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The reshaping of European food systems through plant-rich diets

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Chapter 1. General introduction

1.1 Food systems as drivers of environmental pressures

There are increasing concerns surrounding the substantial environmental footprint of the global food system and its misalignment with climate, biodiversity, and public health goals (Clark et al., 2020; Ellis et al., 2010; Ivanovich et al., 2023). Accounting for up to one-third of GHG emissions (Crippa et al., 2021), half of habitable land (Ellis et al., 2010), and most of global freshwater consumption (Wu et al., 2022), current food production and consumption patterns are incompatible with international climate targets such as meeting 1.5°C (Clark et al., 2020) and other key planetary boundaries, including those related to biosphere integrity, land-system change, and biogeochemical flows (Rockström et al., 2025).

Current food systems challenge the achievement of broader international sustainability commitments, including the Paris Agreement, the Sustainable Development Goals, and the Kunming-Montreal Global Biodiversity Framework (CBD, 2022; UN, 2015; UNFCCC, 2015). In the European context, relevant objectives include reducing GHG emissions by 55% by 2030 under the European Green Deal and European Climate Law (European Commission, 2019; European Union, 2021), reducing pesticide use by 50% and fertiliser use by 20% under the Farm to Fork Strategy (European Commission, 2020a), and protecting 30% of land and sea areas by 2030 under the EU Biodiversity Strategy (European Commission, 2020b).

Food systems are also highly exposed to climate change and are already experiencing disruptions from extreme weather, shifting precipitation patterns, and ecological degradation (Ray et al., 2019). This dual challenge involves reducing food-system environmental pressures while maintaining food security and resilience under increasing climatic and ecological stress (Hadjikakou et al., 2025; Mogollón et al., 2026).

1.2 Dietary change as a high-leverage intervention

In this context, a shift towards plant-rich diets has emerged as one of the most effective approaches to reduce environmental impacts in regions with high consumption of animal-sourced foods, including in the EU (Poore & Nemecek, 2018; Willett et al., 2019; Xu et al., 2021). Across the literature, plant-rich diets are associated with large reductions in GHG emissions, land use, and biodiversity pressures, while also generating co-benefits for human health and, in some cases, reducing exposure to geopolitical or ecological shocks (Navarre et al., 2023; Rockström et al., 2025; Springmann et al., 2018; Sun, Scherer, Zhang, et al., 2022; Willett et al., 2019). These findings indicate that dietary change contributes to climate mitigation and broader food-system resilience.

However, these benefits are unlikely to materialise through consumer change alone. They depend on whether economic and institutional structures adapt to new demand patterns, and whether transition costs are managed in ways that are politically feasible and socially equitable (Kaljonen et al., 2021; Marsden et al., 2019; Verkuil et al., 2022). This dependence is particularly relevant in the EU, where agricultural production and land use are strongly shaped by policy incentives and historical investment patterns.

1.3 Factors hindering the transition in the EU+UK context

A transition towards more plant-rich food systems in the EU+UK is hindered by interacting institutional, economic, social, and political constraints. Sustainability transitions, system innovation, and food-system literature emphasise that such changes are rarely hindered by a single barrier. Instead, transitions are shaped by mutually reinforcing lock-ins across policies, markets, infrastructures, routines, actor coalitions, and cultural norms (for example, Geels, 2019; Loorbach, 2010). In the food-system context, these barriers include policy incoherence across agriculture, health, trade, climate, and environmental domains; subsidy and regulatory structures that continue to support incumbent production models; supply-chain concentration and vested interests; dominant knowledge and innovation systems historically oriented towards productivity growth and efficiency rather than system transformation; culturally embedded consumption norms; path dependence in infrastructure, assets, and routines; farmer dependence on income support and debt; and uneven enabling conditions across places and regions (for example, Anderson et al., 2019; Béné, 2022; Conti et al., 2021; El Bilali et al., 2019; Galli et al., 2020; Geels, 2019; Klerkx & Begemann, 2020; Köhler et al., 2019; Loorbach, 2010; Williams et al., 2024).

This broader literature shows that food-system transitions are not only technical or economic adjustment processes, but also contested processes of change, shaped by power relations, incumbent resistance, institutional inertia, and unequal capacities to adapt (Galli et al., 2020; Williams et al., 2024). This dissertation focuses on three barriers that are important in the EU+UK context and insufficiently quantified in the existing literature: subsidy dependence, capital lock-in, and regional heterogeneity in exposure and adaptive capacity. These barriers are also amenable to quantitative, supply-chain-based analysis.

Among the institutional structures shaping production, the CAP plays a central role in sustaining the current dominance of animal-sourced food systems (Langlais, 2023; Linares Quero et al., 2022). By allocating the majority of its subsidies based on land area, the CAP structurally favours animal production systems (Chapter 2). This subsidy design can entrench high-emission production models (Balduck & Mottershead, 2017; Brown et al., 2021; Heyl et al., 2022; Linares Quero et al., 2022; Pe'er et al., 2020; Scown et al., 2020), even as national dietary guidelines begin to shift towards more plant-based norms (for example, in Austria, Germany, the Netherlands, and Denmark). Yet existing work has more often assessed CAP alignment in legal or policy terms (Heyl et al., 2021; Talenti, 2025) than quantified how subsidy dependence is distributed across commodities, food supply chains, and regions.

A second barrier is capital lock-in. Animal production systems rely on long-lived, specialised assets (buildings, equipment, machinery, breeding animals). Under rapid dietary change, some of this capital may become underutilised or economically obsolete before the end of its technical life. The risk of asset stranding, widely discussed in the fossil sector (Kennedy et al., 2023; Mercure et al., 2018; Semieniuk et al., 2022; Welsby et al., 2021), may also become relevant for agricultural transition policies and for the distribution of economic disruptions across regions and farm types (Caldecott et al., 2013; Rautner et al., 2016; Reddy et al., 2020; Walton et al., 2025). Although recent scholarship has begun to discuss asset stranding in agriculture (Walton et al., 2025), empirical estimates of its scale, timing, and sectoral distribution remain limited.

A third barrier is regional heterogeneity. The socio-economic effects of dietary transitions are unlikely to be evenly distributed because production systems, subsidy dependence, labour intensity, and

profitability vary strongly across EU subregions (Berdegué et al., 2025; Hostiou et al., 2020; Rieger et al., 2023; Springmann & Freund, 2022). As a result, the same shift in demand may relieve pressure in some places and create concentrated losses in others. This uneven geography matters for both transition feasibility and policy design, because EU-level analysis can mask where vulnerability, resistance, and opportunities for adaptation are likely to concentrate (Candel & Daugbjerg, 2025; Dax & Copus, 2018; Guyomard et al., 2021). Yet much existing research remains at national or EU level, obscuring where transition pressures, resistance, and adaptive capacity are likely to concentrate.

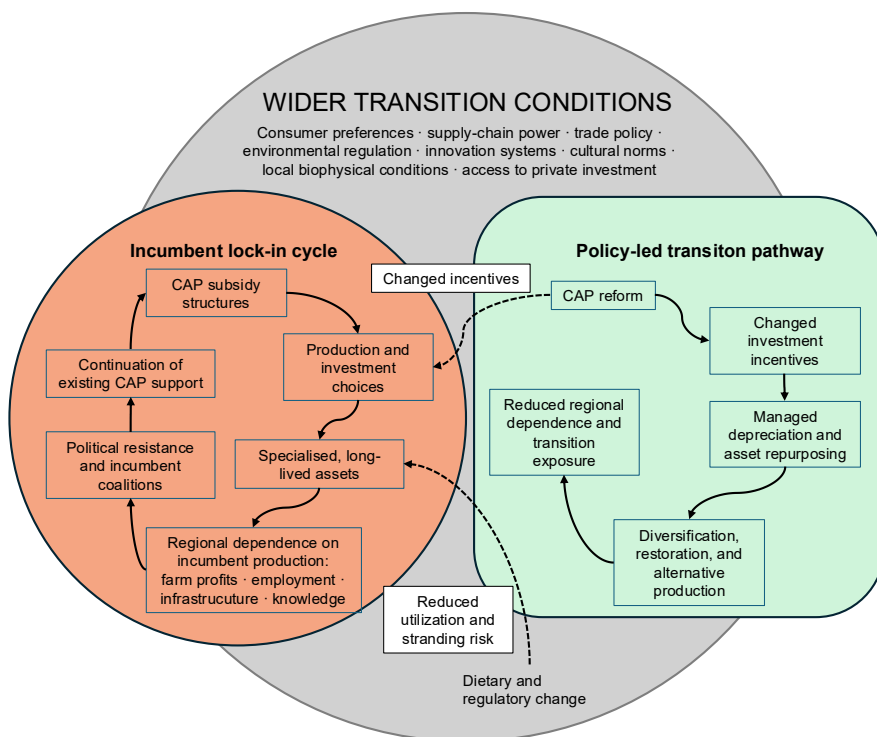


Fig. 1.1 Schematic of illustrative pathways linking CAP subsidy structures, capital lock-in, and regional transition exposure. CAP subsidy structures can shape production and investment decisions, contributing to the accumulation and continued use of specialised, long-lived agricultural assets. These assets can anchor farm profits, employment, infrastructure, and knowledge in particular regions, reinforcing dependence on incumbent production systems and resistance to policy change. Wider market, political, cultural, and biophysical conditions influence each relationship. Dietary and regulatory change can create stranding risks for existing assets, while CAP reform can alter investment incentives and support managed depreciation, asset repurposing, diversification, and restoration, thereby reducing regional dependence and transition exposure. Many other pathways and feedbacks may connect these elements.

The three barriers examined in this dissertation do not operate independently of wider market, political, and cultural barriers (Geels, 2019; Köhler et al., 2019). Subsidy structures influence production choices and investment decisions, while public support can also shape the direction of private investment and the continued use of specialised assets (Baldock & Mottershead, 2017). Where farm profitability and debt-servicing capacity depend strongly on CAP payments, public

support may indirectly shape lenders' risk assessment and sustain private finance for specialised animal-production assets (Marsden et al., 2019). This interaction can deepen capital lock-in and increase exposure to asset stranding when policies or demand change (Walton et al., 2025). Specialised assets also anchor production, employment, and knowledge in particular regions, increasing the economic and political costs of transition (Caldecott et al., 2013; Rautner et al., 2016). Regional dependence can in turn strengthen coalitions seeking to preserve existing support and infrastructure. Consumer preferences, supply-chain power, trade policy, and innovation systems condition each of these relationships (Candel & Daugbjerg, 2025; Galli et al., 2020). The three barriers are therefore treated as interlinked producer-side mechanisms within a broader transition system (Fig. 1.1).

1.4 Research gaps

While the environmental case for dietary transition is well established (Poore & Nemecek, 2018; Rockström et al., 2025; Sun, Scherer, Tukker, et al., 2022; Willett et al., 2019), the socio-economic dimensions remain underexplored and underquantified (Brown et al., 2021; Linares Quero et al., 2022; Pe'er et al., 2020). Consumer behaviour, institutional incentives, capital lock-ins, and the spatial distribution of transition costs jointly shape transition feasibility (FAO et al., 2021; Marsden et al., 2019).

Policy literature on the CAP suggests that current support remains only partially aligned with sustainability goals. Linares Quero et al. (2022) and Langlais (2023) indicate that legal and policy frameworks still contain tensions between existing CAP design and agroecological objectives. Pe'er et al. (2020) argue that incremental reform is insufficient and that more structural change is needed, while Brown et al. (2021) caution that such change cannot be understood through overly simplistic assumptions about farmer decision-making. Studies on economic instruments further suggest that subsidy reform could support more sustainable outcomes, but that instrument design, distributional effects, and political feasibility remain critical challenges (Baldock & Mottershead, 2017; Heyl et al., 2021; Scown et al., 2020). At the global level, FAO et al. (2021) likewise argue that agricultural support should be repurposed, adding legitimacy to CAP reform debates. In parallel, stranded asset literature has begun to explore agriculture, suggesting that dietary transition may improve environmental and health outcomes while imposing substantial adjustment pressures for producers and rural economies. Caldecott et al. (2013) provide a conceptual foundation for understanding how and why assets can lose economic value prematurely, and Walton et al. (2025) frame stranding as a catalyst for food-system transformation.

This literature establishes the relevance of subsidy design, producer livelihoods, and capital exposure, but several gaps that are central for understanding transition feasibility and equity in the EU+UK remain:

Gap A: Subsidy dependence and producer-side socio-economic exposure remain underquantified. Many studies on dietary transitions focus primarily on environmental outcomes, while producer-side consequences such as farm incomes, employment, subsidies, and livelihoods are less consistently quantified, especially in an integrated way across supply chains (Brown et al., 2021; Linares Quero et al., 2022; Pe'er et al., 2020).

Gap B: Agricultural asset stranding is recognised but weakly measured. Although recent work has begun to discuss stranded assets in agriculture and food systems (Walton et al., 2025), empirical quantification remains limited, particularly with regard to exposure, timing, and the scale of potential disruptions associated with assets tied to animal-sourced food systems.

Gap C: Subnational heterogeneity is masked by country-level analysis. Even where socio-economic impacts are analysed, national-level assessments fail to capture how dietary change is likely to affect regions unevenly: some areas may lose subsidy-dependent animal-related jobs, while others may gain from emerging plant-based systems. Spatial disparities in agricultural structure, land use, and subsidy exposure are critical for assessing the feasibility and equity of food-system transition. Moreover, while EU food and climate targets are set centrally, implementation often falls to regional or local authorities, creating a need for geographically resolved insights into where transition costs and benefits will concentrate (Froemelt et al., 2021; Sun et al., 2019). Without such regional differentiation, policy design risks exacerbating rural inequalities or triggering political resistance in more vulnerable areas (Adams et al., 2025; Noll et al., 2020).

1.5 Research approach

Addressing these gaps requires a research approach that can trace how dietary change in final consumption propagates through food supply chains, link consumer-side scenarios to producer-side outcomes such as subsidies, labour, and asset exposure, and capture heterogeneity across countries and, ideally, subnational regions.

These research gaps can be addressed using several modelling approaches. Process-based life cycle analysis (LCA) is well suited for product-level environmental comparisons, but is constrained by system boundaries (Tukker et al., 2011) and data availability when tracing economy-wide indirect effects across complex supply chains (Poore & Nemecek, 2018). In addition, LCA does not typically capture producer-side socio-economic outcomes in a consistent economy-wide framework. Partial equilibrium and sector models, including EU policy models such as CAPRI (European Commission: JRC, 2026a), can represent behavioural, technological, and policy responses in greater detail, but they do not usually provide the same comprehensive and internally consistent accounting of embodied impacts across supply chains and regions. Computable general equilibrium (CGE) and other macroeconomic approaches can capture economy-wide feedbacks, but often require strong behavioural assumptions and may reduce commodity-specific detail or the transparency of supply-chain attribution (see, for example, Wilson et al. (2021) for an evaluation of integrated assessment models of climate mitigation). Farm-level accounting approaches capture livelihoods and heterogeneity well, but they typically lack supply-chain completeness and consistent linkage to consumer-side demand.

From this perspective, EEMRIO analysis is well suited to the aims of this dissertation. Box 1 introduces the EEMRIO framework and its relevance for food-system research. EEMRIO provides agriculture-wide, consumption-based traceability across interconnected sectors and regions, making it possible to distinguish food from non-food products (Behrens & Poore, 2025) and to link dietary scenarios to environmental pressures and socio-economic outcomes along supply chains in a consistent accounting framework (Sun et al., 2019; Tukker et al., 2009, 2011). In this dissertation, the use of FABIO as a physical-flow EEMRIO is especially relevant because it avoids the price-homogeneity assumptions of conventional input-output (IO) models and is therefore better suited to representing biophysical feed and food flows under alternative dietary scenarios.

The supply-chain perspective is important for diet-related analysis, because food-system impacts are distributed across globalised production networks, and consumption changes in one region can have upstream effects elsewhere. At the same time, EEMRIO models abstract from price-mediated adjustment and market dynamics, making them less suitable for analysing market responses directly. This limitation is acceptable here because the aim of this dissertation is to trace supply-chain attribution rather than simulate price and behavioural adjustment. Agricultural equilibrium modelling is more appropriate when market responses are the focus of analysis (for example, Hristov et al., 2024; Rieger et al., 2023) and can be combined with EEMRIO analysis when both market adjustment and economy-wide attribution are of interest (see, for example, Tukker et al., 2011).

A key constraint is the predominantly national or more aggregated resolution of EEMRIO models, which limits equity and feasibility assessments in the EU+UK, where production and subsidy dependence vary strongly within countries, and where implementation of policy often involves regions and local institutions (Sun et al., 2019). Extending EEMRIO frameworks to subnational regions remains methodologically difficult for two main reasons. First, subnational production, consumption, and trade data are typically available only for limited sectors, regions, or years, making bottom-up construction of subnational EEMRIO systems impractical at the European scale. As a result, most subnational applications rely on regionalising national accounts using proxies and assumptions. Second, many existing regionalisation approaches require intensive balancing procedures or complex algorithms, or depend on subnational data inputs that are not consistently available across countries. This combination reduces transparency, reproducibility, and general applicability. These methodological constraints limit the availability of EEMRIO tools that can identify where the costs and opportunities of dietary transition are likely to concentrate within the EU+UK. To address this limitation, the dissertation introduces a novel regionalisation approach that transparently allocates national EEMRIO data to subnational regions using either general proxies (for example, employment and household proxies) or sector-specific output data (for example, subnational food production volumes).

This dissertation adopts an industrial ecology perspective, combining an agriculture-specific EEMRIO database, FABIO (Bruckner et al., 2019), with harmonised farm-level accounts from the Farm Accountancy Data Network (FADN; European Commission, 2024) and a novel spatial disaggregation method introduced in Chapter 5. FABIO enables detailed modelling of agricultural and food supply chains, but as a physical-flow EEMRIO, it does not include standard socio-economic extensions such as value added and employment. Integrating FADN extends the framework with socio-economic indicators relevant to transition feasibility, including subsidies, labour, profits, and asset values. Because FADN is also available at the subnational scale, this integration creates an incentive to move beyond national accounts. The regionalisation approach developed in this dissertation responds to that need by transparently allocating national FABIO flows to subnational regions using subnational household incomes and subnational production volumes of different food types.

Box 1. An introduction to EEMRIO analysis

EEMRIO models provide a systems-based approach to quantify how environmental pressures are linked to economic activities across spatially distributed supply chains (Tukker et al., 2009). EEMRIO models build on conventional IO tables, which capture monetary flows between sectors, and extend them with environmental accounts, such as GHG emissions, land use, or water use, to track resource use and emissions across production and consumption systems (Miller & Blair, 2009).

In this thesis, a central role is played by FABIO (Bruckner et al., 2019), a global, multi-regional, physical IO database tailored to the agrifood system. Unlike conventional IO models expressed in monetary units, FABIO uses physical units (tonnes and numbers of animals), which more directly reflect biophysical reality and are better suited for analysing material flows such as food, feed, and biomass. This physical basis facilitates the construction of alternative dietary scenarios and improves consistency when linking with farm-level production data. Moreover, FABIO offers high resolution in food categories, distinguishing 123 primary and processed crop and animal-sourced products, of which 84 enter final food consumption. This product resolution allows detailed assessment of dietary composition and associated resource use.

Multi-regional models differentiate between countries (and increasingly, subnational regions) and link these economic flows to environmental extensions, making it possible to trace the upstream and downstream impacts of traded foods. This modelling structure allows for so-called footprinting: calculating the total environmental pressure embodied in final demand, regardless of where those pressures occur geographically. Footprinting is widely used to inform consumption-based environmental responsibility and policy evaluation.

For food-system research, EEMRIO offers three key advantages. First, it enables a consistent accounting of upstream and downstream impacts of food products, including embodied emissions in feed production and land used abroad to support EU consumption (Bruckner et al., 2019). Second, it captures interactions across regions and sectors, supporting analysis of how policy and consumption changes propagate throughout the system. Third, it supports scenario-based analysis, where alternative dietary patterns can be simulated to assess their agriculture-wide implications.

In this thesis, the EEMRIO approach is used for environmental accounting (GHG and land use) and extended with socio-economic data. In particular, farm-level data from the European Commission's FADN (European Commission, 2024) are integrated with the physical-flow FABIO to assess the flow of agricultural subsidies, asset values, and labour across the food system. Integrating FABIO with FADN links macro-level food-system flows to farm-level differences in subsidy dependence, profitability, labour use, and asset exposure.

By coupling input-output modelling with FADN microdata (European Commission, 2024), this thesis captures both system-wide and producer-level dynamics of food-system transitions. It allows for the estimation of environmental and socio-economic footprints, including how changes in consumption (for example, towards plant-rich diets) affect farm employment, capital allocation, and subsidy reliance across the EU.

The EEMRIO matrices form the basis for linking production activities, trade, and final consumption to both environmental and economic pressures across space (Table 1.1; Tukker et al., 2009). In this thesis, additional spatial resolution is introduced through a regionalisation algorithm (Chapter 5), which makes it possible to compare environmental pressures and socio-economic outcomes across subnational regions.

Table 1.1 The structure of EEMRIO tables, including the inter-industry transaction matrix **Z**, the final demand **Y**, the total output vector **x**, and the extension row vectors **E** at the bottom

		Inter-industry transaction matrix Z								Final demand Y			Total output x	
		Region 1		Region m-1			Region m			Region 1	Region m-1	Region m		
		food 1	food n-1	food n	food 1	food n-1	food n	food 1	food n-1	food n				
Region 1	food 1	Domestic table Region 1								Domestic food	Exported food			
	food n-1													
	food n													
Region m-1	food 1										Imported food	Domestic food		
	food n-1	Domestic table Region m-1												
	food n													
Region m	food 1									Domestic table Region m			Domestic food	
	food n-1													
	food n													
Environmental extensions E_e														
Socio-economic extensions E_s														

1.6 Research question and thesis outline

This dissertation addresses the need to account for subnational and socio-economic heterogeneity in food-system transition research by focusing on the following research question: **How would a transition towards plant-rich diets reshape the structure, economic and environmental performance of the EU+UK food system, and what are the implications for agricultural assets, subsidies, and regional equity?**

Five interlinked studies form the basis of this thesis (Chapters 2–6). They address the three research gaps identified above (Chapter 1.4) by quantifying producer-side socio-economic impacts, addressing agricultural asset stranding, and resolving the lack of regionally explicit analysis through spatial disaggregation:

Chapter 2 on policy structure: This first study addresses part of **Gap A** by examining how current CAP subsidies are distributed across the food supply chain, quantifying the disproportionate support for animal-sourced foods and identifying structural disincentives to sustainable dietary transitions. Analysing the CAP subsidy structure is essential to uncover institutional misalignment and economic disincentives that currently favour animal-sourced foods, thereby constraining transition potential.

Chapter 3 on socio-economic geography: The second study addresses **Gap A** most directly by assessing how dietary transitions would alter agricultural land use, employment, CAP subsidies, and farm profits across the EU+UK. It proposes a typology of transition archetypes to guide spatially differentiated policy responses. This analysis links consumer-driven dietary transitions to producer livelihoods by showing how land use, labour requirements, subsidies, and farm profits shift across food groups and countries.

Chapter 4 on asset exposure: The third study addresses **Gap B** by quantifying the potential magnitude of agricultural asset stranding under varying levels of dietary change. It assesses how animal-sourced-food-related assets, making up the vast majority of agricultural fixed capital, could be phased out over time, provided proactive policy and financial mechanisms are in place. Quantifying asset exposure and stranding risk helps estimate the scale and distribution of economic disruption under rapid dietary shifts, providing insights into transition finance.

Chapter 5 on spatialisation: The fourth study provides the methodological basis for addressing **Gap C** by developing a transparent and generalisable method for regionalising EEMRIO data, enabling subnational analysis of environmental and economic flows. Spatial disaggregation identifies subregions in which national averages may conceal concentrated employment or subsidy exposure.

Chapter 6 on regional diversity in EU farming: The fifth study addresses **Gap C** and adds a subnational dimension to **Gap A** by applying the regionalisation methods from Chapter 5 to examine subsidy dependence and labour demand across the EU subregions. It demonstrates how national averages may conceal strong internal contrasts and highlights the need for regionally tailored CAP reform. Through case examples, it also demonstrates how policy instruments can be aligned with both ecological vulnerabilities and socio-economic structures.

Together, these five studies enable a multi-scale, consumption-based assessment of food-system transformation that traces impacts across agricultural supply chains and across environmental, economic, and spatial dimensions, expanding understanding beyond environmental metrics by integrating a producer-focused perspective (Brown et al., 2021), spatially differentiated modelling

(Sun et al., 2019), and financial risk concepts such as asset stranding (Walton et al., 2025). The General Discussion in Chapter 7 synthesises the findings of the five studies around five core contributions: (1) the role of CAP subsidies in sustaining structural lock-in and shaping transition incentives, (2) the value of transition archetypes for structuring socio-economic consequences of dietary change and guiding spatially differentiated policy responses, (3) the relevance of stranded agricultural assets for anticipating and managing economic disruption, (4) the contribution of spatial disaggregation for identifying localised vulnerabilities and leverage points, and (5) the importance of recognising regional heterogeneity for designing equitable and more effective policy reforms. The thesis concludes by reflecting on methodological and conceptual limitations and identifying directions for future research and policy design.

Table 1.2 summarises the thesis and the research topics addressed in each chapter. It also reports when each analysis was conducted, which determines the FABIO version and EAT-*Lancet* diet specification used.

Table 1.2. Overview of the dissertation chapters, research topics, and analyses performed.

	Research topics	Analysis performed
Chapter 2: CAP subsidy structure	Distribution of CAP subsidies across agricultural supply chains; support for animal-sourced foods versus plant-based foods; embodied CAP exports	Conducted in 2022–2023 using FABIO v1 (Bruckner et al., 2019)
Chapter 3: Socio-economic geography	CAP subsidies, farm labour, unsubsidised farm profits, and land use under dietary transition; transition archetypes across countries	Conducted in 2024–2026 using FABIO v2 and EAT- <i>Lancet</i> 2.0 (Rockström et al., 2025), applied to all high- and middle-income countries
Chapter 4: Asset exposure	Fixed agricultural assets; potential asset stranding under dietary transition; timing and pathways of asset phase-out	Conducted in 2023–2024 using FABIO v2 and EAT- <i>Lancet</i> 1.0 (Willett et al., 2019), applied to all high- and middle-income countries
Chapter 5: Regionalisation method	Regionalisation of EEMRIO; spatial disaggregation methodology; proof-of-concept application	Conducted in 2021/2022 using EXIOBASE (Stadler et al., 2018)
Chapter 6: Regional diversity in EU farming	Subnational EEMRIO analysis; CAP subsidy dependence, farm labour, and farm profits under dietary transition; smallholder farming; spatialised results	Conducted in 2024–2026 using FABIO v2 and EAT- <i>Lancet</i> 2.0 (Rockström et al., 2025), applied to the EU

Across the chapters, the dissertation identifies where the costs and opportunities of a plant-rich transition arise, how land-based subsidies and specialised assets sustain animal-sourced food production, and which regions are most exposed to changes in demand. It also begins to explore how subsidy reform and support for asset retirement could redistribute transition costs.