal (SDG)-oriented research and policy, especially SDG 12 (Responsible Consumption and Production), and intersects with SDG 2 (Zero Hunger), SDG 3 (Good Health and Well-Being), and SDG 13 (Climate Action). Academic, policy, and civil society actors now widely reference SFC as a guiding principle in sustainability transitions. Yet, despite its growing prominence, there is no unanimously accepted definition of SFC, a conceptual gap repeatedly highlighted in both earlier [5] and more recent studies [6–9].

As a construct, SFC sits at the intersection of two foundational ideas: “sustainability”, broadly understood as the pursuit of environmental, social, and economic conditions that meet present needs without compromising the ability of future generations to meet their own [10, 11]; and “food consumption”, which extends beyond the act of eating to include the selection, acquisition, preparation, use, and disposal of food, shaped by cultural, psychological, economic, and infrastructural factors [12, 13]. SFC thus denotes food-related consumption practices evaluated against sustainability criteria. SFC is also closely related to two neighboring constructs that are frequently used interchangeably in the literature: “sustainable diets”, which foregrounds the nutritional and dietary composition of what is consumed [14, 15], and “sustainable food systems”, which emphasizes the systemic architecture within which food is produced, distributed, and consumed [16]. These three constructs occupy a shared conceptual space. Sustainable diets foreground the dietary patterns and nutritional composition of what is consumed; sustainable food systems refer to the broader structures through which food is produced, processed, distributed, accessed, consumed, and disposed of; and SFC serves as the consumption-oriented frame that connects individual food practices with these wider systemic conditions [5, 17, 18]. This conceptual adjacency is reflected in the literature, where definitions of one construct frequently draw on or incorporate elements of the others [e.g., 19, 20, 21]. Any comprehensive attempt to map how SFC is conceptualized must therefore account for this definitional permeability across neighboring constructs.

The persistent definitional ambiguity of SFC has far-reaching implications for both academia and practice. Without conceptual clarity, it becomes difficult to establish shared metrics of SFC, develop comparative frameworks, or evaluate progress toward sustainability goals. Ambiguous or not universally accepted definitions complicate empirical research by introducing variation in operationalization, which in turn limits the reliability of findings and the generalizability of insights across contexts [4, 18]. Furthermore, definitional variation impairs interdisciplinary collaboration, as researchers from different domains, such as nutrition, environmental science, behavioral economics, or policy studies, may operate under conflicting assumptions about the core elements and objectives of SFC. This phenomenon reflects what [22] referred to as “conceptual confusion”, that is, a proliferation of divergent definitions that weakens a field’s theoretical cohesion and practical relevance. A degree of definitional plurality may be inevitable, and even functional, in an inherently interdisciplinary field, where different stakeholders legitimately emphasize distinct aspects

of sustainability depending on their mandates and contexts [13, 18]. The concern motivating this study is therefore not definitional diversity per se, but the lack of transparency regarding how definitions differ, what they include or exclude, and what assumptions they embed. Without such transparency, it becomes difficult to assess whether definitional variation reflects purposeful adaptation or unexamined fragmentation.

The Food and Agriculture Organization's (FAO) definition of sustainable diets illustrates this problem. It defines sustainable diets as: "diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources" [14]. While this definition is among the most widely cited in the field and has served as a foundational reference for both academic and policy discourse on SFC, it also illustrates why greater conceptual transparency is needed. The definition brings together multiple desirable outcomes, but it does not specify how these dimensions should be prioritized, operationalized, or reconciled when trade-offs arise [1, 18, 19]. As a result, it remains unclear what such a diet might entail in concrete, everyday food choices [18].

For practitioners and policymakers, inconsistent definitions may weaken the design and targeting of interventions, hinder cross-sectoral coordination, and lead to fragmented or even contradictory policy outcomes. In the case of SFC, where implementation depends on coordinated actions across sectors and governance levels [23, 24], the absence of a shared definitional foundation risks diluting policy impact, thereby limiting the transformative potential of food system interventions. For example, when agencies operate under different sustainability definitions, they could generate incommensurable Key Performance Indicators (KPIs), with one prioritizing nutritional outcomes while another targets environmental metrics, producing incentive incongruence and undermining cross-sectoral coherence [9, 21]. Definitional misalignment also constrains scale-up because reporting architectures, budget classifications, and partner contracts cannot be harmonized when outcome constructs lack interdepartmental and interjurisdictional equivalence. Hence, conceptual clarification is not only an academic exercise, but also a necessary step in building the epistemological foundations for transformative policies in complex sustainability domains.

This lack of transparency is visible in the way SFC has been defined across disciplinary and institutional contexts. For example [18], emphasizes ecological and health imperatives, while [25] focus on transformation from a systemic perspective. Institutional actors such as FAO or the United Nations Environment Programme (UNEP) offer widely cited definitions of SFC [19, 26], reflecting attempts to provide definitional clarity, sometimes at the expense of inclusivity and interpretive flexibility. However, as noted in recent analyses [9], such definitions are often criticized for lacking sufficient operational clarity and for emphasizing production-side sustainability, while under-representing critical behavior, governance, and equity/justice dimensions. Similarly, previous typology efforts (e.g. [27]). offer valuable insights into SFC, particularly in relation to barriers and policy implications. Yet they do not comprehensively analyze how SFC has been defined across disciplines and sectors. Moreover, while systematic reviews have examined SFC in relation to consumer behavior, dietary transitions, or policy interventions [6, 28–30], the concept itself remains vague and inconsistently defined. Such examples reflect a broader pattern of definitional fragmentation across disciplinary and institutional contexts, where definitions tend to be either overly broad

or narrowly framed, limiting their utility for integrated policy and intervention design [18]. As a result [7], note (p.1): “Even though sustainable food consumption has been previously studied in literature, there has not been a *universal* definition for sustainable food consumption”. Yet the issue is not definitional plurality per se, but the lack of transparency about how existing definitions differ and overlap. To our knowledge, no study has yet comprehensively investigated SFC definitions from this perspective.

This paper attempts to address this research gap by offering the *first comprehensive conceptual analysis* of 84 unique SFC definitions, drawn from both academic and grey literature. We critically map how existing definitions cluster around distinct conceptual logics. By identifying an overview of patterns, overlaps, and areas of selective emphasis, we aim to enhance conceptual transparency and analytical coherence. In doing so, we extend the approach taken by [4] in their seminal study of circular economy definitions. We construct an original coding framework grounded in the definitions themselves, rather than imposing a priori categories. Specifically, we identify 25 conceptual dimensions, which we organize into six higher-order thematic clusters. Building on this thematic framework, we conduct a multidimensional analysis of how SFC is currently conceptualized, examining frequency, co-occurrence, and coding richness across definitions. Importantly, we synthesize five empirically derived definitional archetypes (i.e., recurring narrative structures that reveal dominant logics and patterns of selective emphasis within the current SFC discourse; [31]). Identifying these archetypes helps clarify the diversity of conceptual orientations within the field, making visible the assumptions and priorities embedded in different definitions and institutional contexts. Building on this analytical groundwork, we also propose a new integrative definition of SFC that synthesizes the most recurrent themes while addressing underrepresented yet critical dimensions, bridging normative goals with procedural clarity and systemic framing.

The novelty and contribution of this study are threefold. First, it provides the field with a systematically coded dataset of SFC definitions as a transparent empirical foundation for future conceptual and comparative work. Second, it yields a multidimensional analysis of SFC and develops a typology of archetypes, offering a higher-order lens to understand how SFC is framed across disciplines, sectors, and institutional contexts. This typology can serve as a diagnostic and analytical tool for researchers, practitioners, and policymakers seeking to evaluate, communicate, or harmonize their own understanding of SFC. Third, it proposes a new integrative definition of SFC as a conceptual reference point that bridges normative goals with procedural clarity, actor responsibility, and systemic framing. By combining key normative, procedural, and systemic elements, this definition can support greater conceptual coherence of SFC in sustainability research, enhance the translatability of theory to practice, and inform more inclusive and effective policymaking. Collectively, these contributions also speak to the broader circular economy and sustainability agenda, where definitional clarity has been shown to be foundational for measurement, prioritization, and transformative action [4].

Methods

Sample Development

The present study is based on the conceptual analysis approach, a methodology used to map definitional variance and clarify conceptual ambiguity in emerging fields [4]. Overall, there are

multiple methodological approaches to investigating the understanding of a concept within academic and policy discourse. As underlined by [32], one approach involves conducting interviews with relevant stakeholders to elicit their interpretations. Yet, interviewees often struggle to articulate well-formed conceptual definitions on the spot [32, 33]. An arguably more reliable method includes analyzing written definitions drawn from academic and institutional sources. These written definitions are typically more deliberate and reflective, as they have been often subjected to editorial and peer-review processes (for academic sources), and thus are considered to offer a more valid snapshot of how a concept is currently understood in discourse [32, 34, 35]. This paper adopts the latter approach as its core methodological foundation. At the same time, we acknowledge that published definitions may reflect narrow operationalizations tailored to the specific scope of a study, particularly in peer-reviewed contexts where space constraints often preclude comprehensive elaboration. To mitigate this, our analysis extends beyond the definition itself. Where needed, aligned with [4], we also considered the surrounding textual context such as conceptual framing, or relevant explanatory remarks, in order to more accurately capture the intended meaning of the definition. Also, to ensure a more inclusive representation, we included institutional (“grey”) literature sources which often offer more elaborate, policy-oriented or context-specific definitions.

To compile a comprehensive dataset of SFC definitions, we adopted a structured, multi-stage sampling procedure. As established in the Introduction, SFC, sustainable diets, and sustainable food systems occupy a shared conceptual space, with definitions of one construct frequently incorporating elements of the others. Our sampling strategy was therefore designed to capture definitions across all three neighboring constructs, consistent with the inclusive approach adopted by [4] in their analysis of circular economy definitions.

The identification of sources proceeded in three stages. Figure 1 provides a flow diagram of the selection process, adapted from the PRISMA reporting logic [36], to enhance transparency regarding the identification, screening, and inclusion of definitions. In the first stage, we conducted targeted searches on Google Scholar using the terms “sustainable food consumption”, “sustainable diets” and “sustainable food systems”. Google Scholar was used as an inclusive discovery tool because it can retrieve peer-reviewed publications as well as book chapters, working papers and reports. In the second stage, we conducted searches in Elsevier’s Scopus using the same search terms. Scopus was selected for its broad multidisciplinary coverage of peer-reviewed literature in the social sciences, environmental sciences, and public health, which are the primary disciplinary homes of SFC scholarship. Across the Google Scholar and Scopus stages, definitions were also identified using citation-based and snowball sampling, ensuring that both foundational and more recent conceptualizations were included. Searches were limited to English-language sources published between 2006 and April 2025. Sources were retained for full screening when the bibliographic information or search-result context suggested that they might contain an explicit or interpretable definition relevant to SFC, sustainable diets, or sustainable food systems. The scope was intentionally broad to capture the diversity of wording used across disciplinary and institutional contexts. In the third stage, with regard to institutional sources (e.g., FAO, UNEP), we reviewed publicly accessible web page documents, reports and official publications hosted on the relevant organizational domains. Specifically, the following organizational domains were consulted: fao.org, unep.org, who.int, usda.gov, regjeringen.no, rivm.nl, oxfamireland.org, and the websites of Deloitte, Danone, Unilever, Boston Consulting Group, the European Environmental Bureau, GreenerAge, and the World Wide Fund for Nature (see Online Resource 1).

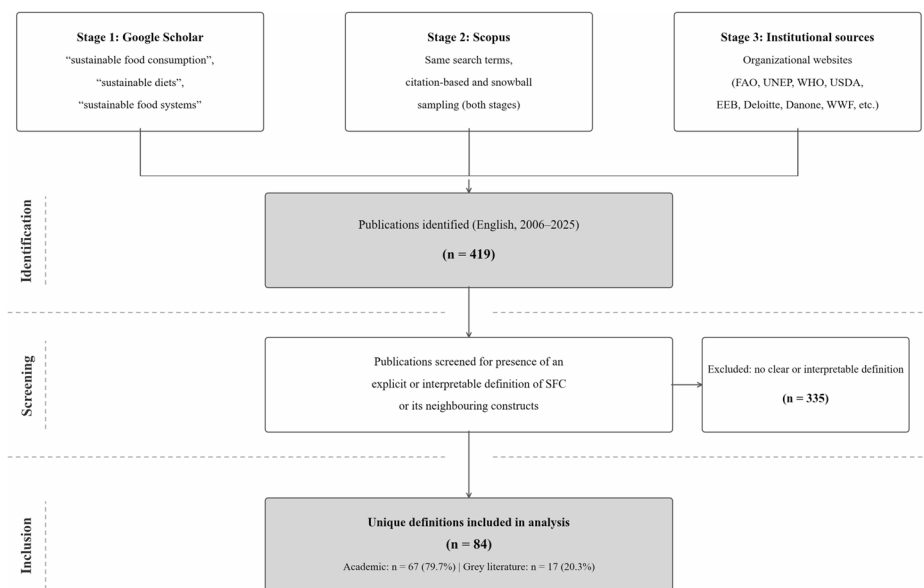


Fig. 1 Flow diagram of the source selection process, adapted from PRISMA reporting logic. Source: authors' own work

This multi-stage process yielded 419 publications and articles spanning academic and grey literature. To be included, a document had to contain at least one sentence or passage that explicitly defined or implicitly conveyed, through its surrounding text, a conceptual understanding of SFC or its neighboring constructs, whether through its goals, mechanisms, or actors involved. Because relevant sources often articulate the meaning of SFC, sustainable diets, or sustainable food systems through explanatory passages rather than concise formal definitions, we use the term “definition” pragmatically. It refers not only to concise formal definitions, but also to definitional passages that explicitly articulate the meaning, scope, goals, or mechanisms of SFC and its neighboring constructs. For readability, we refer to both forms as “definitions” throughout the remainder of the manuscript. Academic and grey literature articles that were identified based on the above process yet lacked a clear or interpretable definition were excluded. A large portion of the screened publications ($n = 335$) did not contain a clear or interpretable definition and were therefore excluded at this stage. These publications focused on behavioral drivers, policy measures, or environmental impacts without specifying what “sustainable food consumption” means conceptually.

After carefully reviewing all sources, we extracted and retained 84 unique definitions that articulated what constitutes SFC and neighboring concepts (i.e., sustainable diets, sustainable food systems). These definitions were gathered primarily from peer-reviewed journal articles, complemented by grey-literature sources from international organizations, non-governmental organizations, and corporate actors (e.g., FAO, WHO, UNEP, EEB, Deloitte, Danone). Where publication dates were available, sources were published between 2006 and April 2025. Six definitions originating from institutional web pages for which a publication year could not be determined (see Online Resource 1) were retained in the analysis because they met all other inclusion criteria and their conceptual content was fully

codable; however, they are excluded from the temporal analysis reported in Sect. [Temporal and disciplinary distribution](#). Online Resource 1 provides a complete overview of all 84 definitions. Table 1 of Online Resource 1 reports the extracted definitions and source details, while Table 2 provides additional metadata for each definition, including publication outlet, source type, primary construct label, archetype assignment, disciplinary field, and publication year where available.

Regarding sample size, conceptual analysis studies of this kind do not aim for statistical representativeness but for analytical depth and conceptual coverage [4, 32]. We considered the corpus conceptually saturated when additional retained definitions no longer introduced new coding dimensions or required changes to the coding criteria [see also 37]. As a second-

Table 1 Coding framework by thematic cluster, coding dimensions and criteria. Source: authors' own work

Thematic Cluster	Coding Dimension	Coding Criteria
Substantive Focus (What is included?)	Environmental	Refers to ecological sustainability and environmental protection
	Economic	Mentions financial or market-oriented sustainability, economics
	Social	Addresses aspects such as societal or community benefit
	Cultural	Mentions culture, tradition, or social food norms
	Health & Nutrition	Covers health, nutrition, or nutritional well-being
	Food security	Refers to access to sufficient food or food availability
	Biodiversity	Focuses on biodiversity as a concern or goal
Levels of Application (Where is it applied?)	Micro (individual)	Focus on individual behavior or consumption choices
	Meso (community/food systems)	Community-level or local food system engagement
	Macro (global/national)	Mentions national or global level frameworks or actors
Systemic Framing (How is it framed?)	Mentions future generations	Mentions long-term goals or future generations
	Systemic perspective/food system	Refers to holistic framing of food as embedded in systemic ecological, social, and economic structures
Actors Involved (Who is involved?)	Consumers	Mentions consumer roles, awareness, or choices
	Producers/retailers	Mentions producers, farmers, or supply chain retailers
	Governments	Refers to governments or national institutions
	Multi-stakeholder	Refers to collaborations between multiple stakeholders
Behavioral Mechanisms (How is it achieved?)	Climate/environmental protection	Climate or environmental impact mitigation
	Equity/justice	References justice, fairness, or equity through ethics and behavioral mechanisms
	Economic viability/livelihoods	Mentions livelihood or income generation
	Dietary shifts	Promotes reduced meat or animal product intake or other dietary shifts
	Food waste reduction	Highlights actions to reduce food waste
	Sourcing/production	Focus on sustainable sourcing or production methods, including animal welfare
	Distribution/access	Focus on distribution, logistics, or food access
Meta-Labeling (Definition Style)	Explicit	Explicit definition of SFC presented
	FAO-based	Based on or reproducing the FAO definition(s)

Table 2 Frequency and share of definitions by thematic clusters and coding dimensions ($n=84$). Note: Definitions may engage with multiple thematic clusters. Source: authors' own work

Thematic cluster	Coding dimension	<i>n</i>	Share of definitions (%)
Substantive Focus		83	99
	Environmental	78	93
	Economic	53	63
	Social	50	60
	Cultural	32	38
	Health & Nutrition	61	73
	Food security	35	42
	Biodiversity	29	35
Levels of Application		64	75
	Micro (individual)	40	48
	Meso (community/food systems)	33	39
	Macro (global/national)	27	32
Systemic Framing		42	50
	Mentions future generations	30	36
	Systemic perspective	25	30
Actors Involved		46	55
	Consumers	37	44
	Producers/retailers	20	24
	Governments	15	18
	Multi-stakeholder	7	8
Behavioral Mechanisms		73	87
	Climate/environmental protection	31	37
	Equity/justice	29	35
	Economic viability/livelihoods	33	39
	Dietary shifts	16	19
	Food waste reduction	15	18
	Sourcing/production including animal welfare	58	69
	Distribution/access	31	37
		49	58
	Explicit	45	54
Meta-Labeling		21	25
	FAO-based		

ary indication of adequacy, the final corpus is also comparable to those used in similar conceptual analyses. For instance [22], analyze 37 definitions of social entrepreneurship [38], analyze 20 definitions of social entrepreneurship and entrepreneurs, while [32] considers 37 definitions of corporate social responsibility [4], whose seminal study analyzed 114 definitions of the circular economy, worked with a sample size relatively close to ours.

Coding framework development

To analyze how SFC is defined across sources, we developed a structured coding framework through a thematic analysis using a hybrid deductive–inductive approach [39]. Initial

coding categories were derived from prior literature on sustainability, food systems, and consumption behavior [5, 18, 19], as well as from institutional definitions, particularly the widely cited formulations of the Food and Agriculture Organization [14, 15]. These preliminary categories reflected commonly emphasized themes such as environmental protection or economic viability. The 25 coding dimensions were then developed inductively through iterative rounds of open coding, comparison, and refinement, aiming to capture recurring values and definitional features of SFC. To ensure analytical clarity, each dimension was assigned a specific coding criterion that delineated its scope (Table 1). We recognize that in an interdisciplinary field such as SFC, some dimensions are conceptually adjacent (e.g., “Environmental” and “Biodiversity” both concern ecological sustainability; “Equity/justice” and “Social” both touch on societal well-being). In such cases, the distinguishing principle was specificity: a general reference to ecological sustainability was coded under “Environmental”, while “Biodiversity” was coded only when explicitly named as a distinct concern. Maintaining this granularity was analytically important because it allowed us to detect whether specific dimensions (e.g., biodiversity, justice) are systematically under-represented even within definitions that address their broader parent category. Borderline cases during framework development were resolved through joint discussion between coders. Once finalized, the dimensions were organized into six higher-order thematic clusters, namely Substantive Focus, Levels of Application, Systemic Framing, Actors Involved, Behavioral Mechanisms, and Meta-Labeling (Table 1).

While the coding framework was developed inductively from the definitions themselves, the resulting six thematic clusters align with established conceptual frameworks in the sustainability and food systems literature. Substantive Focus corresponds to the three pillars of sustainability [10, 11], extended with domain-specific concerns central to food system scholarship [14, 15]. Levels of Application reflects multi-level perspectives used in both sustainability transitions research and comparable conceptual analyses [4, 25]. Actors Involved connects to multi-actor governance frameworks in the food policy literature [23, 24], while Behavioral Mechanisms aligns with consumption behavior and intervention research [6, 13, 28]. This correspondence between inductively derived categories and established theoretical constructs strengthens confidence in the framework’s conceptual grounding and interpretability.

The first cluster, Substantive Focus, captures what SFC is understood to include, promote, or protect. It includes dimensions such as *environmental*, *economic*, *social*, *cultural*, *health & nutrition*, *food security*, and *biodiversity*. These elements reflect the normative goals commonly attributed to SFC. The second cluster, Levels of Application, refers to the scale at which SFC is conceptualized or operationalized. This includes the *micro level* (e.g., individual behaviors or consumption choices), the *meso level* (e.g., community engagement or local food systems), and the *macro level* (e.g., national or global policies and governance frameworks). The third cluster, Systemic Framing, encompasses dimensions that frame SFC within a broader socio-ecological context. It includes references to *future generations*, highlighting intergenerational responsibility, and a *systemic food systems perspective* that emphasizes the interconnectedness of environmental, economic, and social systems. The fourth cluster, Actors Involved, identifies which stakeholders are cited as responsible for, or impacted by, SFC. These include *consumers*, *producers and retailers*, *governments*, and *multi-stakeholder collaborations* involving several actors working collectively. The fifth cluster, Behavioral Mechanisms, focuses on how SFC is achieved. It includes actionable

pathways such as *climate and environmental protection, equity and justice, economic viability and livelihoods, dietary shifts, food waste reduction, sustainable sourcing and production (including animal welfare), and distribution and access*. Finally, the Meta-Labeling cluster captures how the definition itself is presented. Definitions were coded as *explicit* when the concept of SFC was directly defined, and as *FAO-based* when they directly adopted or cited the definition of the Food and Agriculture Organization (e.g. [14]).

Coding Procedure

Manual coding was preferred over automated content analysis to preserve interpretative depth and ensure accurate identification of implied meanings and context-specific wording. As [4] note, automated approaches risk misclassifying terms that carry different meanings depending on context (e.g., “economic” may refer to an aim of SFC or to a mechanism through which it is pursued). Manual coding enabled us to make such distinctions consistently. The coding process followed a four-step content analysis protocol:

1. Pilot coding: A random subset of 10 academic and institutional definitions was independently coded by two members of the research team to assess initial clarity and relevance of dimensions.
2. Framework refinement: Based on pilot results, the coding dimensions were revised for clarity, specificity, and minimal overlap.
3. Full coding: The entire dataset was coded using Microsoft Excel by the lead author to track binary presence or absence for each of the 25 dimensions.
4. Reconciliation and validation: A second member of the research team coded a random subsample of 21 definitions (25% of the total pool). Inter-coder agreement was assessed using Cohen’s kappa, yielding $\kappa=0.90$, indicating strong agreement [40]. All discrepancies were reviewed jointly and resolved through discussion, after which the lead author’s coding of the remaining definitions was reviewed for consistency with the agreed resolution rules.

More broadly, we acknowledge that binary coding inevitably simplifies the richness of individual definitions by reducing them to the presence or absence of a given dimension, without capturing differences in emphasis, centrality, or depth of articulation. This trade-off was acceptable because it enables systematic, transparent comparison across a large set of definitions and is consistent with the approach used in comparable conceptual analyses [4, 32]. Where relevant, qualitative nuances in how definitions articulate specific dimensions are discussed in the interpretation of results (Sects. [Results](#) and [Discussion](#)). The coding process resulted in a binary matrix of 84 definitions by 25 coding dimensions. The coded data were analyzed through several complementary lenses: temporal and disciplinary distribution (Sect. [Temporal and disciplinary distribution](#)), descriptive distribution of thematic clusters and coding dimensions (Sect. [Descriptive distribution of thematic clusters and coding dimensions](#)), coding richness (Sect. [Coding richness across definitions](#)), co-occurrence analysis (Sect. [Co-occurrence of coding dimensions](#)), and source-type comparison (Sect. [Source-type comparison](#)). Building on these analyses, we identified underrepresented dimensions and patterns of selective emphasis (Sect. [Underrepresented dimensions and patterns of selective emphasis](#)). We then conducted a higher-order synthesis to identify five

recurring definitional archetypes (Sect. [Definitional archetypes](#)). The term “archetype” is used here in the sense established in sustainability research [31] to denote a recurring configurational pattern that combines conceptual elements in a recognizable way. In this study, archetypes refer to distinct ways of framing SFC across definitions.

The archetypes were derived through an abductive, iterative process. The co-occurrence analysis (Sect. [Co-occurrence of coding dimensions](#)) provided an initial orientation by revealing which dimensions tended to cluster together across definitions. Building on these patterns, each definition was read in full and assessed according to its primary narrative purpose, namely what the definition was primarily trying to communicate and for what apparent purpose. Definitions sharing a common narrative logic were grouped together, and the groupings were iteratively refined until each exhibited internal coherence and could be distinguished from the others on the basis of its organizing logic. Each of the 84 definitions was assigned to the archetype whose conceptual logic it most closely reflected (see Table 2 of Online Resource 1). The archetypes are best understood as ideal-typical constructs that capture dominant tendencies, not as rigidly bounded categories. While the thematic clusters describe what conceptual elements are commonly included, the archetypes help explain how these elements are assembled into distinct narratives, and how particular framings become more visible in specific institutional contexts. Based on the analyses of Sect. [Temporal and disciplinary distribution–Definitional archetypes](#), we then synthesized a new, integrative SFC definition (Sect. [Toward a new, integrative definition of SFC](#)). The definition draws on those dimensions most consistently present across the dataset, while intentionally incorporating dimensions that appeared less frequently but are conceptually essential because they are needed for the definition to retain its explanatory and classificatory value.

Results

Temporal and disciplinary distribution

The dataset of 84 definitions represents a broad temporal and sectoral range. Academic sources ($n=67$) account for the large majority of the definitions, while 17 definitions come from grey literature. The definitions, excluding the six for which a publication year was unknown, span a period from 2006 to 2025 and reflect contributions from multiple world regions. The number of definitions remained relatively modest until 2018, after which there was a noticeable increase. Peaks are observed in 2021 and 2023 (eight and nine definitions respectively), and especially in 2024, which accounts for the highest number with 12 definitions (Fig. 2). Four definitions were already published in the first months of 2025. In the last four years alone (2021–April 2025), 40 definitions were identified, accounting for nearly half of the total sample, indicating that scholarly and institutional engagement with the concept of SFC has accelerated considerably in recent years.

We examined the disciplinary distribution of the 67 peer-reviewed academic definitions. Environmental Sciences accounted for the largest group (27 definitions), followed by Social Sciences including consumer, communication, and behavioral studies (14 definitions), Public Health/Nutrition and Food Science & Technology (12 definitions each), and Economics/Development (2 definitions). This distribution suggests that while ecological framing remains dominant, social science perspectives, particularly consumer behavior and food

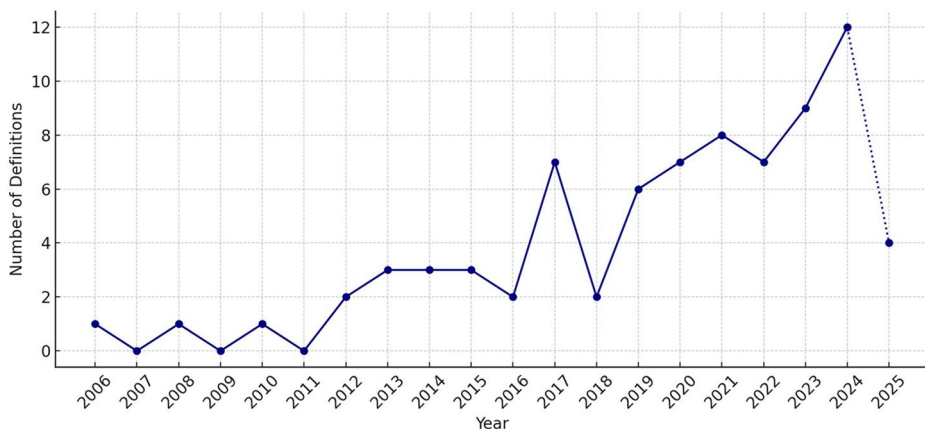


Fig. 2 Trend in the number of SFC definitions per year. *Note:* 2024–2025 line is dotted because 2025 definitions span up to April 2025. Source: authors' own work

choice research, represent a substantial strand of definitional work. At the same time, the relatively lower representation of Public Health/Nutrition and Food Science & Technology suggests that SFC conceptualization is shaped more by sustainability-oriented and social-scientific disciplines than by the food and nutrition sciences per se.

To assess whether pooling definitions across the three neighboring constructs (SFC, sustainable diets, and sustainable food systems) introduced systematic differences, each definition was tagged by its primary construct label. Of the 84 definitions, 52 were primarily framed as SFC definitions, 22 as sustainable diets definitions, and 10 as sustainable food systems definitions. SFC-framed definitions display the broadest disciplinary spread, appearing across all five disciplinary fields, and exhibit the greatest conceptual heterogeneity in terms of which dimensions they foreground. Sustainable diets definitions are comparatively well represented in Public Health/Nutrition outlets and tend toward comprehensive, multi-pillar formulations, largely reflecting the widespread adoption of the FAO's [14] definition. Sustainable food systems definitions are mostly concentrated in institutional and policy-oriented sources. These patterns suggest that the three constructs carry distinct disciplinary and conceptual emphases, but also share sufficient conceptual overlap to justify analyzing them within a single framework, consistent with the inclusive approach adopted by [4]. The pooled analysis therefore does not treat the three constructs as interchangeable, but examines how their overlapping definitional logics contribute to the broader conceptualization of SFC. The construct tagging for each definition is documented in Online Resource 1.

Descriptive distribution of thematic clusters and coding dimensions

We calculated the frequency with which each of the 25 dimensions appeared across the dataset (Table 2). This frequency analysis provides an initial descriptive view of which aspects of SFC are most emphasized across definitions. To complement this dimension-level analysis, we aggregated the 25 coded dimensions into the six overarching thematic clusters to explore broader patterns in how SFC is defined. A definition was considered to engage with a thematic cluster if it included at least one of its associated dimensions.

As expected, the most dominant cluster is Substantive Focus, present in all but one definition (83 out of 84). This near-universal presence confirms that most definitions articulate the “what is included” of SFC, thereby highlighting its normative goals or protected values. Within this cluster, Environmental concerns are the most prominent, appearing in the vast majority of definitions, highlighting the deeply rooted ecological framing of SFC. Substantial attention is also given to Health & Nutrition and Economic and Social dimensions. However, other dimensions appear less frequently. For instance, Cultural, Food security, and Biodiversity appear with 32, 35, and 29 occurrences respectively (Table 2).

The second most frequent cluster is Behavioral Mechanisms, present in nearly nine out of ten definitions, indicating strong attention to how SFC can be operationalized. Yet the emphasis is highly uneven. Sourcing/Production is the most frequently referenced mechanism, appearing in roughly two-thirds of definitions, while dimensions directly tied to consumer behavior such as Dietary Shifts and Food Waste Reduction each appear in fewer than one in five (Table 2). This pattern suggests a persistent production-centric framing of sustainability, potentially influenced by institutional actors or agri-food system discourses, though it may also reflect the fact that some definitions are intentionally scoped to the supply side.

The Levels of Application cluster appears in three-quarters of definitions, which seems promising at first glance. However, the internal distribution reveals a potential gap in multilevel thinking: the Micro level dominates over the Meso and particularly the Macro levels (Table 2). This suggests a tendency to foreground individual behaviors, with less attention to policy-level and systemic interventions.

The Actors Involved cluster is present in just over half of definitions and reveals perhaps the most notable pattern of selective emphasis. While Consumers are referenced in nearly half of definitions, perhaps reflecting the consumption focus of the construct itself, key institutional actors such as Governments and Producers/Retailers are far less frequently mentioned. Multi-stakeholder collaboration, often considered a cornerstone of systemic transformation, appears in only 7 definitions. This suggests that most definitions do not yet embed a collective governance or shared responsibility frame. This may partly reflect the consumer-oriented focus of much SFC research, although consumer-focused definitions can still acknowledge the role of producers, retailers, governments, and wider food-system conditions.

The Systemic Framing cluster is present in half of the definitions. Although intergenerational considerations and a systemic perspective are widely acknowledged in theoretical discussions of sustainability, their comparatively limited presence in definitional language points to a limited correspondence between sustainability principles and their explicit incorporation into SFC definitions. Finally, the Meta-Labeling cluster, present in just over half of definitions, indicates that slightly more than half of the sources provide an explicit definition of SFC, while about a quarter draw on or reproduce the widely cited FAO definition. This points to a definitional field that is somewhat fragmented and variably formalized.

Taken together, the findings reveal a definitional field that is, in aggregate, normatively saturated but procedurally thin; there is strong alignment on what SFC should achieve, but less articulation of how, by whom, or within which systemic structures these aims can be realized. Whether this reflects a genuine conceptual blind spot or a purposeful division of labor across differently scoped definitions is examined further in the co-occurrence and archetype analyses that follow (Sect. [Co-occurrence of coding dimensions and Definitional archetypes](#)).

Coding richness across definitions

Beyond examining individual dimensions, we assessed the coding richness of each definition by summing the number of coding dimensions present. This measure captures the thematic breadth of a definition (i.e., the range of conceptual elements it explicitly addresses) and should not be interpreted as a proxy for definitional quality. A parsimonious definition that addresses fewer dimensions may be equally or more effective for a specific disciplinary or policy purpose, and broader formulations within a definition may subsume several coding dimensions at once. An average of 10 dimensions was recorded per definition. The two most thematically broad definitions [20, 41] each encompassed 18 of the 25 dimensions, combining elements across nearly all thematic clusters, a degree of integration that is rare in the dataset. Even these definitions, however, do not cover the full range of dimensions, illustrating that existing definitions are necessarily selective rather than exhaustive. Such selectivity may reflect the need to balance conceptual breadth with clarity and operational usefulness. This variation in thematic breadth reflects the diversity of purposes definitions serve across different disciplinary and institutional contexts. The patterns underlying this variation, specifically, which dimensions tend to co-occur and how they coalesce into distinct conceptual logics, are examined in the co-occurrence analysis (Sect. [Co-occurrence of coding dimensions](#)) and the definitional archetypes (Sect. [Definitional archetypes](#)).

Co-occurrence of coding dimensions

While frequency analyses offer insight into which dimensions of SFC are most prevalent, they do not reveal how these dimensions co-occur within definitions. To address this, we conducted a co-occurrence analysis to examine the frequency with which specific dimensions appear together. This approach illustrates not only dominant thematic links, but also conceptual pairings that are conspicuously rare, offering insight into the underlying structure of the definitional field. Pairwise co-occurrence counts were calculated by summing instances of simultaneous presence across all 84 definitions and were visualized as a heatmap (Fig. 3). Darker cells indicate stronger co-occurrence for each pair of coding dimensions. Diagonal cells represent the total frequency of each dimension.

To account for the fact that absolute co-occurrence counts are influenced by the base frequencies of the dimensions involved (i.e., two frequent dimensions will naturally co-occur more often than two rare ones), we also calculated Jaccard similarity coefficients for each pair of dimensions (Table 3). The Jaccard coefficient is calculated as the size of the intersection divided by the size of the union of two sets, $J(A, B) = |A \cap B| / |A \cup B|$. In this study, it captures the proportion of definitions containing at least one of two dimensions that contain both. This provides a relative measure of association that is less directly driven by raw dimension frequencies than absolute co-occurrence counts.

The analysis revealed several notable co-occurrence patterns. As anticipated, the Environmental dimension exhibits strong co-occurrence with other core sustainability dimensions; it co-occurs with Health & Nutrition in 57 definitions (Jaccard=0.70), with Economic in 53 (Jaccard=0.68), and with Social in 47 (Jaccard=0.58), reaffirming the central role of ecological framing in SFC conceptualizations.

At the same time, the heatmap and the Jaccard coefficients highlight several notable patterns of weak association. Equity/justice shows limited co-occurrence with implementa-

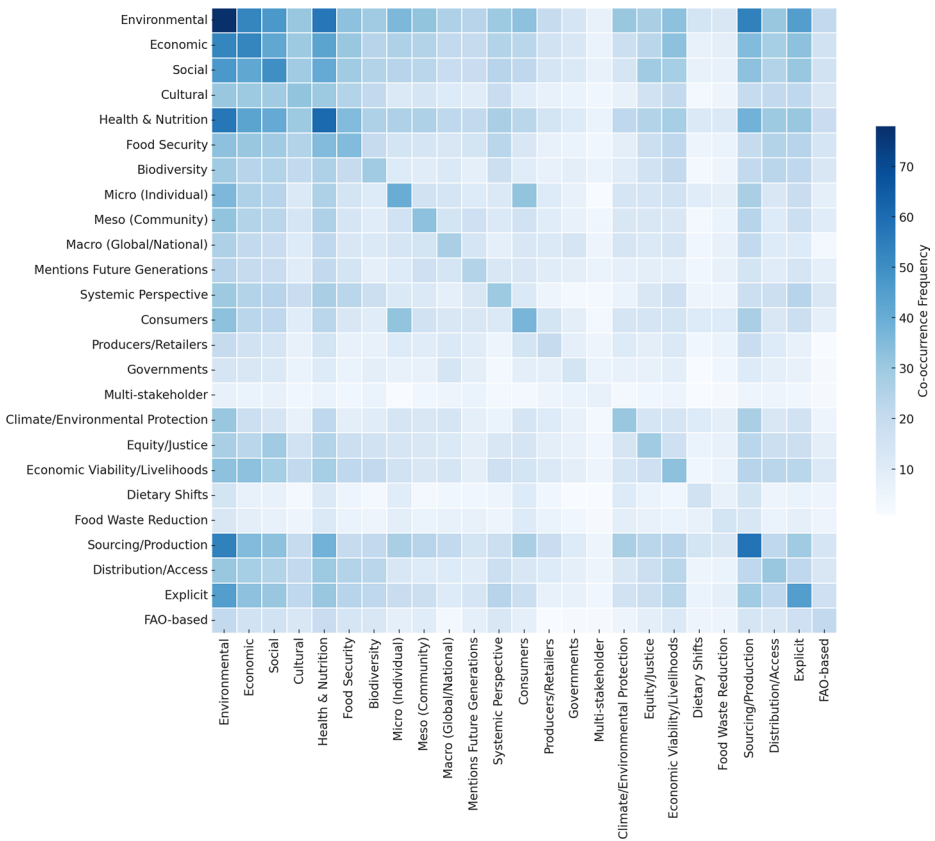


Fig. 3 Co-occurrence heatmap showing how frequently each pair of the coding dimensions appears together across definitions. *Note:* Darker cells represent higher co-occurrence among dimensions in terms of frequency. Diagonal cells represent how frequently each dimension appears, with darker diagonals reflecting more frequent dimensions. Source: authors' own work

tion-oriented dimensions: it pairs with Dietary Shifts in only 6 definitions (Jaccard=0.15) and with Food Waste Reduction in 7 (Jaccard=0.19), suggesting that social justice considerations are often not integrated when operational pathways toward sustainability are defined. Similarly, Future Generations co-occurs with Health & Nutrition in 27 definitions (Jaccard=0.42) and with Economic viability in only 17 (Jaccard=0.37), implying that inter-generational responsibility is not consistently tied to immediate well-being or livelihood outcomes. The Jaccard coefficients support the interpretation that these weak associations are not merely artifacts of low base frequencies, but may reflect meaningful conceptual separation within the definitional field.

Notably, the strongest pairwise association in the dataset is between Micro (individual) and Consumers (Jaccard=0.71), indicating that definitions foregrounding individual-level application almost invariably also reference consumers. Regarding other actor-related dimensions, consumers co-occur with Dietary Shifts and Food Waste Reduction in 11 definitions each (Jaccard=0.26 and 0.27 respectively), indicating a moderate but not dominant link between consumer framing and behavioral mechanisms. The role of Governments

Table 3 Selected pairwise co-occurrence values (absolute counts and Jaccard similarity coefficients). Source: authors' own work

Dimension pair	Co-occurrence (n)	Jaccard
Micro (individual) – Consumers	32	0.71
Environmental – Health & Nutrition	57	0.70
Environmental – Economic	53	0.68
Environmental – Sourcing/production	54	0.66
Environmental – Social	47	0.58
Future generations – Health & Nutrition	27	0.42
Future generations – Economic viability	17	0.37
Equity/justice – Sourcing/production	23	0.36
Macro – Meso	15	0.33
Governments – Producers/retailers	8	0.30
Consumers – Food waste reduction	11	0.27
Macro – Micro	14	0.26
Consumers – Dietary shifts	11	0.26
Multi-stakeholder – Producers/retailers	5	0.23
Equity/justice – Food waste reduction	7	0.19
Equity/justice – Dietary shifts	6	0.15

appears comparatively isolated, and Multi-stakeholder approaches co-occur with Governments in only 6 definitions and with Producers/Retailers in only 5. This suggests that collaborative or shared responsibility frames remain weakly embedded in SFC definitions, despite widespread academic and policy calls for cross-sectoral action [1, 42]. The heatmap also reveals that the Macro level dimension co-occurs with Micro and Meso levels in only 14 and 15 definitions respectively (Jaccard=0.26 and 0.33), pointing to limited multilevel integration in how SFC is conceptualized. This does not imply that all definitions should be fully multilevel; rather, it suggests a need for greater clarity about which level or combination of levels a definition addresses, an issue taken up further in the archetype analysis (Sect. [Definitional archetypes](#)). Taken together, these co-occurrence findings unveil a landscape in which certain conceptual pairings, especially those linking environmental and health concerns, are well-established, while others remain weakly connected. Dimensions tied to implementation mechanisms, systemic linkages, and multilevel governance appear particularly loosely integrated into broader definitional constructs, a pattern that may reflect disciplinary silos, differing definitional purposes, or genuine conceptual underdevelopment. These structural patterns inform the archetype analysis that follows (Sect. [Definitional archetypes](#)), which examines how dimensions cluster into distinct definitional logics.

Source-type comparison

To further understand the diversity in how SFC is conceptualized, we analyzed patterns between definitions originating from academic literature ($n=67$) and those from grey literature ($n=17$), including government bodies, NGOs, and private-sector organizations. This source-type comparison helps assess whether conceptual emphases vary by sector. Given the substantial imbalance between the two subsamples, the patterns described below should be interpreted as indicative rather than conclusive and are reported using raw counts.

Overall, the analysis reveals broad consistency in some thematic emphases alongside notable divergences. Environmental concerns dominate across both groups, appearing in 62 of 67 academic and 16 of 17 grey literature definitions. Similarly, the Economic and Social

dimensions are comparably emphasized, though somewhat more prevalent in grey sources (11 and 12 of 17, respectively) than in academic ones (42 and 38 of 67).

Grey literature definitions tend to place greater emphasis on several dimensions. Health & Nutrition appears in 15 of 17 grey sources but 46 of 67 academic ones, suggesting that institutional actors may be more inclined to frame SFC through the lens of human well-being, potentially due to their operational focus on public health and consumer communication. Grey literature also more frequently includes references to Biodiversity (10 of 17 vs. 19 of 67), Food security (8 of 17 vs. 27 of 67), and Cultural dimensions (8 of 17 vs. 24 of 67). Multi-stakeholder collaboration, while marginal overall, appears in 4 of 17 grey definitions compared to only 3 of 67 academic ones, suggesting that institutional actors may be somewhat more attuned to collaborative governance framings.

Academic definitions, by contrast, more frequently foreground individual-level framing. The Micro dimension appears in 36 of 67 academic definitions but only 4 of 17 grey sources, and Consumers in 33 of 67 academic vs. 4 of 17 grey. This suggests that academic literature tends to frame SFC around individual behavior and consumer choice, while grey literature is more oriented toward systemic and normative considerations. Regarding definition styles, academic sources provide explicit definitions in 36 of 67 cases, grey literature in 9 of 17. Both groups draw similarly on FAO-based framings (15 of 67 academic, 6 of 17 grey).

Taken together, the source-type comparison reveals a complementary pattern: academic definitions tend to emphasize the micro-behavioral and consumer-oriented dimensions of SFC, while grey literature tends to engage more broadly with health, ecological, and cultural dimensions. Both source types, however, show relatively limited engagement with systemic framing (18 of 67 academic, 7 of 17 grey) and intergenerational responsibility (22 of 67 academic, 8 of 17 grey).

Underrepresented dimensions and patterns of selective emphasis

The previous analyses (i.e., frequency distributions; Sect. [Descriptive distribution of thematic clusters and coding dimensions](#), co-occurrence patterns; Sect. [Co-occurrence of coding dimensions](#), and the source-type comparison; Sect. [Source-type comparison](#)) converge on several recurring patterns of selective emphasis across the current definitional landscape of SFC. While these patterns may partly reflect legitimate differences in disciplinary scope and definitional purpose, their consistency across multiple analytical lenses suggests they warrant attention. Specifically, four patterns stand out: the limited incorporation of cultural dimensions, the weak articulation of behavioral pathways, the narrow framing of actor responsibility, and the uneven integration of systemic and intergenerational perspectives.

A first pattern concerns the limited incorporation of the Cultural dimension, despite wide recognition that food consumption is culturally embedded, shaped by tradition, identity, and social norms [1, 4]. This underrepresentation is notable given scholarship emphasizing the need for culturally sensitive food policies and behavior change interventions [43, 44, 45]. The absence of cultural considerations from most definitions risks limiting the relevance and uptake of SFC frameworks in diverse sociocultural contexts.

A second pattern involves the weak articulation of behavioral pathways. Dietary shifts and food waste reduction are not only infrequent but, as the co-occurrence analysis showed, rarely integrated with justice or equity considerations (Sect. [Co-occurrence of coding dimensions](#)). This suggests a disconnect between the normative goals of sustainability and

the means through which these goals might be operationalized, a concern also raised in intervention-oriented food systems scholarship [21, 46].

A third pattern concerns actor framing. The definitional landscape is heavily skewed toward consumer responsibility, with limited attention to governments, producers, or collaborative governance structures. Multi-stakeholder collaboration, despite being widely considered a cornerstone of food system transformation [21, 46], is among the most weakly connected dimensions in the entire dataset (Sect. [Co-occurrence of coding dimensions](#)). This narrow actor framing aligns with scholarly critiques of “healthism” in food discourse, where responsibility is disproportionately placed on individual consumers, deflecting attention from structural determinants [47]. A fourth pattern relates to systemic framing. While systems thinking and intergenerational responsibility are widely endorsed in sustainability scholarship [48, 49], their incorporation into definitional language remains uneven. The co-occurrence analysis revealed that intergenerational considerations, even when present, tend to sit in isolation from behavioral and economic dimensions (Sect. [Co-occurrence of coding dimensions](#)), suggesting that the temporal complexity SFC demands is not yet consistently reflected in how the concept is defined. Systems-oriented literature emphasizes interdependencies, feedback effects, and long-term consequences [50], yet the reviewed definitions rarely make these systemic and temporal features explicit.

These patterns do not necessarily indicate conceptual deficiencies in individual definitions, which may be deliberately scoped to specific purposes or audiences. However, viewed in aggregate, they suggest that the definitional field would benefit from greater integration across normative goals, behavioral pathways, actor responsibilities, and systemic structures. The archetype analysis that follows (Sect. [Definitional archetypes](#)) examines how these dimensions cluster into distinct definitional logics, while the integrative definition proposed in Sect. [Toward a new, integrative definition of SFC](#) draws on these observations to address the most salient patterns of selective emphasis.

Definitional archetypes

Building on the preceding analyses, we identified five definitional archetypes that capture the recurring conceptual orientations observed across the dataset. As described in Sect. [Coding Procedure](#), these archetypes were derived through an abductive process in which each definition was assessed according to its primary narrative purpose, informed by the co-occurrence patterns identified in Sect. [Co-occurrence of coding dimensions](#). While each definition in the sample was unique in composition and emphasis, the qualitative analysis revealed recognizable patterns of meaning. Each of the 84 definitions was assigned to the archetype whose narrative logic it most closely reflected (see Online Resource 1).

The five archetypes, each reflecting a distinct narrative logic, set of key features, commonalities of dimensions, and dimensions of lesser emphasis, are summarized in Table 4. These archetypes serve as heuristic tools that help simplify and make sense of definitional heterogeneity. Importantly, they offer a structured account of the dominant logics by which different actors and institutions frame the meaning of SFC. They are best understood as ideal-typical constructs that capture dominant tendencies, not as rigidly bounded categories.

The first archetype, Eco-Nutritional Core ($n=9$), revolves primarily around ecological and health-related concerns. These definitions consistently highlight the need to reduce environmental harm and promote health-enhancing diets, typically presenting sustainability as an

Table 4 Typology of archetypes in SFC definitions. Source: authors' own work

Archetype	Key features	Common dimensions	Dimensions of lesser emphasis
Eco-Nutritional Core Definitions	Focuses primarily on environmental and health/nutritional goals. Limited attention to procedural details or systemic framing. Often found in academic literature in environmental or public health fields.	Environmental, Health & Nutrition	Behavioral mechanisms, Actors, Systemic framing
Holistic SDG-Aligned Definitions	Comprehensive definitions that integrate ecological, economic, social, health, and systemic elements. Often forward-looking and include intergenerational framing. Common in work by international organizations or interdisciplinary teams.	Environmental, Health, Economic, Equity/Justice, Food Security, Actors, Future Generations	Most dimensions included; may lack Implementation pathways or Behavioral mechanisms
Policy/Institutional Framing	Top-down, governance-focused definitions emphasizing macro-level structures and food system policy. Limited attention to individual behaviors and micro-level change.	Governments, Macro-level, Food Security, FAO-based	Consumers, Behavioral mechanisms
Behavioral Minimalism	Narrowly focused on individual consumer actions such as reducing food waste or choosing sustainable products. Limited attention to system-level framing or equity considerations.	Micro-level, Dietary Shifts, Food Waste Reduction, Sourcing/production	Systemic framing, Macro-level, Social/Equity
Normative or Aspirational Definitions	Symbolic or idealistic in nature, focusing on broad goals like justice or sustainability without concrete operationalization. Sometimes vague and general.	Environmental, Social, FAO-based	Implementation pathways, Actors, Behavioral mechanisms

intersection of environmental protection and nutrition. However, they rarely specify implementation pathways, behavioral mechanisms, or systemic structures. This archetype is predominantly found in environmental science and public health scholarship, where definitions tend to be scoped to the disciplinary focus of the study. A notable example is the [51] definition: “Sustainable diets are simultaneously addressing sustainability, food security and nutrition by linking consumption and production with food and nutrient requirements”. While such definitions align with core sustainability goals, they tend to foreground ecological and health dimensions with less attention to social, economic, or institutional considerations.

The second archetype, Holistic SDG-Aligned ($n=40$), is the most prevalent in the dataset and encompasses definitions that articulate SFC as a multidimensional challenge, addressing environmental sustainability, public health, economic viability, food security, social equity, and systemic resilience. These definitions often integrate multiple thematic clusters and extend their scope to include intergenerational considerations and governance structures. This archetype is common in work by international organizations (e.g., FAO, WHO) and interdisciplinary research teams, and is well suited for framing SFC in cross-sectoral contexts. Their comprehensiveness reflects an attempt to align with the SDGs and to capture the interdependencies inherent in food systems, although sometimes such definitions lack actionable implementation pathways or behavioral mechanisms.

The third archetype, Policy/Institutional Framing ($n=5$), is marked by an emphasis on governance, regulation, and macro-level system design. These definitions prioritize top-

down approaches to food sustainability, often situating SFC within broader food security, development, or agricultural policy frameworks. They are often produced by governmental agencies, transnational institutions, and policy think tanks. This archetype is particularly useful for structuring regulatory and legislative approaches to food system transformation. While these definitions acknowledge structural factors and systemic interlinkages, they often deemphasize the role of individual consumers or bottom-up behavioral change, thereby privileging institutional action over citizen participation.

In contrast, the fourth archetype, Behavioral Minimalism ($n=18$), comprises definitions that narrow their focus to specific consumption practices or actions. These definitions frame SFC as a set of discrete behaviors, such as reducing food waste, shifting diets, or choosing sustainably sourced products. They tend to operate at the micro-level. While they are action-oriented and accessible, their limited scope often excludes systemic framing, equity considerations, or long-term sustainability goals. This archetype is common in consumer behavior research and marketing literature, and is well suited for designing targeted interventions or communication campaigns. An example is the [52] (p. 9929) definition: “Sustainable food consumption, which is directly associated with consumer culture and attitude, improves nutrition and food security by consuming optimal food ingredients and decreasing food wastes”.

Finally, the fifth archetype, Normative/Aspirational ($n=12$), encompasses definitions that typically evoke high-level sustainability ideals such as justice, fairness, or long-term resilience, without necessarily articulating the mechanisms, actors, or governance structures necessary to realize them. A notable example is the [53] (p. 68) definition: “In this paper, we define sustainable food consumption as food consumption where environmental welfare, animal welfare and social justice are respected”. These definitions often rely on broad or symbolic language and are characterized by their generality. Such definitions may serve a rhetorical function or reflect early-stage conceptual development, yet they provide limited guidance for implementation or evaluation.

Together, these five archetypes reveal the diverse yet patterned nature of SFC conceptualizations. The predominance of the Holistic SDG-Aligned archetype (40 of 84) suggests that a substantial portion of the field already strives toward comprehensive, multi-pillar definitions, while the remaining archetypes reflect more specialized orientations toward specific disciplinary or institutional purposes. Rather than representing a hierarchy from less to more adequate definitions, each archetype reflects a distinct function. The Eco-Nutritional Core archetype serves environmental and health scholarship; the Holistic SDG-Aligned archetype supports global policy integration; the Policy/Institutional Framing archetype guides regulatory design; the Behavioral Minimalism archetype informs consumer-level interventions; and the Normative/Aspirational archetype articulates broad value commitments. This functional diversity suggests that the field may benefit not from converging on a single archetype but from greater awareness of how different archetypes complement and constrain one another. The integrative definition proposed in Sect. [Toward a new, integrative definition of SFC](#) draws on this recognition, attempting to bridge the strengths of multiple archetypes while addressing their respective dimensions of lesser emphasis.

Toward a new, integrative definition of SFC

The preceding sections have demonstrated that definitions of SFC exhibit considerable heterogeneity, with recurring patterns of selective emphasis and limited cross-dimensional

integration. Through the coding of 84 definitions across 25 conceptual dimensions, the identification of six thematic clusters and five definitional archetypes, and an analysis of co-occurrence patterns, this study has mapped the existing definitional landscape in considerable depth. Drawing on these insights, we now propose a new, integrative definition of SFC that seeks to synthesize the most recurrent themes while incorporating less frequent but conceptually essential dimensions. As signaled in the Introduction, this definitional synthesis is a deliberate objective of the study. This proposed definition is not intended to serve as an unbiased standard. As [32] (p.1) notes: “Unfortunately, any attempt to develop an unbiased definition is challenging, because there is no methodology to verify whether it is indeed unbiased or not”. Rather, the proposed definition is offered as an empirically grounded yet normatively informed conceptual anchor that balances substantive aims, procedural mechanisms, and systemic framing. The definition draws particularly on those dimensions that were most consistently present across the dataset, namely, environmental sustainability, health & nutrition, economic viability, and food security, while also intentionally incorporating dimensions of lesser emphasis in the current landscape, such as equity, governance, intergenerational responsibility, and behavioral mechanisms. The definition integrates dimensions across all six thematic clusters, bridging the strengths of the Holistic SDG-Aligned archetype with the operational specificity of the Behavioral Minimalism and Policy/Institutional archetypes (Sect. [Definitional archetypes](#)).

New definition of SFC *Sustainable food consumption (SFC) refers to the practices, behaviors, institutional arrangements, and policy frameworks related to the selection, acquisition, use, and disposal of food that jointly contribute to environmental integrity, public health, economic viability, social equity, and enduring food system and community resilience. It encompasses both individual and collective actions, supported through behavioral incentives, that reduce environmental degradation, promote fair and viable livelihoods across the food value chain, ensure culturally appropriate and nutritious diets, minimize food waste, facilitate sustainable dietary shifts, safeguard biodiversity and protect animal welfare. Sustainable food consumption is inherently multi-level and systemic, requiring the coordinated engagement of consumers, producers, institutions, and governments, and is oriented toward the well-being of both present and future generations.*

To enhance the operational clarity of this definition, Table 5 provides brief descriptions of its key constituent terms. These descriptions are intended to anchor the definition’s components in the conceptual dimensions identified throughout the analysis, and to support its application in empirical research and policy design.

We acknowledge that the comprehensiveness of this definition may pose challenges for direct operationalization in empirical research. Not every study will need to address all components simultaneously. The definition is therefore intended to function as a comprehensive conceptual frame from which researchers and practitioners can derive context-specific operationalizations depending on their disciplinary focus and research questions. The archetype typology presented in Sect. [Definitional archetypes](#) offers guidance in this regard; researchers working within a consumer behavior paradigm may operationalize SFC through the dimensions foregrounded by the Behavioral Minimalism archetype, while those engaged in policy analysis may draw on the Policy/Institutional dimensions. The integrative definition provides the overarching frame that situates these partial operationalizations within a

Table 5 Key constituent terms of the proposed SFC definition. Source: authors' own work

Term	Description
Environmental integrity	Maintaining ecological systems, reducing pollution, and minimizing resource depletion across food production, distribution, and consumption
Public health	Promoting nutritionally adequate, safe, and health-enhancing diets
Economic viability	Ensuring financially sustainable livelihoods for all actors across the food value chain
Social equity	Addressing fairness, justice, and inclusivity in food access, distribution, and governance
Food system and community resilience	The capacity of food systems and communities to withstand and adapt to environmental, economic, and social disruptions while continuing to meet nutritional needs and sustaining local social cohesion
Behavioral incentives	Mechanisms that encourage sustainable food choices, including information provision, nudging, pricing, and labeling
Culturally appropriate diets	Food patterns that respect cultural traditions, identities, and social food norms
Multi-level and systemic	Operating across micro (individual), meso (community/food system), and macro (national/global) scales within interconnected socio-ecological structures
Intergeneration-al orientation	Commitment to safeguarding the food security and environmental conditions of future generations

coherent whole. The proposed definition thus offers a conceptual foundation that can inform interdisciplinary research, policymaking, and applied intervention design.

Discussion

This study addresses an important and underexplored area in the circular economy and sustainability literature: the persistent absence of conceptual clarity around SFC. As noted by scholars such as [5], and more recently by [6] and [7], no unanimously accepted definition of SFC exists, despite its increasing prominence in sustainability discourse and policy design. This definitional heterogeneity has contributed to analytical fragmentation, undermined conceptual alignment across disciplines, and impeded the development of coherent strategies to advance sustainable food system transitions. As [4] demonstrated in their analysis of circular economy definitions, conceptual fragmentation within a developing interdisciplinary field can impede cumulative knowledge development if left unexamined. The present study extends their approach to the food consumption domain, where similar dynamics are at work. By analyzing 84 definitions from both academic and grey literature using a 25-dimension coding framework, the study yields three principal contributions.

First, the frequency and co-occurrence analyses reveal a definitional landscape that is normatively saturated but procedurally thin. Environmental concerns and Health & Nutrition dominate, while dimensions related to behavioral pathways, governance, and equity remain comparatively underrepresented. This asymmetry carries practical consequences. The lack of a systemic lens limits the capacity of definitions to reflect how food systems

function as complex socio-ecological structures shaped by feedback loops, institutional inertia, and multi-scalar interactions [49, 50]. Without systemic framing, SFC risks being reduced to a set of individual behaviors divorced from the broader context of power dynamics, supply chains, and policy regimes. The co-occurrence analysis reinforces this observation: Equity/justice and implementation-oriented dimensions such as Dietary shifts or Food waste reduction rarely appear together, suggesting that justice considerations and operational mechanisms remain conceptually siloed. This resonates with [13], who note that consumer perspectives on food sustainability tend to fragment along disciplinary lines, with behavioral, ethical, and ecological considerations rarely integrated within a single framework. Recent systematic evidence further confirms that psychological and behavioral dimensions of SFC remain understudied relative to structural and environmental factors [54]. That said, definitional selectivity is not inherently problematic. Definitions serve different purposes in different contexts, and a definition scoped to consumer behavior research need not address macro-level governance. The concern here is not definitional diversity per se, but the consistency of certain patterns across 84 definitions spanning multiple disciplines and sectors, which suggests a systemic tendency rather than purposeful scoping alone.

Second, the typology of five definitional archetypes offers a higher-order lens for understanding how SFC is framed. The predominance of the Holistic SDG-Aligned archetype (40 of 84) suggests that a substantial portion of the field already strives toward comprehensive, multi-pillar definitions. Yet the persistence of narrower archetypes — Eco-Nutritional Core (9), Normative/Aspirational (12), Behavioral Minimalism (18), and Policy/Institutional (5) — indicates that the field has not converged on a shared conceptual foundation. Whether such convergence is desirable remains an open question. A shared definition can facilitate cross-disciplinary comparison, policy alignment, and cumulative knowledge development [4, 22]. At the same time, definitional plurality may be functional in an inherently interdisciplinary field, where different stakeholders legitimately emphasize different aspects depending on their mandates [18]. Beyond this question, the archetypes can function as a decision aid for policymakers selecting a fit-for-purpose definition within a given policy cycle. Revising dietary guidelines or aligning public-health messaging with planetary boundaries may call for the Eco-Nutritional Core archetype, which foregrounds environmental and health co-benefits and maps readily onto nutrition-labeling and public-health communication contexts. Cross-ministerial food-system strategies may be better served by the Holistic SDG-Aligned archetype, which embeds multiple SDGs and can justify integrated budget lines and interdepartmental KPIs. Behavioral change campaigns relying on nudges or consumer-education programs may draw on the Behavioral Minimalism archetype for its communicative simplicity. Government vision statements or high-level sustainability communications (e.g., EU-level Green Deal) can deploy the Normative/Aspirational archetype to articulate direction without premature operational detail. Jurisdictions drafting comprehensive food-system transition plans can consider adopting the integrative definition proposed in Sect. [Toward a new, integrative definition of SFC](#), which spans all six thematic clusters and offers an umbrella under which specialized sub-policies can nest coherently.

Third, the proposed integrative definition advances the conceptual landscape by synthesizing elements found across both institutional and academic definitions. While the FAO's [14] definition has served as a foundational reference, it provides limited clarity on agency, behavioral pathways, and systemic governance. Other widely cited definitions contribute valuable normative anchors but remain partial: [18] offers an ecologically grounded account

yet underemphasizes actor roles and behavioral mechanisms; [19] foregrounds FAO's framing and consumer behavior with limited reference to institutional or systemic dynamics. The proposed definition consolidates high-frequency dimensions such as environmental sustainability and health while incorporating dimensions of lesser emphasis, including food waste reduction, governance, intergenerational responsibility, and food system and community resilience. Because its constituent dimensions are explicit and modular (Table 5), the definition supports context-specific operationalization: users can foreground dimensions germane to their mandates while retaining a stable conceptual backbone that preserves comparability over time. This modularity also enables crosswalks with widely used definitions such as FAO's, supporting policy coherence and reporting harmonization.

In a broader epistemological sense, this study demonstrates the value of content-driven conceptual mapping in sustainability research. As [4] argued in their analysis of the circular economy, definitional clarity is foundational; it determines what is measured, what is prioritized, and ultimately, what is changed. The same holds for SFC. By surfacing the patterns of selective emphasis, conceptual structures, and dominant logics that shape how SFC is currently defined, this study offers not only diagnostic insights but also a generative platform for advancing more cohesive, inclusive, and actionable sustainability discourse.

Limitations, Future Directions, and Conclusion

While the study offers a comprehensive analysis of definitions in SFC scholarship and practice, several limitations should be acknowledged. First, the corpus is limited to English-language sources, which may underrepresent region-specific, indigenous, or non-Western conceptualizations of SFC. Food consumption practices are deeply embedded in local cultural, ecological, and political contexts, and definitions articulated in other languages may foreground dimensions, such as communal food practices, spiritual dimensions of food, or locally specific governance traditions, that are absent from the English-language literature. This linguistic boundary is an important constraint on the generalizability of the findings. Relatedly, the corpus is predominantly drawn from Anglophone institutional contexts, with limited representation of perspectives from the Global South, where food consumption practices, governance structures, and sustainability priorities may differ substantially. Future research should incorporate geographic metadata for each definition to enable more fine-grained analysis of how regional and institutional contexts shape SFC conceptualization. More broadly, while the dataset was carefully curated to capture both academic and institutional definitions, it does not constitute a representative sample of all existing SFC definitions, nor was that the aim of the current study. Our focus was on analytical depth and the dataset was designed to capture how SFC is framed by influential institutional and academic actors. Second, the analytical approach entails several methodological choices that warrant reflection. The binary coding system, while enabling systematic comparison across a large set of definitions and consistent with established approaches [4, 32], inevitably simplifies the richness of individual definitions by reducing them to the presence or absence of a given dimension, without capturing differences in emphasis, centrality, or depth of articulation. Similarly, while care was taken to ensure that coding dimensions were as discrete as possible (Sect. [Coding framework development](#)), some dimensions remain conceptually adjacent (e.g., Environmental and Biodiversity, Social and Equity/justice), and the boundar-

ies between them involve interpretive judgment. The source-type comparison between academic and grey literature definitions, while revealing indicative patterns, is constrained by the imbalance between the two subsamples, and the findings should be interpreted accordingly. Third, the proposed definition, while integrative, does not resolve all tensions within the definitional landscape. Conceptualizations of SFC are inevitably shaped by context, disciplinary orientation, and normative priorities. Balancing inclusivity with usability remains an inherent trade-off. As discussed in Sect. [Toward a new, integrative definition of SFC](#), the definition is intended as a comprehensive conceptual frame from which context-specific operationalizations can be derived, yet whether modular or domain-specific definitions might better serve certain research communities remains an open question.

Fourth, although the typology of archetypes was developed through qualitative synthesis informed by co-occurrence analysis, it has not yet been validated through statistical techniques such as hierarchical clustering, factor analysis, or latent class analysis, which provide opportunities for future empirical validation. Fifth, the study did not trace the historical evolution of SFC definitions. A longitudinal or bibliometric analysis could shed light on how definitional trends have responded to shifts in policy, science, and public discourse over time. Such an analysis could also incorporate citation tracking to assess the diffusion and influence of specific definitions across disciplines and institutional contexts.

Several directions for future research emerge from these limitations. Broadening the scope to include non-English and regionally specific definitions would help capture culturally embedded framings that may be underrepresented in the current English-language dataset. Recent cross-cultural qualitative work on food-related resistance and identity [55] underscores the importance of accounting for cultural and ideological variation in how SFC is understood and contested. Enriching definitional datasets with metadata such as geographic origin and citation frequency would enable more fine-grained analyses of how SFC is conceptualized across different scholarly and institutional communities.

As sustainability transitions accelerate under the pressure of climate change, biodiversity loss, and widening inequality, conceptual tools such as the one developed here will become increasingly important, not only for aligning academic discourse but for translating broad sustainability aspirations into viable and context-sensitive pathways for change.

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Declarations

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