



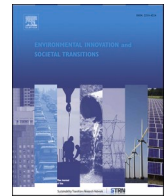
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Thomson, L., Onufrey, K., Johansson Mignon, I. (2027). How directionality emerges through frame layering: An analysis of Swedish research and innovation policy on agri-food. *Environmental Innovation and Societal Transitions*, 62. <http://dx.doi.org/10.1016/j.eist.2026.101204>

N.B. When citing this work, cite the original published paper.



How directionality emerges through frame layering: An analysis of Swedish research and innovation policy on agri-food

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ARTICLE INFO

Keywords:

Innovation policy
Directionality
Critical agri-food studies
Critical frame analysis
Sustainable intensification
Agroecology

ABSTRACT

Transforming agri-food systems is widely seen as necessary to address overlapping ecological and social crises. Public research and innovation policy is a central mechanism through which such transformations are steered, yet it is often articulated in ways that obscure the normative commitments legitimising particular pathways. Using critical frame analysis and drawing on debates around directionality and the contrasting paradigms of sustainable intensification and agroecology, we analyse Swedish agri-food research and innovation policy from 2017 to 2025. We ask how problems and solutions are framed across successive levels of policy articulation, and what this implies for directionality. The policies comprise two national strategies, two action plans, two strategic research agendas and 21 funding calls. The findings show that directionality is not the property of any single instrument or policy level but emerges through frame layering across levels. In this way, diversity at one level can partially compensate for closure at another. We argue that directionality is therefore a relational and partly emergent property of how frames are layered. Hybrid framings, whose paradigm alignment depends on operationalisation, define challenges and solutions in broader terms that ease political friction at the cost of directional clarity. The paper offers a layered account of directionality and shows how critical frame analysis can surface the normative commitments embedded in research and innovation policy.

1. Introduction

The unsustainability of dominant agri-food systems has made their transformation a global policy priority (Candel and Pereira, 2017; Rockström et al., 2025), with national policy arenas central to implementation (Kugelberg et al., 2021; Thomas, 2018). Agri-food transitions are contested, and alternative pathways are continually shaped by actors advancing particular discourses and visions (Constance, 2018; de Graaff et al., 2026; Fischer et al., 2025). Innovation policy often appears technical and neutral, yet it embeds normative choices that privilege particular solution pathways (Stirling, 2008, 2024), with material consequences for agri-food systems (Constance, 2018). Policy does not simply respond to sustainability problems but takes part in constructing how those problems are understood (McMichael, 2000). Without scrutiny, it can stabilise incumbent pathways by obscuring the ideologies and social relations through which agri-food systems are reproduced (Bronson, 2022; Kugelberg et al., 2021).

Critical agri-food scholarship has long shown that policy agendas tend to reproduce dominant industrial and productivist assumptions, even when framed as sustainable (Constance, 2018; Goodman, 2024; McMichael, 2009; Weis, 2010, 2015). The contrasting

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paradigms of sustainable intensification and agroecology help to clarify what is politically and ideologically at stake (Fischer et al., 2025), since they rest on different assumptions about what constitutes legitimate problems and solutions (Constance, 2018). Left implicit, these assumptions tend to favour technocentric and market-oriented solutions that downplay power and equity (Hisano, 2023; Weis, 2015), making incumbent trajectories harder to contest and marginalising more transformative alternatives (Goodman, 2024; Thomas, 2018). Innovation policy may therefore end up reproducing dominant assumptions, intentionally or not, through the way it frames legitimate pathways (Thompson, 2018). What is required is not “better” policy or “more” innovation (Candel et al., 2025), but that the normative commitments underpinning any given pathway are made explicit and open to contestation (de Graaff et al., 2026; Hisano, 2023; Stirling, 2008, 2024).

In innovation and transition policy research, debates about the normative direction of transformative change are tied to the concept of directionality (Bulah et al., 2024; de Graaff et al., 2026; Mueller et al., 2026). Yet, little is known about how directionality is produced as new frames and ideas are successively added (Capano, 2019), and as policy is reinterpreted across successive policy texts (de Graaff et al., 2026; Kugelberg et al., 2021). It therefore remains unclear how inconsistencies between different levels of policy articulation might support a more reflexive directionality that accommodates diversity, rather than steering innovation along a pre-defined path (Bulah et al., 2024; Parks, 2022; Stirling, 2024).

We address this gap through a critical frame analysis (Verloo, 2005; Verloo and Lombardo, 2007) of Swedish research and innovation policy on agri-food, treating policy frames as an empirical entry point into directionality. Sweden is well suited to this inquiry. Its nationally coordinated, multi-level policy system makes directionality traceable across governance levels, and the 2022 change of government in Sweden represents a period in which the normative direction of policy shifted. Two questions guide the analysis: (1) How are problems and solutions framed in Swedish research and innovation policy on agri-food, and what normative commitments do these frames embed? (2) What do these framings imply for policy directionality?

We analyse frames at three levels of policy articulation: national strategies, programmatic research agendas and funding calls. Drawing on critical agri-food scholarship and on the contrasting paradigms of sustainable intensification and agroecology (Constance, 2018; Fischer et al., 2025), we argue that directionality is not set within any single text but emerges from the layering of frames as they are reinterpreted across strategic, programmatic and call-level texts.

The paper makes two contributions. First, it develops a relational account of directionality, in which the directionality of policy is produced across levels of articulation rather than fixed in any single text, so that diversity at one level of policy articulation can partially compensate for closure at another. Second, it shows how critical frame analysis, supported by critical agri-food scholarship, can surface the choices and exclusions through which research and innovation policy legitimises particular agri-food transition pathways. The remainder of the article is structured as follows. Section 2 situates the work at the intersection of directionality and critical agri-food debates. Section 3 sets out the analytical framework and methodology. Section 4 presents the empirical analysis. Section 5 discusses the implications. Section 6 concludes.

2. Theoretical background

2.1. Balancing directionality and diversity through policy layering

Innovation, and innovation policy with it, is shaped by persistent and path-dependent paradigms and trajectories (Dosi, 1982; Nelson and Winter, 1985). Schot and Steinmueller (2018) distinguish three frames of innovation policy, oriented respectively towards economic growth, national competitiveness and transformative change. Because the third frame ascribes an active role to governments in addressing societal challenges (Andersson et al., 2026), recent scholarship has increasingly turned to questions of directionality. In a narrow sense, directionality refers to the prioritisation of innovation activities in relation to grand societal challenges (Bergek et al., 2023; Bulah et al., 2024; Parks, 2022). We adopt a broader view in which directionality concerns the normative direction of transformative change and which emphasises the evolutionary character of transition pathways (de Graaff et al., 2025; Mueller et al., 2026; Stirling, 2024). On this view, every policy frame, i.e., economic growth, national competitiveness, and transformative change (cf. Schot and Steinmueller, 2018), entails directionality of some kind, and directionality is not confined to the transformative change frame alone. Recent work further problematises the assumption that directionality can be “provided” by policy, arguing instead that it “unfolds through a more complex process of contextual emergence and purposive transformative change” (de Graaff et al., 2026, p. 11).

A central issue in this debate is the diversity (Bulah et al., 2024) or plurality (Stirling, 2024) of pathways under consideration. Diversity and directionality can reinforce or undermine one another (Bulah et al., 2024). Directionality reflects a prioritised transition pathway, aligned with specific societal goals (Fuchs and Ziegler, 2025; Schot and Steinmueller, 2018; Stirling, 2024). Yet, given the contested, complex and uncertain nature of transition problems (Wanzenböck et al., 2020), there are deep normative disagreements about what to prioritise and how. As a result, assumptions of interest alignment risk reinforcing dominant trajectories and marginalising alternative solutions (Andersson et al., 2026; Parks, 2022). Limited diversity tends to narrow exploration to incremental changes aligned with the interests of powerful actors (Andersson and Hellsmark, 2024; Bulah et al., 2024). At the same time, greater diversity can dilute strategic guidance and leave only “broad, non-binding visions” (Priebe and Herberg, 2024, p. 9), with consequences for goal achievement and coordination (Bulah et al., 2024). The challenge is to balance the requirements of directionality and diversity (Andersson and Hellsmark, 2024), but how this can be achieved through policy remains unclear.

One way of approaching this question is to examine how policy texts develop through layering. Layering refers to gradual institutional change through the addition of new elements such as new policy instruments, new actors and decision arenas, or new ideas that can alter how policy problems and solutions are framed (Capano, 2019; Daugbjerg and Swinbank, 2016). Earlier work has

discussed layering over time, from pre-existing to new policies (Howlett and Rayner, 2007; Schot and Steinmueller, 2018), and across levels, from national to regional (Parks, 2022), or from strategic to operational (Wiarda et al., 2024). Higher-level or pre-existing policies influence and constrain those that follow, but the process of translation between them is not standardised, opening space for both adjustment and inconsistency (Capano, 2019; Howlett and Rayner, 2007). Some scholarship associates layering with goal incoherence (Kivimaa and Kern, 2016; Rohrer et al., 2023). Others see it as a means of incorporating multiple interests, perspectives and framings. Parks (2022), for example, found that layering allowed actors who would otherwise lack capacity to influence the policy process to do so. We adopt this analytically narrower sense of layering, that is, the addition and adjustment of frames and ideas as policy is reinterpreted at successive levels of articulation (cf. Rohrer et al., 2023), rather than the historical accumulation of instruments associated with institutional change. In agri-food, where transformation is contested and uncertain, how diversity and directionality are balanced is a normative and political question, since different framings imply different trade-offs, beneficiaries and futures (Constance, 2018).

2.2. Critical agri-food perspectives on directionality: Paradigms and hybrid framings

Critical agri-food scholarship makes visible the political-ideological assumptions through which agri-food transitions are problematised, governed and contested (Constance, 2018). Transitions are shaped by actors advancing competing visions and discourses (Constance, 2018; de Graaff et al., 2026; Fischer et al., 2025; Goodman, 2024). Yet prevailing systems benefit from productivist policy legacies, organised lobbying and the capacity of incumbents to steer research, investment and marketing in ways that entrench dominant trajectories (Bronson, 2022; Guthman, 2024). Innovation policy must therefore engage with power and contestation, including the appropriation of sustainability narratives in the service of narrow corporate interests (Eliasson et al., 2022; Weis, 2015). To articulate these contested assumptions, we use two paradigms, sustainable intensification and agroecology, as directionality heuristics (Mueller et al., 2026) for reading the political-ideological commitments embedded in policy framings.

Sustainable intensification is the dominant paradigm in agricultural policy and innovation agendas (Candel et al., 2025). Within this paradigm, environmental problems and the harms of conventional agricultural practices are framed as the result of inefficiencies that can be corrected through better technologies and management, and not as requiring more fundamental structural change (Constance and Moseley, 2018). The core problem diagnosis is insufficient productivity to meet current and future global food security needs (Constance, 2018), with transformation driven by consumer demand and markets. Regulation is positioned as an obstacle to competitiveness in global markets, and limited R&D investment and skills gaps are portrayed as constraints on innovation, growth and exports. Solutions focus on resource-use efficiency through technological and managerial innovations (Bronson, 2022). Precision agriculture is emblematic, promising environmental gains through optimisation while leaving the productivist model intact (Bronson, 2022; Fischer et al., 2025). Solutions also centre on increasing yields within existing, large-scale, conventional production systems (Constance, 2018) and on greater integration into global markets (McMichael, 2000), in line with commodity sector logics that treat efficiency and output as core indicators of “good” farming (Bronson, 2022). The emphasis on techno-scientific solutions narrows the range of actors and pathways considered (Eliasson et al., 2022; Psarikidou, 2023), giving less weight to relational perspectives that prioritise ecological complexity and territorial embeddedness.

Agroecology departs from this position. It treats the dominance of industrial agriculture and its inequitable power relations as inherent to contemporary environmental and socio-economic crises (Fischer et al., 2025), and understands powerful actors within the agri-food system as systematically undermining food sovereignty by marginalising farmers and displacing locally embedded and traditional forms of knowledge (Wezel et al., 2020). Rather than the incremental efficiency gains emphasised by sustainable intensification, agroecology advocates a paradigmatic shift (Fischer et al., 2025). As Constance (2018, p. 5) puts it, “where the current system promises to sustainably intensify, the agroecologists prefer to intensify sustainability”. Agroecology promotes diversified farming systems and knowledge pluralism, valuing insights beyond formal scientific traditions and supporting technologies suited to decentralised, culturally rooted and context-specific modes of production (Constance, 2018; Fischer et al., 2025). It favours low external-input systems with high-yields per unit area that maximise diversity to mimic ecological processes and build fertility and resilience (Constance, 2018), and it extends beyond production to support food sovereignty, social justice, fair trade and rural community resilience (McMichael, 2000; Wezel et al., 2020). Questions of power, rights and distribution are therefore central to the paradigm.

Many policy frames draw selectively on both paradigms and resist easy classification. We treat these hybrid frames as a third analytical category: frames whose problem or solution content is paradigmatically undetermined and whose directional implications depend on operationalisation. Hybrid frames can function as vague settlements that hold divergent commitments loosely together, easing the political friction needed for broad acceptance but at the cost of directional clarity. They can also be read as points in the problem-solution space where problem definitions and solution couplings are not yet settled (Wanzenböck et al., 2020). Whether such frames open space for more transformative interpretations or absorb sustainability vocabulary into incumbent trajectories therefore depends on how they are put into practice.

3. Methods

3.1. Study context: Swedish research and innovation policy on agri-food

Sweden is an informative setting for examining how directionality is articulated in research and innovation policy on agri-food. Swedish agriculture was deregulated in 1990, reorienting the sector towards market integration and competition. Sweden's

accession to the European Union in 1995 brought it within the Common Agricultural Policy. By the time the 2017 National Food Strategy set out an explicit national agenda for agri-food research and innovation, competitiveness, market orientation and integration with international supply chains were already established features of the policy landscape. The 2017 Strategy is nonetheless the first comprehensive national food-system strategy with linked action plans, and the moment at which research and innovation priorities for agri-food were tied to a national strategic research agenda.

Several agencies implement agri-food policy in Sweden. The Swedish Board of Agriculture (Jordbruksverket) and the Swedish Food Agency (Livsmedelsverket) are the principal authorities translating the National Food Strategy into operational programmes (see Eckerberg et al., 2023, on the implementation of EIP-AGRI in Sweden). Research and innovation funding is provided by several public funders, notably FORMAS, the Swedish Research Council and VINNOVA, alongside sectoral and private funders.

Our analysis focuses on FORMAS, the Swedish government research council for sustainable development, which funds research on the environment, agricultural sciences and spatial planning. Over the period studied, FORMAS was a principal public funder of agri-food research in Sweden, and its strategic research agenda is the most explicit articulation of national research priorities for the agri-food system. The government shapes FORMAS' work through the National Food Strategy, which FORMAS translates into research priorities in its strategic research agenda. This makes FORMAS a useful site for examining how strategic priorities are taken up in programmatic policy texts.

Within this remit, FORMAS coordinates the National Research Programme for Food, a ten-year programme established in 2017 under the National Food Strategy: *A National Food Strategy for Sweden – More Jobs and Sustainable Growth Throughout the Country*. Its strategic research agenda *Towards a Sustainable and Competitive Food System* (2020) was developed in consultation with the National Committee for Food Research, which brings together the principal Swedish research funders for the field: Forte, Mistra, the Swedish Farmers' Foundation for Agricultural Research, the Swedish Foundation for Strategic Research, the Swedish Research Council, VINNOVA and FORMAS. The agenda also drew on written input from higher education and research institutes, industry actors and government agencies. Subsequent calls are formulated by FORMAS staff within the priorities of this agenda, and from a subsequent revision of it consolidating new themes and perspectives (2024). FORMAS' policy texts are therefore shaped by government priorities, without being a direct expression of them. Funders, agencies and stakeholders reinterpret strategic objectives as they translate them

Table 1
Summary of analysed policies.

Policy document	Issuing organisation	Year	Description
A National Food Strategy for Sweden – More Jobs and Sustainable Growth Throughout the Country	Government of Sweden	2017	Sweden's first national food system strategy
Food Strategy – Action Plan, Part 1	Government of Sweden	2017	Action plan 2017–2020 [AP-Pt1]
The National Research Programme for Food – First Call: Syntheses within the Food Sector	FORMAS	2017	Funding call [A]
The National Research Programme for Food: Research Projects and Proof of Concept	FORMAS	2018	Funding call [B] (composed of two sub-calls: B1 & B2)
The National Research Programme for Food – Second Call: Part 1, Research Projects	FORMAS	2018	Funding call [B1]
The National Research Programme for Food – Second Call: Part 2, Proof of Concept	FORMAS	2018	Funding call [B2]
Increased Mobility Between Academia and Practice	FORMAS	2019	Funding call [C]
Digital transformation of the food system	FORMAS	2019	Funding call [D]
Transition Opportunities and Societal Impacts of COVID-19	FORMAS	2020	Funding call [E]
Centre Initiatives for Sustainability and Competitiveness in the Food System	FORMAS	2020	Funding call [F]
Food Strategy – Action Plan, Part 2	Government of Sweden	2020	Action plan 2020 - 2025 [AP-Pt2]
Towards a sustainable and competitive food system – a strategic research agenda	FORMAS	2020	FORMAS strategic research agenda
Applied Research for Improved Animal Protection and Enhanced Animal Welfare	FORMAS	2021	Funding call [G]
FORTE and FORMAS – Green Transition and Working Life 2021	FORTE & FORMAS	2021	Funding call [H]
Rural Areas and Regional Development	FORMAS	2021	Funding call [I]
Knowledge for a Sustainable and Competitive Food System	FORMAS	2021	Funding call [J]
Sustainable Food Production	FORMAS	2021	Funding call [K]
Targeted Call for Research Funding for Plant Protection Projects Benefiting Swedish Horticultural Production	Lantbruksforskning & FORMAS	2021	Funding call [L]
From Research to Application for a Sustainable Society	FORMAS	2021	Funding call [M]
Taste and Sensory Science – From Field to Table	FORMAS	2022	Funding call [N]
Sustainable Food Supply in Uncertain Times	FORMAS	2022	Funding call [O]
Carbon Sequestration as a Climate Measure in Agricultural Land	FORMAS	2022	Funding call [P]
From Research to Application for a Sustainable Society 2023	FORMAS	2023	Funding call [Q]
In the Stomach and not the Bin – Measures to Reduce Food Waste	FORMAS	2023	Funding call [R]
Research-Driven Solutions for a Sustainable Transition 2024	FORMAS	2024	Funding call [S]
Centre Initiatives for Increased Preparedness and Competitiveness in the Food System	FORMAS	2024	Funding call [T]
Compilation of New Themes and Perspectives – Revision of the Research Agenda for the National Research Programme for Food 2024	FORMAS	2024	FORMAS revised strategic research agenda
Impact! From Research to Benefit	FORMAS	2025	Funding call [U]
The Food Strategy 2.0	Government of Sweden	2025	Sweden's second (and current) national food system strategy

into research priorities.

Government priorities are set through the Swedish remiss procedure, a formal public consultation process in which draft strategies are circulated for written response by a wide range of stakeholders. The 2017 Strategy was produced under a Social Democrat–Green minority government and drew on a relatively broad remiss process, with input from environmental, rural development and food-system actors alongside industry representatives. *Food Strategy 2.0* (published in March 2025), by contrast, was developed under a centre-right coalition government dependent on parliamentary support from the Sweden Democrats under the 2022 Tidö Agreement. Its drafting was more strongly shaped by incumbent industry interests, particularly through the food-industry interest organisation (Livsmedelsföretagen) and the national food policy council (Livsmedelspolitiska rådet), which primarily convenes senior executives from industrial food and beverage companies including Coca Cola, Cloetta (international confectionery manufacturer), and Spendrups (a large Swedish beverage company). This council was formalised as a key consultation mechanism for strategy development. The two strategies thus span both a shift in the political balance of power and a narrowing of the participatory base of strategic policy formulation, with corporate manufacturing interests gaining more structured influence relative to other food-system stakeholders.

We analyse the policy texts that articulate research and innovation priorities for agri-food in Sweden between 2017 and 2025 (Table 1), comprising two national strategies (2017; 2025), two action plans (2017; 2020), two FORMAS strategic research agendas (2020; 2024) and 21 research and innovation funding calls. Together, these texts constitute principal articulations through which directionality in publicly funded agri-food research and innovation is shaped during the period. The strategies and action plans set out government priorities; the FORMAS strategic research agendas translate these into research priorities; and the calls operationalise those priorities into funded research themes. We focus on how directionality is articulated in these texts, that is, how policy “sets the course”, and therefore do not examine funded projects or their downstream effects (de Graaff et al., 2025).

3.2. A critical frame analysis of innovation policy directionality

Critical frame analysis is an analytical approach for examining contested policy discourse (Verloo and Lombardo, 2007). It draws on policy theory, social movement theory and gender theory, and starts from the premise that policy problems are inherently open to multiple interpretations (Verloo, 2005). It uncovers these interpretations by examining how socio-political actors frame problems and propose solutions (Verloo and Lombardo, 2007). Verloo (2005, p. 20) defines a policy frame as “an organising principle that transforms fragmentary or incidental information into a structured and meaningful policy problem, in which a solution is implicitly or explicitly enclosed”. Framing is a process of social legitimation through which power is exercised and meanings stabilised. This makes critical frame analysis a useful lens for analysing how agri-food system transformation is constituted as a policy issue, including what is rendered visible, prioritised or marginalised. We operationalise the approach through a set of sensitising questions (for a similar approach, see Bancerz, 2018), contextualised by drawing on critical agri-food literature on sustainable intensification and agroecology (Appendix A).

The analysis proceeded in four steps. First, each policy document was read in full, and sections relevant to the frame analysis were identified, highlighted and annotated. Second, text segments were coded and organised in a table according to whether they related to a policy problem or a policy solution, and whether they constructed an issue or attributed responsibility to particular actors. Third, the initial codes were reviewed and condensed into analytically distinct codes, each given a more abstract label intended to capture its underlying meaning. For example, the statement “to reduce emissions from the food system there is a need for more sustainable meat consumption, with less but Swedish meat, and more vegetables” was coded as “supporting domestic producers”. Higher-order codes were grouped into aggregate-level frames. In this case, the code was placed in the “Consumption change and demand steering frame”, alongside related codes such as “enhancing consumer information for sustainable choices”. Frame development was conducted sequentially across documents, with new frames introduced only when existing frames could not capture emergent meanings (Tables 2, 3, and 4). This approach enabled us to observe the layering of frames by tracing how they travel and shift across documents. Fourth, to support comparison across paradigms, each frame was positioned on a three-point scale from sustainable intensification to agroecology, based on a joint assessment by the research team grounded in the content of the frames and the paradigm clarifications (Table 5). During coding, we encountered frames whose content was compatible with either paradigm depending on operationalisation. The “systemic transformation frame”, for instance, frames the sustainability of the agri-food system as an urgent problem while remaining agnostic about production logics, power relations or ontological and epistemic orientations. We coded these as hybrid frames and treated them as an analytical category of their own.

4. A critical frame analysis of Swedish research and innovation policy on agri-food

Tables 2–4 present the frames identified across the analysed texts, annotated to indicate their paradigm orientation: SI (sustainable intensification), HY (hybrid) and AE (agroecology). Table 5 summarises their distribution across the three levels of policy articulation.

4.1. Strategic level: Export-led competitiveness framings

The 2017 strategy and its two action plans construct the global agri-food system as a significant contributor to environmental and climate degradation (Table 2). Agriculture is framed as a growing source of greenhouse gas emissions, with animal production highlighted for poor resource efficiency. These concerns are reconciled with expanded production by casting climate change as a comparative advantage for Swedish exports. Swedish food production is problematised as having low growth and weak innovation, especially in animal agriculture, where lost market share is attributed to insufficient productivity in a competitive global market. The

Table 2
Strategic frames*.

Strategic policy	Problems constructed as... (diagnosis)	Actors held responsible for problems... (attribution)	Solutions centred on... (prognosis)	Actors positioned as solution providers... (attribution)
A National Food Strategy for Sweden – More Jobs and Sustainable Growth Throughout the Country (2017), AP-Pt1, and AP-Pt2	Agri-food impacting environment frame - HY • Agriculture a growing source of global emissions (11,12,87) • All food production impacts environment (11,12,17,52,58,87) Climate change a comparative advantage frame - SI • Changing climate a national export opportunity (15) Weak innovation and growth frame - SI • Loss of market share in Swedish food production (16,17,18,22,27,38,69) • Constraints on production inputs (46) Regulatory constraints frame - SI • Regulatory burden hindering growth (28,30,33) Food security frame - SI • Resilience requires increased food production (11,17) Unsustainable consumption frame - SI • Poor diets impacting human health (14) • Excessive food waste (37) • Lack of consumer information (64) Intergenerational responsibility frame - HY • Fixing environmental problems for next generation (13,18,87, AP-Pt1:3)		Competitiveness and growth frame - SI • Strengthening agri-food supply chain (6,16,17,20,21,24,52,55,68,70,89, AP-Pt1:3,7) • Supporting structural transformation for global competitiveness (30,31,40) • Digitalising agri-food for improved productivity (69, AP-Pt2:6) • Export certification support (AP-Pt2:6) Comparatively climate-efficient national production frame - SI • Increasing domestic production climate-beneficial (11,12,13,17,20,21,37,38,58) Consumption change and demand steering frame - SI • Supporting domestic producers (12,14) • Enhancing consumer information for sustainable choices (6,14,21, AP-Pt1:3) • Voluntary product information from food supply chain actors (64) • Increased ecological production and consumption: (AP-Pt1:3,5, AP-Pt2:4) Governance reform frame - HY • Market-oriented agricultural policy (20) • Reducing administrative burden (22,27,33, AP-Pt2:5) whilst • Increasing animal protection in EU (AP-Pt1:6) Public-sector steering frame - HY • Strategic use of public procurement for sustainability (66) Resilience and food security frame - SI • Domestic production as resilience and security (14)	Consumer responsibility frame - SI • Consumers as informed decision-makers (12,17,23,64, AP-Pt1:5) Government as co-ordinator frame - HY • Government as co-ordinator for public health (14, AP-Pt1:5) • Government monitoring and accountable for strategy (25) • Government agencies as competitiveness and export enablers (29,72,82) Multi-actor governance frame - HY • Multi-actor engagement as condition for delivery (18, 26, AP-Pt1:5) Research for impact frame - SI • Academia as impact-oriented solution provider (76,79,80) Farmers as decision makers frame - SI • Farmers' on-farm decisions as drivers of sustainability (88)
The Food Strategy 2.0 (2025)	Environment impacting agri-food frame - SI • Climate change affecting food production (7,41) • Vulnerability of blue food systems (9) Global disruptions frame - HY • External shocks disrupting the agri-food system (5) Climate change a comparative advantage frame - SI • Changing climate a national export opportunity (8)	Nature impacting production frame - SI • Wildlife damage to agriculture (7,13) • Climate as cause of production problems (8) Competing land-use frame - SI • Renewable energy	Competitiveness and growth frame - SI • Strengthening agri-food supply chain (2,5,10,12,36,39) • Export-led profitability and self-sufficiency (2,3,4,6,14,35,45,46) • Innovation for productivity and responsiveness (6,9,30,31) • Precision agriculture for efficiency gains (9, 10,40) • Wildlife population control to increase production (7–8) Governance reform frame - HY • Improving business climate (2,13,14,23,24,45) Comparatively climate-efficient national production frame - SI	Consumer responsibility frame - SI • Consumers as demand drivers (3) Government as co-ordinator frame - HY • Government as monitoring and accountability actor (2,57) • Government as protector of agricultural land (38) Government as partner frame - SI • Close state-industry collaboration to sell

(continued on next page)

Table 2 (continued)

Strategic policy	Problems constructed as... (diagnosis)	Actors held responsible for problems... (attribution)	Solutions centred on... (prognosis)	Actors positioned as solution providers... (attribution)
	Regulatory constraints frame - SI - Regulatory burdens hindering growth (13,14,16,19,28) Weak innovation and growth frame - SI - Historically low innovation levels in agri-food (30) - Lack of advanced competencies among workers (19,30,31,34) Increasing global population frame - SI - Rising global food demand (27)	competing with agriculture (38)	Increasing domestic food production for climate benefits (18,27,46)	production and export strategy (3,4,11,14,45,47) - Government as remover of growth barriers (14,15,18,20,21) - Political leadership in export promotion (49) Research for impact frame - SI - Researchers as providers of applied and impactful knowledge (14)

Note. * Page numbers are shown in (brackets).

need for consumption change is acknowledged but positioned as an issue of consumer information and national substitution (e.g., reduced meat consumption replaced by Swedish production). The diagnosis aligns with a market-steering logic in which sustainability follows from better choices within existing market structures, rather than from contesting power relations and structural conditions.

These problem framings converge on solutions centred on competitiveness, productivity and growth, including continued structural transformation to improve global competitiveness and to “stimulate dynamism in the economy”. Innovation and digitalisation are positioned as key enablers. Product information is treated as a driver of more sustainable demand, although such information from supply-side actors is voluntary. The strategy also calls for ecological production and consumption to meet environmental goals (a goal removed in the 2025 revision), while remaining embedded within a market-based logic.

Food Strategy 2.0 (2025) retains many of these framings while reinforcing a productivity and export focus, externalising disruption and attributing constraints to non-human actors. The agri-food system is presented as itself subject to external environmental forces affecting production, rather than as a driver of environmental and climate change. Disruptions such as COVID-19 and wars are presented as threats to output, emphasising continuity and stability over structural change. A growing global population is invoked to justify increased production and export, without attention to distribution. Constraints on innovation and growth are attributed to limited digital, AI and statistical competence. In contrast to the first strategy, Food Strategy 2.0 explicitly attributes responsibility for production challenges to non-human actors. Wildlife, specifically wild boar, deer, cranes, seals and wolves, are named as problem owners, alongside competing land uses from renewable energy installations. These framings emphasise actors that undermine current efficiency logics, while omitting systemic drivers such as fossil-fuel dependence or ecological simplification.

The dominant solutions remain export-oriented innovation and precision agriculture, coupled with governance reforms to improve the business climate, such as reduced taxes and the opening of new export markets. Wildlife population control is advanced as a solution to increase production. The intensification of these framings between 2017 and 2025 is consistent with the change in the political composition of government and the narrower set of interests involved in strategy development described in [Section 3.1](#).

Solution ownership narrows between the two strategies. The 2017 strategy emphasises multi-actor delivery, including civil society and farm-level decision making, whereas the 2025 strategy strengthens state-industry partnership and political leadership in export promotion (e.g., the Minister for Rural Affairs committing to at least two export promotion trips per year). The narrowing is consistent with the increased growth and competitiveness framing of the 2025 strategy.

Overall, the strategies shift from acknowledging the agri-food system’s environmental harms (2017) to externalising environmental change as a force acting on the agri-food system (2025). In both, sustainability is reconciled with continued growth through efficiency, innovation, consumer information and export expansion rather than through structural change. Food Strategy 2.0 goes further by naming wildlife and competing land uses as problem owners and narrowing solution ownership to state-industry leadership. This results in an emphasis on productivity and competitiveness while sidelining more systemic perspectives as well as justice- and distribution-oriented framings.

4.2. Programmatic level: Technoscientific modernisation framings

The FORMAS Strategic Research Agenda (2020) differs from the national strategies by framing transformation as urgent and as a societal responsibility anchored in Agenda 2030. This urgency introduces a temporal imperative absent at the strategic level, while the systemic transformation framing emphasises complexity and interconnectedness. The agenda also acknowledges tensions between

Table 3
Programmatic frames*.

Programmatic policy	Problems constructed as... (diagnosis)	Actors held responsible for problems... (attribution)	Solutions centred on... (prognosis)	Actors positioned as solution providers... (attribution)
FORMAS Strategic Research Agenda (2020)	Urgency frame - HY - Urgency of agri-food system transformation for sustainability (6,11,13,17,37,41) Systemic transformation frame - HY - Responsibility to deliver on Agenda 2030 (6,11,25, 31) - Systemic interconnectedness of agri-food system (12,13,17,25) - Conflicting transformation objectives between growth and sustainability (28) Unsustainable consumption frame - SI - Lack of consumer information impeding sustainability transition (18,29,34,35) Weak innovation and growth frame - SI - Low innovation intensity in Swedish agri-food system (19,38) - Lack of education and sector attractiveness (29) - Weak productivity and growth (19) - Export-import imbalance (20) Regulatory constraints frame - SI - Regulatory burdens hindering profitability (20)		Competitiveness and growth frame - SI - Transforming agri-food system for sustainable competitiveness (6,7,11,12,15,20,28,29,30,31,34,37) - Sustainable intensifying through digitalisation and technological development (30,33,35) - Innovating for impact (12,14,20,32,33) - Upskilling workforce for productivity gains (19,29) Systemic transformation frame - HY - Adopting a systems perspective under Agenda 2030 (6,28,32,38,40) Holistic targets frame - HY - Guiding transformation through broader programme targets (6,15,32) Consumption change and demand steering frame - SI - Consumer information as steering mechanism (29,34,35)	Multi-actor governance frame - HY - Broad coalition of actors as programme drivers (4,37,40) - Industry engagement as priority (14) Civil society frame - HY - Research supporting societal change by civil society (30) National leadership frame - HY - Sweden as sustainability leader (35)
FORMAS revision of Strategic Research Agenda (2024)	Systemic transformation frame - HY - Systemic interconnectedness of agri-food system (3,6) - Development of local supply chains to complement international, global ones (12) Global disruptions frame - HY - External shocks disrupting agri-food system (3) Agri-food impacting environment frame - HY - Producing more food with less impact (7)		Growth and sustainability frame - HY - Technological development and precision agriculture for growth and efficiency (6,8) - Upskilling workforce to improve technological implementation (6) - Enhancing circularity and resource effectiveness (7,8) - New business models for sustainable growth (9) Agroecological and systemic knowledge frame - AE - Research on alternative production logics (8) - Research exploring trade-offs between short-term profitability and long-term investments (9) - Sustainable diets within planetary limits (10)	

Note. *Page numbers are shown in (brackets).

objectives, particularly between productivity and growth on the one hand and environmental sustainability on the other. “Transformation” remains underspecified, however, and problem construction often aligns with a knowledge-and-innovation deficit diagnosis, with low innovation intensity, weak productivity and growth, skills gaps and regulatory burdens. Compared with the 2017 strategy, where sustainability is frequently framed as an outcome of increased productivity and comparatively efficient national production, the agenda more clearly positions sustainability as a parallel goal alongside productivity and innovation.

These diagnoses converge on solutions that emphasise competitiveness and growth through an explicitly articulated “sustainable intensification”, with digitalisation and technological development prioritised and a focus on translating research into practical

impact. An upskilled workforce is positioned as enabling productivity growth and improved adoption of scientific findings, legitimising a top-down view of knowledge production and dissemination. Although the 2020 agenda retains systems-oriented targets, solutions are operationalised through improved innovation systems and information rather than fundamental structural change. Solution ownership is framed in terms of multi-actor governance that includes civil society and social movements, but primarily as facilitators of change rather than as actors contesting priorities and power relations.

The FORMAS revision of the Strategic Research Agenda (2024) retains systemic transformation but omits the urgency emphasis. It strengthens the articulation of interconnectedness through supply chains and links local development to international and global perspectives. It also introduces a clearer external disruption framing (e.g., climate change, pandemics, war) with an associated emphasis on resilience. Environmental concern is coupled with a “produce more with less impact” logic, allowing environmental objectives to be reconciled with expanded or sustained production without identifying the actors who benefit from, or reproduce, the conditions that make the current system unsustainable.

These framings continue to privilege technoscientific modernisation (e.g., precision agriculture, food-tech and biotech) as a route to producing more food efficiently. Competence development is framed as necessary for implementing these technologies. The revision extends the range of possible solutions by considering circularity and resource effectiveness and by proposing business models that create value while sustaining natural, social and economic capital beyond firm boundaries. This is a subtle shift from innovation defined as productivity gains to innovation as organisational and economic reconfiguration, though still anchored in growth. At the same time, the revision expands relevant knowledge through an agroecological and systemic framing, opening space for alternative production logics. It proposes exploring trade-offs between short-term profitability and long-term sustainability investments, and situates sustainable diets within planetary boundaries, linking dietary change to health and environmental objectives while raising implications for company profitability.

The programmatic level therefore shows greater framing diversity and more explicitly transformative vocabulary than the strategic level but continues to privilege technoscientific modernisation as the primary route to change. The 2024 revision strengthens resilience framings, yet neither agenda explicitly names problem owners or the interests reinforcing the current system.

4.3. Call level: Emerging justice and structural vulnerability framings

Across most calls, the problem diagnosis centres on knowledge deficits, limited innovation and growth, and insufficient technological adoption, alongside the claim that current research has insufficient impact (Table 4). Sustainability challenges are frequently linked to strengthening resilience to disruptions in interconnected systems and supply chains. A subset of calls specifies sustainability more materially by emphasising fossil-free production (O) and reduced dependence on fossil-based inputs (K). One call articulates the environmental challenge as requiring net-positive food production through carbon sequestration (P). Going further than the strategic and programmatic levels, several calls frame Sweden as a sustainability leader while acknowledging that the country falls short of climate and sustainability objectives (F, G, K).

A subset of calls complicates the techno-optimism prevalent in call problem framings by introducing vulnerabilities and justice-oriented concerns. Digitalisation is framed not only as an opportunity but also as a socio-ethical vulnerability, highlighting threats to payment systems or data infrastructure and the resulting fragilities (D). Another call problematises food insecurity, emphasising that global hunger persists despite sufficient aggregate production and thereby redirects attention from “producing more” logics towards questions of access and allocation (O). These problem frames remain minority positions, but they create openings for more critical and structural understandings of transformation.

The dominant solution logic remains needs-driven knowledge development with rapid translation into practice. Research is valued for generating impact, most often through collaboration with industry and public-sector actors. Across most calls, sustainability is articulated as compatible with efficiency gains, digital technologies and innovation in products and processes, often aligned with circular and bio-based economy narratives. Demand-side change via improved information and informed choice is positioned as the pathway to transformation, rather than interventionist or structural approaches. Some calls broaden solutions by emphasising circularity (B, B1, K) and stronger alignment with broader sustainability targets such as Agenda 2030 (B2, C, D, H, O), but these remain embedded within a growth-oriented logic prioritising innovation and commercialisation. Only a small subset of calls open diversification-oriented pathways, with solutions centred on integrated production combining plants and animals (O), input free or alternative input methods (K), and new knowledge to support diversified and sustainable farm businesses (O).

Across all calls, attribution of responsibility within problem frames is absent. Even where complexity, goal conflicts and structural vulnerabilities are acknowledged, the calls stop short of identifying problem owners. By contrast, solution ownership is clear. Researchers are positioned as central knowledge providers, collaborating with industry, the public sector and other societal stakeholders.

Overall, the call level defines “transformation” in more specific terms than the strategic and programmatic levels by commenting on fossil-free production and net-positive climate benefits through carbon sequestration. Solutions nonetheless prioritise efficiency gains, digitalisation and impactful research, although farm diversification and integrated production are presented as an alternative pathway. A small set of calls introduces more critical problem framings around digital vulnerability, input dependence and food access, but these remain the exception.

Table 4
Call frames*.

Problems constructed as... (diagnosis)	Actors held responsible for problems... (attribution)	Solutions centred on... (prognosis)	Actors positioned as solution providers... (attribution)
Lack of knowledge frame - HY [A, C:3, L] - Knowledge gaps as barriers to transformation - Research having limited impact Systemic transformation frame - HY [E:5, F:5, G:7, H:1,2, J:5, K:7–9,21, M:4,5, O, Q, S, T, U] - Systemic interconnectedness of agri-food system - Socio-technical-ecological complexity - Research must be co-produced in practice - Conflicting transformation objectives and synergies Urgency frame - HY [F:5, H, J:5] - Urgency of agri-food system transformation - Radical GHG emission reductions needed Increasing global population frame - SI [B1:2, D:4] - Rising global food demand Changing demographics frame - SI [B1:2, D:4, N] - Evolving demands on food system Weak innovation and growth frame - SI [D:5, I:4, J:6, L, N] - Lack of technological implementation - Shrinking rural communities - Low innovation intensity - Input access as competitive constraint - Imbalanced import-export Digital justice frame - AE [D:5] - Socio-ethical digital justice issues Global disruptions frame - HY [E:4, O, T] - External shocks disrupting the agri-food system - Digital vulnerabilities Nuanced comparative advantage frame - HY [F:6,7, G:7, K:7–8] - Sweden forerunner with way to go to meet Agenda 2030 Unsustainable consumption frame - SI [J:7, N, R] - Lack of consumer information hindering transformation - Poor habits impacting human health - Global food waste inefficiencies - National food waste inefficiencies Environment impacting agri-food frame - SI [K:7, O] - Climate change affecting food production		Knowledge development frame - HY [A, E:5, H:2,5, P] - Synthesising knowledge and gaps - New knowledge for resilience in preparation for crises - Research on transition impact on work - New knowledge for sustainability via carbon sequestration - Knowledge development for international competitiveness Growth and sustainability frame - HY [B, B1:2,3, B2:4,12, C:3, D:15, O, R] - Enhancing circularity to produce more food more sustainably - Technological development of new, 'smart' food - Innovating for impact and commercialisation - Innovating for sustainability impact in line with Agenda 2030 and Paris Climate Agreement - Reducing input reliance to minimise price sensitivity to global fluctuations - Innovation for sustainability to ensure less food thrown Competitiveness and growth frame – SI [D:4, F:6–8, J:5,7, K:7–8, L, N] - Digitalisation for efficiency and control via precision agriculture - Innovation for profitability and competitiveness - Competitive blue food - Upskilling workforce - Food development for sensory experience and market acceptance - Develop sensory experience knowledge - New food development for sustainability Consumption change and demand steering frame - SI [D:5, J:7] - Consumer information as steering mechanism to drive transformation Production diversification frame - AE [K:8,9, O] - Diversification of agricultural practices - Develop knowledge for farm diversification - Developing input free/alternative input systems Needs-driven knowledge development frame - SI [G:8, I:4,5, J:6, M:4–6, Q, R, S, T, U] - New needs-driven knowledge for sustainability and competitiveness - Solution scalability for impact - Novelty a pre-requisite for solutions - Knowledge development for food waste reduction	Research-led frame - HY [A, E:6, H:2] - Researchers as knowledge providers Research collaboration frame - HY [B, B1:2,3, B2:2, C:3, D:5, F:5–6, G:7, I:8, J:5,8, K:9, L, M:4, N, O, P, Q, R, S, T, U] - Collaborative research with business and other sectors - Double-directed research mobility - Research centres bringing together different actors

(continued on next page)

Table 4 (continued)

Problems constructed as... (diagnosis)	Actors held responsible for problems... (attribution)	Solutions centred on... (prognosis)	Actors positioned as solution providers... (attribution)
Agri-food impacting environment frame - HY [P] • Agriculture impacting environment • Food production should decrease carbon dioxide in atmosphere Food access frame - HY [O] • Inequitable distribution of food, not lack of production Input vulnerabilities frame - AE [O] • Agricultural input reliance a vulnerability		• Needs-driven research centres for solving practical challenges	

Note. *Page numbers are shown in (brackets). Where the online format of policy documents did not support page numbers, only the relevant policy document is indicated.

5. Discussion

5.1. Frame layering and directionality across levels

Through critical frame analysis (Bancerz, 2018; Verloo, 2005; Verloo and Lombardo, 2007), informed by critical agri-food scholarship, we identified the problem and solution frames constructed in Swedish research and innovation policy on agri-food (Tables 2–4) and assessed their alignment with sustainable intensification, agroecological or hybrid orientations (Table 5).

Read across the strategic, programmatic and call levels, the frames do not align in a single direction. At the strategic level, problem and solution frames cluster around sustainable intensification, and agroecological framings are absent. This closure can be understood as a lack of reflexivity in strategy formulation, in which the normative commitments of the strategy are taken for granted (de Graaff et al., 2026), with problem definitions and solution priorities presented as technical questions rather than political ones. It can also be understood as the deliberate prioritisation of a particular trajectory aligned with incumbent interests (Andersson and Hellsmark, 2024; Fuchs and Ziegler, 2025; Parks, 2022; Stirling, 2024). On this reading, the dominance of sustainable intensification represents a narrower, less uncertain pathway (Bulah et al., 2024) serving established producers, industrial firms and export-oriented policy logics.

The narrowed focus on sustainable intensification from the 2017 strategy to Food Strategy 2.0 suggests the deliberate prioritisation of this trajectory rather than an unreflective reproduction of assumptions, particularly given the change of government and the narrower group of actors consulted on the second strategy (Section 3.1). Across this shift, environmental degradation is externalised, productivity and export framings are intensified, and solution ownership is narrowed to state-industry partnership. Whether or not this narrowing is deliberate, the absence of plural framings at the strategic level is itself a directional choice that shapes what counts as a legitimate problem and a credible solution, constraining the space within which alternative pathways can be explored (Andersson and Hellsmark, 2024).

Read in the terms set out by Schot and Steinmueller (2018), the strategic level policy framings more closely resemble the first and second frames of innovation policy (R&D, and systems of innovation), than to the third, transformation-oriented frame that the scale of agri-food transformation requires. These earlier frames emphasise economic growth and competitiveness and locate problems in market failures, lack of innovation, insufficient R&D and weak coordination among actors (Mueller et al., 2026). Within the strategic level framings, the complex and uncertain character of agri-food problems and solutions is largely absent. Problems and solutions are reduced and reconstructed as tame, amenable to technocratic resolution through productivity gains and technological innovation (Wanzenböck et al., 2020). The result is a set of directionality heuristics that are poorly suited to the wickedness of agri-food system transformation (Mueller et al., 2026; Wanzenböck et al., 2020).

At the programmatic level, FORMAS interprets and respecifies strategic priorities through the strategic research agenda, producing a layering of frames across levels. The 2020 agenda holds the dominant orientation in place while introducing urgency and systemic transformation as additional framings. The 2024 revision goes further, retaining the technoscientific orientation but opening more explicit space for agroecological and systemic knowledge alongside it. Read through the framework of Wanzenböck et al. (2020), the programmatic level is where problem-solution couplings begin to diverge, and where the interpretive agency of funders, agencies and stakeholders is most visible (Capano, 2019; Mignon and Bastås, 2025).

At the call level, framing is more diverse. In contrast with the strategic and programmatic levels, where questions of distribution, dependency and pluralism were set aside, a minority of calls introduce these by framing food in terms of access rather than aggregate output, agricultural inputs in terms of vulnerability, production in terms of diversification rather than specialisation, and digitalisation in terms of justice. These framings remain minority positions but show that framing across layers can introduce adjustments and inconsistencies not present in the policies above.

Table 5
Policy frames and paradigm alignment.

<i>Problem Frame</i>	<i>Policy articulation level</i>			<i>Paradigm Alignment</i>		
	<i>Strat.</i>	<i>Prog.</i>	<i>Call</i>	<i>Sust. Int.</i>	<i>Hybrid</i>	<i>Agro.</i>
Climate change a comparative advantage frame	x					
Food security frame	x					
Intergenerational responsibility frame	x					
Regulatory constraints frame	x	x				
Environment impacting agri-food frame	x		x			
Increasing global population frame	x		x			
Unsustainable consumption frame	x	x	x			
Weak innovation and growth frame	x	x	x			
Global disruptions frame	x	x	x			
Agri-food impacting environment frame	x	x	x			
Urgent and systemic transformation frame		x				
Systemic transformation frame		x	x			
Urgency frame		x	x			
Changing demographics frame			x			
Lack of knowledge frame			x			
Nuanced comparative advantage frame			x			
Food access frame			x			
Digital justice frame			x			
Input vulnerabilities frame			x			
<i>Solution Frame</i>	<i>Policy articulation level</i>			<i>Paradigm Alignment</i>		
	<i>Strat.</i>	<i>Prog.</i>	<i>Call</i>	<i>Sust. Int.</i>	<i>Hybrid</i>	<i>Agro.</i>
Comparatively climate-efficient national production frame	x					
Resilience and food security frame	x					
Governance reform frame	x					
Public-sector steering frame	x					
Competitiveness and growth frame	x	x	x			
Consumption change and demand steering frame	x	x	x			
Systemic transformation frame		x				
Holistic targets frame		x				
Agroecological and systemic knowledge frame		x				
Growth and sustainability frame		x	x			
Needs-driven knowledge development frame			x			
Knowledge development frame			x			
Production diversification frame			x			

Across all three levels, however, the largest single category of frames is hybrid: paradigmatically undetermined, with directional implications that depend on operationalisation. Frames such as systemic transformation, urgency, and growth and sustainability appear most frequently at the programmatic and call levels. We treat hybridity as a category of its own, and not as evidence of incoherence or compromise and argue for its relevance to understanding how directionality emerges across levels. Such framings can support plurality by “opening up” the space of credible transition pathways and holding competing commitments together (Stirling, 2008). The same openness, however, can also insulate dominant paradigms by making them less contestable. Because their framing is broad, they can be operationalised in support of fundamental structural change, or in pursuit of the incremental productivity and efficiency improvements associated with sustainable intensification. The 2024 FORMAS agenda revision illustrates both possibilities, opening space for agroecological and systemic knowledge while continuing to anchor solutions in technoscientific modernisation and growth. From an agroecological perspective, the incremental gains promised by sustainable intensification are not merely insufficient but reproduce the structural conditions that generate unsustainability in the first place (Fischer et al., 2025). By framing societal challenges in broad terms that few would dispute, hybrid framings ease political friction and improve short-term governability, “taming” wicked problems (Wanzenböck et al., 2020). However, the competing commitments they hold together become more

difficult to contest, which can allow incumbent trajectories to absorb sustainability vocabulary without meaningful change. Whether hybrid framings reproduce or challenge the dominant paradigm depends on how they are operationalised.

5.2. Frame ownership, depoliticisation and the limits of transformative change

Alongside frame layering and its directional effects, a second pattern is visible across all three levels, concerning how ownership of both problems and solutions is distributed within the frames. Solution ownership is generally articulated clearly, with researchers, industry, government agencies and consumers positioned as the actors expected to deliver change. Problem ownership, by contrast, is largely absent. Problems appear as external conditions, generalised pressures or systemic complexities rather than as outcomes of particular actors, practices or power relations. We read this absence as itself a framing move, consistent with the depoliticisation of research and innovation policy as technical and value-neutral rather than contestable. Following [Bancerz \(2018\)](#), the dominance of a single paradigm or of a narrow group of actors with convergent commitments is more troubling for democratic governance than visible disagreement. We argue that naming problem owners exposes the assumptions on which framings rest, makes trade-offs and beneficiaries explicit and enables deliberation across alternative pathways. In wicked problems, attributing ownership to a single actor will often be neither possible nor desirable. A broader-based attribution that locates the source of the problem in, for example, “contemporary agri-food systems” and the structural relations they sustain, can nonetheless bring the wickedness of the issue, and the contestation it carries, into view, rather than dissolving it into externalised pressures and systemic complexities. Opening policy-making to a genuine plurality of normative perspectives is not, however, the same as widening participation. It means allowing participants to shape how problems and solutions are framed, rather than legitimising framings that have already been established.

The broader implication is that the question is not whether directionality is coherent across levels, but how the contradictions and asymmetries between levels are handled, and with what consequences for transformative change. In our case, programmatic and call-level texts widened the strategic level’s narrow framing in places, but the strategic emphasis on sustainable intensification persisted and increased between the first and second national strategies. Because the strategic level sets the remit within which the research agenda and the calls are formulated, the scope for downstream variation in framings is shaped from above. However, rather than a cascade in which the strategic framing is reproduced downwards, our findings suggest ‘wobble room’ for adjustment and inconsistency ([Capano, 2019](#); [Howlett and Rayner, 2007](#)). For instance, the introduction of agroecological and systemic knowledge framings as part of the 2024 strategic agenda revision suggests a non-linear development of directionality, which in this case opened for greater plurality. This contributes to the diversity-directionality debate ([Bulah et al., 2024](#); [Stirling, 2024](#)) by showing that diversity at one level can offset closure at another, whilst recognising that the strategic level establishes the reference point from which such inconsistencies are introduced. Where existing work has tended to treat directionality as a property of policy mixes or strategic intent, our analysis suggests it is a relational and partly emergent property of how frames are layered across policy articulation levels. This also nuances the framework of [Wanzenböck et al. \(2020\)](#), in which convergence and divergence in problem-solution framings are typically read within a single policy setting. Our analysis shows that these tensions also play out across policy levels. In our case, individual policy levels are internally fairly consistent, but the problem-solution space is in tension between them, with framings shifting between national strategy, programmatic agenda and funding call. A single level analysis would have understated the contestation, uncertainty and complexity involved.

6. Conclusion

This study started from the premise that research and innovation policy is central to transforming agri-food systems. However, its transformative potential rests on the normative commitments embedded in problem and solution framings. The paper therefore asked how problems and solutions are framed in Swedish research and innovation policy on agri-food, what normative commitments these frames embed and what the framings imply for directionality across policy articulation levels. Through critical frame analysis informed by critical agri-food scholarship, we found that the strategic level stabilises framings aligned with sustainable intensification, that the programmatic and call levels retain this alignment while shifting modestly towards agroecological framings, and that this layering of frames is mediated by a substantial body of hybrid frames. Swedish research and innovation policy on agri-food therefore remains directed towards sustainable intensification. In concrete terms, that direction is increased domestic production for export-led competitiveness, with sustainability and productivity delivered by incremental gains in technological efficiency. Questions pertaining to the structural issues of contemporary agri-food systems are almost entirely absent. A greater diversity of framings at the programmatic and call levels nonetheless widens the range of directions that policy can support. While hybrid frames have the potential to shift the dominant paradigm, their direction depends on how they are operationalised. Directionality is therefore not the property of any single level or text, but emerges from the layering of frames across strategic, programmatic and call-levels. By opening up or closing down transformative directions, layering is one mechanism through which research and innovation policy might be redirected.

Two contributions follow. The first is conceptual: a relational account of directionality, in which the directionality of policy is produced across levels of articulation rather than fixed in any single text, so that diversity at one level of policy articulation can partially compensate for closure at another. The second is methodological: critical frame analysis, read through critical agri-food scholarship, can surface the normative commitments embedded in policy texts and show how, in this case, Swedish agri-food research and innovation policy legitimises particular transition pathways.

The implications for practice follow from this layered character of directionality. If research and innovation policy is to accommodate a plurality of normative orientations, that plurality cannot be left to depend on the ‘wobble room’ available to programmatic and call-level actors alone. Because the strategic level establishes the reference against which downstream adjustments and

inconsistencies can be established, it can only be partially offset from below. Yet the aim is not to impose coherence in framings across levels but make their assumptions and contradictions visible and subject to deliberation. This requires more deliberate, plural and contested forms of “innovation democracy” (Stirling, 2024), in which participation reshapes how problems and solutions are framed rather than legitimising framings that have already been established. As Mueller et al. (2026, p. 10) put it, “directionality in innovation policy is not a clear path towards a better world. It is a non-linear process that involves complexity, uncertainty, and contestation”. Making problem ownership, trade-offs and beneficiaries explicit, at each level and across them, is one practical entry point, since it makes the normative commitments of policy framings available for contestation. Such openness may be supported by consulting on how problems are defined before a strategy is drafted, rather than on a finished text, and by broadening the composition of stakeholders advising on strategy formulation. Swedish research and innovation policy on agri-food would benefit from a more realistic appraisal of the complex and contested challenges it faces, and from problem and solution framings more capable of accommodating them.

The study has limitations that point to further work. Our analysis examined how directionality is articulated in policy texts and did not extend to how these framings are taken up in funded projects or in the practices of researchers, agencies and producers. We suggest that future research follow this thread by examining how researchers themselves interpret and act on funding call framings, when applying for and carrying out research. This would show whether the openings towards plurality that we observe at the call level are widened in funded practice or narrowed as calls are interpreted and operationalised by researchers. Adding to that, our paradigm operationalisation drew most readily on dimensions concerning agricultural production and offered fewer entry points for analysing processing, distribution, retail and consumption. Future research could extend these paradigms to encompass non-production elements more fully.

Declaration of generative AI and AI-assisted technologies in the writing process

The authors used Claude for language editing. All AI-assisted text was reviewed and edited by the authors, who take full responsibility for the content of the manuscript.

CRedit authorship contribution statement

Linus Thomson: Writing – review & editing, Writing – original draft, Visualization, Project administration, Methodology, Investigation, Formal analysis, Conceptualization. **Ksenia Onufrey:** Writing – review & editing, Writing – original draft, Methodology, Conceptualization. **Ingrid Mignon:** Writing – review & editing, Writing – original draft, Methodology, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A

(See [Appendix A](#)).

Appendix A

Operationalisation of critical frame analysis.

	Problems constructed as... (diagnosis)	Actors held responsible for problems... (attribution of problems)	Solutions centred on... (prognosis)	Actors positioned as solution providers... (attribution of solutions)
Sensitising Questions	- What is represented as the problem? - Why is it seen as a problem?	- Causality (who is seen to have made the problem?) - Responsibility (who is seen as responsible for the problem?) - Problem holders (whose problem is it seen to be?)	- What to do? - Hierarchy/priority in goals - How to achieve goals (strategy/means/instrument)?	- Call for action and non-action (who should (not) do what?) - Who is acted upon (targeted groups)?
Sustainable intensification	- Insufficient agricultural productivity to meet demand - Environmental problems resulting from inefficiencies - Consumers establish market demand that steers transformation	- Unproductive, uncompetitive producers unwilling to adopt latest technologies and practices - Bureaucratic and cumbersome regulation from policymakers	- Increasing yields to boost national exports and enhance food security - Enhancing resource efficiencies innovations e.g., precision agriculture - Integration into global commodity markets	- Innovative producers maximising production of commodities - Policymakers facilitating innovation and market efficiency - Scientists and firms as drivers of high-tech R&D and innovation

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Appendix A (continued)

	Problems constructed as... (diagnosis)	Actors held responsible for problems... (attribution of problems)	Solutions centred on... (prognosis)	Actors positioned as solution providers... (attribution of solutions)
Agroecology	• Inequitable power relations undermine food sovereignty • Environmental and socio-economic crises inherent to conventional agriculture • Powerful actors shape markets and consumption behaviours, marginalising farmers	• Perceived lack of R&D and innovation from scientists and firms • Industrial agri-food producers, corporations and globalised supply chains • Policy regimes that promote productivism and commodification • Research and innovation systems privileging high-tech, productivist knowledge	• Developing highly productive (per unit area), low external-input production systems utilising context-appropriate technologies • Mimicking ecological processes to improve long-term fertility and resilience • Supporting decentralised, place-based, culturally rooted food systems grounded in social justice, fair trade, and food sovereignty perspectives	• Farmers, indigenous communities, and local producers as knowledge holders and system stewards • Policymakers supporting bottom-up transitions • Scientists as partners in co-creation of knowledge

Data availability

Data will be made available on request.

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