

Transforming Europe's food system — Assessing the EU policy mix



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Executive summary

The need to transform Europe's food system

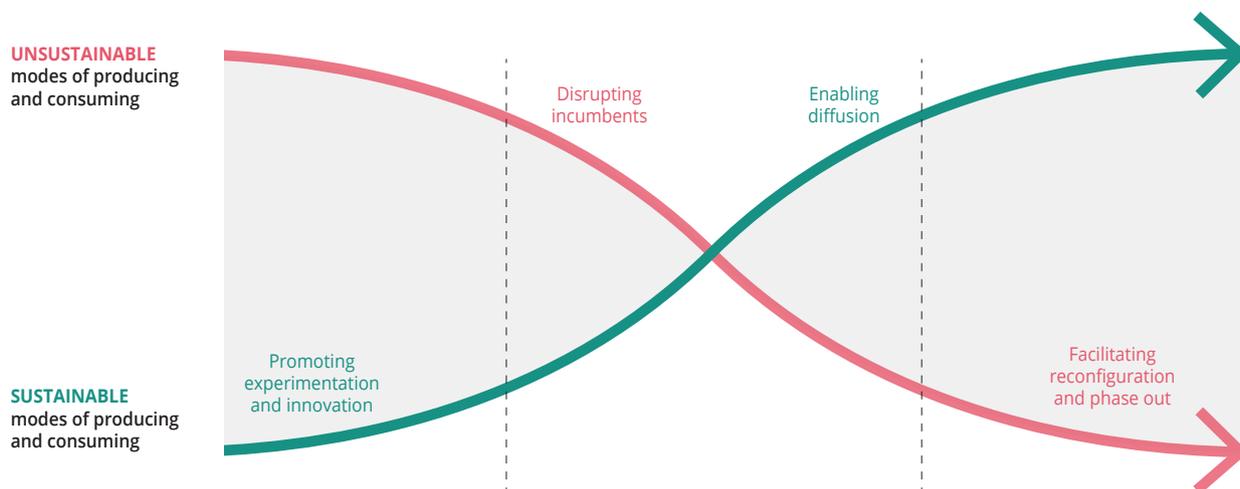
Food systems in Europe and across the world are currently unsustainable. Globally, they account for almost one-third of GHG emissions, drive biodiversity loss and harmful health impacts, and fail to ensure fair economic returns and livelihoods for all actors. According to the EAT-Lancet Commission (Willett et al., 2019), addressing these failings and achieving healthy diets within planetary boundaries will require nothing less than a 'great food transformation'. Recognising the scale of change needed, in 2020 the EU adopted the Farm to Fork (F2F) strategy, with the goal of enabling and accelerating 'the transition to a fair, healthy and environmentally-friendly food system' (EC, 2020c).

While the need to transform Europe's food system is clearly acknowledged in both research and EU policy,

the challenges are equally obvious. Europe's food system is hugely complex and interwoven with its societies, economies, cultures and landscapes. Such interdependencies create diverse barriers and resistance to change, which are often magnified by the influence of powerful vested interests.

During the last two decades a growing body of research into 'sustainability transitions' has emerged, providing insights into how societies can overcome these barriers and achieve far-reaching systemic change (EEA, 2017b). According to such research, sustainability transitions occur through a twin process, combining the emergence and spread of innovative new ways of meeting societal needs (e.g. technologies, social practices, business models) and the disruption and phasing out of established modes of producing and consuming (Figure ES.1).

Figure ES.1 The twin processes of innovation and phase-out in sustainability transitions



Source: Based on Loorbach et al. (2017).

Achieving transitions requires bold and comprehensive policy responses

Sustainability transitions inevitably involve trade-offs, creating winners and losers. Transitions are also inherently complex and uncertain processes, which cannot simply be modelled, planned and implemented by governments. Nevertheless, public policies and institutions play an essential role in triggering and shaping innovation and phase-out, as well as addressing interactions between systems and providing directionality for transition processes (EEA, 2019a). Achieving sustainability transitions requires coherent contributions from diverse policy areas and levels of governance, ranging from international trade rules and EU policies to legislation at Member State, regional and local levels.

This understanding of the role of policy in enabling transitions is now embedded in the EU's strategic thinking. The European Commission's flagship strategic framework, the European Green Deal (EGD), combines policies aimed at transforming core production-consumption systems (such as the F2F strategy) with a specific focus on cross-cutting themes, such as innovation, finance and the 'just transition'. The EGD clearly acknowledges the need for well-designed combinations of policy goals and instruments (i.e. policy mixes) to drive forward systemic change, affirming that 'The policy response must be bold and comprehensive... . It will require intense coordination to exploit the available synergies across all policy areas.' Moreover, the EGD 'will make consistent use of all policy levers: regulation and standardisation, investment and innovation, national reforms, dialogue with social partners and international cooperation' (EC, 2019).

In practice, however, the policy mixes that govern production-consumption systems are always characterised by inconsistencies. While transformative policy frameworks, such as the EGD and the F2F strategy, aim to increase alignment, they inevitably build on numerous policies that have developed over decades, in diverse areas (agriculture, innovation, environmental, health, etc.) and with contrasting objectives. Even individual sectoral policy frameworks acquire inconsistencies over time as their goals evolve and new instruments are layered on top of old ones. This incoherence can create contradictory signals about the direction of travel, slowing down the progress and deterring the investments needed for transition processes.

Assessing the EU food system policy mix

Given the scale and urgency of Europe's environmental and climate challenges, there is a need to understand the gaps and inconsistencies in current EU policy mixes and how to overcome them (EC, 2022e). This report aims to do that, focusing its attention on Europe's food system. As such, the

report's **central aim is to assess the EU policy mix in the light of the insights from transitions research about the dynamics and governance of sustainability transitions.**

The report addresses two core questions. First, is the current EU policy mix governing Europe's food system consistent with the EGD's transformative objectives? Second, if not, how could it be made more genuinely transformative?

In addressing these questions, it is first necessary to delineate the policy mix being analysed. In the case of the European food system, the relevant policy mix is vast, encompassing multiple goals and instruments across a range of policy areas and at different levels of governance. In practice, therefore, any policy mix analysis will need to narrow its focus to make it feasible but still insightful.

The approach in this report takes as its starting point the EU's strategic intent to make food systems fair, healthy and environmentally friendly, as set out in the F2F strategy. It looks horizontally across EU policies that strongly influence the EU food system, first addressing the Common Agricultural Policy (CAP), Common Fisheries Policy (CFP) and F2F strategy before broadening the analysis to include other selected policy areas. While this does not constitute a comprehensive analysis of all EU policies shaping food systems, it aims to provide a reasonably broad and accurate overview of relevant policies.

Clearly, the assessment's focus on EU policies also has some important limitations. For example, while EU policies have a substantial influence in areas such as agriculture and fisheries, the EU's remit is limited in other relevant areas, such as fiscal policy. Moreover, some legislation shaping the food system is developed and/or enacted at national or regional level, and much depends on how EU policies are implemented in Member States. Global trade policy is also very important in shaping EU food systems but is not addressed in detail and warrants further analysis in future studies.

Despite these caveats, the report provides valuable insights into the extent to which EU policies are in line with insights about the governance of transitions and where there are important limitations and gaps. It also provides the foundation for more comprehensive assessments in the future, addressing other levels of governance and the interplay between different governance levels.

Mapping and assessment of the CAP, CFP and Farm to Fork strategy

The assessment process involved two phases. The first phase focused on categorising and mapping the instruments in the core EU policies affecting food system governance, namely

the CAP and CFP, which have been the main sectoral policies influencing Europe's food production in past decades, and the F2F strategy, which marks a shift to a more systemic, integrated policy approach. As established policies, the CAP and CFP are clearly different in character from the F2F strategy, which provides a strategic roadmap for additional policies and initiatives. However, for the purposes of the assessment, this is not problematic, because the aim is to address the goals and instruments of these policy frameworks — and where there may be gaps or misalignments — not to address their implementation or their effects.

The three policy frameworks were categorised according to the part of the food value chain targeted, the type of instrument employed, and their contributions to transition dynamics. The mapping and assessment process provided a set of insights into potential gaps and limitations in the EU policy mix. These initial results were consolidated into a set of five priority questions for deeper exploration, which were discussed at EEA internal and external stakeholder workshops and subsequently refined further.

The second phase of the assessment focused on these five questions, drawing on a broader analysis of EU policy, including areas such as innovation, environment, corporate governance, nutrition and so on, with the aim of providing a more complete picture of potential gaps or weaknesses in the EU policy mix. It also looked at some Member State activities, for example national CAP strategic plans and examples of more transformative policy approaches.

This analysis was informed by a series of workshops and interactions with experts in research and policy, as well as a literature review. These activities aimed to develop the findings from the first phase and build a better picture of the strengths and limitations of the EU policy mix. The outcomes of this more detailed assessment are summarised below and presented in full in Chapters 5-9.

Question 1: Does the EU policy mix promote a shift to sustainable food consumption?

Consumer choices about what food to eat, how it is produced, where it comes from, how it is prepared and consumed, and how much of it is wasted have an essential role in shaping food system outcomes and impacts, both within Europe and globally. As emphasised in transitions research, altering established consumption patterns requires actions by actors along the entire value chain. Yet, the assessment of the EU policy mix shows that policies currently address consumers and other key actors unevenly and in ways that are not likely to lead to significant change. Consumers are overwhelmingly targeted with informational tools, such as labelling, while pricing instruments are hardly used. Policies and actions targeting key actors in the middle part of the food value chain, such as food manufacturers and retailers, are emerging, but are currently mainly voluntary.

Achieving sustainability transitions requires that policy interventions align with the realities of how consumers actually make choices. Information-based tools remain important for guiding rational decision-making, and need to be designed in ways that maximise their impact. However, many choices are based on habitual behaviour and food environment factors, such as the availability and accessibility of food. With these realities in mind, policy interventions can go further in targeting actors such as retailers and influencing their marketing and 'choice-editing' activities. Pricing instruments can influence the relative affordability of sustainable options. Public procurement policies can shape the availability and accessibility of food products in key micro-environments, such as schools, workplaces and canteens. Such measures, in combination with communication and marketing, can help shift social norms, making sustainable choices desirable — particularly if aligned with other consumer motivations, such as health goals. Finally, policies can also create opportunities for citizens to create novel practices, for example through local food policy councils or alternative food networks.

Question 2: Is EU food policy actively phasing out unsustainable technologies, practices and systems?

Sustainability transitions research underlines the need for policies to disrupt and phase out harmful technologies, substances and practices, and even entire socio-technical systems. Stringent regulations and market-based instruments can also incentivise innovation and support the diffusion of more sustainable alternatives. In practice, however, EU food system policy is inconsistent regarding actions to phase out unsustainable activities. The F2F strategy and CFP contain a range of instruments that aim to phase out unsustainable aspects of the current food system, but some of these policies lack ambition and stringency. Other EU policies, such as parts of the environmental acquis, are beginning to have real systemic impact but they sit alongside numerous measures in the CAP and CFP that favour business-as-usual practices. Correcting this, and phasing out harmful food system practices, requires a significant reorientation of CAP spending, as well as a broad array of measures to address the availability and price of unsustainable products.

Experiences in EU Member States also underline the need for complementary measures to build societal consensus on the need for change and to ensure that costs are shared fairly. Phase-out policies are politically difficult if they impose disproportionate costs on some groups and generate resistance from vested interests. Successful phase-outs therefore require combinations of policies that support innovation, disrupt established systems, navigate resistance, broker consensus and ensure a fair distribution of costs and benefits.

Questions 3: Does EU policy provide sufficient support for transformative innovation?

Transforming food systems depends on the emergence and spread of radical innovations, ranging from new technologies to novel social practices and governance mechanisms (e.g. community-supported agriculture or food policy councils). Radical innovations face major barriers, however, and public policies and institutions therefore have a vital role in creating niches for experimentation and learning; building coalitions of actors in innovation systems; creating visions and missions to guide the direction of innovation and investment; and accelerating the diffusion of niche innovations, for example with direct investments, subsidies or tax policies.

In practice, EU food system policy offers mixed support for innovation. The CAP, CFP and F2F strategy tend to support incremental, technological innovations and are targeted at a limited set of established actors. However, other EU policies, such as research and innovation policy, provide strong support for transformative innovation and help engage diverse stakeholders in living labs, social innovation and citizen science, as well as strengthening the science-policy- society interface. Policy support could, however, go further in engaging societal actors in developing solutions adapted to particular localities and using missions to coordinate and accelerate niche activities. Crucially, the strong investment in research projects is not yet complemented by comparable levels of support for accelerating and upscaling radical innovations, e.g. through financial assistance or market creation. Improving synergies between EU policies and programmes could further help accelerate the diffusion and use of transformative innovation.

Question 4: Does EU policy enable a just transition of the food system?

The concept of the just transition has become prominent in sustainability transitions research in the last decade, reflecting the need to engage with the social dimensions of transitions and manage unintended harms. The EU has sought to address some of the negative social and economic repercussions of energy system transition through the Just Transition Mechanism and Fund. At present, no equivalent mechanism exists for the agri-food transition, at least at the EU level.

Mechanisms to ensure a just transition are essential for the social acceptability and political feasibility of efforts to upscale innovations, implement stringent phase-out measures and secure broad societal support for ambitious visions and targets. Tools like the Just Transition Fund can provide compensation, but there is also a need for measures that respond to cultural and social lock-ins and facilitate effective stakeholder participation in decision-making processes. This means embracing a multidimensional understanding of justice, encompassing distribution (of benefits and harms),

recognition (of the interests of diverse stakeholders), and procedures (e.g. fair and transparent decision-making). In practice, this will mean employing governance approaches to give affected groups a voice in visioning and planning on regional scales, addressing injustice across the entire system, recognising the diverse values and identities of communities and stakeholders, and using anticipatory methods to build a shared understanding of the system and future change.

Question 5: Does EU food policy provide a coherent framework and directionality towards a sustainable food system?

Governing food system transitions requires coordinated action across different policy areas and across society more broadly. Coherent and consistent policy goals and instruments, combined with long-term visions, missions and targets, are essential to create this shared direction and to enable governments and businesses to focus their resources on specific innovation and transition pathways. While there are some synergies between the goals of the CAP, CFP and F2F strategy, the overall EU food policy mix sends mixed signals because of incoherencies between policy goals. The policy mix is also ambiguous about the desired direction of change. For example, the F2F strategy often refers to 'sustainable agriculture' — a concept that is open to radically different interpretations.

In line with the F2F strategy, the European Commission is developing a proposal for a legislative framework for a sustainable food system that 'will promote policy coherence at EU and national level, mainstream sustainability in all food-related policies' (EC, 2020a). An ambitious framework could significantly strengthen directionality and coherence. Progress towards transparent mission maps and a coherent policy mix needs to be supported, as well as periodically reviewed and monitored. Actions and activities needed to achieve sustainable food systems will vary between EU countries, and their regions and cities. However, developing ambitious policies, goals and targets at EU level can support the development of food system strategies on national and local scales that complement and drive progress towards the EU's shared goals.

Windows of opportunity

This report comes at a critical time. The EGD and F2F strategy represent vital advances in the uptake of systemic transitions thinking in EU policy. Yet, they are clearly only first steps. As set out in this report, the EU policy mix governing Europe's food system is characterised by gaps and inconsistencies that limit its transformative potential. The actions identified across this report and summarised in Table ES.1 could make the policy mix more transformative. However, their strong interdependence means that their

potential can only be fully realised through a strategic and coherent approach.

The planned development of an EU legislative framework for a sustainable food system in 2023 provides a vital opportunity to achieve the needed coherence and ambition. While some interest groups have pointed to the crisis in Ukraine as a reason to delay or derail implementation of the F2F strategy and development of the legislative framework for a sustainable food system, it is clear that transformation of Europe's food system is essential to ensure food security and to achieve the EU's broader environmental, climate, social and economic goals.

As European Commission Vice President Timmermans has argued: 'Using the war in Ukraine to water down proposals and scare Europeans into believing sustainability means less food is, frankly, quite irresponsible' (EC, 2023b).

An ambitious legislative framework for a sustainable food system has the potential to set the direction for broader changes in EU policy, including under the next European Commission and in the post-2027 financial period. In doing so, such a framework can make a decisive contribution to EU efforts to achieve a just and sustainable European food system.

Table ES.1 Possible actions to create a more transformative EU policy mix

Policy intervention point	Action
Stimulating and promoting the emergence of diverse forms of innovation	<ul style="list-style-type: none"> Engage consumers as innovators and decision-makers — designing and delivering sustainable new social practices, institutions or business models, and remedying the democratic deficit of food systems
	<ul style="list-style-type: none"> Improve multi-actor engagement with local authorities, NGOs and others that currently lack access to R&I funding (e.g. via smart specialisation) Develop food system missions to stimulate, connect and accelerate experimentation Encourage food system innovation and transdisciplinary perspectives in the exploration and evaluation of alternatives through R&I funding, such as Horizon Europe
	<ul style="list-style-type: none"> Support the upscaling of food production that builds resilience of natural systems and reduces environmental impacts Create markets for more sustainable products and services by changing the food environment guiding consumption patterns (e.g. using LCA information better, fiscal reforms and regulations on food availability, accessibility and desirability) Address financial barriers to upscaling (e.g. with public guarantees, and support for mini-bonds and crowdfunding) Support upscaling of multi-actor initiatives, and encourage bolder experimentation with upscaling of promising innovations and evaluation of effects (e.g. by expanding successful programmes like LIFE) Promote changes in behaviours and norms (e.g. regulating marketing and advertising of food, changing availability of food in key micro-environments, linking sustainability to other motivations such as health) Improve synergies between policies for upscaling innovation (e.g. linking Horizon Europe better with EU regional policy funding)
Upscaling, replicating and institutionalising innovations and sustainable practices	

Table ES.1 Possible actions to create a more transformative EU policy mix (cont.)

<p>Phasing out unsustainable practices</p>	<ul style="list-style-type: none"> • Further reorient EU subsidies and support for farming and fishing away from environmentally harmful practices towards supporting more sustainable practices • Make food industry actors more accountable for the impacts of their business activities (e.g. by increasing corporate sustainability reporting and due diligence requirements as a basis for future legislation, civil society action and consumer empowerment) • Navigate resistance from powerful interest groups by providing compensation, incentives, recognition and engagement in processes, and building consensus on the way forward • Signal the long-term direction of phase-out measures (e.g. relating to practices, harmful substances, dietary patterns) to enable planning and reorientation of investments, and sequence measures to enable the emergence of alternatives • Take actions to curb corporate influence in phase-out policy processes
<p>Policy intervention point</p> <p>Anticipating and managing social and economic disruption</p>	<p>Action</p> <ul style="list-style-type: none"> • Embrace a multidimensional understanding of justice in policy, including distributive, recognitive and procedural justice • Create distributional mechanisms, like the Just Transition Fund, for the food system • Enable stakeholder agency and recognition by promoting governance for solution co-creation on appropriate scales and promoting 'futures literacy' • Support a just transition for consumers (e.g. via 'carbon dividends' or school meal programmes) to ensure universal access to healthy, sustainable food • Encourage long-term planning for reconversion by aligning educational, innovation and labour force skill development policies
<p>Harnessing synergies and ensuring that policies are coherent and consistent</p>	<ul style="list-style-type: none"> • Create a strong EU legislative framework and targets for Europe's food system to guide reforms across EU policy areas and to inform strategic planning and policymaking at other levels of governance • Create new EU roles or institutions to improve coordination across policy areas and engage frontrunning stakeholders in decision-making • Promote the development of national food system strategies to translate EU-level goals into national contexts, embed a transformative, systemic perspective in national policy and promote horizontal and vertical coherence • Enable more direct EU support for community-level initiatives to boost multi-actor participation and vertical governance • Encourage regular evaluation of policy mix consistency and coherence
<p>Giving direction to innovation and system change</p>	<ul style="list-style-type: none"> • Create political spaces to deliberate and develop a broad but ambitious vision for Europe's food system • Develop concrete food system visions at national, regional and local scales through engagement of relevant stakeholders and frontrunners • Promote action towards Europe's shared goals with ambitious targets and policies • Develop 'mission maps' to make sense of the directionality implicit in EU policy and provide the basis for future policymaking

1 Report aims and structure

In 2015, the EEA wrote that 'living well within ecological limits will require fundamental transitions in the systems of production and consumption that are the root cause of environmental and climate pressures. Such transitions will, by their character, entail profound changes in dominant institutions, practices, technologies, policies, lifestyles and thinking' (EEA, 2015).

Both knowledge and policy have evolved rapidly since then. The EEA has published a series of reports that address sustainability transitions and their governance (e.g. EEA, 2016a, 2016b, 2017b, 2019a, 2019c). And with the European Green Deal (EGD) (EC, 2019) the EU has put in place a broad framework that reflects many of the insights from sustainability transitions research, combining policies aimed at transforming core production-consumption systems with a focus on cross-cutting themes, such as innovation, finance and the just transition. At the heart of the EGD is a recognition that achieving the needed transformation of social and economic systems will require a 'bold and comprehensive' policy approach, involving 'intense coordination to exploit the available synergies across all policy areas' (EC, 2019).

This report explores what this means in practice in the context of Europe's food system. As noted in the EGD, 'Food production still results in air, water and soil pollution, contributes to the loss of biodiversity and climate change, and consumes excessive amounts of natural resources, while an important part of food is wasted. At the same time, low quality diets contribute to obesity and diseases such as cancer'. The global COVID-19 pandemic and the ongoing crisis in Ukraine have further underlined the urgent need for European countries to work together to transform Europe's food system in ways that make it more resilient and sustainable, and guarantee food security (EC, 2020a, 2022b).

Project aims and approach

The aim of this report is to assess the EU policy mix governing Europe's food system in the light of what is known about the dynamics and governance of sustainability transitions. The report focuses on two core questions. First, is the current EU policy mix targeting the food system consistent with the EGD's transformative agenda? Second, if not, how could the policy mix be made more genuinely transformative?

A large and diverse body of EU policies and strategies influence Europe's food system. For this reason, this report does not attempt to carry out a systematic analysis of the design or stringency of individual policies but rather provides a broad assessment of the policy mix, aiming to make sense of where and how it contributes to transition dynamics, and where there may be gaps or limitations.

Report structure

Chapter 2 provides an overview of Europe's food system, outlining the environmental and other outcomes that necessitate fundamental changes to the system, as well as the many social and economic benefits that the system generates, which contribute to lock-ins and path dependency.

Chapter 3 summarises the analytical foundations for the assessment, in terms of research into sustainability transitions and policy mixes. It also outlines the two-phase approach used in the assessment.

Chapter 4 presents the outcomes of the first phase of the assessment, which involved mapping and assessment of the Common Agricultural Policy (CAP), the Common Fisheries Policy (CFP) and the Farm to Fork (F2F) strategy; a review of relevant literature; and a series of stakeholder interactions. This phase culminated in a set of five questions about potential gaps and limitations in the policy mix for further analysis, specifically:

1. Does the EU policy mix promote a shift to sustainable food consumption?
2. Is EU food policy actively phasing out unsustainable technologies, practices and systems?
3. Does EU policy provide sufficient support for transformative innovation?
4. Does EU policy enable a just transition of the food system?
5. Does EU policy provide a coherent framework and directionality towards a sustainable food system?

Chapters 5-9 address these five questions, presenting the findings of the second phase of the assessment, which was based on an assessment of other relevant EU policies. Each of these chapters introduces relevant insights from research into sustainability transitions, assesses the EU policy mix in the light of these insights and identifies potential opportunities to make the policy mix more transformative.

Chapter 10 draws together the findings from the analysis in Chapters 4-9, connecting them to the policy intervention point

framework and highlighting implications for the knowledge needed to support the transformation of Europe's food system.

Finally, the annexes set out the core policy goals of the CAP, CFP and F2F strategy, and the list of policy instruments categorised and mapped in the first phase of the assessment.

2

The need to transform Europe's food system

Food production, trade and consumption have shaped human history, natural landscapes and people's relationship with the natural world. Food is also a crucial element in connecting communities, defining identities, expressing values and preserving cultural traditions (EEA, 2017a). A food system can be defined as all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, and to the outputs of those activities, including socio-economic and environmental outcomes (HLPE, 2014)

Food systems have evolved from predominantly local systems to complex global networks. As currently structured, Europe's food system is a major driver of environment, climate and health impacts, including the depletion of resources, loss of biodiversity and degradation of ecosystems in Europe and beyond, emissions of pollutants and unhealthy dietary choices (IPES-Food, 2019). The need to transform Europe's food system is now firmly established in science and policy. A substantial body of scientific evidence points to the need for far-reaching action to rethink models of food production, reconfigure value chains and reduce meat and dairy consumption (FAO, 2017; IPCC, 2019; IPES-Food, 2019; Willett et al., 2019; GCSA, 2020; SAPEA, 2020). Indeed, the EAT-Lancet Commission argues that achieving healthy and sustainable diets within planetary boundaries will require nothing less than a 'great food transformation' (Willett et al., 2019). Policies such as the EU's Farm to Fork (F2F) strategy correspondingly aim 'to enable and accelerate the transition to a fair, healthy and environmentally-friendly food system'.

2.1 Sustainable food system outcomes

Moving towards sustainable food systems is not straightforward because sustainability is multidimensional.

There are also diverse views on the problems with the food system, where and how to intervene to deliver more sustainable outcomes and how to balance trade-offs between different sustainability objectives.

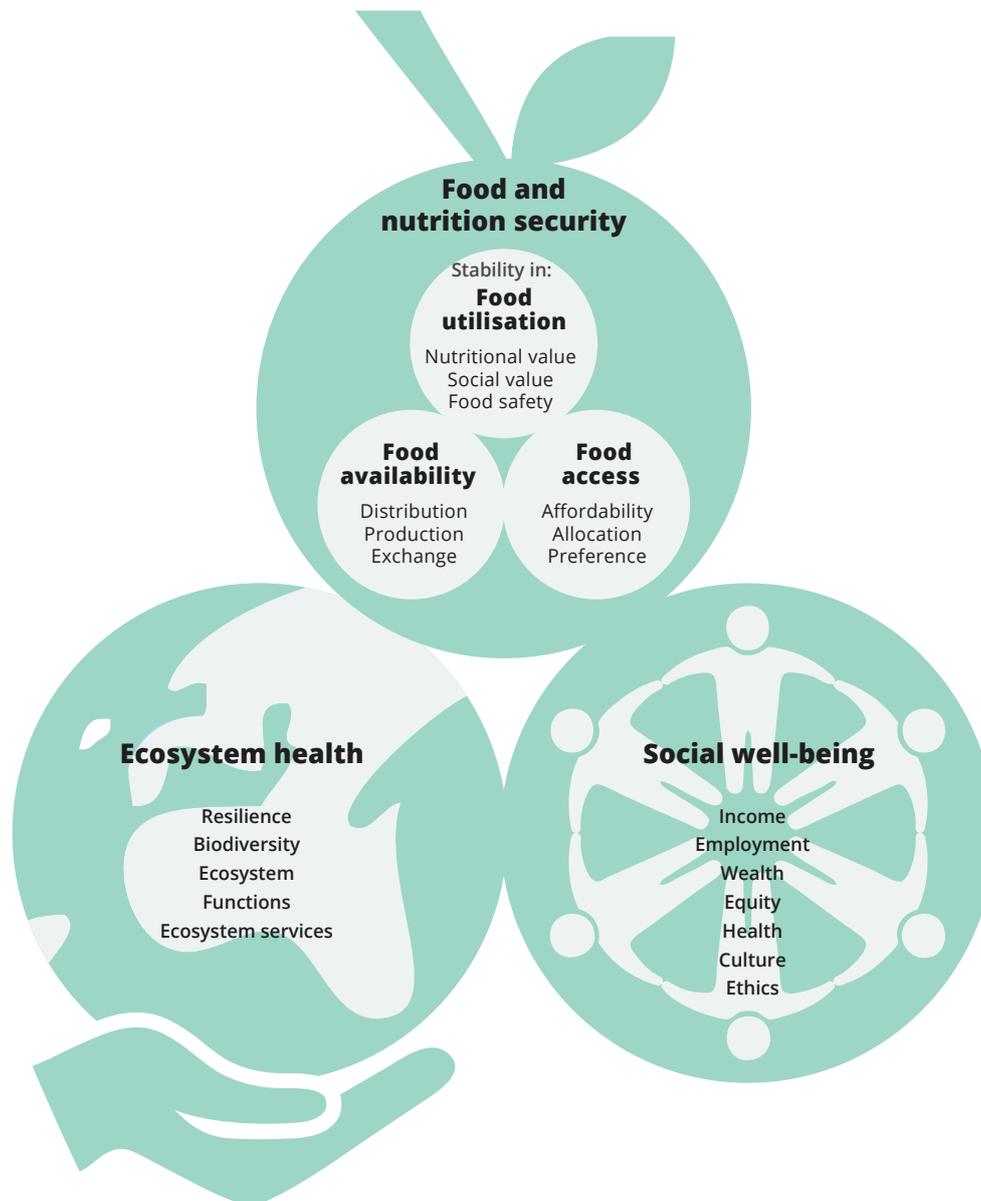
A sustainable food system for the EU has been defined as:

one that provides and promotes safe, nutritious and healthy food of low environmental impact for all current and future EU citizens in a manner that itself also protects and restores the natural environment and its ecosystem services, is robust and resilient, economically dynamic, just and fair, and socially acceptable and inclusive. It does so without compromising the availability of nutritious and healthy food for people living outside the EU, nor impairing their natural environment (SAPEA, 2020).

Despite the complexity, it is possible to identify criteria for sustainable food systems and robust sustainability assessment frameworks (Bock et al., 2022) that can be supported by a coherent policy mix and effective governance arrangements.

Figure 2.1 interprets the EU 2050 vision set out in the 8th Environment Action Programme that 'we live well, within the planet's ecological limits' in terms of three overarching food system outcomes: food and nutrition security, ecosystem health, and social and economic well-being. To 'live well' means that the food system optimises outcomes in terms of food and nutrition security and social well-being in an equitable way and contributes to the provision of good livelihoods, healthy, safe and nutritious food, and communities and culture. To 'live within the planet's ecological limits' means that the food system optimises outcomes in terms of ecosystem health, contributing to ecosystem resilience, rather than degrading biodiversity, ecosystems services and the natural resource base.

Figure 2.1 Food system outcomes



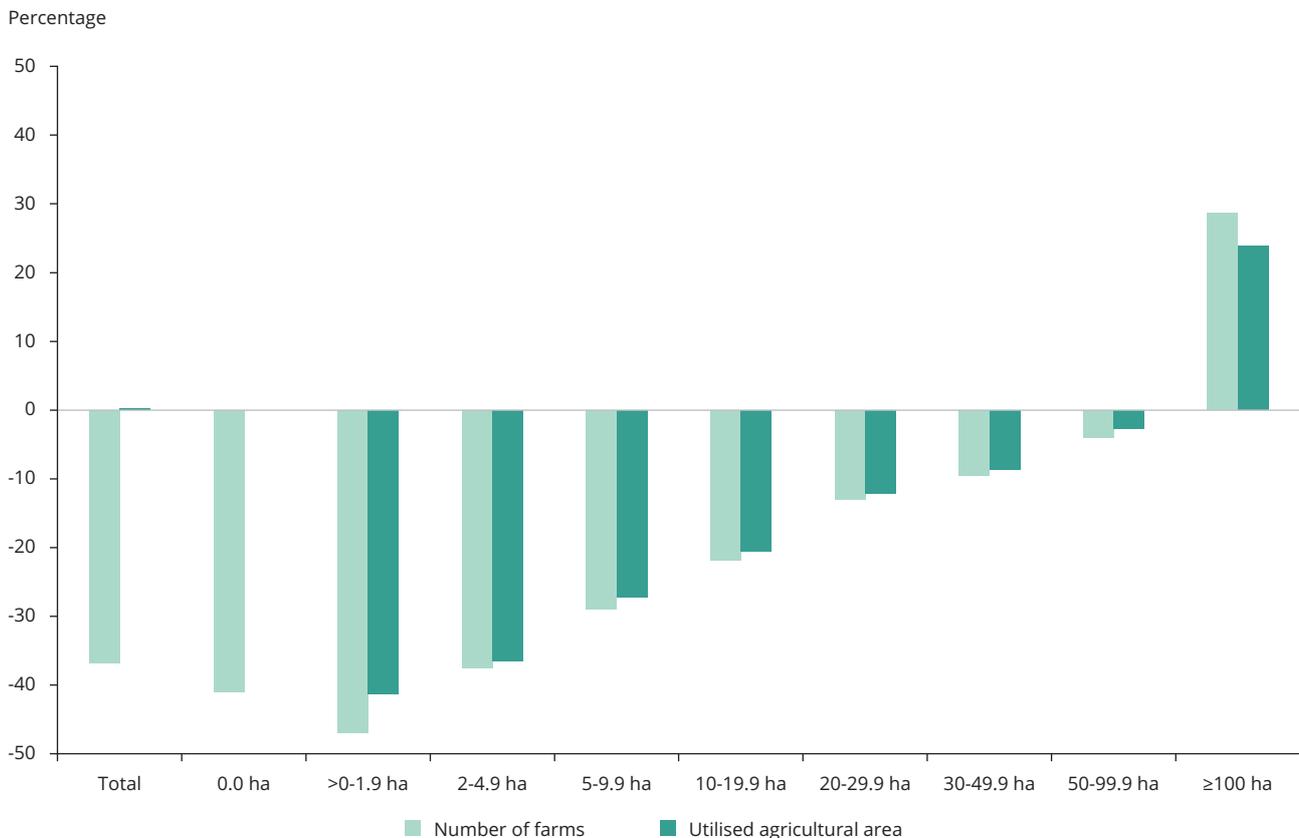
Source: EEA (2017a).

2.2 The European food system

Europe's food system is not a single, uniform entity. It incorporates highly interlinked national and local food systems, reflecting different biogeographical, economic, territorial and social conditions. Yet, the European dimension is crucial, because many important aspects, such as regulation, financial support and trade, are determined at EU level.

The overall European food system is characterised by wide use of capital-intensive technologies, high dependence on fossil fuels (e.g. for transport, machinery, production of

synthetic fertilisers) and synthetic agricultural inputs (e.g. fertilisers and pesticides), low labour inputs, and long and often complex supply chains. There is also a significant share of organic farming and extensive grazing systems in mountain ranges and other less productive areas. Europe's food system is also diverse, with many small-scale family-based producers operating alongside large, globalised food companies, retailers and suppliers. The global dimension increasingly influences the food system in Europe, as international markets, technological developments and transport systems have made it possible to connect food production and consumption globally (EEA, 2017a).

Figure 2.2 Changes in numbers of farms and total farmland area in the EU-27 by farm size, 2005-2020

Note: The EU figure for 2005 includes 2007 data for Croatia.

Source: Eurostat (2022a).

Food production

While the primary function of the agriculture, fisheries and aquaculture sectors is to provide food, these sectors also help to maintain employment in rural and coastal communities and thus support a certain level of development and social cohesion in marginal areas.

Currently, agriculture accounts for around 47% of the land area in the EU, and production has increased significantly since the 1950s as a result of technological and economic change, EU and national policy measures, production-related subsidies and market incentives. There has been growth in the area and livestock numbers per farm, with many small family units disappearing and large corporations becoming more important. While overall agricultural production has increased, the number of farms (and farmers) has declined by 37%, from 14.4 million farms in 2005 to 9.1 million farms in 2020, while the overall area used for agricultural production remained almost unchanged (Eurostat, 2022d; Figure 2.2).

Although the dominant trend is still towards intensification, around 9% of agricultural land lies on Natura 2000 sites (EC, 2017) and around 30% is classified as high nature value farmland.

The share of organic production in total agricultural production has also increased significantly in the EU, and is projected to increase further. The area under organic farming increased by 4.3 million hectares between 2012 and 2019 and now constitutes 9.1% of utilised agricultural area (Eurostat, 2021a).

Agricultural production both contributes to climate change and is affected by climate change. Agriculture accounts for 11% of the total domestic annual greenhouse gas (GHG) emissions of the EU. Emission reductions in the agricultural sector have stagnated since 2005 and, based on current policies and measures, this trend is expected to continue, with only a 1.5% decrease expected between 2020 and 2040 (EEA, 2022b). Agriculture is dependent on the sustainable use of natural resources and ecosystem services, such as pollination. It is a key source of environmental pressures, with unsustainable agricultural activities leading to pollution of soil, water and air, overexploitation of natural resources, biodiversity loss and ecosystem degradation (EEA, 2019b). For instance, agriculture is responsible for some 94% of EU ammonia emissions, which has significant adverse effects on the natural environment and every year contributes to air pollution that causes the premature deaths of around 360,000 Europeans (EEA, 2022a).

The EU is the seventh largest producer of fishery and aquaculture products in the world, with 2% of global production in 2020. The EU fishing and aquaculture sector employs over 160,000 people (Eurostat, 2020) and, although relatively small, the sector plays a role by providing economic activity and employment in many coastal communities (EEA, 2019b). In Europe, there has been a steady decline in production (by 25.7%) in capture fisheries since 2000, while outputs from aquaculture have remained relatively stable (Eurostat, 2021a). In 2019, total EU landings comprised 4.1 million tonnes, with an economic value of EUR6.8 billion, and 1.4 million tonnes of aquaculture production, with an economic value of EUR5 billion (EUMOFA, 2022). Of the fish caught, 70% came from the North Atlantic region and 10% from the Mediterranean and the Black Seas, with the remainder caught by distant-water fleets (Eurostat, 2021a).

Fish stocks are a renewable resource if exploited in an appropriate manner. Overfishing has been historically present in all EU regional seas, leading to changes in marine food webs and affecting species composition and abundance, with incidental catches of non-target species increasing the magnitude of such changes. Other impacts, for example damage to the seabed, are related to fishing methods and the type of fishing gear used. The overall use of fish and shellfish stocks in Europe currently remains beyond the limit for long-term environmental sustainability, and the state of stocks is especially critical in the Mediterranean and Black Seas (EEA, 2022d). In the Mediterranean, 'the intensity of fishing is overshooting sustainable levels by nearly 100%' while in the Baltic Sea recent improvements are also under threat due to overfishing and eutrophication, which hinders fish reproduction and growth (EC, 2022h).

While the agriculture and fisheries sectors have declined in relative importance economically over the last 50 years, the wider food and drink industry is one of the largest manufacturing sectors in the EU in terms of employment (4.5 million), turnover (1,093 billion euros) and value added (1.9% of EU gross value added) (FoodDrink Europe, 2021). All food system activities have an environmental impacts and the wider food system is a major consumer of energy, emitter of GHGs and air pollution, and generator of waste. The nitrogen use efficiency of the EU food system has been estimated at 18% (Leip et al., 2022). Improving the sustainability of food production in Europe implies a fundamental shift towards more ecological approaches by ensuring the sustainable use of natural resources, making changes in production methods, food choices and diets, and reducing environmental risks by phasing out the use of harmful chemicals throughout the food chain (EEA, 2017a).

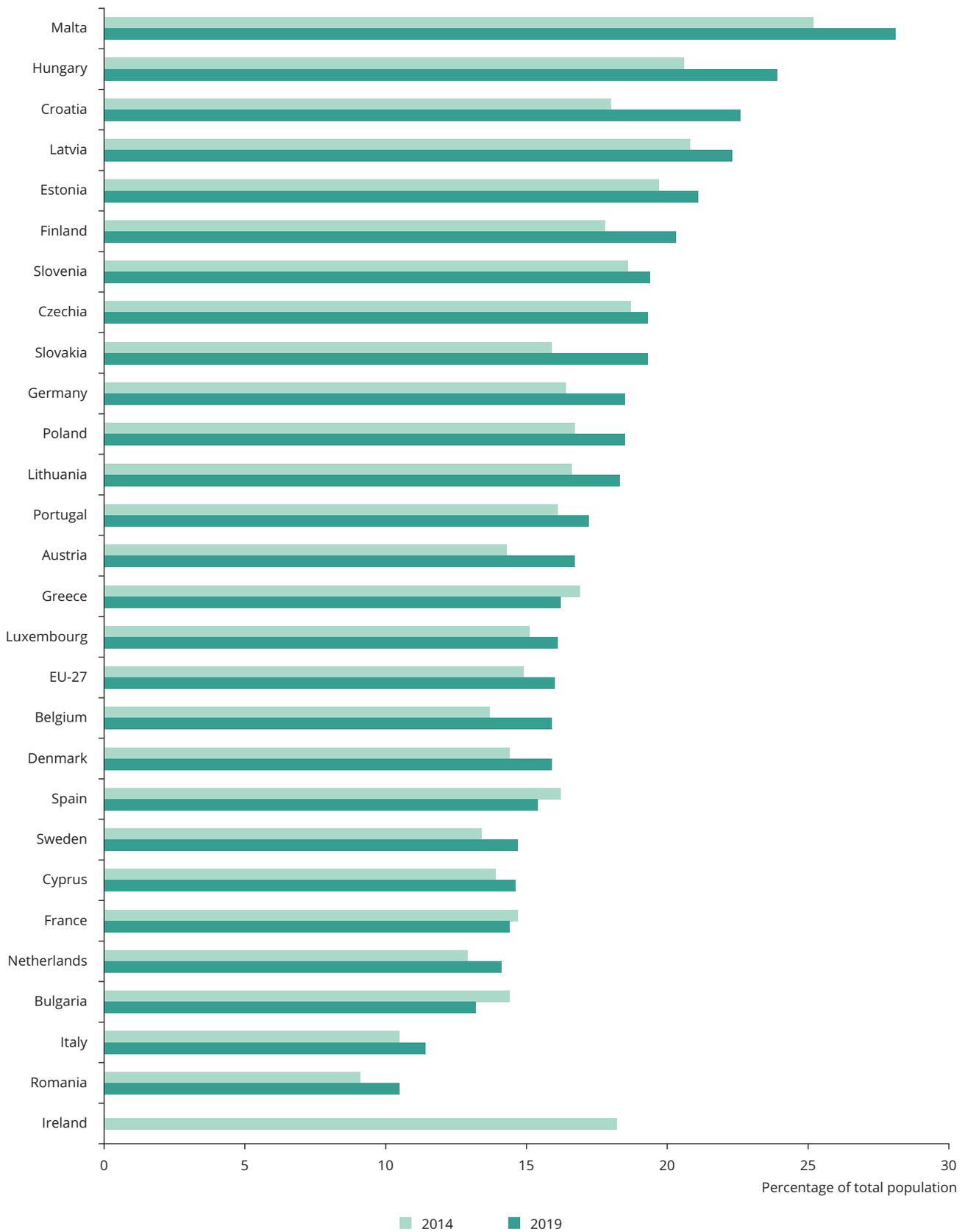
Food consumption

Diets 'inextricably link human health and environmental sustainability' (Willett et al., 2019). Most studies on the environmental impacts of various diets conclude that a diet rich in plant-based foods with fewer animal source foods has benefits for human health and the environment (Willett et al., 2019). In the EU, average intake of energy, red meat, sugars, salt and fats continue to exceed recommendations, whereas consumption of whole-grain cereals, fruit and vegetables, legumes and nuts are insufficient (EC, 2020a). Food consumption patterns vary substantially among European countries. For example, meat consumption ranges between 100 and 160 g/day, fish and seafood consumption ranges between 10 and 60 g/day and milk and dairy product consumption ranges between 170 and 520 g/day (EFSA, 2008). The share of household expenditure attributed to food and non-alcoholic beverages in EU Member States varies between 9% and 25% (Eurostat, 2022b).

Food and drink consumption are related to leading risk factors for disease and mortality in Europe. Poor dietary choices contribute to obesity and an increased risk of cardiovascular disease, stroke, certain types of cancer and diabetes. In 2019, an estimated 52% of the adult population was overweight, with obesity increasing at a rapid rate in most EU countries (Eurostat, 2021b; Figure 2.3). The abundance of unhealthy foods with little nutritional value has resulted in nutritional poverty and 'hidden' hunger, meaning that consumers may have enough to eat in terms of calories, but they do not meet their needs in terms of nutrition (Benton et al., 2021). Food poverty is still an issue in Europe. In 2019, around one in every 15 people was unable to afford a meal with meat, chicken, fish or a vegetarian equivalent every second day (Eurostat, 2021a).

Over the last 50 years, food consumption in Europe has undergone significant changes. Consumption patterns are influenced by the food environment — i.e. the combination of physical, socio-cultural, economic and policy elements that influence what people eat. In recent years, awareness of the environmental impact of meat consumption has seen a rise in intake of plant-based proteins and milks, and an increasing number of flexitarians, vegetarians and vegans, especially among younger consumers (Nicolau et al., 2021). However, food-based dietary guidelines are only starting to integrate environmental aspects or develop guidelines for people choosing low-meat, vegetarian or vegan diets (Costa Leite et al., 2020).

Figure 2.3 Share of the adult population aged 18 and over that were obese



Note: Ireland data for 2019 not available.

Source: Eurostat (2023).

Trade

In 2020, the EU exported to non-EU countries agricultural, fishery, food and beverage products that together were valued at 179 billion euros (Eurostat, 2021a). Europe is a net exporter of meat, dairy products, cereals and wine, and is a net importer of tropical fruits, coffee, tea, cocoa, soybean products, palm oil, and seafood and fish products. Imports of fish and aquaculture products for direct consumption and fishmeal for aquaculture meet around 70% of European demand (EUMOFA, 2022), and contribute to overfishing outside Europe. However, the majority of food consumed in the EU is still produced within the EU and two thirds of the EU's trade in food and drink products takes place between EU countries (Eurostat, 2021a).

Food production and consumption in Europe also have environmental, social and economic impacts beyond European borders. More than 30% of the land required to meet EU food demand is located outside Europe (IPES-Food, 2019). Europe imports feed used in both livestock and aquaculture production, meaning that Europe is dependent on overseas land for its own production. In 2018, the land footprint of EU soybean imports was around 4.7 million hectares (De Laurentiis et al., 2022). Much of this was in South America, where intensive export cropping zones have been linked to deforestation, environmental degradation of important biomes, pesticide poisoning and human rights abuses (IPES-Food, 2019). The use of land for feed production, rather than food production, also has implications for food security. However, as one of the world's main importers and exporters, the EU can play an influential role in setting standards for food and feed production and trade (Bock et al., 2022).

Food system actors

Food system actors include those directly involved in food chain activities, as well as governments and civil society, which set the wider policy and societal contexts (EEA, 2017a). Food system actors represent the largest group of natural resource managers in the world and, consequently, are critical in both creating problems and implementing solutions (UNEP, 2016). Identifying actors along the food chain (Figure 2.4), as well as where and how power is located, enables policymakers to target actors with influence.

Although all actors in the food system need to contribute towards sustainability, some have more agency (i.e. ability to take action or choose what action to take) than others. Bock et al. (2022) identified the six most important food system actors to be primary producers, food and drink manufacturers, retailers, consumers, the financial sector and international traders. While primary producers and consumers are the largest in numbers, they do not necessarily have the most power or influence to bring about change. Instead, large retailers, large food and drink manufacturers, the financial sector and international traders were considered the most

influential in shaping the behaviours, activities and choices of other actors regarding sustainability (Bock et al., 2022).

In the European food system, small and medium-sized enterprises are responsible for 40% of turnover and 58% of employment (FoodDrink Europe, 2021). However, the 10 biggest retail companies in the EU have a combined market share of over 50% (Heinrich Böll Stiftung et al., 2017), exerting a large influence over both producers and consumers. Many larger companies are vertically integrated, meaning that they operate at different steps of the value chain, and are well connected to one another through subsidiaries. This consolidation has been accompanied by a shift in power from primary producers to actors downstream in supply chains and a decrease in the share of EU food chain value going to primary producers (IPES-Food, 2019).

2.3 Policy and governance

The key challenges for EU policy and governance in terms of achieving sustainable outcomes for the food system relate to (1) the complex and global nature of the system; (2) policy coherence and coverage; (3) the need to deliver on and balance multiple objectives; (4) the ability to identify synergies and co-benefits; and (5) managing difficult trade-offs in a transparent way (EEA, 2017a).

With the F2F strategy, the EU has put in place a strategic policy framework for the food system as a whole (see Chapter 4). However, a much broader range of policies shape Europe's food systems, including policies addressing products, environment and climate protection, health, research and innovation (R&I), trade and development (Figure 2.5). Together, the policies provide frameworks for governance and action, define incentives and direct R&I. In doing so, they shape the food system and influence how activities and actors interact with each other and the use of natural resources.

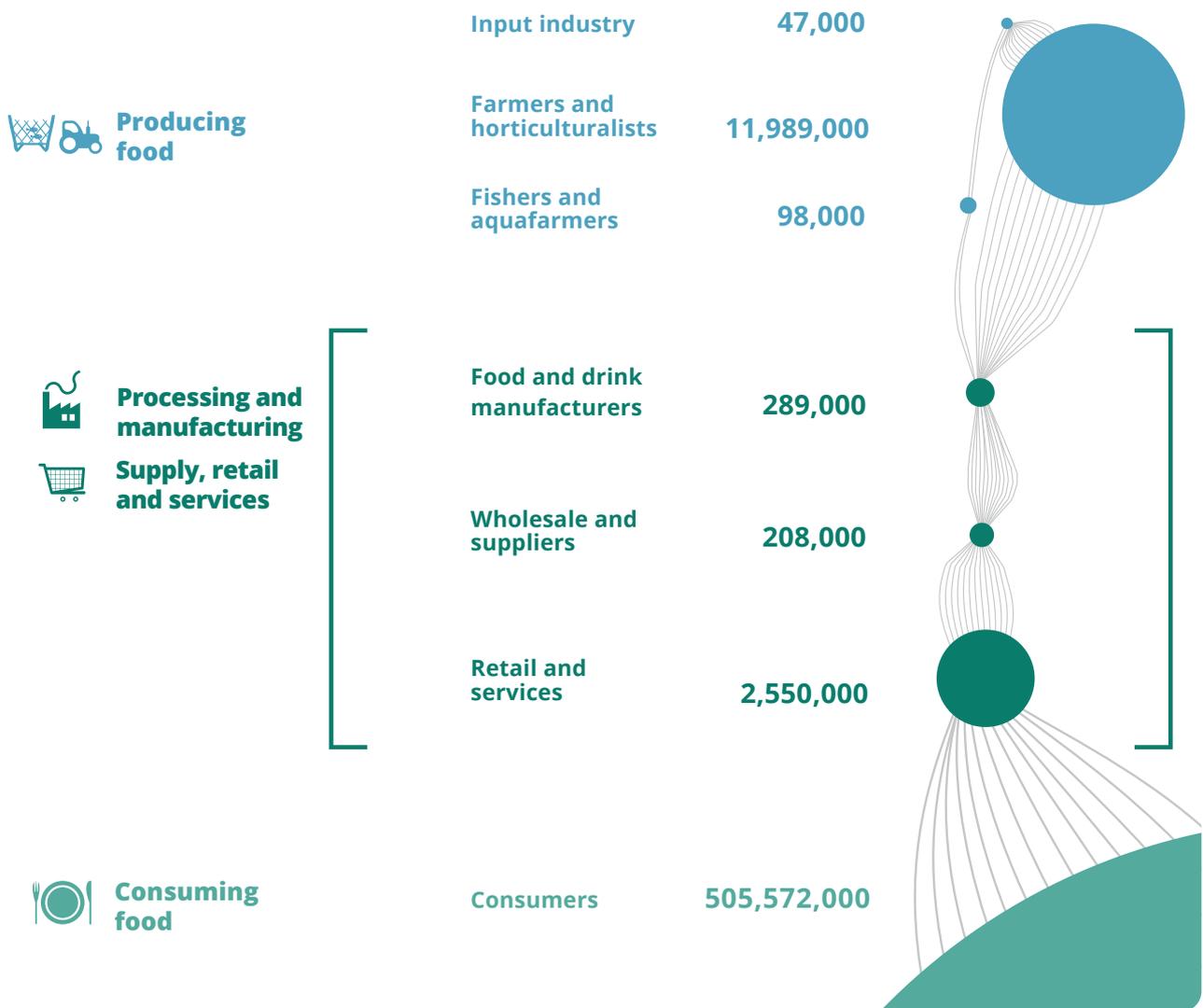
From an EU policy perspective, there are challenges with current governance arrangements and there is little evidence that conventional market-based policies can transform a food and farming model that systemically generates negative externalities (SAPEA, 2020). Governance mechanisms normally operate within specific policy areas. For example, fisheries and aquaculture is governed by the Common Fisheries Policy (CFP), agriculture by the Common Agricultural Policy (CAP) and the protection of biodiversity by the EU Habitats and Birds Directives. This means that potential synergies, tensions and trade-offs across policy domains are not always explicitly considered. These include, for example, the potential competition between producing crops for food, feed and renewable energy or other industrial uses, and the implications of nature restoration targets for food production. At the same time, however, there are potential synergies between actions at different stages of the food system, from the design and production of products, to consumption and

waste that reduce the overall demand for resources, prevent waste generation and use resources in a circular way, reducing GHG emissions and increasing agriculture's capacity to sequester carbon (EEA, 2022b).

Looking ahead, challenges lie not just in developing governance arrangements that address this complexity but also in their practical application, particularly regarding

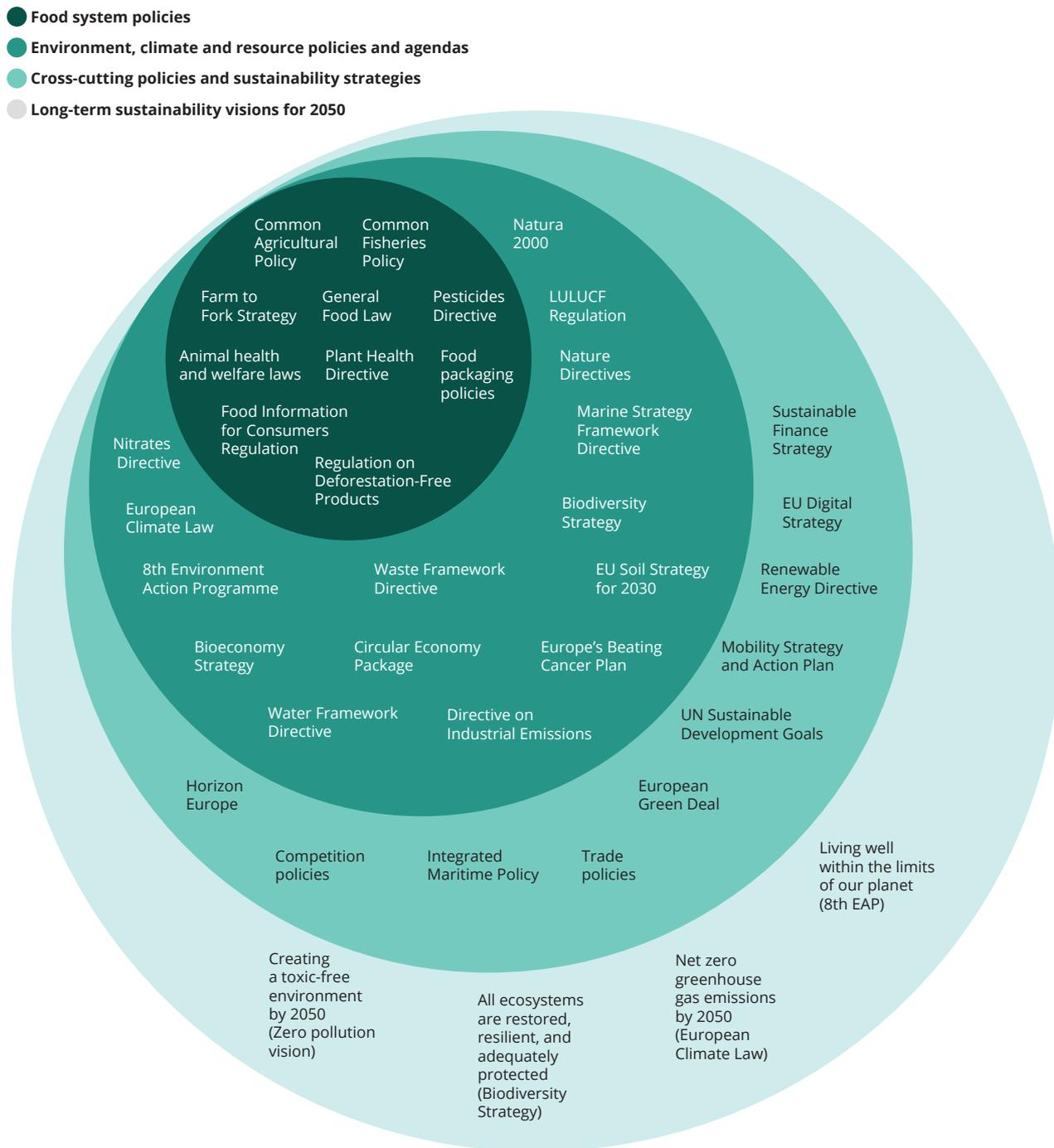
variation in policy implementation at country level. Harmonisation of multiple objectives and goals may not always be possible, but governance arrangements that involve stakeholders and improve shared understanding of why and how food is produced, obtained and consumed can open up people's views to a wider array of responses and solutions. Achieving a sustainable food system will require strengthening policy coherence and effective multi-level governance.

Figure 2.4 Actors in the food chain



Source: EEA (2017a).

Figure 2.5 Key EU policies, strategies and visions influencing Europe's food system



Source: Based on EEA (2017a).

2.4 The challenges and opportunities ahead

The need to transform the food system is clear and the challenges are equally obvious. Europe's food system is hugely complex and interwoven with its societies, economies, cultures and landscapes. Despite differences in approaches, reviews and assessments of scientific evidence have identified a range of complementary conclusions regarding the type of policy interventions that are needed to transform food systems (FAO, 2017; EEA, 2017a, 2019b; IPCC, 2019; IPES-Food, 2019; Willett et al., 2019; GCSA, 2020; SAPEA, 2020; Bock et al., 2022). In combination with current policy ambitions (EC, 2020a, 2021b; EU, 2022) and objectives, these studies identify a number of clear areas where urgent and bold action is needed to phase out unsustainable practices, promote sustainable alternatives and facilitate a socially fair transition. These areas include:

- setting out a clear vision of a sustainable food system and further developing the policy framework with legally binding targets;
- enhancing coordination across policy domains and governance levels to improve coherence;
- creating a food environment that makes it easier to choose healthy and sustainable diets to benefit well-being and reduce health-related costs for society;
- embedding food production in a broader development perspective and promoting participatory social innovation;
- improving food production methods to build resilience of natural systems and reduce environmental impacts, for example through sustainable intensification, agroecology, organic farming and halting overexploitation of fish stocks;
- reducing use, risk and dependency on pesticides and antimicrobials, and enhancing integrated pest management;
- reducing fertiliser use and nutrient pollution through integrated nutrient management;
- transitioning to less animal farming, with reduced dependency on critical feed materials and improved animal welfare;
- shifting food choices and diets towards plant-based dietary patterns and reduced meat and dairy consumption;
- reducing food losses and waste across the food supply chain, consumption sectors and households;
- ensuring a just transition for affected stakeholders;
- supporting a global transition and ensuring that European food production, consumption and trade do not compromise food security or the environment of those outside the EU.

The transition to a sustainable food system presents a huge economic opportunity and will be essential to achieving the objectives of the European Green Deal, while improving the incomes of primary producers and reinforcing the EU's competitiveness (EC, 2020a). EU policy therefore has a vital role to play in driving this paradigm shift from food as a commodity to food as a common good — a great food transformation.



3

Analysing policy mixes for sustainability transitions

3.1 Characteristics of sustainability transitions

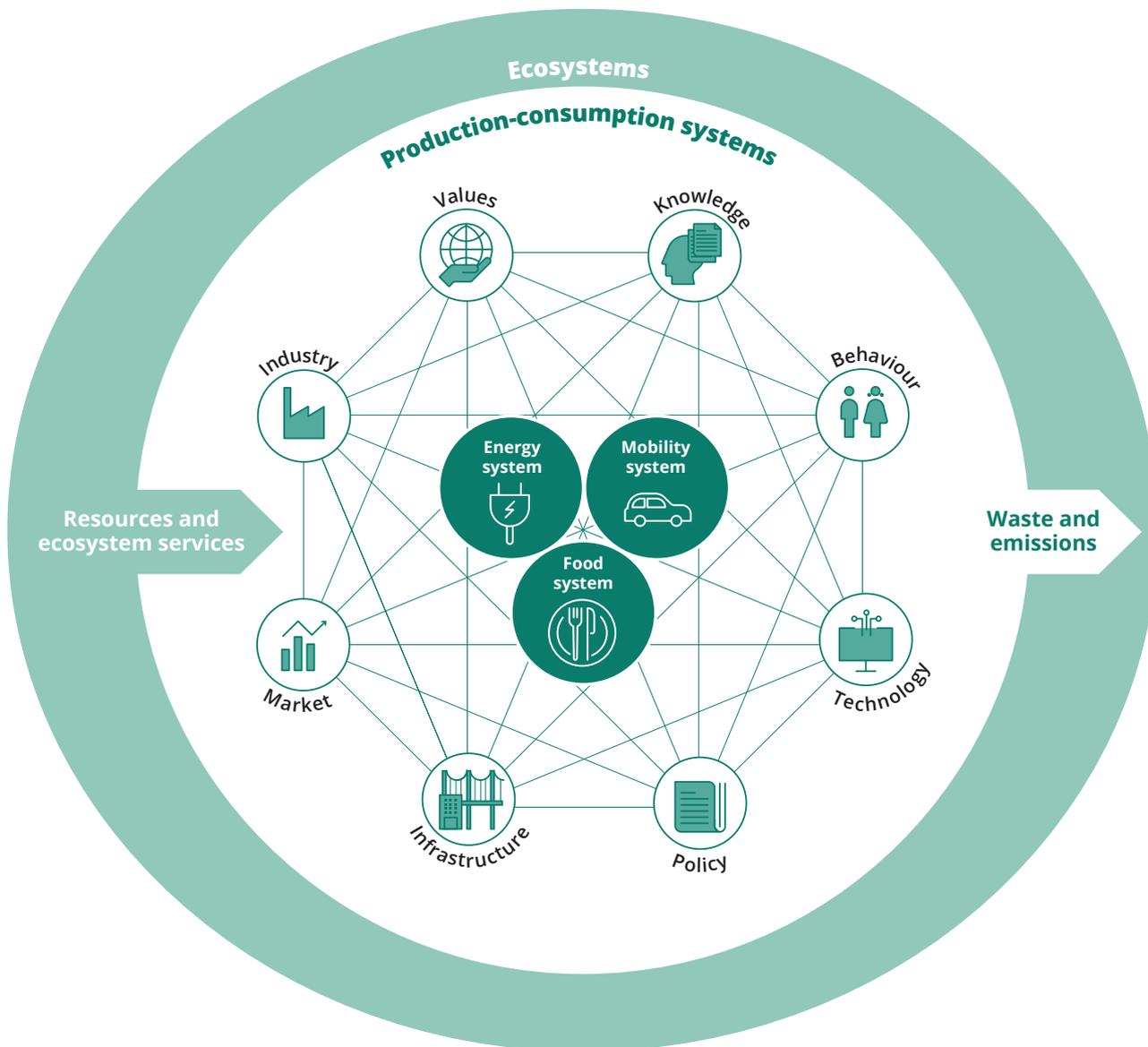
During the last two decades, research into sustainability transitions and transformations has grown rapidly, providing insights into how societal systems change and the role of policy in stimulating and guiding these transformation processes (Markard et al., 2012; Köhler et al., 2019). While there are contrasting schools of thought in transitions research, they share an understanding that the persistent sustainability problems facing humanity are rooted in complex societal systems that meet demand for food, energy, mobility and shelter (EEA, 2017b). These systems of production and consumption account for much of humanity's burden on nature, but they also link together diverse material, social and institutional elements that have co-evolved over decades (Geels, 2004). These elements range from jobs, investments and physical infrastructures to policies, behavioural practices, cultural norms, knowledge and skills (Figure 3.1).

The interdependence of these elements has the effect of stabilising the system, creating inertia and path dependence (Arthur, 1994; Sydow et al., 2009). As a consequence, strong economic, social and psychological incentives often lock society into particular ways of meeting needs. Radically altering these systems is likely to disrupt established investments, jobs, consumption patterns and behaviours, knowledge, social norms and values, inevitably provoking resistance from affected industries, regions or consumers. Such resistance constrains governments in their ability to impose regulations and pricing instruments that are consistent with long-term environmental goals. Although change still occurs in path-dependent systems, it normally proceeds incrementally and relatively predictably (Dosi, 1982).

Transitions research shows that the transformation of complex societal systems can change more fundamentally when radical innovations emerge and become mainstream, providing novel ways of meeting society's needs. Radical innovations include technologies but can also take the form of new social practices, business models or organisational structures. Whatever form they take, radical innovations often face major barriers. For example, they often struggle against established approaches that may have benefited from decades of accumulated efficiency improvements, are well integrated into people's lifestyles and may be actively defended by established industries with stranded assets and vested interests in preserving the status quo.

Transitions research shows that radical innovations will drive systemic change only under particular circumstances. First, radical innovations normally emerge in protected spaces or 'niches' where they are shielded from normal market forces and consumer preferences. For example, research and development (R&D) labs or subsidised demonstration projects offer spaces where new ideas can be developed, tested and improved. And as radical innovations emerge from these niches, they will often need sustained support to overcome the commercial, political, social and cultural barriers to wider diffusion. Second, for radical innovations to become mainstream, there is a need for disruptions to develop in the dominant system, creating windows of opportunity for alternatives to break through. Often such disruptions are triggered by events on the macro-scale, including long-term trends, such as climate change or demographic change, or more short-term shocks, such as the COVID-19 pandemic or the Ukraine war.

Figure 3.1 Production-consumption systems driving environmental pressures



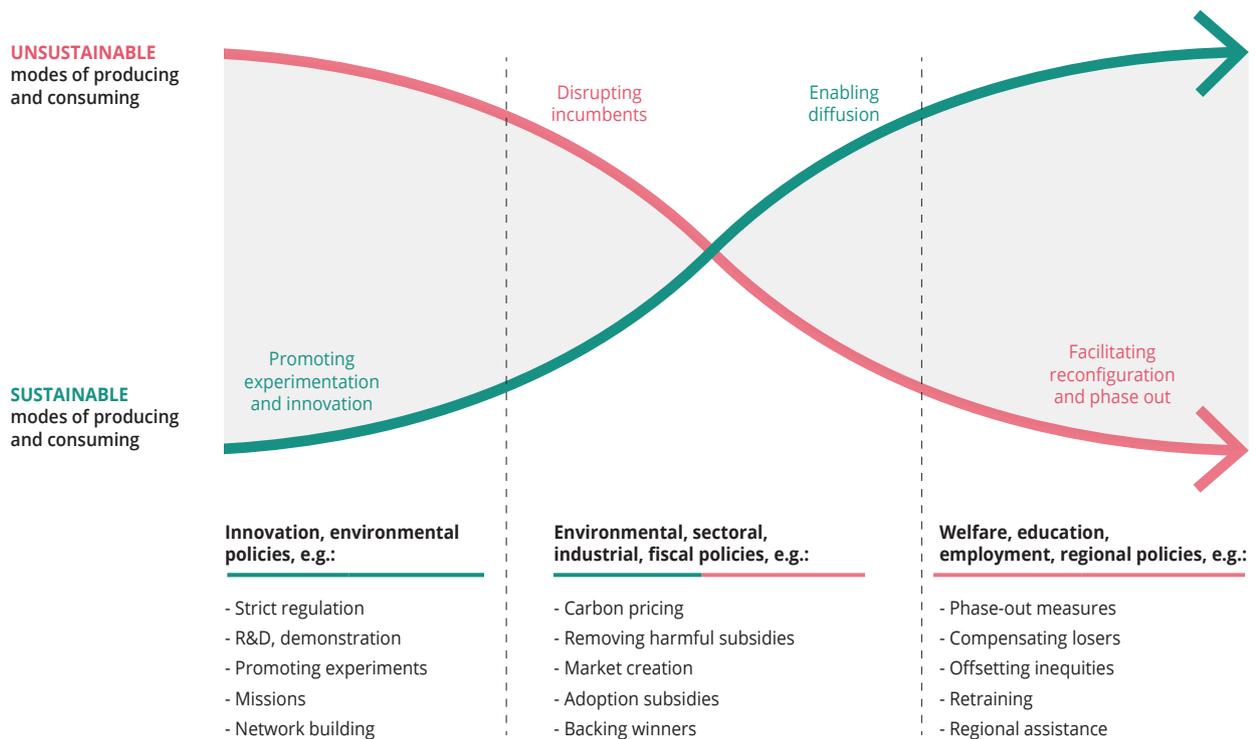
Source: EEA (2019b).

3.2 Governing sustainability transitions

Transitions research points to opportunities for public policies and institutions to play an essential role in triggering the twin dynamics of transition processes, i.e. facilitating the emergence and diffusion of niche innovations, and actively destabilising existing systems and enabling the phasing out of unsustainable practices. Transition processes highlight the need for coordinated actions across diverse areas of policy and levels of governance (Figure 3.2). Stringent environmental regulations and pricing instruments remain important in stimulating innovation, putting pressure on unsustainable practices and creating a level playing field for more sustainable modes of producing and consuming. Stimulating niche innovation also requires contributions from a broad range of policy areas, including research and innovation (R&I), sectoral, regional, industrial and financial policies. At the same, enabling the

phasing out of unsustainable practices will depend on regulations but also contributions from areas such as welfare, education and regional policy to help sectors and communities adapt to structural change and ensure a just transition.

Sustainability transitions also depend on coordinated governance at all levels, from local to global. Given the globalised and interlinked character of production-consumption systems, areas such as trade policy and international development are also key. Much of the creativity and investment needed to drive transitions forward is situated in sub-national or urban settings, implying an important role for regional and municipal authorities. Governments therefore have an essential role in providing directionality and coherence to activities across society, supporting knowledge creation and networking, and creating mechanisms to anticipate and adapt to new risks and emerging issues (EEA, 2019a).

Figure 3.2 Policy instruments supporting the twin dynamics of sustainability transitions

Source: Adapted from Loorbach et al. (2017).

Based on a systematic literature review, Kanger et al. (2020) propose a conceptual framework to explain the role of policy in supporting sustainability transitions. They identify six 'policy intervention points', i.e. 'particular areas in the socio-technical system or its environment where the application of appropriate policy instruments would likely facilitate transformative change in the system's directionality'. As presented in Table 3.1, these policy intervention points address innovation (niche stimulation and acceleration), phase out (regime destabilisation and its broader socio-economic repercussions) and wider coordination issues (multi-regime interactions and 'landscape tilt'). This framework has an important role in this assessment, providing a tool for categorising and making sense of the ways that policies contribute to transition dynamics.

The need for targeted and coordinated policy action to address the dynamics of systemic change has progressively been taken up in EU policy over the past decades and most

recently in the European Green Deal (EGD) (EC, 2019). The EGD provides an integrated framework, bringing together policies aimed at transforming core production-consumption systems (food, energy, mobility and buildings) alongside measures to address climate change, pollution and ecosystem protection (Figure 3.3). The EGD includes a specific focus on cross-cutting themes, such as innovation, finance and the 'just transition', and provides a basis for more far-reaching strategies to trigger and orient systemic transitions in the coming years. The EGD very clearly embraces the need for well-designed and far-reaching combinations of policy goals and instruments (i.e. policy mixes) to drive forward systemic change. For example, the EGD states that: 'The policy response must be bold and comprehensive It will require intense coordination to exploit the available synergies across all policy areas.' It also states that: 'The Green Deal will make consistent use of all policy levers: regulation and standardisation, investment and innovation, national reforms, dialogue with social partners and international cooperation.'

Table 3.1 Policy intervention points for sustainability transitions

Intervention point	Policy rationale	Examples of instruments
Niche stimulation	Stimulate the emergence of diverse forms of innovations (technical, social, nature-based, etc.) in niches through shielding, nurturing, learning and expectations	R&D funding schemes and support for demonstration projects, tax exemptions, education policies and training programmes, etc.
Niche acceleration	Upscale, replicate and institutionalise niche practices and align niches with each other	Incubators, standards and labels, promotion of entrepreneurship, advisory services, subsidies, public procurement, venture capital, etc.
Regime destabilisation	Phase out unsustainable practices and weaken the position of incumbent regime actors	Subsidy removal and reforms, technology bans, carbon trading, pollution taxes, removal of tax deductions for incumbents, etc.
Repercussions of regime destabilisation	Anticipate and manage the broader social and economic disruption associated with sustainability transitions	Creative labour adjustment programmes, compensation schemes, education to support reskilling and unemployment, etc.
Coordination of multi-regime interaction	Ensure that input-output relations and multi-regime linkages are complementary and mutually supportive	Cross-cutting strategies that bring together siloed policies areas; processes such as impact assessments
Landscape tilt	Alter broader framework conditions and give direction to innovation and socio-technical systems change	Overarching strategic frameworks, such as the European Green Deal, long-term goals and roadmaps (e.g. 2050 targets, Sustainable Development Goals (SDGs))

Figure 3.3 Structure of the European Green Deal



Source: EC (2019b).

3.3 Analysing policy mixes for sustainability transitions

Within the social sciences, there is a growing academic literature on the topic of policy mixes for sustainability transitions (Kern et al., 2019). This reflects an understanding that achieving transitions requires contributions from diverse policy areas and levels of governance. It also reflects a recognition that, despite the emergence of transformative, system-oriented policy frameworks, such as the EGD and the Farm to Fork (F2F) strategy, the policy mixes that govern Europe's production-consumption systems still have many gaps. Much work remains to be done to develop policies that target the different intervention points identified in Table 3.1.

The fact that existing policies at all levels of governance have been developed in departmental silos with contrasting objectives and expertise means that misalignments within policy mixes are common (Kern and Howlett, 2009). Even individual policy frameworks, such as the Common Agricultural Policy (CAP), can acquire inconsistencies as their goals evolve and new instruments are layered or patched on top of old ones (Howlett and Rayner, 2013). This incoherence of goals and inconsistency of instruments can slow down or impede transition processes, creating contradictory signals about the direction of travel and deterring investments (OECD, 2015).

Policy mix analysis takes its starting point not in detailed analysis of individual policy instruments but rather in exploring the implications of combinations of policies and related processes. Analysing the coherence of policy goals and the consistency and comprehensiveness of instruments provides a means to evaluate the potential of the policy mix to achieve its objectives (Howlett and Rayner, 2007, 2013; Kern et al., 2017).

Policy mixes can be defined in different ways, depending on the objective of the analysis (Kern et al., 2019). Some studies have employed a narrow interpretation that limits the analysis to interacting policy instruments (e.g. Kivimaa and Virkamäki, 2014; Kivimaa and Kern, 2016), while other studies include both policy goals and instruments (Kern and Howlett, 2009) or the broader policy life cycle, including policy formulation and interaction (Flanagan et al., 2011). Rogge and Reichardt (2016) argue for an even broader conceptualisation, comprising policy elements (policy strategies and instruments), policymaking and implementation processes and also policy characteristics, such as credibility, coherence, consistency and comprehensiveness. Even with narrow definitions, deciding which instruments to include in a policy mix is not straightforward (Kern et al., 2019).

Ossenbrink et al. (2018) offer further nuance, contrasting top-down and bottom-up approaches of analysing policy mixes. The top-down approach starts by identifying an overarching strategic intent (e.g. achieving climate neutrality

by 2050) and then maps out the mix of policy instruments that contribute to that intent, both horizontally (across policy fields and geographical scope) and vertically (across governance levels). In contrast, the bottom-up approach starts with a specific impact domain (e.g. organic farming in the EU) and maps the mix of policy instruments that affect that domain.

3.4 Analytical approach used in this assessment

Drawing together the different approaches identified in the research, it is clear that the policy mix that governs the EU food system is vast, encompassing multiple goals, instruments, processes and policy mix characteristics across a range of policy areas and scales of governance. In practice, therefore, any policy mix analysis will need to narrow its focus, so that it is feasible but still insightful.

The analysis in this assessment adopts the top-down approach of Ossenbrink et al. (2018) and focuses primarily on policy goals and instruments, not processes and implementation. It takes as its starting point the EU's strategic intent to make the food system fair, healthy and environmentally friendly, as set out in the F2F strategy. It looks horizontally across EU policies that influence the transformation of Europe's food system in pursuit of this strategic intent, first addressing the CAP, the Common Fisheries Policy (CFP) and the F2F strategy and then broadening the analysis to include other EU policy areas that affect food system governance. In this way, the mapping and assessment aim to be as accurate and complete as possible; however, the report does not provide an exhaustive description of all EU policies influencing Europe's food system.

In general, the assessment does not look in detail at the important levers that Member States and local authorities have at their disposal, although it does include some secondary analysis, for example of whether or not selected aspects of Member States' CAP strategic plans are in line with the political targets of the F2F strategy. Clearly, this focus on EU policies has some important limitations. For example, while EU policies have had an important influence on the food system, particularly in the areas of agriculture and fisheries, the EU's remit is limited in some areas, such as fiscal policy. Some of the relevant legislation shaping the food system is developed and enacted at national or regional level, and much also depends on how EU policies are implemented in Member States (EEA, 2019a).

Despite these important caveats, the assessment provides interesting insights into the extent to which EU policies have taken up the systemic perspective of sustainability transitions research and where there are limitations and gaps. This, in turn, provides a foundation for more detailed analysis at other levels of governance in future research.



Mapping and assessment of CAP, CFP and F2F strategy

In practical terms, the assessment involved two phases. The first phase focused on categorising and mapping the instruments in the core EU policies affecting food system governance: the CAP and the CFP, which have dominated developments in past decades, and the F2F strategy, which marks a fundamental shift to a more systemic, integrated policy framing, requiring the engagement and collective efforts of most actors across the food value chain.

Evidently, there are qualitative differences between these three frameworks. The CAP and CFP are legislative frameworks comprising established instruments, whereas the F2F strategy is a strategic communication, which sets out a roadmap for policy actions and initiatives (both legislative and non-legislative) that are not all in place yet. However, these differences are not problematic for the present analysis because the assessment addresses the objectives of policies and their gaps, not their implementation or their effects.

It is also clear that the categorisation and tallying of policy instruments is a relatively crude assessment method, which does not take into account important information such as the relative strength of particular instruments. Nevertheless, this relatively simple approach can provide valuable insights. For example, if there is a disproportionate focus on one type of instrument or actor, or an absence of instruments targeting particular intervention points, then the approach points to potential gaps or limitations that warrant further analysis.

The categorisation and mapping of the CAP, CFP and F2F strategy during the first phase of research involved several steps:

- First, the goals of the F2F strategy, CAP and CFP were reviewed to assess synergies or tensions between them.
- Second, policy instruments were categorised and mapped according to the part of the food value chain targeted (from production, processing and distribution to consumption and waste) and the instrument type used. Instruments were categorised according to the threefold classification of Borrás and Edquist (2013) (regulatory, financial or informational) and further divided into subtypes (i.e. various kinds of hard and soft instruments) based on the European Commission's Better Regulation toolbox and guidelines.
- Third, policies were categorised and mapped in terms of their contributions to transition dynamics, using policy intervention points categories (Table 3.1)
- Fourth, the kinds of innovations supported by F2F strategy policy actions and initiatives were categorised in terms of their novelty (incremental versus radical change) and targeted dimensions (social versus technical change) to provide insights into the innovation portfolio's transformative potential (Geels et al., 2015a; see also Chapter 7).

Mapping F2F strategy instruments that are not yet in place was challenging in some cases, as there was relatively little information on the specific design or focus of the policies. Each of the 27 policy actions and initiatives proposed in the F2F strategy were assessed, drawing on information available from the European Commission. Moreover, to improve the reliability of the coding and subsequent analysis, two researchers coded each instrument separately, compared the results and agreed on a shared interpretation. A full list of the CAP, CPF and F2F strategy policy instruments is presented in Annex 2 of the present report and the mapping and categorisation is available on the EEA website [xxx].

Extended assessment of the EU policy mix governing Europe's food system

The mapping and categorisation of the CAP, CFP and F2F strategy generated an initial set of insights, pointing to potential gaps, incoherence and inconsistencies in some of the core policy frameworks shaping Europe's food system. These insights were developed into a set of priority questions for deeper exploration, based on interactions and workshops with experts in research and policy, as well as a literature review that drew on key scientific evidence reviews and assessment reports, in particular:

- *The future of food and agriculture: trends and challenges* published by the Food and Agriculture Organization of the United Nations in 2017;
- *Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems* published by the EAT-Lancet Commission (EAT-Lancet) in 2019;
- *Towards a common food policy for the European Union: the policy reform and realignment that is required to*

build sustainable food systems in Europe published by the International Panel of Experts on Sustainable Food Systems (IPES-FOOD) in 2019;

- *Food security in climate change and land: special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems* published by the Intergovernmental Panel on Climate Change (IPCC) in 2019;
- *A sustainable food system for the European Union* published by Science Advice for Policy by European Academies (SAPEA) in 2020;
- *Towards a sustainable food system: moving from food as a commodity to food as more of a common good* published by the EU's Group of Chief Scientific Advisors in 2020.

The second phase of the assessment focused on exploring these questions, drawing on a broader analysis of EU policy (including key areas such as innovation, the environment and health), with the aim of providing a more complete picture of the potential gaps, incoherence and inconsistencies in the policy mix. The second phase also looked at Member State activities in terms of CAP strategic plans or examples of more transformative policy approaches.

This second phase of the analysis was informed by a workshop held by the EEA in June 2022 and subsequent dialogues with key stakeholders in research and policy, including representatives of the European Commission's directorates-general for agriculture, the environment, health and food safety, maritime affairs and fisheries, and R&I, as well as the Joint Research Centre. The workshop and dialogues aimed to assess, strengthen and nuance the findings from the first phase of the assessment to develop a stronger picture of the strengths and limitations of the EU policy mix. The outcomes of this more detailed assessment are presented in Chapters 5-9.



4

Categorisation and assessment of the Common Agricultural Policy, Common Fisheries Policy and Farm to Fork strategy

4.1 The CAP, CFP and F2F strategy

With the Farm to Fork (F2F) strategy, the EU has put in place — for the first time — a strategic policy framework to guide the development of the food system as a whole. Yet, EU policies targeting various aspects of the food system extend back over decades. Indeed, the Common Agricultural Policy (CAP) and Common Fisheries Policy (CFP) have been at the core of European integration since its earliest stages, with agriculture and fisheries identified as elements of the common market in the Treaty of Rome (EEC, 1957). Both the CAP and CFP have evolved substantially in subsequent decades through iterative processes of reorientation and patching.

Common Agricultural Policy

The CAP has long been the largest expenditure item of the EU budget and, while its relative share has decreased to about 35% today, the CAP remains the EU's largest budget item and the most influential policy area affecting the EU food system. The goals of ensuring food security, fair incomes for farmers and affordable food for consumers have remained central to the CAP, but environmental concerns have become steadily more important and the design of financial support has evolved correspondingly. Price supports that generated substantial production surpluses were replaced in 1992 with a system of income support through direct payments to farmers. Subsequent reforms in 1997, 2003, 2009 and 2013 introduced a second 'pillar' of the CAP, which was dedicated to rural development, and increased focus on environmental concerns, in particular by decoupling most of the subsidies from production and instead linking payments to compliance with obligations to protect the environment and natural resources.

The post-2020 CAP, implemented from January 2023, aims to further improve farmers' environmental and climate performance through a stronger focus on result-oriented

subsidies, improved mandatory environmental standards, additional voluntary measures and an increased focus on investments into green technologies. Nevertheless, the general structure of policy instruments essentially remains unchanged and the post-2020 CAP remains an agriculture-orientated policy that integrates other selected sustainability objectives. As such, it does not present a transformation of the CAP into a comprehensive food and agricultural policy oriented towards sustainability goals (Galli et al., 2020).

Common Fisheries Policy

In Europe, fish stocks and fishing fleets are managed by the CFP, which was first introduced in the 1970s and has gone through successive updates. The CFP also includes rules on aquaculture, which are reinforced by the blue growth agenda component. The CFP applies to all vessels fishing in European waters and to European vessels fishing in non-European waters. The scope of the CFP includes the conservation of marine biological resources and the sustainable management of fisheries targeting them and gives the EU exclusive legislative competence in this area. To that end, the CFP is adapting exploitation rates to ensure that, within a reasonable timeframe, the exploitation of EU marine biological resources is restored and populations of harvested stocks are maintained above levels that can produce the maximum sustainable yield (MSY). Exploiting fish stocks at or below the MSY allows the stocks to be maintained or recover to healthy levels, providing food for consumers while contributing to important ecosystem and marine food web functions.

Farm to Fork strategy

The F2F strategy, which was published in May 2020, calls for a major transformation of European food systems to make them 'fair, healthy and environmentally-friendly' and is a key component of the European Green Deal (EGD). In contrast to

the CAP and CPF, the F2F strategy is not a legislative framework but a roadmap of policy actions and initiatives (both legislative and non-legislative) that outline the premises for the future of European food systems. The F2F strategy takes an integrated, systemic approach, requiring the engagement and collective efforts of all actors across the food value chain. The vision of the F2F strategy is 'to reduce the environmental and climate footprint of the EU food system and strengthen its resilience, ensure food security in the face of climate change and biodiversity loss and lead a global transition towards competitive sustainability from farm to fork and tapping into new opportunities' (EC, 2020c).

In accordance with this vision, the F2F strategy aims to ensure that European food systems have a neutral or positive environmental impact; to make sure that everyone has access to sufficient, nutritious, sustainable food; and to preserve the affordability of food while generating fairer economic returns across the food value chain. In addition to these strategic objectives, the F2F strategy contains five quantitative policy targets, four of which target primary producers:

1. reduce the overall use and risk of chemical and hazardous pesticides by 50% by 2030;
2. reduce nutrient losses by at least 50% while ensuring that there is no deterioration in soil fertility, and reduce the use of fertilisers by at least 20% by 2030;
3. reduce overall EU sales of antimicrobials for farmed animals by 50% by 2030;
4. increase the proportion of EU agricultural land under organic farming to 25% by 2030;
5. halve per capita food waste at the retail and consumer levels by 2030.

Pursuant to the F2F strategy, the European Commission plans to propose a legislative framework for sustainable food systems before the end of 2023, as a means to further promote policy coherence and integration at EU and national levels. The framework legislation will lay down common definitions and general principles for sustainable food systems. It will also address the roles and responsibilities of all actors in the food system, allow operators to benefit from sustainable practices and progressively raise sustainability standards. Once these common definitions and principles are in place, there may be a need to update existing sectoral legislation to align it with these developments.

4.2 Results from the categorisation and assessment of the CAP, CFP and F2F strategy

The four assessment steps outlined in Section 3.4 provided a variety of preliminary insights into the structure, key elements and focus of the three core policies analysed. These findings are summarised in brief here and explored in more detail in

Chapters 5-9 (also see Annex 2 for an overview of the CAP, CFP and F2F strategy policy instruments).

First, the mapping indicates that the CAP, CFP and F2F strategy have different emphases in terms of the types of instruments used (Figure 4.1). Given its main objectives to ensure food security and a secure income for farmers and land managers, the CAP is almost exclusively based on economic and financial instruments (26 out of 32 instruments) and includes very few legal and regulatory instruments. In contrast, the CFP draws mainly on legal and regulatory instruments, which account for 12 out of the 17 instruments, and includes relatively few economic and financial or education and information instruments.

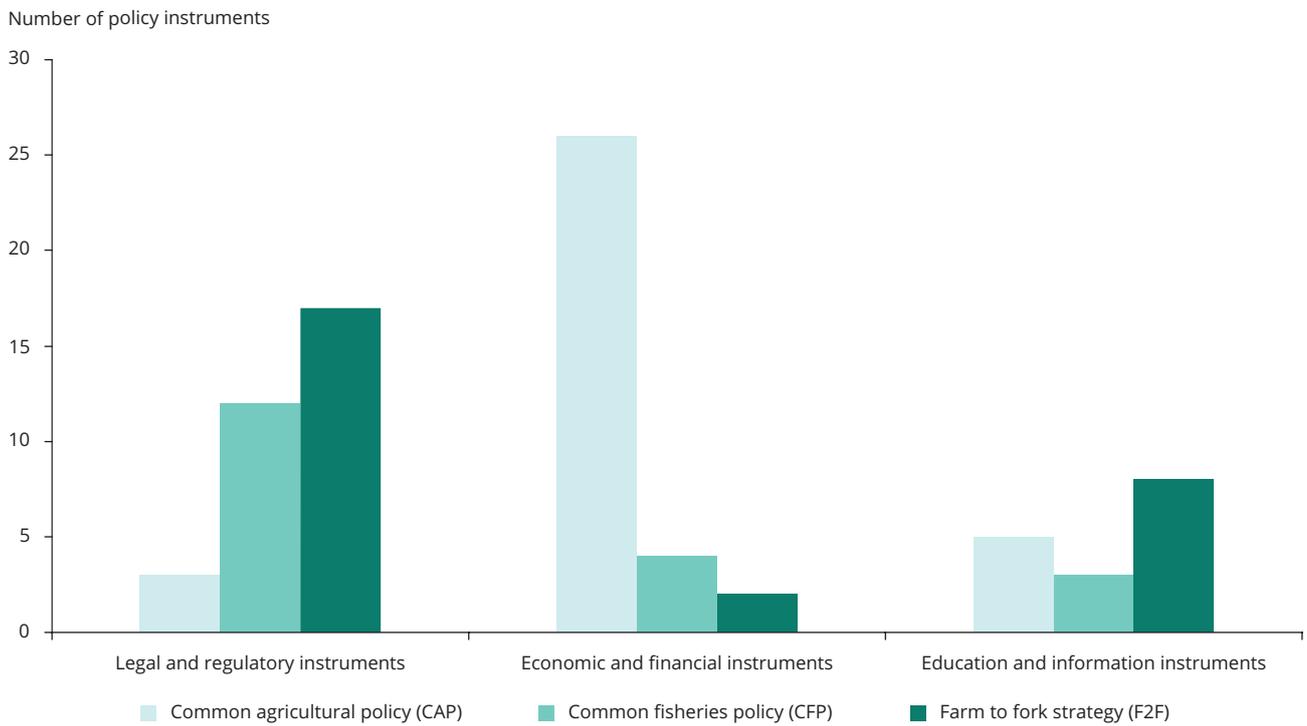
Similar to the CFP, legal and regulatory instruments comprise about half the instruments in the F2F strategy (17 out of 32 instruments), followed by several education and information instruments (8 instruments). Although legal, regulatory, education- and information-based instruments are potentially effective drivers of sustainability transitions, it is noteworthy that the F2F strategy does not include more economic and financial instruments. Sustainability transitions literature generally argues that economic and financial incentives are needed to support the development and acceleration of alternative niche practices in 'protected spaces' (Smith and Raven, 2012; Turnheim and Geels, 2019; Kanger et al., 2020). While information-based instruments can be a useful part of the policy mix, they can be criticised for putting too much of the burden of systemic change on consumers — a tendency known as 'consumer responsabilisation' (see Chapter 5).

The differences in focus of the CAP, CFP and F2F strategy become even clearer when looking at the clustering of policy instruments along the food value chain.

As shown in Figure 4.2, the majority of instruments in the policy mix focus on the production part of the food value chain, with fewer instruments targeting processing, distribution, consumption and waste. The comparison of the CAP, CFP and F2F strategy along the value chain also highlights their different emphases. For the CAP, 30 out of 32 instruments focus on production, while for the CFP 15 out of 17 instruments do so. In both cases, some of these instruments also address other parts of the value chain, although to a much lesser extent. For example, only two CAP instruments and one CFP instrument focus on waste. This strong focus on production is not surprising given that the goal of these policies is to support agricultural and fishery production.

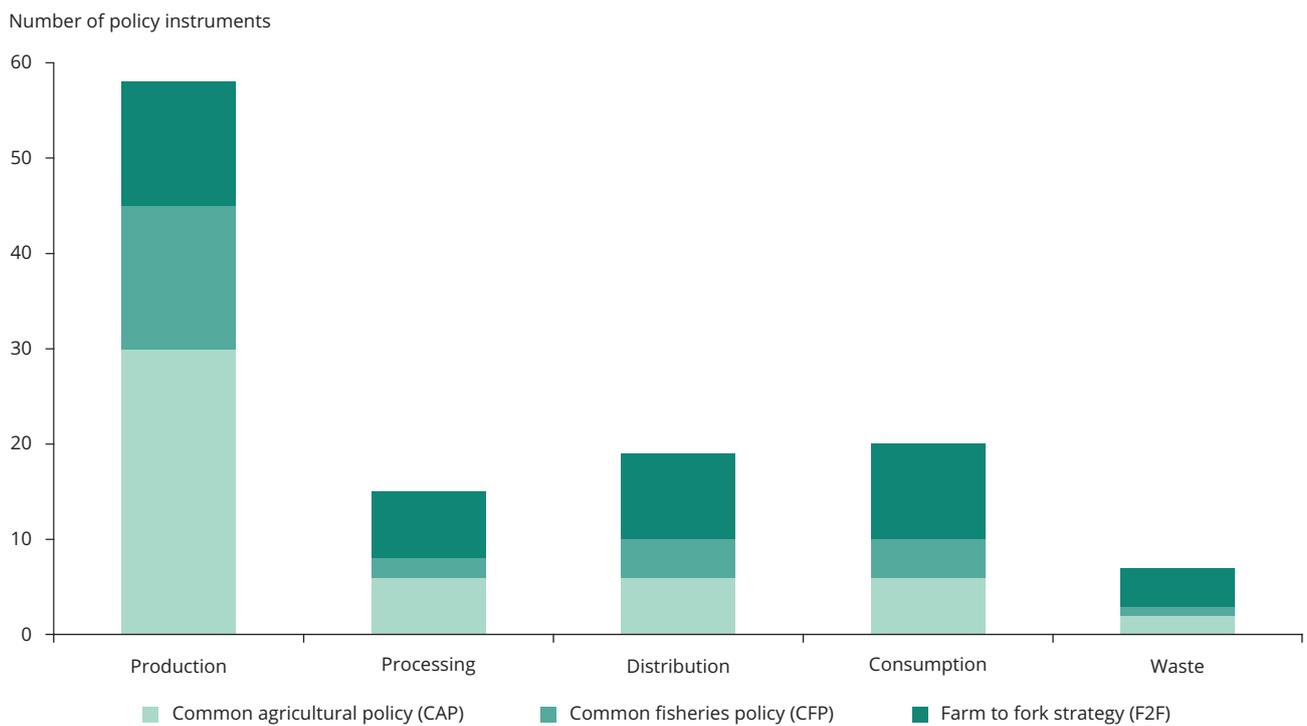
The distribution of instruments of the F2F strategy is more balanced in comparison, with 13 instruments targeting production, 10 targeting consumption, nine targeting distribution and four targeting waste. Therefore, one important insight from the first phase of the assessment is that the allocation of F2F strategy instruments is spread across the food value chain, which is desirable for a policy strategy aiming to adopt a more integrated and systemic approach to food system change.

Figure 4.1 EU food policy mix according to policy instrument types



Source: EEA.

Figure 4.2 EU food policy mix according to food value chain stages



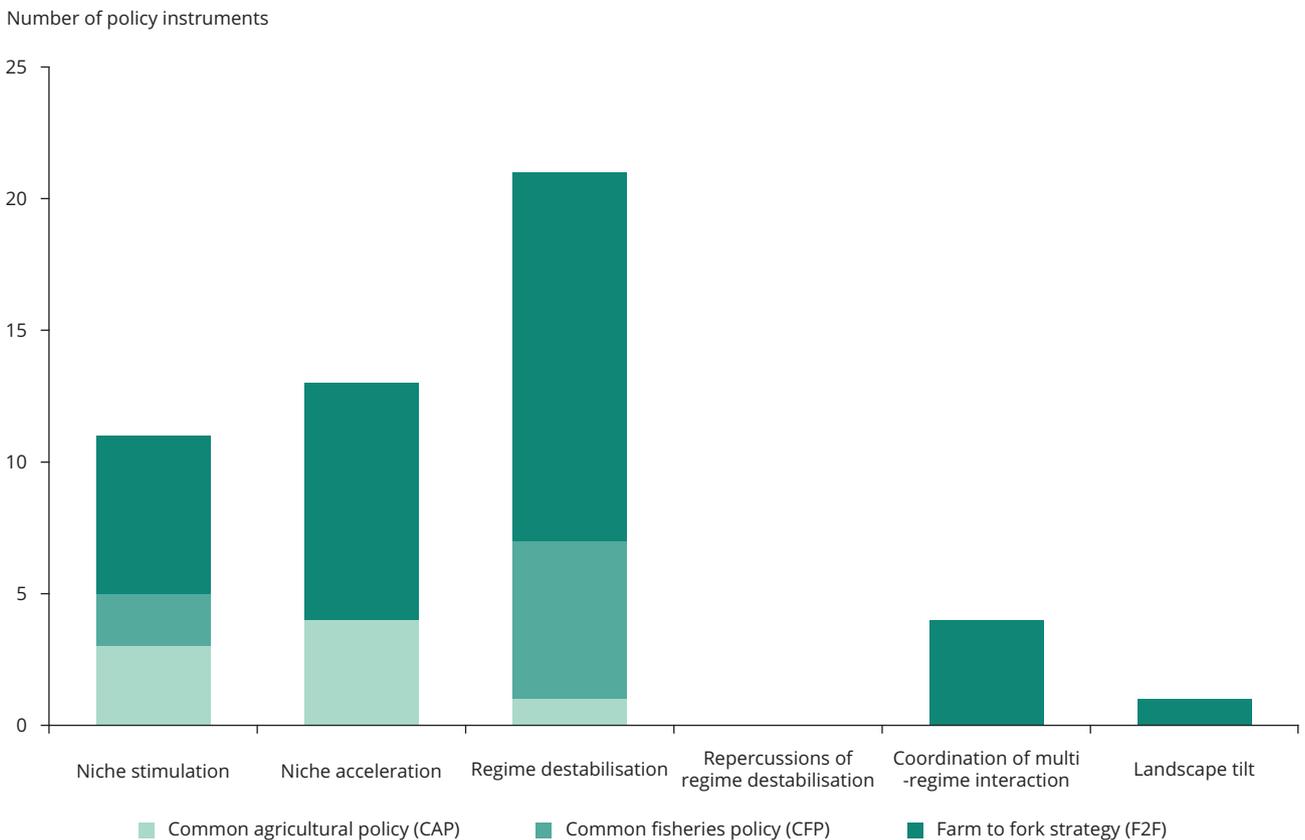
Source: EEA.

As noted in *The European Environment — state and outlook 2020* (SOER 2020), relatively few policy measures address the input providers, the processing and distribution of food, traders or finance (EEA, 2019b). Moreover, few instruments target influential groups of actors, such as food manufacturers, distributors, advertisers and retailers, which all play an important role in shaping the choices of both producers and consumers. The absence of measures targeting the middle part of the food value chain may also hinder transitions by limiting incentives for phasing out unsustainable practices and innovating sustainable alternatives. Similarly, the relative dearth of instruments targeting consumption (and the predominant focus on education and informational tools) may limit the scope for consumer behavioural change and the potential to mobilise consumers as innovators. Waste

generation and food loss is hardly targeted by the CAP, CFP or F2F strategy, despite growing awareness of the issue and the potential for local initiatives to reshape food production and consumption cycles.

Categorisation of policy instruments against the policy intervention categories listed in Table 3.1 reveals that the CAP and CFP include various instruments that are not considered relevant in terms of affecting transition dynamics, such as the Young Farmers Payment, regulations on market transparency, forest-environmental and climate services and forest conservation in the current CAP, and the fleet register, the illegal, unreported and unregulated fishing regulations and the mandatory disclosure standard in the CFP.

Figure 4.3 EU food policy mix according to transition intervention points



Source: EEA.

Across the food policy mix as a whole, a large number of instruments can be categorised as 'regime destabilisation'. This is somewhat surprising, as previous studies of sustainability transition policy mixes have found a lack of policies targeting this aspect of transition processes. The conventional explanation for a lack of 'regime destabilisation' measures is that the political difficulties of such endeavours can challenge existing actors and result in sunk investments and stranded assets (see Chapter 6). However, it is questionable how disruptive these policy measures are in practice, as these instruments exist alongside many others that maintain established practices, potentially undermining their destabilisation potential (Figure 4.3).

The relatively limited attention to stimulating and accelerating niches is problematic, since the promotion of alternative and sustainable niche practices is critical to the transition to a sustainable food system (see Chapter 7). In addition, few instruments address multi-regime interactions or the broader framework conditions for system innovation, and none addresses the broader social and economic repercussions of destabilisation or the phasing out of unsustainable practices (i.e. the just transition) (see Chapter 8). This is an important omission, given the scale of structural change that will be needed to achieve a sustainable food system in Europe.

4.3 Questions for further exploration

While the categorisation of instruments in the CAP, CFP and F2F strategy and their targeting of different intervention points offers some initial insights into the balance and focus of EU policies governing the food system, the findings clearly reflect in part the selection of policies addressed and the remit of EU policy in relation to national or local policies (e.g. Member

States retain control over taxes, which are an important tool for shaping consumption patterns).

Nevertheless, the mapping raises questions about the extent to which the EU policy mix embraces a whole-system approach to driving transformation, and whether or not instruments target relevant policy intervention points for sustainability transitions. Indeed, the initial results indicate that some intervention points and policy areas such as the just transition are not targeted, suggesting areas where stronger policy support may be needed.

Based on these initial findings and interactions with stakeholders in research and policy, a set of questions were identified for deeper exploration, specifically:

- Does the EU policy mix promote a shift to sustainable food consumption?
- Is EU food policy actively phasing out unsustainable modes of producing and consuming food?
- Does EU policy provide sufficient support for transformative innovation?
- Does EU policy enable a just transition of the food system?
- Does EU food policy provide a coherent framework for and directionality towards a sustainable food system?

Chapters 5-9 address these questions, drawing on a broader assessment of the EU policies affecting the food system, interactions with stakeholders in research and policy, and evidence in the literature. Chapter 10 draws together the findings from this analysis and connects them to the policy intervention point framework (Table 3.1).



5

Does the EU policy mix promote a shift to sustainable food consumption?

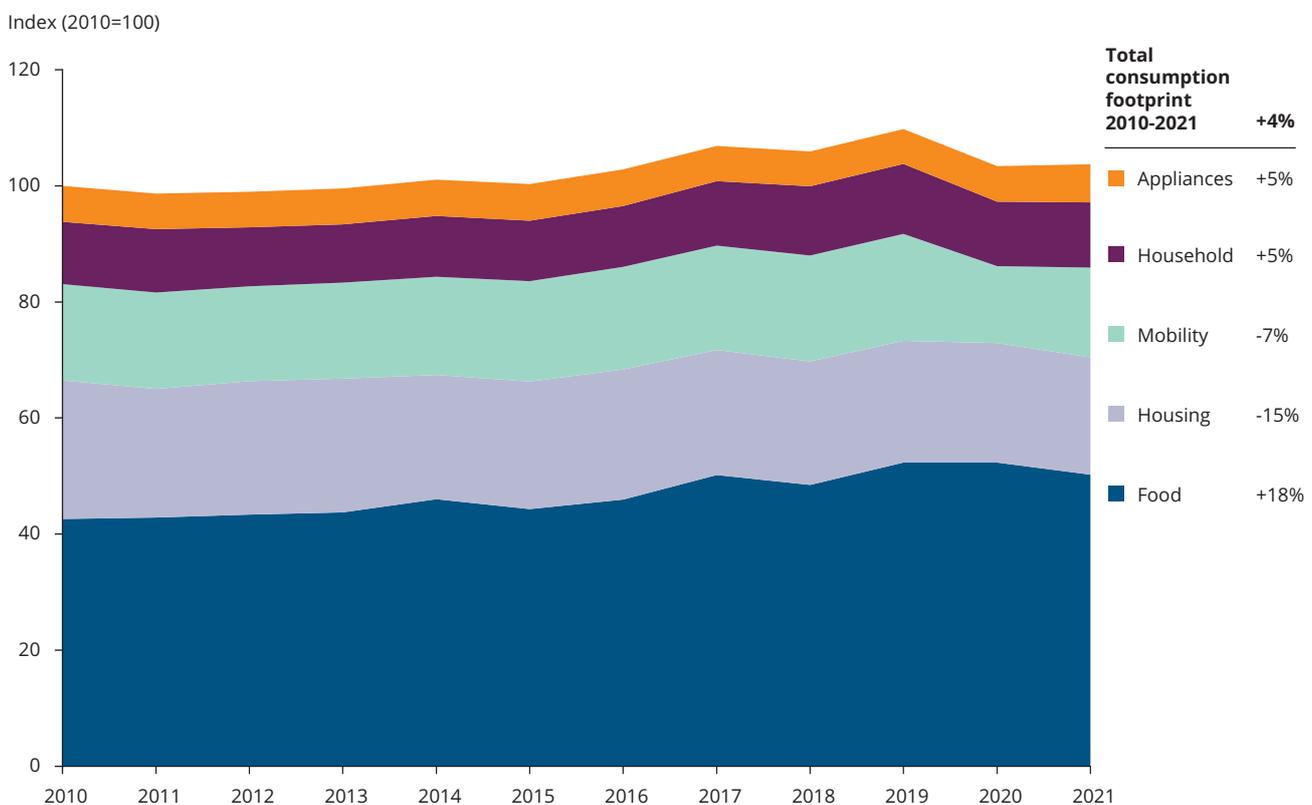
5.1 Consumption in sustainability transitions

Food consumption patterns have an essential role in shaping food system outcomes and impacts (FAO, 2016; Lindgren et al., 2018; Willett et al., 2019; Bock et al., 2022). The environmental impacts associated with EU-27 food consumption increased by 18% between 2010 and 2021, accounting for 49% of the EU's

total consumption footprint in 2021 (EC, 2023a; Figure 5.1).

These pressures affect ecosystems in Europe and globally. For example, more than half of the seafood consumed by EU citizens comes from outside EU borders (EC, 2022g). Dietary choices also influence obesity and related incidence of cardiovascular disease, stroke, diabetes and some types of cancer, which are leading risk factors for disease and mortality in Europe.

Figure 5.1 Evolution of the EU-27 consumption footprint (2010-2021)



Source: Sanye Mengual and Sala (2023).

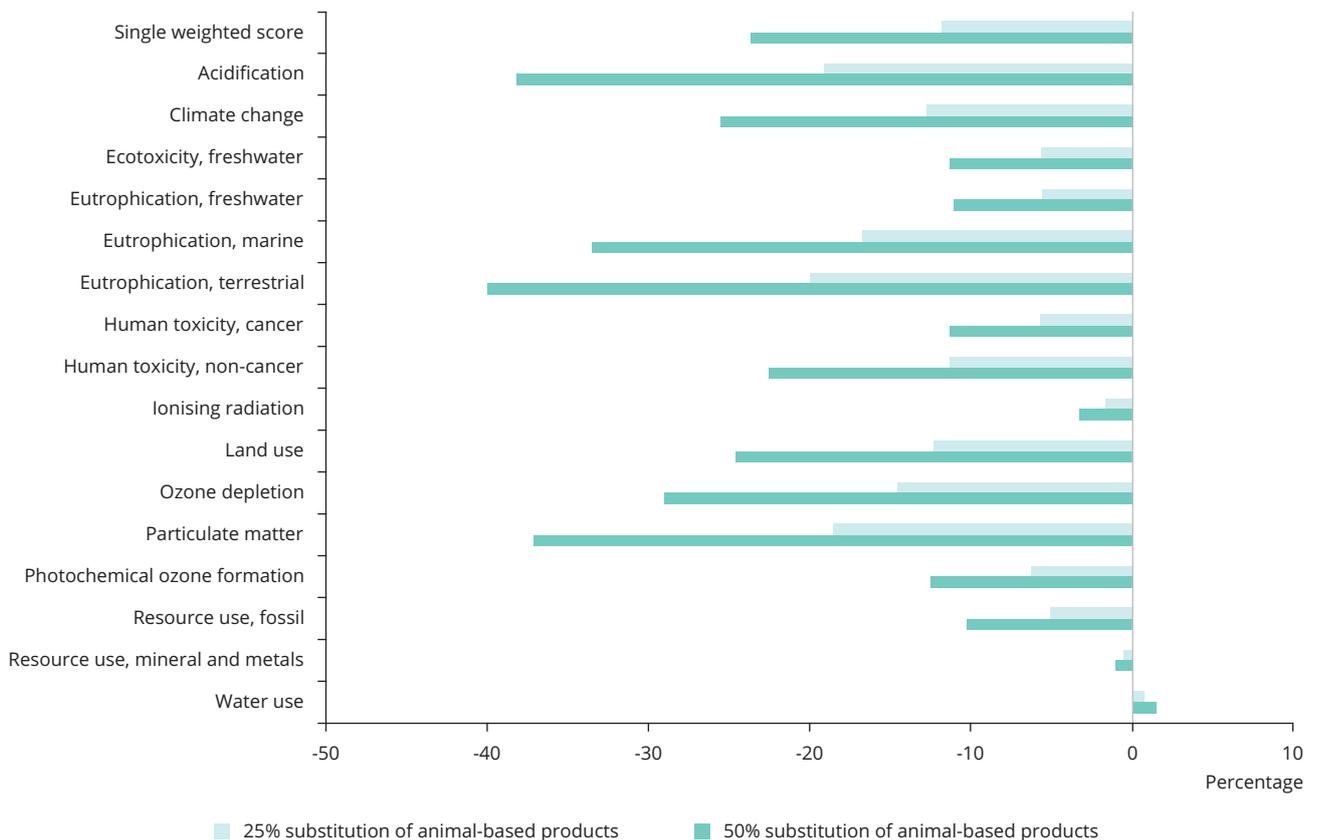
Consumption choices have some potential to drive innovation and investment across the value chain (Kanger et al., 2020) and shape corporate decisions about phasing out unhealthy and unsustainable food products (Grunert, 2011; EEA, 2017a). In practice, however, consumer choices are often highly constrained and conditioned by the product selection and marketing strategies of food manufacturers and retailers. Sustainable food choices and consumption patterns also have a social dimension, linking in complex ways to local identities, skills and food cultures (Randers and Thøgersen, 2023), and affecting the livelihoods and well-being of workers across global value chains.

There is substantial scientific evidence that dietary shifts, such as reducing dairy and meat consumption (especially beef) and increasing intake of vegetables, whole grains and fruits,

can deliver significant environmental and health benefits. Similarly, the European Commission's Joint Research Centre has modelled the effects of reducing both meat and dairy consumption by 25% and 50%, and revealed substantial reductions in a broad range of environmental impacts (Sanye Mengual and Sala, 2023; Figure 5.2)

Consumer choices in relation to food waste and packaging also offer clear environmental and climate benefits. Food waste accounts for 15% of the greenhouse gas (GHG) emissions associated with all food consumed, and preventing waste at household level is particularly important because this is where a high share of potentially avoidable food waste occurs (Scherhauser et al., 2018). Households generated 55% of food waste on average in 2020 (Eurostat, 2022c).

Figure 5.2 Changes in environmental impacts from replacing EU consumption of animal products with plant-based alternatives



Note: The figure shows the changes in environmental pressures that would occur if the EU-27 population were to reduce its consumption of meat, dairy and eggs by either 25% or 50% and instead consume a greater amounts of nuts and seeds, cereal-based products, tubers, vegetables, and legumes and legume-based products.

Source: Sanye Mengual and Sala (2023).

Other changes in consumer choices, such as purchasing from local producers or buying organically produced food, may offer more mixed or contingent benefits. For example, while organic farming has clear benefits for biodiversity and soil, the benefits for nutrients and GHG emissions can be offset by lower productivity, which necessitates increased land use (Ramankutty et al., 2019). As a consequence, realising the full benefits of organic farming may require that it be combined with dietary changes that mitigate demand for land (e.g. less meat consumption). Pathways to upscale organic farming thus need to be designed carefully to avoid risks (Brzezina et al., 2017; Rööös et al., 2018). Similarly, the evidence about the sustainability of shorter value chains is mixed. While shorter value chains can offer clear economic benefits for producers, who can capture a large proportion of the margin otherwise absorbed by intermediaries, as well as contribute to strengthening community relations and local identities, they can also increase carbon footprints (Malak-Rawlikowska et al., 2019).

Limitations of 'consumer responsabilisation'

While it is clear that behavioural change is essential to achieve a sustainable food system, the means to achieve that change are more disputed. In particular, a growing body of research is critical of 'consumer responsabilisation', i.e. the tendency of policies such as labelling and other information tools to give consumers the responsibility for effecting change with their 'purchasing power', rather than placing the onus on governments or businesses (Giesler and Veresiu, 2014; Eckhardt and Dobscha, 2019; Kaljonen et al., 2020; Mesiranta et al., 2022).

With the introduction of labels and other information measures, consumer responsabilisation has become a central element of governance, implying that we can 'consume our way out of environmental problems' (Soneryd and Ugglä, 2015). For governments, shifting the responsibility and burden to the wider public has obvious appeal, as it spares governments from confronting powerful industries, lobbying organisations or interest groups. Moreover, focusing on information tools (e.g. nutrition profiles and food labelling) also avoids political sensitivities around government efforts to shape individual-level consumer behaviour (Grubb et al., 2020).

Despite its popularity, however, there are significant limitations to this shift towards 'conscious capitalism', which rests on an assumption that consumers have the desire, opportunity and capabilities to act responsibly (Eckhardt and Dobscha, 2019). In practice, indifference to the cause at stake, limits to information processing in decision-making contexts, social norms and structural constraints may limit the impact of such approaches (Soneryd and Ugglä, 2015). As Schot et al. (2016) argue:

Current government information policies and market-based instruments ... often ignore the fact that consumer behaviour is not fully reducible to individuals making rational conscious decisions all the time. The decisions of consumers are largely configured by shared routines embedded in socio-technical systems. To achieve a transition ... an approach that goes beyond individual consumer choice and puts shared routines and system change at its centre is needed.

This does not mean that policies cannot or should not seek to shape consumer behaviour. But it does imply that an effective policy mix will need to address the complex determinants of food choices in a coherent and synergistic manner, going beyond purely informational tools, such as food labelling. This includes designing policies to target influential but sometimes neglected actors across the food value chain that have a key role in shaping food choices, such as food manufacturers, distributors, advertisers and retailers (Gupta et al., 2022). For example, food retailers are important contributors to food waste, both in terms of generating food waste themselves and also in influencing the waste produced by households and manufacturers.

Creating more transformative policies also means reconceptualising the role of consumers and engaging them as active participants in system innovation processes. In this understanding, consumers have a role in inventing and legitimising new practices, building niche markets and social networks around them, and thereby collectively transitioning to new shared routines and enacting system change (Verhees and Verbong, 2015; Schot et al., 2016). Consumers can also play an active role in policy design, while initiatives such as local food policy councils provide important means to promote citizen participation.

Factors driving consumption choices

Research into the factors shaping food choices has proliferated in recent years, as have attempts to organise these factors into conceptual models that can explain and predict food choices. Chen and Antonelli (2020) identify more than 60 conceptual models of food choice that explain healthier, sustainable and organic food choices, as well as fruit and vegetable choices. In general, these models posit food choices as resulting from complex interactions between three categories of factors: individual (consumer) characteristics, food product characteristics and food environments.

- **Individual characteristics** of consumers include biological factors (e.g. genetics, health status), psychological factors (e.g. beliefs, emotions, motivations, habits, skills, knowledge) and socio-demographic factors (e.g. income, age, gender, education, ethnicity, employment). For example, food choices may be closely tied to socio-cultural identity, providing a means to signal

association with particular groups or values, as well as with one's history (Gerber and Folta, 2022).

- **Food product characteristics** influencing food choices include sensory and perceptual features (e.g. taste, texture, portion size), as well as external features, such as the information provided through labels, packaging or the branding and aesthetical qualities of food (Allender et al., 2015; Friel et al., 2017; Gerritsen et al., 2019; Chen and Antonelli, 2020).
- **Food environments** comprise the physical, socio-cultural, economic, political and environmental conditions under which consumers engage with the food system to make decisions about purchasing, consuming and disposing of food (Bauer and Reisch, 2019; Moran et al., 2020; Table 5.1).

These categories of factors interact in non-linear ways, resulting in complex causal chains and sometimes leading to reinforcing and balancing loops (Allender et al., 2015; Friel et al., 2017; Gerritsen et al., 2019; Chen and Antonelli, 2020; Sawyer et al., 2021). For example, poorer households may buy a monotonous diet of energy-dense, low-nutrient, highly processed food, as such diets are often cheaper on a cost-per-calorie basis than healthier fresh produce (Darmon and Drewnowski, 2008). If this consumption pattern is widespread in a locality, then limited demand may make healthier food less available and more

expensive, creating a reinforcing loop. This may be further exacerbated if there is limited affordable transport to locations where healthier food can be purchased (Sawyer et al., 2021).

In summary, research on sustainability transitions and human behaviour highlights limitations in the dominant policy approach to shaping consumer choice, which often relies on consumers to act responsibly in response to informational tools. A richer understanding of the diverse, interacting factors driving consumer behaviours points to the need for a much more sophisticated set of policy interventions that influence the types of food available to consumers and their accessibility, affordability, attractiveness and visibility. Sustainable and healthy food choices need to become the default and most desirable option (EPHA, 2022). This necessarily involves policy interventions targeting not just consumers but also input providers, producers, manufacturers, distributors and retailers. Policy interventions should include measures to regulate advertising and marketing practices; shape the availability of sustainable foods in neighbourhoods, social contexts and shops; educate and raise awareness about what a sustainable and healthy diet looks like; and incentivise food innovation that generates healthy and environmentally sustainable outcomes. Collaboration across scales of governance and multiple stakeholders is also essential to tailor food policy to different places, cultures and socio-economic consumer groups.

Box 5.1 Key dimensions of the food environment

Physical environmental conditions determine the availability and accessibility of food options, and include the presence, accessibility and characteristics of retail stores, restaurants and canteens, and the availability and cost of transport (Allender et al., 2015; Friel et al., 2017; Gerritsen et al., 2019).

Socio-demographic, regional and national differences shape food preferences. Social norms reflect shared beliefs and rules about food products and practices, which can deter or enable sustainable and healthy food choices, both in micro-environments (e.g. schools, workplaces, community events) and macro-environments (e.g. larger societal, cultural and economic contexts), through, for example, advertising and marketing practices (Vatn et al., 2022).

Economic and policy characteristics of the food environment exert an important influence on food choices through prices, regulatory frameworks, policy support for food system innovation and governance of food systems across different scales (i.e. EU, national and local).

Natural environment characteristics have recently been added to descriptions of food environments, including climate change effects and natural resources (Gifford et al., 2018; Nielsen et al., 2020; Ruby et al., 2020).

5.2 Assessing the EU policy mix

5.2.1 Limited measures promoting sustainable consumption

The CAP and CFP were initially designed to support food security and farm incomes, with a clear focus on production. While the general structure of the CAP remains focused on agriculture, it has moved towards a more systemic framing with the inclusion of demand-side measures and a limited focus on changing food consumption patterns. Six of the 32 policy instruments in the most recent version of the CAP address the demand side. Two of these instruments concern information and policy campaigns and the others relate to public procurement and subsidies.

The CAP's demand-oriented measures can help to create markets for more sustainable food and change consumer behaviour. However, these measures stand alongside a system of financial support that has tended to preserve the status quo of high-input agriculture (Chapter 6), thereby limiting the relative availability and affordability of sustainably produced food. Conventional food production has been heavily subsidised to support farmer incomes and food security, while conditionality standards have only encouraged 'do-no-harm' practices and are not sufficiently linked to soil and biodiversity conservation (SAPEA, 2020). As a consequence, conventionally farmed products are cheaper and more accessible and therefore remain the most likely default option for consumers.

The latest CFP reform likewise aims to improve the sustainability of fisheries and avoid stock depletion by including a maximum sustainable yield benchmark, a discard ban, multiannual ecosystem-based management plans and an obligation for Member States to match their fishing fleet to their fishing opportunity. It also led to the common market organisation of fisheries and aquaculture products and the establishment of the European Maritime and Fisheries Fund, which is one of five European structural and investment funds that support fishers to implement sustainable fishing practices and strengthen coastal communities. The CFP's heavy emphasis on regulatory instruments is useful for improving fish catchment and farming practices, with implications for the sustainability of the products available to consumers, as well as positive effects on biodiversity. Four of the 17 instruments address demand directly, with three relating to information (two on labelling and one on information disclosure) and one to market and technical standards.

In contrast to the CAP and CFP, F2F strategy instruments are more evenly distributed across the food value chain, with 22 instruments targeting the production side (including processing and distribution) and 14 instruments targeting food consumption and waste. The latter are primarily information-based instruments, such as front-of-pack nutrition labelling, certification, date marking, origin indication and

dietary guidelines to restrict consumption of unhealthy foods. In addition, nutrient profiles are set to prevent unhealthy food from misleading consumers by claiming health benefits. However, the F2F strategy still has few instruments targeting actors in the middle of the chain, such as food processors, distributors and retailers, which potentially influence consumer demand significantly through advertising and marketing.

The F2F strategy instruments, like the information-based tools of the CAP and CFP, build on a body of other EU rules on food information, traceability and safety, including the General Food Law of 2002. An EU-wide organic label was introduced in 2001 to help consumers to identify organically produced food. Since 2014, it is also obligatory for food companies to provide certain information on their food items at no additional cost, such as a list of ingredients, a best-before date, a nutrition declaration, and the name and address of the company. These measures have improved transparency to some extent, thereby potentially empowering consumers to make healthier and organic food purchasing decisions. However, achieving the needed changes in consumption patterns requires more robust and comprehensive policies targeting consumer demand for sustainable food options.

5.2.2 Very limited use of pricing instruments

Information-based instruments are certainly an important part of the policy mix. However, as emphasised by the European Commission's Group of Chief Scientific Advisors, the shift to a sustainable food system cannot rely solely on individual consumers choices: 'information-based initiatives should be a part of the policy mix despite the fact that on their own they would be insufficient to change behaviour' (EC, 2020e).

Since price considerations are among the most important factors guiding purchasing behaviour (Nicolau et al., 2021), it is essential that food prices send the 'right' signals. In practice, this is likely to involve a balancing act. Bock et al. (2022) are surely correct to argue that governments should avoid using low consumer food prices as a social policy instrument. Nevertheless, it is socially (and politically) imperative that governments find ways to secure universal access to affordable, healthy food. Ensuring that low-income households can access sufficient quantities of sustainable and healthy food may require the use of tools such as green vouchers for aid recipients (Büchs et al., 2021) and regulatory provisions regarding the sustainability and health value of food aid options.

Taxes, subsidies and other pricing instruments provide vital tools to make sustainable food affordable, while also ensuring that food prices reflect the 'true costs' of production and consumption (Fesenfeld et al., 2020). As noted in the F2F strategy: 'EU tax systems should also aim to ensure that the price of different foods reflects their real

costs in terms of use of finite natural resources, pollution, GHG emissions and other environmental externalities' (EC, 2020a). Fiscal tools can take different forms, including taxes on harmful emissions from agriculture (e.g. New Zealand's proposed scheme to tax GHG and nutrient emissions from livestock farming (Corlett, 2022)); taxation of inputs, such as fertilisers; targeted taxation of high-impact foods, such as meat and dairy; taxation of end products based on life cycle assessment (LCA) of environmental impacts; and reductions in value added tax (VAT) rates for healthy and sustainable foods (e.g. fruit, vegetables and cereals) (Moberg et al., 2021). As discussed in Chapter 8, taxing essentials such as food is likely to have regressive effects, necessitating carefully designed compensatory measures.

The design of fiscal tools is characterised by trade-offs. Taxing production may have relatively little effect on end prices and may be politically difficult if it puts domestic producers at a competitive disadvantage relative to producers in other countries. On the other hand, taxing environmental pressures and impacts near the beginning of the value chain has some advantages as it is easier to identify those impacts and assign responsibility for them, and farmers can actually do something about them, for example by changing their practices or their use of harmful substances.

In practice, the EU does not have a direct role in collecting taxes or setting tax rates. The CAP, CFP and F2F strategy therefore make almost no provision for fiscal policy support for sustainable food. Meanwhile, the EU's carbon pricing policy does not cover agriculture.

This absence of fiscal tools is likely to be problematic, as the sustainability transitions literature generally argues that pricing instruments are needed to support the development and acceleration of alternative practices (Smith and Raven, 2012; Turnheim and Geels, 2019; Kanger et al., 2020). The absence of EU policies would be less of a concern if national measures addressed this gap. However, Tziva et al. (2020) point out that at the national level there is almost a complete absence of favourable taxation schemes for sustainable consumer food products. As a consequence, niche consumer markets are instead 'supported by conscious individuals who are willing to pay a relatively high price for products with specific characteristics'.

The F2F strategy does recommend that national governments apply differentiated VAT regimes to support healthy, under-consumed products, such as fruit, vegetables and nuts, and to discourage products that contribute to unhealthy, unsustainable diets, such as ultra-processed products. Such VAT adjustment rules are also recommended in the European Commission's communication on safeguarding food security and reinforcing the resilience of food systems, which was published following Russia's invasion of Ukraine (EC, 2022b). The current cost of living crisis also points to the crucial role of prices in driving sustainable food system change.

5.2.3 Measures to influence food industry actors

Recognising the influence of food manufacturers and retailers in shaping consumer choices, the F2F strategy also includes measures that target the food industry. The EU code of conduct on responsible food business and marketing practices was launched in July 2021 and aims to stimulate the uptake of healthy and sustainable consumption patterns, and sustainable practices by all food system actors. Both individual companies and EU and national food associations can sign up to the code of conduct. By mid-2022 there were 130 signatories, comprising major players in the food system with a considerable share of the European market. The code of conduct has also contributed to an exchange of experience and best practices that might support sustainable change.

Nevertheless, the design of the code of conduct is likely to limit its impact. First, the code is more general and less concrete than originally envisaged in the F2F strategy. For example, explicit references to avoiding advertising cheap meat have been removed. Second, the code's reliance on self-regulation and voluntary pledges alone is probably not sufficient to pressure food system actors to change their practices fundamentally. Indeed, previous experience indicates that such approaches often fail (EPHA, 2022). For example, signatories have the choice of committing to one or several of the seven 'aspirational objectives' established in the code, with healthy, balanced and sustainable diets being just one of them. While this type of flexibility might encourage businesses to embark on a journey of sustainable transformation, it also runs the risk of delivering very limited results.

Two upcoming evaluations of the annual reports of signatories to the code are planned by the European Commission, by the end of 2022 and 2023. The evaluations are likely to provide insights into the code's effectiveness. The European Commission has stated that it 'will consider legislative measures if progress is insufficient' (EC, 2021c), which could provide the impetus needed for systemic change.

As argued in a recent evidence review, 'the evidence is clear that binding ("coercive") policy measures, such as regulation and fiscal measures, tend to be the most effective in achieving change towards food sustainability' (SAPEA, 2020). Such measures include marketing and advertising bans; restrictions on promoting unhealthy, unsustainable food in key everyday environments; rules regarding the prominence of sustainable food products in key food choice environments; establishing minimum sustainability requirements for food products and operations; and harmonised mandatory sustainability labels. In addition to making consumer decisions easier by providing the right signals, such interventions could foster sustainable innovation by levelling the playing field and reducing the risks for front-running businesses already fostering sustainable food consumption.

In some cases, establishing a baseline through mandatory reporting by Member States can provide a foundation for subsequently developing binding measures. For example, mandatory monitoring and reporting of food waste generation has led to collecting relevant data for a first appraisal of the problem (EC, 2022j), and the ongoing revision of the Waste Framework Directive could include binding food waste targets.

Looking beyond the F2F strategy, other EU policies are being developed that could increase the pressure on businesses to operate sustainably. For example, the European Commission's proposed Corporate Due Diligence Duty Directive (EC, 2022c) would require companies to identify, end, prevent, mitigate and account for negative human rights and environmental impacts in their operations, their subsidiaries and across their value chains. In addition, certain large companies would need to ensure that their business strategy is compatible with limiting global warming to 1.5°C in line with the Paris Agreement. Company directors are incentivised to contribute to sustainability and climate change mitigation goals.

The European Commission's due diligence proposals build on an increasingly robust body of measures that increase the transparency and harmonisation of corporate reporting about the impacts of their activities. The EU taxonomy provides a list of sustainable activities, which contribute to one of six EU environmental targets (i.e. climate mitigation, climate adaptation, protection of healthy ecosystems, protection of water and marine resources, pollution prevention and control, and circular economy) while not harming the other five targets (EU, 2020). Alongside this taxonomy, the Corporate Sustainability Reporting Directive (CSRD) creates substantial new reporting requirements for 49,000 large and listed companies in Europe (EC, 2022d). The CSRD imposes a strict double materiality perspective, requiring affected businesses to report annually on the impact of their operations on sustainability issues and the effects of sustainability issues on the company's economic situation. The CSRD builds on the taxonomy, requiring companies to report on their sustainability targets, the role of their boards and their material adverse impacts.

The implications of these new measures are potentially substantial. By creating responsibilities for impacts across value chains, the measures compel businesses to take a systemic perspective. The new information also creates opportunities for action by diverse actors. With better information about business activities and impacts, governments can potentially create new standards or obligations. In combination with new EU rules on financial advice, green bonds and green financial products (EC, 2022q), sustainability information enables investors to steer their financial resources towards sustainable businesses. Sustainability reporting also provides a basis for businesses and consumers to make choices between suppliers or where they shop, or to dissociate themselves from certain brands. For civil society groups, sustainability reporting can provide

a foundation for campaigning to highlight bad (or good) conduct and raise standards across sectors, or even for suing businesses for the impacts across their value chains.

5.3 Towards a transformative food policy mix

Achieving healthy diets from sustainable food systems will require substantial shifts in dietary patterns, reductions in food losses and waste, and improvements in food production practices (Willett et al., 2019). In complex systems, food choices and consumption patterns are shaped by the interplay of individual biological and psychological characteristics, shared norms and identities, and structural elements of micro- and macro-level food environments. To be transformative, EU policy needs to address the different drivers of food choices in tandem and make sustainable food choices the norm; create a common regulatory framework for reduction targets and effort sharing across Member States; make all actors across the food chain responsible for health, social and sustainability outcomes; and engage consumers as innovators.

Some of the policy tools required for food system transformation are beyond the EU's policy remit, making cross-scale collaboration and synergies essential for policy effectiveness. The F2F strategy highlights the importance of effective multi-level governance as a key objective of the planned legislative framework for a sustainable food system, which 'will promote policy coherence at EU and national level, mainstream sustainability in all food-related policies and strengthen the resilience of food systems' (EC, 2020a). For example, the Waste Framework Directive requires all Member States to develop food waste prevention programmes. Although this is a soft instrument, it has led to many countries introducing policies for surplus food donation.

5.3.1 Aligning policy interventions with psychological realities

Research shows that in everyday life many decisions are made automatically, without rational deliberation, because this is less cognitively taxing. As a result, consumption choices often rely on habits or associations with positive emotions or social figures, such as celebrities, rather than information about products or services (Kahneman, 2011; Verplanken and Orbell, 2022). Information-based tools can influence a consumer's choices if they have the necessary ability (e.g. to interpret labelling), opportunity (e.g. to access sustainable food) and motivation (e.g. to consume healthy food). Information-based tools are also more likely to influence behaviour when a consumer experiences a disruption of their normal habits, for example when a consumer relocates, changes job or becomes a parent (Verplanken and Roy, 2016). In other situations, consumer choices are much more likely to be based on other types of cues.

Policy interventions aimed at shaping consumption choices need to be aligned with these realities. Information-based tools remain important for guiding rational thinking and they need to be designed and delivered in ways that maximise their impact. However, the central role of environmental factors and habits in shaping consumer choices also implies a need for other measures to address accessibility, marketing, affordability, social norms, etc. It includes combining 'upstream' interventions that disrupt the environmental triggers for habitual behaviour and 'downstream' measures that provide informational inputs at points where habits are vulnerable to change (Verplanken and Wood, 2006).

5.3.2 *Providing information about food products effectively*

Product labels remain an important tool for informing policymakers, businesses and consumers about environmental impacts of food products, based on how they were produced, processed, packaged and transported. Pursuant to the F2F strategy, the European Commission is developing sustainability labelling methodologies to provide clear and meaningful information to consumers about selected environmental and social dimensions of sustainability.

Differentiating food products on the basis of their environmental impacts is becoming easier thanks to advances in whole life cycle analysis (Deconinck, forthcoming). For example, the Agribalyse database in France catalogues around 2,500 products in terms of their sustainability performance, providing a basis for more accurate product labelling. However, the issue of product labelling raises some difficult questions in relation to both the methodologies for identifying sustainability impacts and the best ways to communicate those impacts to consumers. For example, IFOAM (2022b) is critical of the use of product environmental footprint methodology (an LCA methodology being developed by the European Commission) in the food system context because it tends to favour more intensive, high-yield agriculture. Accordingly, the product environmental footprint needs to be complemented with additional information to ensure that consumption choices contribute to the transition to a sustainable food system.

Other efforts to quantify the environmental impacts of farms include the Harmonised Environmental Storage and Tracking of the Impacts of Agriculture (Hestia) database, which covers more than 40,000 farms and 1,600 processors and retailers in 120 countries. This database supports reductions in emissions at production level but also provides the basis for effective labelling and consumer-directed behavioural change strategies (Poore and Nemecek, 2018). The EDGAR-Food database also quantifies country-level emissions for each stage in the food value chain (e.g. production, processing, transport, packaging, retail and consumption), potentially supporting country-level

targets for emission reductions tailored to actors at each of the stages (Crippa et al., 2021).

Labels also need to be effectively designed to overcome human cognitive limitations, striking the right balance between accessibility and credibility (De Bauw et al., 2021). Too much information can be overwhelming, but too little information can undermine the trustworthiness of sustainability claims. For instance, regarding healthy choices, interpretive labels such as those using a traffic light system have shown some effectiveness (Cecchini and Warin, 2016). The effects of an Eco-Score that would be synergistic with Nutri-Scores on food products have been tested recently, with mixed results, finding that a joint Nutri- and Eco-Score does not necessarily improve the environmental impact of food purchases, unless coupled with specific (quantitative) recommendations for use (De Bauw et al., 2021). In a recent review of evidence, simple, colourful and evaluative front-of-pack labels were found to be more easily understood and were preferred by consumers (Nohlen et al., 2022).

Beyond labels, menu labels, shelf labels and point-of-sale signs are also effective means of information provision, at least for healthy food choices; however, more research is needed for sustainable food choices (Werle et al., 2022). The language used on labels also plays a key role in the decision to buy, with indulgent and experiential language and mentions of food origin increasing sales, and labels such as 'meat-free' deterring purchase (Wise and Vennard, 2019). Consumers like to support local or domestic farmers and food industries (Thøgersen and Nohlen, 2022).

5.3.3 *Shaping availability and accessibility*

Food system actors such as food distributors, processors and retailers have a major role in shaping consumer choices (Gupta et al., 2022). Policy interventions, ranging from regulatory and market-based tools to product and outlet labels, can engage these actors and shape the range of products offered, the location of those products in retail stores, the pricing of products and the information provided to consumers through advertising and marketing (Fesenfeld et al., 2020; Grubb et al., 2020). These kinds of policies can both create a more level playing field for sustainable products to compete against unsustainably produced food and make it easier for companies to shift to greener business models without losing market share or support from investors.

Although 'choice editing' has been criticised as disempowering consumers, it is inevitably exercised by retailers through store design and product location, often in ways that undermine sustainability objectives. Policies can help improve outcomes by progressively reducing widespread access to the most unsustainable products (in line with successful actions to constrain access to harmful products, such as cigarettes, or to restrict advertising practices); promoting recommendations on

quantities of certain food products corresponding to healthy and sustainable diets; and legislating to make intermediary food chain actors responsible for the environmental and climate pressures associated with their value chains.

Policy interventions can include regulations on the availability, accessibility, proportion and location of sustainable food products in key food choice environments such as shops and restaurants. Regulations on minimum percentages of sustainable, organic and local food products can be used to encourage shorter supply chains, improve public knowledge about agricultural practices, support preservation of agricultural land and reduce power imbalances in favour of smaller producers. However, local and smaller producers also need scrutiny to ensure that agricultural, trading and logistical practices are truly sustainable.

Eliminating contradictions is also important to increase credibility, for example by regulating the use of unsustainable packaging options from sustainable food choices. Subsidies, tax breaks or public procurement could be used to further incentivise choice editing, in terms of both reducing access to unsustainable food and expanding the choice of sustainable food options. In addition, policies can create financial or reputational mechanisms (e.g. prizes or certifications) to reward food industry actors that facilitate sustainable choices through price and product promotion, sustainable supply chain procurement requirements and the design of store environments (Castro et al., 2018).

Policies that aim to improve product information about sustainability impacts (e.g. labels) can potentially also trigger more widespread effects. For example, effective labelling may compel food manufacturers to adjust their production to avoid negative labels or drive food retailers to refuse to stock items that fall below minimum sustainability criteria. Shopping apps or online stores can also use product sustainability data to suggest alternative products to shoppers or provide information about the health and sustainability of a purchaser's whole shopping basket.

Policy interventions are also needed to address the availability and accessibility of food products in other key micro-environments such as workplaces, neighbourhoods and restaurants (Gesteiro et al., 2022). In broad terms, the European Public Health Alliance (EPHA, 2022) has recommended that the European Commission support national governments in designing food policy plans that reduce opportunities and incentives for unsustainable and unhealthy food consumption. This would include encouraging policy coherence across different governance scales through, for example, dedicating regional funds to shaping physical environments in ways that make sustainable food products accessible, while reducing the availability of harmful food products, especially for certain social groups (e.g. children, hospital patients).

Public procurement policies can also be used to establish criteria for the availability, size, visibility and share of sustainable and healthy food products in everyday environments, such as schools, workplaces, canteens, stations and airports. For example, the F2F strategy recognises the need to set minimum mandatory criteria for sustainable food procurement. As suggested by the EPHA (2022), this could include criteria on the nutritional quality of foods and menus, the share of organic products in procurement, the share of foods from other quality or sustainability schemes, and the share of plant-based menus offered. Cooperation with privately owned businesses in such environments can be encouraged to promote the availability of healthy and sustainable food options.

5.3.4 *Influencing social and cultural norms*

Making sustainable food products prominent in everyday settings is also an important way to shape and strengthen social norms, i.e. the shared assumptions, rules and behavioural expectations that regulate social life. Norms may be inferred from observing the behaviour of others or its consequences (descriptive) or passed on as moral obligations about what is considered appropriate (injunctive).

Policy interventions using social norms are among the most effective in fostering pro-environmental behaviour, including food choices (Bauer and Reisch, 2019; Willett et al., 2019). Increasing the availability, accessibility, visibility and prominence of sustainable food products in everyday settings can influence consumer behaviour by communicating that such choices are popular and desirable. Communication and marketing campaigns can also be highly effective, employing both descriptive messages (i.e. about what others do) and injunctive messages (i.e. about what is right and socially expected), especially if the messages are dynamic (i.e. suggest increased acceptance of sustainable products) (Sparkman and Walton, 2017). Policies can also limit marketing and promotion activities for unsustainable food choices or require environmental warnings for harmful products, using a similar approach to the health risk warnings that accompany tobacco products.

Newly established norms and behaviours related to sustainable food choices can spread via social networks, through social contagion or direct intervention, contributing to social tipping dynamics and points (Otto et al., 2020). Recent evidence points to the fact that such tipping points are quantifiable, indicating that, when a minority opinion reaches 25% of the members of a social group, new norms and behaviours are more easily adopted by a majority (Centola et al., 2018).

5.3.5 *Addressing human motivations*

Environmental, health, economic and emotional motivations influence consumer decisions in relation to healthy and sustainable food, providing potential further intervention

points for policy. For example, policies can tap into economic motivations by adjusting prices for sustainable or unsustainable food, using taxes, subsidies or regulatory interventions, such as bans on selling selected foods at artificially low prices (Grubb et al., 2020).

While the EU's role in fiscal policy is limited, it can influence prices by setting regulatory standards that require better farming practices. Indeed, consumers may be more willing to pay more for ethically and sustainably produced products if prices simply reflect higher standards, rather than taxes. However, the EU can also create a supportive framework and provide recommendations to Member States on using fiscal measures. As signalled in the F2F strategy, Member States could be given more flexibility in setting VAT rates to promote healthy and sustainable foods, such as organic fruit and vegetables, and deter unsustainable products. The European Semester process could also put more emphasis on green and fair tax reform in all Member States (Gore et al., 2022).

There are also opportunities to align sustainable consumption with health motivations (Grubb et al., 2020), for example through nutrition policy. While this area has largely been left to Member States, the EU has developed frameworks that address nutrition, such as the European food and nutrition action plan 2015-2020, which aims to reduce preventable diet-related non-communicable diseases, and the European one health action plan against antimicrobial resistance (AMR). Integrating sustainability criteria into nutritional policies and strategies can provide a boost to sustainable diets, as illustrated by the upcoming update of the Nordic Nutrition Recommendations (Helsedirektoratet, 2022). Nutrition recommendations guide public procurement of food in childcare settings, schools and homes for the elderly, which mean that they can provide powerful levers for durable behavioural changes and help to build a more sustainable food system (Kaljonen et al., 2020).

Other policy areas will also need to be addressed in a synergistic manner. For example, education policies strongly influence people's attitudes towards and ability to access healthy and sustainable diets. Social policies affect labour and living conditions across the food system, as well as the ability of households of low socio-economic status to afford a healthy diet from a sustainable food system. As a lot of these policies are formulated at national and municipal levels, coherence across different governance scales and the definition of aligned national and regional food system strategies are extremely important in shaping sustainable and healthy food consumption patterns.

5.3.6 *Engaging consumers as innovators and citizens*

Policies also have a role in engaging consumers as innovators — designing and delivering sustainable new social

practices, institutions or business models, and playing a key role in remedying the democratic deficit of food systems (Schebesta and Candel, 2020). Consumers can innovate through the creation of community-supported agriculture schemes; food cooperatives such as collective food-buying or organic product delivery groups; civil society-based food policy councils; food-sharing initiatives; farmers' markets; urban gardening projects; or slow food initiatives that create economically viable ecosystems of sustainable food products, markets and communities (e.g. Bui et al., 2016; Audet et al., 2017; Dedeurwaerdere et al., 2017; EEA, 2022c). Local support for food democracy and citizen participation is essential to open up the space for engagement and innovation. Such initiatives need financial resources and time to be dedicated to developing capabilities for meaningful participation in shaping food policy, as well as carefully designed processes that lead to real citizen impact and keep power imbalances in check.

In broad terms, the shift in EU policy from a focus on the agricultural and fisheries sectors to a food system perspective enables a more diverse set of actors, including consumers and citizens, to be meaningfully involved in food governance (Rosenzweig et al., 2020). Socially innovative initiatives need to be given financial resources and time to develop opportunities for citizens to participate meaningfully in shaping food policy, and to carefully design processes that allow citizens to reclaim decision-making processes from powerful actors (IPES-Food, 2019). Such innovation initiatives also create environments that help develop new knowledge about the food system (e.g. about connections between food, health and environmental impacts), new skills (e.g. for cooking), and new habits and social norms. Local initiatives and translocal networks are also environments where different actors in the food system can achieve a common vision on what a sustainable food system might look like, from local to global scales, through social learning and the use of foresight approaches.

As discussed in Chapter 7, EU policy has provided some direct support for engaging consumers in innovation processes. For example, EIP-AGRI operational groups bring together farmers, researchers, advisers, consumer groups, businesses and non-governmental organisations to support food system innovation. Social and governance innovations are also supported through Horizon Europe. However, support for the mainstreaming of innovation ecosystems should become a key part of the EU food system strategy. Incentives and regulations should support small and medium-sized producers and businesses in gaining access to the market, given that 99% of EU food businesses are small and medium-sized enterprises, and support middle-chain actors to contribute to shorter, more sustainable food chains. Research and innovation funds such as those provided through Horizon Europe or LIFE programmes can test additional strategies to promote sustainable and healthy food choices and socially innovative options for actively engaging consumers. Innovative solutions can be further stimulated and implemented in national and local plans.

6

Is EU food policy actively phasing out unsustainable technologies, practices and systems?

6.1 Phase-out in sustainability transitions

Transitions research has broadened its scope in recent years from a primary focus on innovation processes to a complementary emphasis on the disruption and phasing out of unsustainable and harmful modes of producing and consuming (e.g. Kivimaa and Kern, 2016b; Heyen et al., 2017a; Rogge and Johnstone, 2017a). As illustrated in Figure 3.2, transformations combine complementary processes of innovation and phase out, including processes of building up and breaking down (Hebinck et al., 2022). The active and coordinated governance of innovation and phase-out processes and their dynamics can play a crucial role in accelerating transitions towards EU sustainability objectives (Rinscheid et al., 2021).

Phase-outs have been defined as 'governance interventions aimed at terminating specific technologies, substances, processes and practices that are considered harmful' (Rinscheid et al., 2021). Phase-out patterns can vary from 'gradual regulatory tightening, culminating in a deliberate phase-out' and 'market-driven phase-out modulated by strengthening policies' to rapid phase-out decisions due to unexpected external shocks (EEA, 2019a). The governance of phase-out can therefore target single unsustainable substances and technologies or aim to transform systems (e.g. EU food systems), implying differing sets of measures and instruments (Rinscheid et al., 2021).

Research has shown that the processes of phase-out and innovation are linked in important ways (Turnheim and Geels, 2012). Stringent policies that aim to phase out dominant practices can incentivise innovation (Ambec et al., 2013) and support the diffusion of more sustainable alternatives. For example, research on the German energy transition found that 'Germany's nuclear phase-out policy had a positive influence on manufacturers' innovation expenditures for renewable energies and was seen as by far the most influential policy instrument for the further expansion of renewable energies in Germany' (Rogge and Johnstone, 2017). The German example

also shows that the timing and sequencing of interventions that influence innovation and phase-out dynamics can be crucial. The Fukushima disaster created a window of opportunity to accelerate the phasing out of nuclear energy in Germany but can also be seen as having resulted in the political decision to temporarily use more highly polluting lignite electricity production. Ideally, alternatives (in this case renewable energy technologies) need to be available and sufficiently diffused before phasing out existing technologies.

Transitions research also points to the complex politics of phase-out processes, which are 'riddled with issues of power, political legitimacy, and equity' (Rinscheid et al., 2021). As discussed in more detail in Chapter 8, systemic transitions inevitably create 'winners and losers', with the societal costs of structural change and phase-out policies often falling on particular sectors, regions and/or societal groups. Politically influential industries, lobbies and constituencies can be expected to resist phase-out measures, thereby potentially reducing their impact. For example, research into the phase-out of DDT in the United States, France and the United Kingdom finds that what looked like a 'victory of environmental movements' in fact did not lead to wider systemic changes (Levain et al., 2015). According to the authors, 'the DDT ban wasn't a major turning point for the pesticide regulation. On the contrary and by many ways it has enhanced the legitimacy of the pesticide regulatory actors to control pesticide hazards' (Levain et al., 2015). Similarly, in a study on the phase-out of battery cages for hens, van Oers et al. (2021) show how mainstream 'political and economic interests steered destabilisation processes towards a prolonged technology phase-out with manageable outcomes'.

In sum, deliberate phase-out measures can be politically difficult to implement and require active governance to deal with issues of vested interest and compensating 'losers'. The Kanger et al. (2020) framework presented in Chapter 3 therefore identifies the need to address the broader repercussions of regime destabilisation as an important policy intervention point.

6.1.1 Phase-out policy mixes

In practice, successful phase-outs often require combinations of policies that both support innovations and disrupt more established systems, while managing resistance and lobbying activities and ensuring a fair distribution of costs and benefits. Policy mixes can also help to prevent risk migration, where the phasing out of one practice leads to the adoption of unsustainable alternatives. Tackling these problems and accelerating existing transitions requires the active governance of phase-out processes and combinations of interventions that go beyond targeting individual substances, technologies or practices to address broader system changes (Rinscheid et al., 2021). The timing and sequencing of phase-out interventions are also important.

Phase-out policies can therefore include a broad mix of instruments, including direct and indirect interventions (Turnheim, 2022). According to Turnheim, direct policy interventions can withdraw support from harmful practices (e.g. removal of subsidies), make them economically disadvantageous (e.g. through carbon pricing) or even ban them. Other possible measures include long-term targets, changing rules and strengthening regulations. To give established actors time to plan and reallocate their investments, it can be helpful to signal the direction of change and increase the pressure gradually. This could mean starting with voluntary schemes, followed by combining voluntary schemes with financial incentives, before using regulatory means such as bans as the last resort.

By putting pressure on established actors, direct policy interventions can potentially disrupt existing power asymmetries and provide a window of opportunity for alternative niche practices and technologies (both consumption and production) to emerge and create wider system changes. Examples of direct interventions include measures such as the EU ban on incandescent light bulbs (Koretsky, 2021) and the recent decision to phase out the sale of internal combustion engine vehicles across Europe by 2035.

'Indirect' policy interventions aim to mitigate resistance to phase-out processes or actively support 'losers' from such processes. 'Indirect' policy interventions can also enable diverse and inclusive participation in the governance of phase-out, increasing the preparedness and adaptive capacity of affected groups and overcoming structural dependencies (Turnheim, 2022). Such measures can include compensation for losses and stranded assets, financial support or infrastructure investments to help to convert to new modes of production, reskilling and professional training programmes, social safety nets and regional development funds. In addition to offering practical means to enable structural change, many of these measures are necessary for achieving socially just transitions (see Chapter 8). An example of such an approach is the EU's Just Transition Mechanism and Just Transition Fund, which support the transition of fossil fuel-intensive regions and alleviate the socio-economic impacts of this transition.

6.2 Assessing the EU policy mix

The mapping and assessment of the F2F strategy, CAP and CFP policy mixes have revealed a large number of instruments classified as potentially contributing to the decline and eventual phasing out of unsustainable practices for the CFP and the F2F strategy. This is somewhat surprising, as previous studies within the transitions literature have found that policies often neglect this aspect of transition processes (Kivimaa and Kern, 2016). The conventional explanation for the lack of phase-out policies is the political difficulties of such endeavours, which potentially threaten powerful actors and may cause stranded assets.

The mapping of the EU food policy mix shows that 14 of the 27 F2F strategy instruments and 6 of the 17 CFP instruments aim to phase out unsustainable practices. Nevertheless, closer assessment of the policy mix brings to light the political challenges in adopting and implementing phase-out policies. Political support for developing ambitious policies is often fragile and faces significant opposition from some Member States and lobbying from influential interests, with the Ukraine crisis further increasing pressure for derogations from greening rules (Willard, 2022a). The efficacy of phase-out measures also depends critically on national and local implementation and the development of coherent policies across different levels of governance.

6.2.1 Phase-out measures in the CFP and CAP

Six of the 17 CFP instruments aim to destabilise and phase out unsustainable practices, with all six targeting production. The instruments include regulations regarding total allowable catches (TACs), the landing obligation (discard ban), fishing effort limits and fleet capacity ceilings. Closer examination of these instruments reveals questions around effectiveness and implementation. For example, the TACs instrument is based on the maximum sustainable yield (MSY), but ministers often assign TACs that are higher than the recommended level and MSY, and Europe failed to achieve the target of ending overfishing in all European basins by 2020 (as stipulated in Article 2.2 of the Basic Regulation) (Puymartin et al., 2021).

The landing obligation likewise faces some difficulties with implementation. Guillen et al. (2018) argue that 'the extensive practice of discarding in EU fisheries fostered by the EU quota system, has been identified as one of the reasons for the failure of the past CFP'. As a consequence, the establishment of the landing obligation is a major provision of the latest reform of the CFP and a potentially important step towards achieving more sustainable fisheries. Guillen et al. (2018) note, however, that 'to ensure compliance with the landing obligation will require high levels of surveillance (i.e., high cost of enforcement) and/or creation of economic incentives to land all catches; without them, the success of the policy is at risk'. Neither of these two options has been

implemented alongside the landing obligation. Moreover, recent research on the landing obligation finds an increasing number of exemptions, while TACs have been significantly adjusted upwards to accommodate the volume of fish that would have been discarded but must now be landed. As such, fishing opportunities have increased significantly without any evidence that fewer fish are being discarded (Borges, 2021).

In sum, although CFP policies theoretically challenge the existing fishing system, in practice they have not yet led to a significant change in fishing practices, partly because of the way the policies were designed or implemented.

Turning to the CAP, the mapping shows that one CAP instrument aims to phase out unsustainable agricultural practices. Cross-compliance rules comprise statutory management requirements (SMRs) that all European farmers must follow, regardless of whether or not they receive CAP support, and standards for good agricultural and environmental condition of land (GAEC), which must be met to receive CAP support. The recent CAP reform has changed these cross-compliance rules, creating a 'new green architecture'. Mandatory rules for 'conditionality' include both SMRs and GAEC standards and set 'a higher level of ambition in several domains' (EC, 2021f). The rules include GAEC standards on soil protection and quality and on biodiversity and landscapes. In addition, voluntary eco-schemes have been introduced to provide incentives for climate- and environment-friendly farming practices and the second pillar of the CAP (i.e. rural development) will allocate a higher share of resources to climate interventions.

The impact of the new conditionality rules and the support of the eco-schemes will depend on how the instruments are implemented in Member State CAP strategic plans. However, the conditionality requirements have been criticised for aiming to achieve only certain minimum environmental standards for conventional practices (e.g. EEB et al., 2018). The Institute for European Environmental Policy (IEEP, 2021) argues that the requirements do not target the major changes in practices that are needed to achieve the F2F strategy's goal of creating a European food system that has neutral or positive environmental impacts. Likewise, an analysis of the European Commission's 'observation letters' on the CAP strategic plans of all 27 Member States identifies a 'misuse of targets and result indicators' (Willard, 2022b) which are important for achieving goals related to, for example, cutting nutrient losses and reducing fertiliser and pesticide use.

In other respects, implementation of the CAP can tend to consolidate rather than disrupt conventional farming practices. This is apparent, for example, in relation to dairy and livestock farming. Although assessments by EU Member States and key scientific literature have shown the negative socio-economic and environmental implications of intensive livestock farming (Ilea, 2009; SAPEA, 2020; ARC2020, 2022) and industrial meat production and consumption (Heinrich

Böll Stiftung et al., 2021), there are currently no dedicated phase-out policies to change these practices. And although the CAP in combination with other policies could potentially have a strong influence on the livestock sector (ARC2020, 2022), a European Commission study based on a review of the 28 draft CAP strategic plans has found that 'with a few exceptions, proposed plans ignore the importance of actions to reduce methane emissions from livestock and those with intensive livestock production to tackle these emissions at all, which is reflected in the fact that only 9 out of 28 CAPs set the relevant target (R.13 — reducing emissions in the livestock sector)' (EC, 2022o). This lack of action seems to be at odds with the EU's ambitious targets for transforming the food system to operate within environmental limits, as outlined in the F2F strategy.

6.2.2 F2F strategy and the wider policy mix

The F2F strategy contains 14 initiatives related to phase out, with a relatively equal distribution across the value chain. The initiatives range from proposals for addressing pesticides and revising animal welfare legislation, which can help to improve animal health, protect biodiversity and deter the emergence and spread of disease; through improvements to corporate governance and the development of a code of conduct for responsible business and marketing practices; to measures targeting food labelling and waste targets.

Although the broad coverage of these measures is welcome evidence of a systemic approach to food policy, closer scrutiny raises questions about the stringency of the measures and highlights difficulties with political contestation and implementation in Member States. Six of the 14 instruments categorised as targeting the phasing out of unsustainable technologies or practices are 'information and education' measures, such as setting nutrient profiles to restrict promotion of food high in salt, sugars and/or fat and proposing a sustainable food labelling framework. While implementing these measures may be important, the measures are unlikely to be sufficient to lead to systemic change in the food system by themselves (see Chapter 5). From a transitions perspective, it is important to link these kinds of informational tools with support for innovations and/or already existing alternatives (e.g. organic agriculture and agroecology), as well as additional phase-out interventions (e.g. taxes on pesticides).

EU actions to reduce the use of pesticides provide further evidence of the political challenges of phase-out. In line with the F2F strategy and the Biodiversity Strategy, the European Commission has proposed a new regulation on the sustainable use of plant protection products, which includes legally binding targets that aim to 'reduce the overall use and risk of chemical pesticides by 50% and the use of hazardous pesticides by 50% by 2030'. Environmental NGOs have welcomed the introduction of the proposed regulation, which was adopted despite opposition from 12 Member States

and a lobby of agricultural companies. However, the NGOs also pointed to the need to change the calculation system to measure progress by developing new indicators to be able to move towards the F2F strategy's pesticide reduction targets (IFOAM, 2022a).

The impacts of the new regulation will also depend on implementation at national level, where there is likely to be resistance. For example, a recent Friends of the Earth study of seven Member State draft CAP strategic plans found that 'action appears to be particularly lacking on pesticides and fertiliser, where none of the CAP plans assessed will make a significant contribution to the target [outlined in the F2F strategy]' (FOE, 2022). This is despite the fact that the F2F strategy requires the European Commission to make recommendations to each Member State about key focus areas to achieve European Green Deal (EGD) targets before national strategic action plans are submitted. As such, Member States were explicitly asked to explain in their CAP strategic plans how they plan to reduce and phase out pesticide and fertiliser use.

Actions targeting influential actors such as food manufacturers, distributors and retailers have advanced but continue to lack bite. As noted in Chapter 5, the code of conduct has secured widespread buy-in from big businesses and associations, but it is voluntary and aspirational in nature. Industry resistance also resulted in a code that is more general and less concrete than envisaged in the F2F strategy. More recently, the adoption of the Corporate Sustainability Reporting Directive and the development of a Corporate Sustainability Due Diligence Directive potentially offer ways to amplify the pressure on businesses, creating the basis for designing new policies, reorienting financial flows and mobilising civil society action. However, again, much will depend on the stringency and implementation of the legislation finally adopted. There are indications already that ambitions for the Corporate Sustainability Due Diligence Directive have declined since the European Commission first proposed it in February 2022 (Euractiv, 2022).

Looking beyond the CAP, CFP and F2F strategy, other important EU policies are putting pressure on harmful food system practices and driving changes. As discussed in more detail below in Section 6.3, implementation of the Nitrates Directive is putting significant stress on intensive livestock farming in some Member States, driving both dramatic policy interventions and significant resistance from the agricultural sector. There are also growing indications that the obligation to ensure that all waters are 'of sufficient quality' by 2027 is further amplifying pressure to tackle chemical and nutrient pollution, particularly because increasingly frequent droughts are intensifying water quality problems (NRC, 2022). Similarly, the EU Biodiversity Strategy 2030 and the EGD's 'do no harm' principle aim to reverse ecosystem degradation and will require major changes to farming and fishing practices across Europe.

EU climate policies are potentially also stimulating changes in agricultural practices. At present, the EU's Effort Sharing Regulation drives GHG emissions reductions by setting national targets for total emissions from sectors such as transport, buildings, agriculture and waste, and the parts of industry not addressed by the EU Emissions Trading System. The Effort Sharing Regulation (ESR) does not specify national targets for agricultural non-CO₂ emission reductions (such as methane and nitrous oxide). Member States therefore decide individually how their agricultural sector should contribute to the ESR national target and can impose national targets for agriculture. In 2022 the European Commission proposed an EU regulation on carbon removals from land use, land use change and forestry sector that provides incentives for carbon sequestration both in forests and on agricultural land (such as croplands and grasslands). Moreover, other climate initiatives such as support for carbon farming aim to increase carbon stocks in soils and will drive farmers to improve soil management.

6.3 Towards a transformative policy mix

While the phase-out instruments in the CAP, CFP, F2F strategy and the broader EU policy mix go some way to disrupting the established food system, the mapping and assessment of policies point to significant limitations and gaps. This section first outlines and discusses several Member State interventions across the food system that provide some insights into the opportunities and barriers in relation to more ambitious phase-out policies. It then explores ideas for policy strategies that could mitigate these barriers and strengthen the EU's phasing out of unsustainable practices.

6.3.1 Opportunities and barriers for phase out instruments

As discussed in Chapter 5, governments across Europe have introduced measures to manage or restrict unhealthy and unsustainable food products or practices. Examples of such measures include:

- implementation of taxes for soft drinks and sugary foods (e.g. Latvia and Portugal);
- restrictions on advertising certain types of foods (e.g. France, Ireland and Sweden), such as limiting fast-food advertising, prohibiting advertisements in children's television programmes, banning food and drinks advertisements in schools and including health warnings in advertising;
- bans or restrictions in schools, such as in France, where vending machines are banned from schools, and in Hungary, where schools have re-examined their contracts with vending machine providers (Gerritsen et al., 2019).

Such measures demonstrate that interventions aimed at banning or restricting unhealthy practices have been implemented across Europe. However, in most cases, the effectiveness of these policies (i.e. whether or not the intervention actually promoted a shift towards healthier food options) has not yet been assessed.

Other measures with health-related and environmental co-benefits have addressed meat consumption. Currently, the main focus has been on information provision and skills support rather than regulatory and fiscal measures, such as carbon-based taxes that directly target meat products (Trewern et al., 2022). For example, in France, the Plan National Nutrition Santé has recommended that people limit their consumption of red or processed meat to a certain amount. Other countries provide information about reducing meat consumption, but the types of information and recommendations vary between countries.

Trying to go a bit further, the Danish government introduced a tax on saturated fats linked to meat and other food products in 2011. However, the tax was controversial because of the potential impact on Denmark's food industry and concerns about possible increases in meat purchases in neighbouring countries. The tax was abandoned in 2013 (Bonnet et al., 2020). In 2016, the Danish Council on Ethics promoted a national tax on the consumption of meat to curb GHG emissions, which was highly controversial (Lykkeskov and Gjerris, 2017) and was therefore not introduced. More recently, in 2020, Denmark tried to ban the serving of meat for 2 days a week in state canteens. However, after several weeks, the government cancelled the ban because of trade union objections and agreed on voluntary meat-free days instead. These examples serve as a reminder of the political difficulty of phase-out policies that go beyond information provision and voluntary approaches.

More stringent measures have been introduced by Member States to reduce nitrate and pesticide use. Scandinavian countries have a long tradition in the taxation of pesticides. In Denmark, the Treatment Frequency Index has helped to 'map out the intensity of pesticides in agriculture and their environmental impact' and measure the progress on pesticide use reductions (Kudsk et al., 2018; UBA, 2022). Importantly, the introduction of the tax 'had no negative consequences on Danish agriculture productivity'. Finger et al. (2017) have argued for the need to align pesticide policies and taxes with other policy instruments, for example policies linked to fertiliser applications, considering the interlinkages between fertiliser and pesticide use. Other Member States such as Germany have investigated the Danish taxation system for pesticides and describe it as 'progressive' because the increase of levies in relation to the toxic load of pesticides has been proven to be effective (UBA, 2022).

The need to reduce nitrate pollution has encouraged some Member States to introduce phase-out instruments. While some Member States (e.g. Denmark) introduced measures

even before the EU Nitrates Directive came in, other Member States (e.g. the Netherlands and Spain) have more recently been under pressure to introduce measures to meet the targets set by the directive (Levitt, 2021; Weyndling, 2022a). The Dutch government has been struggling to reduce nitrate pollution due to its farming industry, which is the EU's biggest meat exporter and has the highest livestock density in Europe. In 2015, the Dutch government introduced a nitrogen permit system to deal with nitrogen deposits close to Natura 2000-protected areas, as required by the EU Habitats Directive. The permit system, which strongly relied on positive impacts that future restoration measures might have, was deemed insufficient by environmental groups, who therefore sued the government in 2016 (Schoukens, 2017).

The case was finally decided in the Court of Justice of the European Union, which ruled against the Dutch government in 2019, finding that it did not take sufficient action to reduce nitrogen pollution in vulnerable natural areas (Stokstad, 2019). In December 2021, the Dutch government therefore announced a EUR31 billion plan to radically reduce nitrogen pollution over the course of 15 years. The plan aims to address nitrogen pollution in various systems and sectors (e.g. pollution in the building sector and car-related nitrogen pollution), and places strong emphasis on the Dutch livestock sector. The proposed policy aims to voluntarily 'buy out' farmers to reduce levels of nitrogen pollution by relocating to less vulnerable areas, stopping production or transitioning to less intensive methods and downsizing herd size. However, in case of a lack of voluntary response, the government has emphasised turning to forced expropriation to meet the objectives legally set to support Natura 2000 (van der Wal, 2022).

The aim of the proposed nitrogen policy is to gradually reduce the number of pigs, cows and chickens in the country by one third. The policy has generated strong opposition, protests and tractor blockades, especially by conventional farmers who oppose any potential non-voluntary measures in the future (van der Ploeg, 2020). However, the policy has received support from some groups of farmers, especially farmers who have already transitioned, or are in the process of transitioning, to more sustainable farming practices.

As these examples illustrate, phasing out particularly harmful practices across the EU food system is complex and difficult, and often requires a system-based approach to phase-out — for example in terms of attending to unintended consequences and active governance — rather than technological substitution (Rinscheid et al., 2021). The Dutch example makes visible vulnerabilities and dependent social groups that bring with them issues of justice and democracy that need to be an integral part of phase-out policy strategies (see Chapter 8). It also demonstrates that the implementation of phase-out instruments and the stringency of the processes is not only shaped by governments. Environmental groups and courts can also play a crucial role.

The key role of NGOs and environmental groups in phase-out processes is further illustrated by the recent climate case in which the Dutch branch of Friends of the Earth (Milieudefensie) won a major decision against Shell. The court ruled that Shell must reduce its Scope 3 GHG emissions (i.e. including all indirect emissions across its value chain) by 45% by 2030 (Rb. Den Haag, 2021). There are already signals that food industry actors could soon face similar actions. For example, Milieudefensie has recently commissioned a substantial report into the Scope 3 GHG emissions of the Dutch multinational food retailer Ahold Delhaize (Rijk et al., 2022). Moreover, similar court cases could arise against food industry actors as a result of the proposed EU Corporate Sustainability Due Diligence Directive.

6.3.2 Approaches to mitigating barriers to phase-out instruments

As illustrated above, Member States' phase-out policies have been politically difficult to devise and implement, producing varying impacts and conflicts between actors. In some cases, the policies could not be sustained because of pressure from affected groups — even in instances where the policies aimed to reduce rather than completely phase out certain practices. These realities point to the need to design phase-out policies in ways that can mitigate resistance.

The Kanger et al. (2020) framework presented in Chapter 3 highlights the need to address the socio-economic repercussions of phase-out as a key policy intervention point. Indeed, the transitions literature increasingly argues that measures to mitigate negative socio-economic and environmental consequences of phase-outs should be seen as an integral part of phase-out policy (Vona, 2019; Turnheim, 2022). It is therefore striking that the mapping of the F2F strategy, CAP and CFP revealed no instruments that aim to address the repercussions of phase-out policies.

Evaluations of direct and indirect effects (e.g. magnitude, duration and persistence) of phase-out measures, affected groups and/or areas help to design policy measures that mitigate justified losses (see Chapter 8). When investigating the phasing out of asbestos mining, tobacco cultivation and cod fishery, for example, McDowall (2022) points to the need to 'soften the blow faced by communities that are dependent on these industries'. While the EU seeks to address negative social and economic repercussions of the energy transition through the Just Transition Mechanism and Fund, no such equivalent seems to yet exist for the agri-food transition, at least at an EU level.

Equally, however, compensation for losses may not be enough to mitigate resistance to phase-out, as the example of ongoing efforts to reduce intensive livestock farming in the Netherlands illustrates. As discussed in Chapter 8, this implies the need to engage relevant stakeholders in policy preparation and implementation and to ensure transparent, impartial and accountable processes. For affected actors to have time to reallocate resources and make long-term investment choices, both the overall direction of change and specific measures need to be signalled well in advance and potentially phased in over time (Bock et al., 2022a; see also Chapter 9).

Transitions researchers have also pointed out that the bidirectional relationship between phase-out and innovation is often neglected in the governance of phase-out (Rinscheid et al., 2021). The timing and interaction between phase-out and innovation are key to accelerating transitions and avoiding the creation of new lock-ins. For example, Trencher (2020) points to the tensions inherent in Japan's plan to phase out conventional cars, which rely heavily on the creation of hydrogen production facilities that are still reliant on high-carbon sources. Contrastingly, Andersen and Gulbrandsen (2020) have examined the interactions between technological phase-out (offshore petroleum technology) and innovation (diversification activities of petroleum technologies suppliers) in Norway, and point to the opportunities gained if phase-out and innovation processes are aligned. They argue that 'although certain technologies and products decline, the underlying capabilities and associated firms and sectors do not need to... [T]he tensions can be reconciled if technological phase-out... can be combined with alternative and promising industrial opportunities that build on similar capabilities' (Andersen and Gulbrandsen, 2020). The example demonstrates the interlinkages between phase-out and innovation, and the need to actively govern such interactions to overcome possible resistance and seek out potential opportunities.

Moreover, as our examples have shown, some interest groups have exerted their position and power within food systems to hold, delay and change the direction of phase-out measures. Some studies have shown how corporate concentration and power have shaped global and national food systems, and have therefore argued for actions to address power asymmetries to move towards sustainable food system transformations (Clapp, 2021, 2022; Béné, 2022). For instance, Clapp (2021) has pointed to 'measures to curb corporate influence in policy process' and the need for 'stronger and wider competition policies'. Similarly, Béné (2022) has argued for the 'governance of food systems with the ambition to dis-empowering the established Big Food actors'. Such a 'levelling the playing field' approach would lead to a faster pace of change in the transition towards sustainable food systems.

7

Does EU policy provide sufficient support for transformative innovation?

7.1 Innovation in sustainability transitions

Transitions research provides a variety of insights into the role of innovation in enabling sustainability transitions, the barriers to innovation and the opportunities for policy to stimulate and shape innovation processes.

7.1.1 Promoting diverse forms of innovation

The transformation of Europe's food system depends critically on the emergence and diffusion of new ways of producing and consuming food. This certainly includes technological innovations. For example, a recent mapping of future food technologies identifies 'an arsenal of technological options' that could drive systemic change, such as consumer-ready artificial meat, precision agriculture, smart farming, intelligent packaging, nano-drones and vertical agriculture (Herrero et al., 2020). However, only focusing on often capital-intensive technological innovations can have limitations and drawbacks, potentially causing unintended rebound and lock-in effects and increasing power and market concentrations. As a result, having a dominant focus on technologies risks perpetuating existing problems and inhibiting large-scale food system transformation (Klerkx and Rose, 2020; Kliem et al., 2021).

For these reasons, transitions research also emphasises the importance of social innovations (Haxeltine et al., 2013; Avelino et al., 2019; EEA, 2019a), which sometimes offer more radical ways to restructure and reorganise food systems. Such innovations include behavioural and cultural changes (e.g. critical consumerism, dietary changes), new farming practices (e.g. agroecology, organic farming) and alternative organisational structures and ways of organising (e.g. food-sharing initiatives, community-supported agriculture), to mention just a few. The

social and technological dimensions of innovation are not mutually exclusive and often interact (EEA, 2019a). For example, digital technologies make new business models, social practices and behavioural norms possible. Indeed, digitalisation in the food system context has been characterised as 'a process of social transformation, which takes place both as an effect and as a driver of technological change' (Brunori, 2021).

Transitions research typically distinguishes between incremental and radical innovations. Incremental innovations that improve and adapt existing technologies and practices can contribute to sustainability by improving environmental performance. Moreover, such innovations are often favoured by established businesses and policymakers because they are compatible with existing organisational structures, expertise, markets and business models. However, focusing on incremental innovations alone will not fundamentally transform the food system and can even strengthen existing lock-ins and path dependencies (EEA, 2019a). For instance, as argued by Friends of the Earth, 'bioeconomy' projects such as biogas plants are often implemented within the context of intensive animal farming. These projects therefore risk locking farmers into unsustainable production models, increase pressure on land and resources, and do not challenge underlying power relations (FOEI, 2018; IPES-Food, 2019). Similarly, the production of plant-based meat alternatives may substitute for livestock production but may still be based on monoculture agriculture and high-input farming practices.

As presented in Figure 7.1, food system innovations can be classified in terms of their novelty (incremental versus radical change) and their targeted dimension (social versus technical). Achieving sustainability transitions requires support for both incremental and radical social and technical innovations (Geels et al., 2015b).

Figure 7.1 Classification of innovations in terms of incremental and radical social and technological change



Source: Adapted from Geels et al. (2015b).

In contrast to incremental innovations, radical innovations create new ways of producing and consuming. However, radical innovations typically face major barriers that hinder their emergence and diffusion. For example, companies may be reluctant to invest in research and development (R&D) for radical innovation because of the uncertainty of future earnings. In addition, radical innovations often struggle to compete in terms of price and performance with established practices that have benefited from years of incremental improvement, and may also externalise social and environmental harms. Moreover, well-established consumer preferences can make it hard to create markets and enable uptake of radical innovations. For these reasons, radical innovations typically emerge in protected spaces (niches) where they are isolated from social and market forces, and can develop through experimentation, networking and learning (Smith and Raven, 2012).

Public policies and institutions have an important role in stimulating niche innovation, for example through carefully crafted government R&D programmes; providing public funding or tax breaks in the agri-food sector; or connecting them to local science and technology parks. However, niche innovation also extends to a much broader set of measures aimed at shielding, nurturing and facilitating learning in ways that allow technology, user practices and regulatory structures to co-evolve (Schot and Geels, 2008; Smith and Raven, 2012). Such measures include financial support for demonstrations, experimentation and learning; education policies and training programmes; advisory services; removal of regulatory

obstacles to innovation; and creation of institutional structures to facilitate networking and knowledge exchange.

7.1.2 Transformative coalitions of actors

A broad range of measures is needed to promote innovation because innovations are not simply the outputs of scientific and technological breakthroughs. Many transformative ideas, such as community-supported agriculture or dietary changes, are rooted in grassroots or civil society activities that challenge dominant modes of producing and consuming food (Hermans et al., 2016; Kliem et al., 2021; Raven et al., 2021). Moreover, innovations of all kinds emerge and take shape through the interaction of coalitions or partnerships of multiple actors — universities, businesses, policymakers, professional societies, investors, citizens, etc. — in innovation systems (Lundvall, 1992; Breschi and Malerba, 1997). In the food system context, Klerkx and Begemann (2020) highlight the particular role of 'agricultural innovation systems'.

Each group of actors brings different resources, ranging from knowledge, organisational skills and finance to supply and distribution channels and political connections, which all play an important role in innovation systems. As noted in Chapter 5, transitions research reconceptualises consumers as 'users' with a particularly important role, not just in identifying problems and demanding change, but also in shaping how innovations are taken up and used in society (Verhees and Verbong, 2015; Schot et al., 2016; Hoek et al., 2021)

Recognising the contributions of these diverse actors has implications for innovation policy. In general terms, this points to the need to move from a 'supply-side' emphasis on research to a greater focus on users and demand-side measures more broadly. More specifically, genuinely transformative coalitions will most likely need to engage and give agency to new entrants, outsiders, entrepreneurs, users and communities to stimulate and accelerate radical niche innovations, as established actors tend to be locked into existing regimes, causing incremental change and retaining prevalent practices (van de Poel, 2000; Hockerts and Wüstenhagen, 2010; Schot et al., 2016). This also implies an important role for governments in fostering transformative coalitions, for example by promoting networking or defining 'challenges' or 'missions' that can focus and coordinate diverse actors around shared goals and solutions (EC, 2018b; Mazzucato, 2018; Hekkert et al., 2020; Klerkx and Begemann, 2020).

7.1.3 *Orienting innovation processes and managing uncertainty*

Transitions research also places particular emphasis on the uncertainty inherent in innovation processes. It is hard to anticipate and deliberately plan what new innovations will emerge; which new innovations will be technically, socially and commercially viable; how new innovations will be taken up and used in practice; and what socio-economic outcomes and environmental impacts will emerge as a result. Such uncertainties are particularly evident in the agri-food domain, as regions have different ecological challenges and solutions, different (networks of) local actors and specific local institutional settings (Vermunt et al., 2020). For these reasons, transition policy approaches such as strategic niche management (Kemp et al., 1998; Schot and Geels, 2008), transition management (Loorbach, 2010) and technological innovation systems (Hekkert et al., 2007) all emphasise the importance of promoting diverse innovations and using real-world experimentation to test, learn and adapt (Schot and Geels, 2008), before eventually closing down exploration and concentrating resources on a more limited set of innovations and transition pathways (Stirling, 2008).

As will be discussed in more detail in Chapter 9, engaging different stakeholders in developing shared visions and related missions for sustainable food systems is also essential to create directionality for transitions, providing the basis for selecting and orienting innovations based on anticipatory and adaptive governance processes. Such visioning processes are important to help clarify the range of competing visions of sustainability that exist (ranging from optimising current practices to a complete transformation of production and consumption) and build greater alignment around a shared vision. To guide innovation processes, it is not sufficient to stick to relatively vague and generic statements that label intended transition pathways as being 'more sustainable',

without mentioning specific farming or consumption practices. A mission-oriented perspective can help to create a more explicit reflection on the precise way that innovation is expected to contribute to food system transformation (Klerkx and Begemann, 2020), and help guide choices and focus resources as a result.

7.1.4 *Niche acceleration and scaling*

Finally, and crucially, support for niche innovation needs to go beyond promoting new ideas (i.e. 'niche stimulation') to enabling their diffusion and uptake across society (i.e. 'niche acceleration'). This is arguably a particularly important issue for the European agri-food sector, which according to the European Investment Bank (EIB) is characterised by high fragmentation (99% of the companies in the sector are small businesses); low innovation spending (total annual private R&D investment is EUR3 billion, compared with EUR41 billion in the health sector and EUR34 billion in the information and communication technologies sector); and slow uptake of new technologies linked to specific market characteristics such as harvest cycles that limit opportunities for testing and demonstration (EIB, 2022).

Public policies and institutions have an essential role here, through both direct interventions, such as funding incubator subsidies and incentives for private investments and venture capital, and broader actions aimed at shaping the selection environment that enables or deters the upscaling of agri-food innovations and guides consumer choices (Wigboldus et al., 2016). Such interventions necessarily go well beyond traditional innovation policy, necessitating coherent and consistent contributions from sectoral, financial, environmental and other policy areas (Pigford et al., 2018; Klerkx and Begemann, 2020).

As discussed in Chapter 5, an important set of niche acceleration actions focus on creating demand for more sustainable products and influencing consumer behaviours and norms. Such policies include labelling, pricing instruments, public procurement and other interventions that shape the food environment, including efforts to create positive narratives around more sustainable modes of producing and consuming. Targeting the broader market and policy environment affecting actors across the value chain is vital. This means that measures such as regulations and taxes or removing harmful subsidies must be used to tilt the playing field in favour of more sustainable products and processes.

7.2 *Assessing the EU policy mix*

As outlined in Section 7.1, transitions research identifies a variety of important ways in which public policies and institutions can support niche stimulation and acceleration.

The present section assesses the extent to which EU policies address these different intervention points.

7.2.1 CFP, CAP and F2F strategy support for innovation

Both the CAP and the CFP acknowledge the importance of innovation in improving environmental and climate performance. For example, the CFP seeks to promote sustainable aquaculture development and support the algae industry, authorising novel feeds to reduce the environmental impact of livestock farming. The introduction of mandatory digitalised catch certificates to prevent illegal fish products from entering the EU market is another area where technological innovation is highlighted. A key measure of the European Maritime, Fisheries and Aquaculture Fund (EMFAF) is the support of innovative investments in fishing vessels to improve gear selectivity (i.e. gear that catches only fish of certain sizes and species). In general, however, most EMFAF funding goes to large-scale fisheries, with only 18% of funding directed at more sustainable small fisheries where alternative practices more often emerge (O’Riordan, 2019).

Under the CAP, several measures of its ‘second pillar’ target innovation, identifying priority areas, such as fostering knowledge transfer, enhancing the competitiveness of all types of agriculture, promoting innovative farm technologies and supporting the shift towards a low-carbon and climate-resilient economy. Such measures largely aim to improve the environmental performance and resource efficiency of farming by optimising the use of pesticides, fertilisers and fuels. Digitalisation also takes a prominent position in EU food and agricultural policy. Technologically advanced applications such as precision agriculture, integrated pest management and smart farming technologies (e.g. autonomous land machines, image-processing drones, remote sensors and robotics, blockchain technologies) are identified as prerequisites for realising sustainable food systems.

The CAP also funds a broad variety of more sustainable agricultural practices. Support for organic farming dates back to the 1990s, and programmes such as LEADER have a long history in enabling exchange of and support for new ideas. New eco-schemes support practices such as precision agriculture, agroecology (including organic farming), carbon farming and agroforestry, rewarding farmers for adopting agricultural practices in line with environmental objectives. Other areas where the CAP may be opening up to a broader variety of innovation are the many activities focused on strengthening Europe’s Agricultural Knowledge and Innovation Systems (AKIS). These are measures such as knowledge transfer (through vocational training, demonstration activities and information actions), advisory services and a wide range of cooperation measures. They promote innovation among supply chain actors aimed at establishing and developing short supply chains and local markets; diversifying farming activities into health care; enabling social integration and

community-supported agriculture; and promoting education about the environment and food. These kinds of investments are important to develop needed knowledge and also to foster a more fundamental belief that transformative change is possible. However, ensuring that this potential is realised requires a clear directionality for these services. At present, many AKIS policies are not explicitly focused at niche practices and hence run the risk of conforming with the status quo, rather than transforming it.

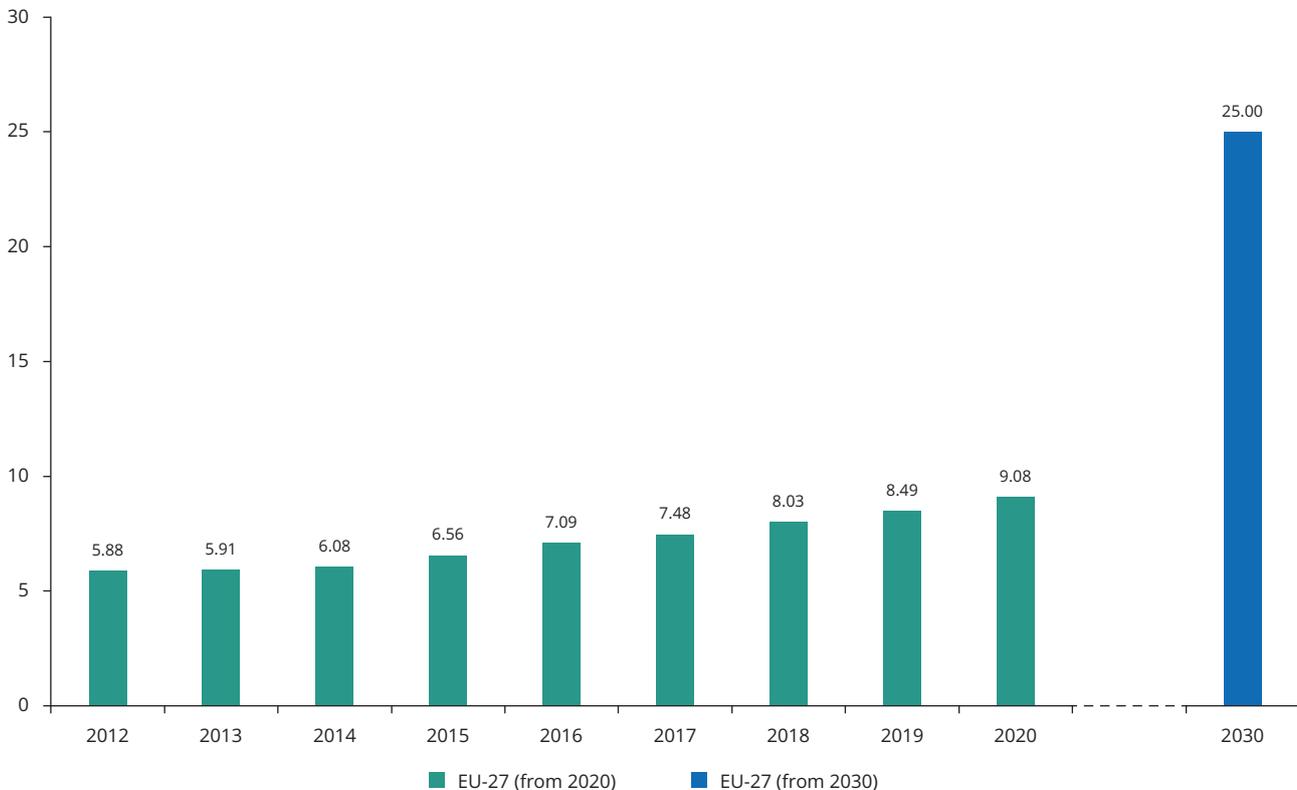
The F2F strategy emphasises research and innovation as key drivers of the transition to sustainable, healthy and inclusive food systems. It recognises a wide range of innovations, including precision agriculture, innovative feed additives and new genomic techniques. It seeks to promote sustainable and socially responsible production methods and circular business models to accelerate green and digital transformation. It also acknowledges the transformative potential of scaling up alternative niche practices such as agroecology and organic farming to transform the industrial food system and intensive farming model that has developed in Europe over the past decades.

The F2F strategy includes a range of instruments targeting both niche stimulation and acceleration. These instruments include revisions to EU directives on pesticides, plant protection products, feed additives, packaging and marketing standards, as well as measures addressing Member State CAP strategic plans, carbon farming, food origin indications and labelling, food procurement, promotion of agricultural products and the EU school scheme. It is notable that most of these actions are geared towards incremental technological improvements and limited change in social and behavioural practices. Moreover, most instruments indirectly promote niche acceleration, not by providing direct funding or incentives for the niche practice but indirectly through improving labelling, standards, setting minimum criteria, etc. The F2F strategy includes few economic or financial instruments and lacks stringent regulatory measures targeting crucial parts of the food value chain (e.g. processing and distribution).

The proposed policy actions also remain relatively vague concerning directionality and intended transition pathways, referring to ‘sustainable (agri-)food systems’, ‘sustainable agricultural practices’ or ‘sustainable consumption and production’ generally, without mentioning specific farming practices. As discussed in Section 7.1, this lack of explicit directionality can lead to system optimisation at the expense of more transformative transition pathways. An exception is organic farming, where the F2F strategy specifically refers to the promotion of organic farming/aquaculture and sets the target of ‘at least 25% of the EU’s agricultural land under organic farming by 2030 and a significant increase in organic aquaculture’ (EC, 2020a). While this level of ambition is welcome, there are uncertainties about whether or not the policy support will be sufficient to reach the 25% target in 2030 (EEA, forthcoming). Although the share of organic farming in

Figure 7.2 Share of utilised agricultural area fully converted or under conversion to organic farming in the EU-27 (2012-2020) and the EU target for 2030

Percentage of total utilised agricultural area



Source: Eurostat (2022e).

the 27 EU Member States (EU-27) increased from 5.9% in 2012 to 9.1% in 2020, the average annual conversion rate would need to be four times higher after 2020 to reach the 2030 target (Figure 7.2).

As noted in Chapter 5, social innovations are emerging across Europe, from alternative food networks and community-supported agriculture schemes to food cooperatives (e.g. collective food buying groups or organic product delivery) and the creation of civil society-based food policy councils, food-sharing initiatives, farmers' markets and urban gardening projects (IPES-Food, 2019). Although often ineligible for direct CAP support, such social innovations are highly promising in terms of addressing power imbalances and path dependencies, reclaiming value for small-scale farmers and reconnecting food businesses in ways that restore democracy, accountability and trust in food systems (Bui et al., 2016; Audet et al., 2017; Dedeurwaerdere et al., 2017; SAPEA, 2020). The F2F strategy, like the CAP and CFP, does relatively little to support actors who develop and support social innovation.

7.2.2 Broader EU innovation policy support

Viewed together, the CAP, CFP and F2F strategy's support for innovation largely emphasises technology substitution, based on digital, data-driven, climate-smart agriculture, and tends to target established regime actors, such as industrial farmers, agri-food corporations, retailers and food processors. The F2F strategy, like the CAP and CFP, does relatively little to support niche actors. In emphasising the greening of existing practices, these policy frameworks tend to consolidate rather than challenge the established food systems. As such, the three frameworks are unlikely by themselves to induce large-scale transformation of the food system.

Encouragingly, a rather different picture emerges from the analysis of broader EU policy support for food system innovation. A number of cross-cutting strategies offer innovation support in an ambitious and more systemic fashion. For instance, the Bioeconomy Strategy (EC, 2018a) paves the way for the renewal of European industries and primary sectors through bio-based innovation, providing opportunities for new

business models for farmers. Likewise, the Circular Economy Action Plan (EC, 2020b) supports the adoption of circular economy principles across the value chain, with direct influence and impact on the transformation of the food system.

Most notably, the EU has provided substantial and growing funding for food- and agriculture-related innovation under successive R&I framework programmes. Under the Seventh Framework Programme and Horizon 2020, the EU provided almost 18.4 billion euros to relevant projects, which equalled almost 15% of total funding. However, this spending was skewed towards the production side, with 55% of funds allocated at the EU level focusing on projects in the early stages of the value chain (e.g. primary production/food processing) and much less focus on areas such as alternative proteins and dietary change (<6%), logistics (1%) and food retail (1%) (EC, 2022i).

The Food 2030 initiative, launched in 2016 to set up a multistakeholder dialogue on the role of R&I in future-proofing the food system, plays a central role in bringing in a food systems perspective. The Standing Committee on Agricultural Research has pushed for a broader food systems approach. As a result, EU frameworks such as the Horizon Europe programme support diverse innovations, engage a broad range of actors in innovation processes and promote experimentation and learning via living labs, pilots and demonstration projects. This indicates an uptake of insights from research into innovation and sustainability transitions that are not yet fully reflected in the CAP, CFP and F2F strategy.

Under Horizon Europe, the EU plans to invest EUR9 billion under cluster 6, which addresses food, the bioeconomy, natural resources, agriculture and the environment (EC, 2021e). Funding calls in 2021-2022 give prominence to social innovation and target activities across the entire value chain, including dietary shifts towards sustainable and healthy nutrition; supplies of alternative and plant-based proteins; prevention and reduction of food loss and waste; food sharing; improving food safety and traceability; fighting food fraud; sustainable business models; behavioural change; personalised nutrition; and urban food systems.

Traditionally, EU research funding has tended to be geared more towards research than innovation, meaning that mechanisms primarily target universities, research institutes and knowledge-intensive firms. To address these limitations, EU policy increasingly creates mechanisms to connect research to practice and engage diverse actors in co-creative innovation processes and knowledge sharing — a process known as the 'multi-actor approach'. For example, the European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI) is a networking initiative that aims to drive forwards innovation on the ground by promoting collaboration between researchers, farmers, entrepreneurs, consumers and other stakeholders within the AKIS network.

The multi-actor approach builds on the principles of Responsible Research and Innovation and is now applied in all food system projects under Horizon Europe. One example is the planned Horizon Europe food systems partnership on 'Sustainable food systems for people, planet and climate', which aims 'to collectively develop and implement an EU-wide committed research and innovation partnership to accelerate the transition towards healthy diets that are safe and sustainably produced and consumed' (EC, 2022f). Other partnerships focus on agri-food system transformation from different angles, for example the partnerships on 'Accelerating farming systems transition: agroecology living labs and research infrastructures', 'Animal health and welfare' and 'Agriculture of data'.

While the multi-actor approach is undoubtedly a step in the right direction, challenges persist in building transformative coalitions. For example, the multi-actor approach has been criticised in practice for marginalising potentially innovative actors such as the media, NGOs, consumers, educational institutions, primary producers and representative organisations (farmers/foresters), in part because actor engagement can be strongly influenced by previous cooperation experiences (Feo et al., 2022). Moreover, the multi-actor approach in Horizon Europe programmes is often skewed towards international cooperation, running the danger of lacking sufficient depth for locally embedded insights (Klerkx et al., 2017). In general, there is a long way to go before research funding is balanced, targeting actors both outside the traditional research setting and throughout the value chain.

The emergence of mission-oriented innovation policy within Horizon Europe provides further support for coordinating actors and steering activities and investments towards shared objectives (EC, 2018b). Horizon Europe articulates five missions up to 2030, including 'A soil deal for Europe'. This mission aims to establish 100 living labs and lighthouses that engage researchers, farmers, foresters, spatial planners, land managers and citizens in co-creating innovations to secure healthy soils, demonstrating their value in real-life contexts. At present, however, the EU does not have a mission specifically geared towards the transformation of the food system. Indeed, as touched on in this chapter but discussed in more detail in Chapter 9, EU policy is generally ambiguous on what a sustainable EU food system would look like and what targets are needed to get there. A mission with a more explicit focus on food systems could help to create better guidance on the precise way that innovation is expected to contribute to food system transformation.

7.2.3 Mixed support for niche acceleration and scaling

The broader EU policy mix also includes measures that partly address the weak support for niche acceleration in the CAP, CFP and F2F strategy. Horizon Europe measures include support for 'thematic networks' that aim to translate R&I project outcomes

into forms that can be taken up and used by farmers to tackle problems; 'advisory networks' to transfer research into actions on the ground; and 'innovation actions' that are aimed at small and medium-sized enterprises and food industry actors and support demonstration, piloting and deployment in the market. However, Horizon Europe is not intended to fund niche acceleration, for instance by supporting marketable innovations, which risks limiting its impact on financing innovation in the agri-food sector (EIB, 2022).

Further contributions come from complementary EU initiatives, such as EIT Food, which has resources of EUR400 million and provides many accelerators and training programmes for entrepreneurs. The European Innovation Council (EIC) likewise provides additional financial support to visionary scientists and entrepreneurs. For instance, the EIC pathfinder programme uses an open-call structure to support the exploration of bold ideas and radically new technologies. The EIC work programme for 2023 includes two challenges in the fields of 'food chain technologies' and 'novel and sustainable food' (one in the pathfinder and one in the accelerator programme), adding top-down coordination through dedicated calls focused on specific challenges within the food system. In addition, the EIC accelerator programme supports individual small and medium-sized enterprises to develop and scale up game-changing innovations and will, in close coordination with the EIB, also connect applicants to equity finance.

In the future, the EIB will also provide support for developing investment agendas within mission implementation plans. EIB advisory services will contribute to the understanding and use of appropriate financing tools, models and instruments of actions, including instruments under InvestEU, ensuring effective financing to reach mission objectives. For the EU mission 'A soil deal for Europe', the EIB will carry out a market assessment study on investment needs related to the mission and develop, together with the EIB Advisory Hub, targeted investment vehicles to support implementation.

Turning to the broader selection environment that influences the upscaling of innovations, it is apparent that EU policies aimed at creating a level playing field and fostering demand have limitations (see Chapter 5). The absence of pricing instruments is easy to understand because the EU's remit largely excludes fiscal policy. However, this absence creates a problem for the policy mix as a whole because national governments have been reluctant to fill this gap with appropriate policies as a result of concerns about putting domestic businesses at a competitive disadvantage, barriers erected by international regulatory institutions, uncertainties about the impact of such tools and strong industry opposition (Bødker et al., 2015). The EU food policy mix, therefore, lacks the appropriate regulations or pricing policies to help the diffusion of niche innovations. As a consequence, niche markets for sustainable products depend disproportionately on the willingness of conscientious individuals to pay a higher price (Hugner et al., 2007; Akaichi et al., 2019).

7.3 Towards a transformative policy mix

EU policy support for transformative innovation in the food system has advanced rapidly in recent years. For instance, Horizon Europe, the EIC and the Bioeconomy Strategy make important steps towards supporting diverse innovations and place-based experimentation, employing multi-actor approaches, supporting social and grassroots innovation, and creating mechanisms to promote niche acceleration. However, there remain opportunities to make the EU food policy mix more transformative, for example in going further to build transformative combinations of actors, connecting place-based experimentation with specific missions and supporting the further acceleration of niche innovations.

7.3.1 Improving multi-actor engagement

The EU has opportunities to strengthen multi-actor collaboration by engaging groups that are currently under-represented in framing sustainable food challenges and ways to overcome them. For instance, the Directorate-General for Agriculture and Rural Development's multi-actor approach is predominantly centred on farmers and foresters, and could do more to include a broader and more diverse set of stakeholders throughout the food value chain, including retailers, social entrepreneurs and citizens. The Directorate-General for Research and Innovation has also embraced the multi-actor approach, but here it can be argued that its logic still favours traditional triple-helix actors, including universities and research institutes, over actors such as municipalities or NGOs that typically do not consider themselves innovation or research actors and do not automatically find their way to EU R&I funding opportunities. The EU can potentially also give such groups more access to policymaking processes and advisory boards, and facilitate diverse stakeholder dialogues (EEA, 2019a), for instance in defining missions that help guide and coordinate innovation activities.

The EU could also take a more active role in supporting, facilitating and convening multi-actor collaborations to address inclusion and exclusion issues, potentially also at regional and local levels (see also Chapter 8). This could be achieved through place-based innovation policy approaches such as 'smart specialisation', which advocates the concentration of R&I activities in ways that complement and enhance entrepreneurial processes and engage a diverse set of actors (EC, 2022v). Smart specialisation strategies are aligned with the particular conditions of a given region, promoting a participatory approach to economic transformation and building on the assets and resources available to regions and EU Member States.

Local public administrations have increasingly picked up on calls for more multi-actor food policies by developing municipal food strategies that aim to involve diverse actors involved in food system changes (Sibbing et al., 2021). For example, the Bristol Food Policy Council creates a community of practice that brings together the public sector, civil society and the private

sector. Its role is to strategically address the main challenges and solutions linked to local food system changes, and create an inclusive coordinating structure for collaboration to develop actions on sustainable food (Moragues-Faus and Morgan, 2015). It has successfully opened up food agendas traditionally dominated by national governments, manufacturers and retailers to include, for example, citizen initiatives and local administrations. Novel governance approaches of this sort have emerged in cities across Europe, fostering social innovation and sometimes benefiting from EU funding.

These local examples show the potential benefits of opening up the multi-actor approach pursued by the EU to a more diverse set of actors. However, Moragues-Faus and Morgan (2015) caution that initiatives of this sort can 'degenerate into conventional governance spaces, characterised by elites excluding needs and interpretations of those not readily accessible to these spaces'. Moreover, power relations can become visible and problematic when multiple actors work together. These realities point to the need for carefully designed recruitment and engagement strategies.

In addition to addressing exclusion and power issues, multi-actor approaches need to be even more focused on implementing and accelerating innovation, rather than focused simply on creating new knowledge. To do this, it is important that interactions at the early stage of multi-actor collaborations go beyond a focus on the technology readiness level and also identify broader enablers for upscaling innovations so that they become the core focus of these initiatives in action (Sartas et al., 2020). To facilitate this and better engage currently marginalised actors, EU funding models could be adapted to support multi-actor collaborations at an early stage of proposal development. This could help enable the coalitions to co-design project aims and activities, and think through the dissemination and exploitation of results.

Such funding changes could, for example, be taken forward in the EU's LIFE programme, which funds environment and climate demonstration projects with sustainability impacts. Despite not having an explicit food system strategy, LIFE has the potential to play an important role in the policy mix. The programme is flexible in that it allows for no minimum and maximum specifications for project budgets and partners, and the acceptance of single-location projects (unlike Horizon Europe projects, which must always have a transnational element). For example, the FLAW4LIFE project, which won LIFE's citizens awards 2020, has created a network to distribute, collect and sell fruit and vegetables rejected by mainstream retailers because of their physical properties. The project aims to reduce food waste, shorten supply chains, increase returns to farmers and operate through a consumer cooperative structure. The project currently distributes 23 tonnes of fruits and vegetables per week to 8,000 users in Lisbon and Oporto.

While the LIFE programme has been a success story, it currently lacks the resources to create real 'learning platforms' or 'portfolios' of projects, leaving the projects in isolation. Portfolio evaluations of multi-actor collaborations need to become the

rule in research, innovation and experimentation processes and need to be implemented at each stage of the process. An example of a practice-ready tool is one that has been developed as part of the Horizon 2020 Liaison project to 'evaluate, monitor and assess the impact of interactive innovation processes' (Feo et al., 2022) in collaboration processes. Such tools need to be implemented more widely, and resources need to be made available to carry out such evaluations.

7.3.2 *Connecting spaces for experimentation with missions*

Exploring implications, uncertainties and possibilities associated with radical innovation (e.g. price, performance, market demand, social acceptance and environmental performance) require real-world experimentation (EEA, 2019a). Such place-based experimentation enables open-ended learning-by-doing and trial-and-error processes, exploring multiple configurations of innovations before upscaling configurations that work. The EU's Horizon Europe programme (and its predecessors) have supported a diverse range of experiments for food system changes, such as FIT4FOOD2030 and the DESIRA2020 project, which used 20 living labs to co-develop ideas, scenarios, digital storytelling outputs and socio-technical solutions related to digitalisation.

Place-based experimentation of this sort has great potential to generate novel ideas and practices that can support food system transformation. Indeed, place-based experimentation potentially turns the diversity of knowledge and innovation systems across Europe into an asset. The question, however, is how to govern the upscaling of such niche innovations into mainstream regime practices (Coenen et al., 2010). Transitions research indicates that diffusion of niche practices typically occurs through translocal networks that connect initiatives by sharing ideas, objects and activities across local contexts (Loorbach et al., 2017), which in turn requires coordination and learning across different levels of governance (EU, national, local).

Missions provide a useful means for combining these kinds of local and translocal processes. Interest in mission-orientated innovation systems and policies for food system transformations has been revived in recent years (e.g. Klerkx and Begemann, 2020) based on learning from past mission-orientated innovations within agriculture (Wright, 2012). As argued by Mazzucato (2018), missions 'should be broad enough to engage the public and attract cross-sectoral investment and remain focused enough and achieve measurable success'. Missions can perform different roles, with contrasting governance requirements. For example, Kuittinen et al. (2018) have divided missions into accelerator missions linked to particular science and/or technological solutions and transformer missions linked to socio-institutional transformations.

The EU mission 'A soil deal for Europe' promotes 'soil health' living labs as places for demonstration and peer-to-peer learning to inspire other practitioners. At present, the EU does not have

a mission specifically geared towards the transformation of the food system and there could be benefits in developing one. A number of European regions have started adopting a challenge-led or mission-oriented approach to their smart specialisation activities to give them directionality in addressing sustainability challenges and to harness the variety of bottom-up ideas for transformative innovations and experimentation (Miedzinski et al., 2022). Formulating and implementing such place-based missions requires a shared understanding of the long-term vision for a sustainable food system at European and national levels. As noted in Chapter 9, however, such missions currently remain vaguely defined or absent.

Another example of mission-oriented food system innovation policy can be found in Sweden. There, Vinnova, the national innovation agency, funded system demonstrators ('niche experiments') to promote diverse innovations with clear directionality towards sustainable food systems (Hill, 2022). One of the first missions addressed the role of school food in transforming the food system. Co-creation workshops and prototyping of alternative practices within multi-actor collaborations enabled diverse groups (e.g. entrepreneurs, food producers, chefs, teachers, students, families and municipality representatives) to interact and reflect. This fostered a systemic perspective on school food, which brought greater awareness of interdependencies and interrelations, and the potential for systemic leverage points and accelerating change. Twenty-five municipalities submitted proposals for contributing to transforming the school food system in Sweden. In the case of Vinnova, a government agency became a facilitator for co-designing missions within multi-actor collaborations to create prototypes and demonstrators so that the missions can be achieved (Hill, 2022), linking experimentations with policy developments through the missions.

7.3.3 Better support for niche acceleration and scaling

EU polices and institutions provide growing support for niche acceleration, but more support is needed. As pointed out by the transitions literature, public policies and institutions have an essential role in supporting niche acceleration, through both direct interventions, such as funding instruments, regulations and direct infrastructure investment, and broader actions aimed at shaping the selection environment that enables or deters the diffusion of innovations and guides consumer choices, such as financial and non-financial incentives, information provision and adjustments in economic framework conditions (EEA, 2019b). While the EU's role in important areas such as fiscal policy is limited, there are important opportunities for EU policy to influence consumption patterns and create a more receptive market for sustainably produced goods and services (as discussed in Chapter 5).

When it comes to direct interventions, closing the financing gap for small farmers and agri-food innovators presents a particular challenge, as the market is highly fragmented, leading to higher transaction costs and risks for investors that hinder the development of science-industry linkages and formation of

agricultural innovation systems (EIB, 2022). This is a well-known challenge for the sector and has led to many AKIS policies. As noted earlier, however, AKIS policies tend to be geared towards system optimisation and hence run the risk of conforming with the status quo, rather than transforming it. To become more transformative, AKIS policies should become more explicitly niche oriented, focusing on knowledge and capacity building for radically different modes of production and consumption (Ingram et al., 2015; Pigford et al., 2018; Hall and Dijkman, 2019).

In addition, entrepreneurs and small agri-food businesses are faced with particularly high entry barriers, as the sector is traditionally risk averse and cautious. Lack of access to finance, including publicly backed guarantees, credit and liquidity, impede investment in technologies, as the net incomes of small-scale farmers are often low (Bock et al., 2022). This is important from a transitions perspective, as small-scale innovators can be important actors in accelerating and scaling radical niche innovations that challenge dominant capital-intensive farming practices. New types of financial instruments can help to reduce risk for private actors and ensure direct and indirect financial support for small-scale farmers and food businesses. For instance, the EIB points towards crowdfunding and mini-bonds as promising avenues to explore further. In addition to partially addressing the financing gap, crowdfunding can also create a direct local link with consumers, actively involving them as important actors in the innovation process. The introduction of a legislative framework to facilitate mini-bonds can create additional sources of capital for small companies or cooperatives that are not listed on the stock market. Such mini-bond markets already exist in France, Germany, Italy, Norway, Spain and the United Kingdom (EIB, 2022).

Finally, there are opportunities to strengthen support for upscaling innovations by better aligning the policy instruments mentioned in this chapter, for example through cross-referencing in work programmes and coordinated or joint calls. As underlined by Cesaer (2022), the European association of universities of science and technology, there are opportunities to go further in promoting synergies with other EU policies and funding sources (e.g. cohesion policy and the Recovery and Resilience Facility) and programmes at regional and national level. In previous funding period, the European Commission did not make systematic efforts to create synergies between different funding programmes (ERA-Learn, 2021). However, the European Commission has recently released guidance on 'Synergies between Horizon Europe and ERDF programmes' (EC, 2022n), while the European Council's 'Prague Declaration on Synergies in the Research and Innovation Funding in Europe' clearly articulates the need for further actions, stating that:

Synergies between EU programmes (including amongst them, e.g., Horizon Europe and Digital Europe), and national and regional programmes for research and innovation (R&I) are a cross-cutting need to capitalise on the full potential of investments in R&I. An efficient design, creation and implementation of the EU's, Member States' and Associated Countries' policies, promoting the right policy mix for the science and technology advancement, is the way to put synergies in practice (CEU, 2022).



8

Does EU policy enable a just transition of the food system?

8.1 Justice in sustainability transitions

The idea of a 'just transition' was first developed by labour unions in North America during the 1970s, in response to concerns about the impacts of environmental policies on jobs (Stavis and Felli, 2015; Morena et al., 2020). As the implications of climate policies for energy systems became clearer in the 2000s, the just transition concept was also taken up by unions in the United Kingdom and elsewhere, for example in the work of the International Trade Union Confederation (ITUC, 2010; Newell and Mulvaney, 2013). It also became a feature of international climate policy, notably the Paris Agreement, which calls for a 'just transition of the workforce and the creation of decent work and quality jobs' (UNFCCC, 2015).

Meanwhile, the 'just transition' concept also appeared in sustainability transitions research, with an emphasis on exploration of the social and economic impacts of energy transitions (Newell and Mulvaney, 2013). Here, the concept of 'energy justice' was introduced to draw attention to the impacts of climate mitigation efforts on local communities and vulnerable groups, as well as on global justice (Jenkins et al., 2016; Sovacool et al., 2019; Martiskainen et al., 2021).

The policy interpretation of the concept is broadening slowly. The key message of the European Green Deal (EGD) is to 'leave no one behind', which means increasing citizen participation as well as paying attention not only to the workforce but also to the sectors and regions most affected by transitions (EC, 2019). The EGD also introduced the Just transition Fund as a mechanism to support the affected regions and sectors and avoid regional disparities (EC, 2022k).

Despite this evolution, the definition of the just transition in European policy remains limited in scope (Pianta and Lucchese, 2020), focusing primarily on the distributional impacts of transforming energy production. Seen in the context of the profound societal transformations envisaged in the EGD, a broader understanding of justice is needed. Such an understanding would address a broader range of systems and actors, attend to both existing injustices and those arising from systemic change, and consider the distribution of opportunities

as well as costs. Most importantly, it would extend beyond a focus on distributional justice to embrace other relevant dimensions of justice (Newell and Mulvaney, 2013; Martiskainen et al., 2021). This means asking not only how economic burdens are shared, but also what is deemed just and for whom and who participates in defining and delivering justice (Newell and Mulvaney, 2013; Martiskainen et al., 2021).

8.1.1 Enabling a just transition in food systems

In the food system context, the need for a broader understanding of the just transition is particularly clear. The just transition of the food system has only recently started to attract political and academic attention (Hebinck et al., 2021b; Kaljonen et al., 2021). Although the F2F strategy and the 8th Environment Action Programme reference the need for a just and fair transition, the concept is not developed in any detail. Yet, policies and action to transform Europe's food system will have major implications, not just for farmers, fishers and regional economies but also for economic actors along the value chain and consumers, for example in terms of increasing overall food prices and differential access to healthy and sustainable foods.

The existing configuration of European and global food systems is linked to investments, earnings and livelihoods. This makes the question of a just transition in food systems both value-laden and important, and highly prone to being a source of conflict, particularly for those with a vested interest in the status quo (Zurek et al., 2022). Examples of such conflict can be seen throughout Europe. In the Netherlands, plans to limit nitrate emissions and livestock production have provoked major protests (van der Ploeg, 2020). The European Commission has also referred Spain, Europe's second largest producer of pig meat with the continent's largest pig herd, to the European Court of Justice for failing to take sufficient action on nitrates pollution, in which intensive livestock production plays a significant role (EC, 2021h; Weyndling, 2022b). In Finland, farmers strongly oppose any restrictions on using peatlands, although they account for more than half of the GHG emissions from Finland's agricultural sector (Puupponen et al., 2022).

As well as generating diverse benefits, Europe's food system is also associated with major inequities that must be addressed as part of a just transition. These include inequalities in the distribution of income, wealth and power; in exposure to harmful externalities; and, most strikingly, in access to sufficient, good, healthy nutrition (Hebinck et al., 2021a; FAO et al., 2022). While ensuring accessibility of food supply and stability of rural livelihoods have been the core reasoning behind much of the EU's agricultural and food policy (Candel et al., 2014), food poverty and malnutrition are increasingly an issue in the EU. Food assistance initiatives have skyrocketed in the last 10-15 years (Lambie-Mumford and Silvasti, 2020) and obesity is projected to increase all over Europe (Pineda et al., 2018; De Schutter et al., 2020). The emergence of food assistance organised by civil society organisations as the main response to food poverty is met with much critique by experts, who argue that this response overlooks the responsibilities of the state to ensure the right to food (Galli et al., 2018).

The prevalence of obesity is also strongly linked to poverty, as the consumption of unhealthy foods is on average cheaper than that of healthy foods (Salmasi and Celidoni, 2017; Gracia-Arnaiz et al., 2022). Here, scholars argue that an embedding of the right-to-food approach in governance would firmly establish the entitlement to food of citizens and reprioritise food systems towards ensuring healthy, adequate and safe diets for all (Vivero Pol and Schuftan, 2016; Bump, 2018; Hebinck et al., 2021a).

Concentrations of power in the value chain can also influence the distribution of opportunities from transitions and the types of innovation that break through (Clapp, 2021). For example, many recent start-ups that have introduced novel plant-protein products to the markets have been bought by established food industry actors. While this market-driven logic supports the industrial upscaling of these products, it may reinforce the dominance of certain actors and — unless novel value chains are developed — could marginalise potentially transformative bottom-up or agroecological solutions (Mylan et al., 2018; Van der Weele et al., 2019; Lonkila and Kaljonen, 2022; see also Chapter 7). The lock-ins created by previous investments in production technologies and know-how also affect the ways in which farmers transform their businesses or modes of production.

8.1.2 A multidimensional understanding of justice

In considering how EU policy can support a just transition of the food system, a multidimensional understanding of justice is essential (Schlosberg, 2007; Williams and Doyon, 2019; Kaljonen et al., 2021; Tribaldos and Kortetmäki, 2022). Such an understanding emphasises the interdependence of distributive justice and recognitive and procedural justice (Kivimaa et al., 2022). Recognitive and procedural justice are both intrinsically valuable and contribute to delivering distributive justice (Table 8.1).

Table 8.1 Three dimensions of justice and the cross-cutting viewpoint of global justice

Distributive justice	Recognitive justice	Procedural justice
How do planned policy measures influence the distribution of benefits and disadvantages?	Are all relevant stakeholders adequately identified and their world views considered in policy preparation, decisions and implementation?	Is the decision-making process fair, for example in terms of transparency, impartiality and accountability?
How can existing injustices be lessened through planned policy measures?	Is there adequate consideration of vulnerable or marginalised groups or the rights of animals or nature?	Do citizens and different groups influenced by policy measures have the capacities and opportunities to define the questions being considered, influence procedures, participate and affect decisions?
What compensation measures can be used to minimise the unfair burdens caused by the transition?	Can planned policy measures be used to improve the circumstances of vulnerable or marginalised groups?	
Cross-cutting the above: global justice		

Source: Kivimaa et al. (2022).

Distributive justice addresses the distribution of benefits and advantages across the food system, between social groups or between production sectors. It is often addressed through social, economic or gender impact assessments. Distributional impacts can result from regime destabilisation but also from innovation processes and associated policies. *Ex ante* evaluation of the magnitude, duration, persistence and likelihood of both direct and indirect effects, and of the size of the group of people or area affected, can help in planning and designing policy measures to mitigate or compensate for the justified losses. It is also essential to consider how the effects are intertwined, how they cumulate and how they are distributed temporally. Simultaneous rises in the cost of energy, food and mobility may hit the same group of people hardest. If losses have already been caused, restorative measures can be used to address, for example, income redistribution, employment or regional development (Green and Gambhir, 2020).

Recognitive justice draws attention to the cultural values and viewpoints of the diverse stakeholders affected by food system transformation. It emphasises the need to recognise the different socio-cultural identities and their intersections and the agency of marginalised and vulnerable groups, and to acknowledge the rights and well-being of non-human animals (Celemajer et al., 2021). Shifting to sustainable diets and modes of agricultural production will also affect the cultural values and identities of citizens, consumers and farmers (de Boer et al., 2013; Burton and Farstad, 2020; Janssen et al., 2022; Puupponen et al., 2022). Recognitive justice involves bringing out these values and ensuring that they are given fair recognition. This includes fostering the capacities and capabilities of different groups to partake in the transition.

Procedural justice is closely linked to recognitive justice and centres on the design of decision-making structures and processes. It is particularly important in the context of the European food system, where decision-making from the EU to the national and regional levels is not always clear, power is unevenly distributed and many actors across the system, including consumers, have very limited agency and influence over decisions.

A multidimensional understanding of justice is essential when addressing the multitude of structural changes implied by the EGD's transformative agenda. It will be politically impossible to agree on ambitious visions and targets for Europe's food system or introduce disruptive regulations and fiscal measures if EU policy does not attend to the impacts of systemic transition broadly. As the European food system operates on a global market, it is important to keep in mind also the global dimension when considering the distributive, recognitive and procedural impacts. A multidimensional view on justice can help to go beyond restorative measures to develop anticipatory transition policy. The anticipatory policy for a just transition includes both immediate and long-term policy goals and measures.

8.2 Assessing the EU policy mix

Ensuring food security and rural livelihoods has always been an important theme in the development of EU agricultural and food policy (Candel et al., 2014). The CAP was originally designed to balance regional differences and use of natural resources in common agricultural markets, and to secure affordability of food to consumers. Recent reform has shifted the focus of the CAP towards supporting farmers and rural areas in the coming sustainability transitions, either by incentivising innovation and adaptation or by supporting rural livelihoods more generally and safeguarding a 'fair income for farmers'. However, there are no CAP instruments that deal with the potentially uneven social repercussions resulting from a sustainability transition. And although the reformed CAP does promote recognitive justice by explicitly mentioning specific groups (e.g. young and female farmers) and processes (social inclusion in local development) that need support, there is little reference, implicit or explicit, to procedural justice. As a result, vulnerable groups or regions may be overlooked.

Regulation of fishing waters and the market for fisheries products was the main objective in the design of the Common Fisheries Policy (CFP). Over the years, the CFP has evolved in several rounds of reform towards the sustainable management and conservation of fisheries resources. In its key policy objectives, the CFP does not explicitly mention justice, nor does it have instruments that can mitigate or address the potential negative impacts that change processes may have on particular groups of people. The CFP addresses distributive aspects of justice by aiming to ensure 'reasonable prices for consumers' and through the quotas and limits put in place to create a level playing field for different countries and regions. On the whole, while there are instruments addressing distributive justice elements, the CFP does not consider procedural or recognitive justice.

In comparison, the F2F strategy is a major step forward. By positioning the aim for a just transition at the centre of its strategic goals, it demands a more reflexive and critical stance on the repercussions of how change might have different impacts on regions and different social groups. While detailed instruments of how to enable a just transition are still lacking, the F2F strategy does have elements that link to a multidimensional understanding of justice. For example, the F2F strategy sets out to empower consumers to make more sustainable choices by improving knowledge around how food is provisioned; by broadening its perspective on the protection of food chain workers beyond income alone and talking of decent living; and by acknowledging that some instruments require better targeting, to ensure that support goes to the places and people that need it the most.

These examples are deliberate aims to address unequal distributions of power, income and agency in the current functioning of the EU food system. In the F2F strategy, most attention is directed towards the distributive injustices of current

food system functioning, be they consumer rights, farmer livelihoods or environmental degradation. The recognitive aspects of sustainability transitions get less attention, as do the procedural solutions for dealing with repercussions.

Importantly, the F2F strategy also underlines the EU's global responsibility in setting ambitious sustainability standards in food markets. For example, to reduce the EU's contribution to global deforestation and forest degradation, the European Commission has presented a legislative proposal and other measures aimed at avoiding or minimising the placing of products associated with deforestation or forest degradation on the EU market. These legislative proposals are attempts to contribute to global justice. While this is obviously crucial moving forwards, a focus on the future overlooks historical processes that have been a root cause of today's systemic injustices and distorts responsibilities for sustainability action (Stoddard et al., 2021). For example, historical climate impacts may have allowed certain national economies to flourish and build their current position of power, but today's climate emergency and governance agreements are limiting low- and middle-income countries in their ability to take similar paths. This also extends to the global food system. Having built a resilient food system that still largely relies on global patterns of resource depletion and injustices in supply chains (Oliver et al., 2018), overhauling this system means potentially disturbing already vulnerable economies and nations. While the relationship between global and local justice is not always straightforward, consideration of this relationship beyond EU boundaries is vital to ensure a global just transition.

Taking a wider look at strategies and programmes that touch on the food system, it is apparent that 'just transitions' is becoming a prominent theme. For example, the 8th Environment Action Programme, which sets a standard for environmental and climate-related objectives, calls for action that ensures well-being within planetary boundaries. In doing so, the 8EAP emphasises the need for governing bodies to transform the EU's food system in a way that supports life within planetary boundaries, specifically through the means of a just transition. Similarly, the Social Climate Fund and the Just Transition Fund include crucial instruments that focus on distributive justice to address the disproportionate negative impacts that sustainability transition goals may have on certain groups of people, sectors or regions.

8.3 Towards a transformative policy mix

8.3.1 The need to combine distributive, recognitive and procedural justice

Achieving a just transition of the food system will require much stronger measures to ensure distributive justice — in terms of both ensuring a fair sharing of costs and benefits from the transition and ensuring the transition's political feasibility. The EU already has the Just Transition Fund to mitigate the social and economic repercussions caused by

reconversions in the energy sector. Such measures will surely be needed for the food sector in the future as well.

In the light of the climate emergency and the need for urgent action, providing compensation may mean allocating funding to motivate heavily polluting farmers to stop their current unsustainable farming practices (see Chapter 6). While such compensation mechanisms may be crucial to persuade vested interests to change their unsustainable modes of food provisioning, this approach could imply compensating — or even rewarding — large and powerful actors in some instances (Stoddard et al., 2021; Zurek et al., 2022).

Research shows that CAP-related subsidies have been 'biased towards larger farms' (Burkitbayeva and Swinnen, 2018; Scown et al., 2020), with subsidies based on the area farmed creating a crucial driver of increasing farm size (Clough et al., 2020). Not only has this benefitted large farmers more, it has also drastically shaped the control and ownership of land across the EU. The result is that land ownership is often concentrated 'in a few large holdings' instead of with European farmers (van der Ploeg et al., 2015). Paramount to facilitating this shift have been financial institutions, which have grown more important to farmers in recent years, to the extent that they increasingly own substantial amounts of land and have large stakes in farming businesses. As a consequence, farmers increasingly adopt the practices and mindsets preferred by banks (Latruffe and Le Mouél, 2009; Grivins et al., 2021). The growing influence of financial institutions risks perpetuating the decline in the significance of small farmers and complicates the entrance of prospective farmers (Toma et al., 2021), as they are not provided with fair opportunities to innovate and modernise their role in value chains (Grivins et al., 2021).

With this in mind, funding mechanisms established to provide distributive justice need to be designed in ways that do not reward bad practices or absolve actors from their responsibility to effect change. Measures also need to enable and encourage farmers and food industry actors to convert to more sustainable cultivation practices or modes of production. The factors locking primary producers into current models of food production extend well beyond economic interests and include issues of identity, farming culture and rural livelihoods. Responding to these issues will mean engaging with recognitive and procedural justice.

Recent examples from the Netherlands illustrate the interdependence of these different conceptions of justice. As Chapter 6 described in more detail, the Dutch government has established a substantial fund (EUR31 billion) to reduce nitrogen pollution in the coming 15 years, including by reducing livestock numbers by one third in the next 8 years and offering to compensate farmers exiting the sector (Rijksoverheid, 2022). In distributive terms, the policy is strong, but, in recognitive and procedural terms, it has significant shortcomings. As a result, the proposed policy has provoked strong resistance, especially from conventional farmers (van der Ploeg, 2020). Farmers

argue that this plan has a disproportionate focus on them, overlooking other nitrogen-polluting sectors. The mention of possible forced expropriation and the regionally distributed reduction goals have also been a major source of discontent among farmers and the provinces. The buy-out schemes have run the risk of omitting recognitive justice aspects, as quitting certain practices will have consequences for strongly held identities (Burton, 2004; Janssen et al., 2022).

Similarly, in Finland, efforts to reduce GHG emissions from cultivated peatlands have provoked resistance among farmers (Puupponen et al., 2022). In Finland, peatlands cause more than half of emissions from the agricultural sector, although peatlands represent only 11% of Finland's total cultivated area. In addition, the peatlands are concentrated in particular regions, giving rise to concerns in relation to distributive justice (Lehtonen et al., 2022). Similar to the Netherlands, farmers in these regions have been reluctant to remove peatlands from production. This links partly to recognitive justice but also to incoherent policy messages. Until now, hectare-based subsidies and the environmental permit rules (which require enough land for manure spreading) have made land clearance and the use of peatlands reasonable for farmers (Huttunen, 2015). As Finland's new CAP strategic plan includes only limited mitigation measures, other distributional measures will be needed for agriculture to meet its 29% reduction target. Rewards for emission reductions need to be considered alongside regulatory measures. Recognitive justice, however, also calls for other procedural solutions.

8.3.2 Engagement in reflexive governance at appropriate scales

Much research underscores the use of reflexive governance approaches to enable a just transition. These are adaptive governance processes that centre on stakeholder engagement, articulation and implementation of shared visions (Marsden, 2013). A key issue is creating processes and institutions that provide stakeholders with agency to agree on targets, how those targets should be delivered and the appropriate scale of governance. In just transitions, the regional and local scales appear to be of special importance, allowing proper attention to be paid to recognitive justice and capacity-building (Marsden, 2013).

Past experiences show that organising bottom-up processes at regional level can help overcome some of the obstacles blocking transitions (Runhaar, 2017; Vermunt et al., 2022) and address social justice issues. For example, on the Dutch island of Schiermonnikoog, farmers have collectively decided to reduce their livestock numbers by 35%, focusing on ecological production for local markets (Erisman, 2019; van der Linde, 2021). This plan was proposed by the farmers themselves in response to the government's nitrogen reduction plan. But also including provincial government, scientific and advisory stakeholders in developing the plan helped ensure that there adequate financial and advisory support for implementation.

The plan was well received by decision-makers at the national level, who considered this regional process a good example of how to achieve the necessary nitrogen reductions in the Netherlands. Bottom-up, regional approaches of this sort provide a valuable tool to identify novel pathways for future farming at regional scale, in addition to offering a way to navigate the phase out of current practices (see also Kuhmonen and Siltaoja, 2022).

Likewise, in the case of peatlands, re-parcelling land could be one way of finding regional solutions to removing peatlands from cultivation and manure-spreading. In such cases, procedural justice could allow more sustainable agriculture to be practised in future and capacities to be built for transition. The experiences gained from food policy councils and the building of urban food strategies (see also Chapter 7) also underline the hard work required to build long-term solutions for social justice (Moragues-Faus and Morgan, 2015; Huttunen et al., 2022).

In the future, these kinds of capacity-building functions could be supported through an enlargement of the Just Transition Fund or through regional and rural development funds. The current emphasis on stakeholder involvement in EU research and innovation projects alone is not sufficient, and more systematic institutional support is needed to support regionally sustainable solutions. The investments in extension and capacity-building at an EU level (e.g. the European CAP Network and Agricultural Knowledge and Innovation Systems) are important measures to support a just transition.

8.3.3 Ensuring a just transition for consumers

There is a need to extend the focus of the just food system transition beyond primary producers. There are already significant inequalities and injustices in terms of access to healthy and affordable food in Europe. The cost-of-living crisis and uncertainties about global trade flows are greatly augmenting risks. In this context, the introduction of pricing measures, which would internalise the full environmental and social costs of food raises many difficult questions (Patel, 2021). In its report on sustainable food system, the Joint Research Centre rightly underlines that food prices should not be used as a substitute for social policy (Bock et al., 2022). There are, however, major social and political issues that should be taken into account in food pricing policy.

Value added tax (VAT) discounts for healthier and more sustainable products are certainly easier to introduce than health and environmental taxes. Research underlines that the reduction in prices should be sufficiently large to result in the desired effect. VAT reductions could, however, ease the situation of the most vulnerable consumer groups, who suffer the most as a result of the simultaneous rises in energy, food and mobility prices. Another approach could be to return the revenues from health, carbon or environmental taxes to poorer consumers. In the energy domain, 'carbon dividends'

are often seen as a way to create public support — by giving a boost to social policy (Burke, 2021). This concept has been tested for health taxes as well (Wright et al., 2017). Such taxing models hold potential in redistributing the environmental effects of food purchases in a more socially equal manner.

School meal programmes, which are found in countries such as Finland, Ireland, Latvia and Sweden, present another kind of social policy measure that has assisted in smoothing out socio-economic differences in healthy eating (Grivins et al., 2018; Darmody, 2021). In just transitions, such social policy measures should be utilised more to secure equal access to healthy and sustainable food and food environments for all (Kaljonen et al., 2019). The school meal coalition, which was launched at the Food Systems Summit of the United Nations in 2021, already has over 100 committed countries and parties as its members, including the EU (schoolmealscoalition.org). School meal programmes not only provide good nutrition but also support learning. To date, the responsible procurement policies of the EU have concentrated on boosting sustainable procurement as part of local or novel value chains (Morgan and Sonnino, 2010). The public procurement policy of the EU should also be seen as a way of fostering capacities for and access to sustainable eating and diversity of food cultures. In addition to fair pricing, a just transition for consumers entails investments in education and capacity-building.

8.3.4 *Recognising diverse values in relation to food*

Europe is characterised by a rich diversity of food products, foodscapes, and skills and methods for producing food. This rich cultural diversity is part of local identities, provides a sense of community and contributes to local economies (Moragues-Faus et al., 2020). Although certain products and areas have the status of 'origin designation', the recognition of these diverse values also entails a recognition of other important dimensions such as traditional ways of producing and preparing food, local skills, cultural relationships with food, and the role that food production occupies in local communities and economies.

A positive example of strategies for the preservation and recognition of these different values is offered by the slow food movement, which documents the rich diversity of local food products in Europe (plants, seeds, animal breeds, types of cheese, etc.) through the Ark of Taste catalogue. More importantly, the slow food movement recognises local examples of place-based food practices through the Slow Food Presidia, including the physical (place), social (communities of producers and their knowledge) and cultural (cultural heritage) ecosystem around a particular food product (SFF, 2022). In addition, the NGOs targeting wider consumer segments have a vital role to play in translating the just transition into culturally meaningful practices. In Finland, for example, the Martha organisation, famous for their home economic advice, has invested a lot in recent years in translating the latest scientific evidence on sustainable diets into culturally meaningful recipes and advice

to different consumer groups and citizens. Such recognition draws attention to elements of value, cultural and social diversity, which are largely absent and difficult to capture in current large-scale models of agriculture and food governance.

The slow food movement, in collaboration with the coffee company Lavazza, introduced the concept of 'narrative labels', which recognise producers, regions and ways of producing, providing another example of a policy instrument that acknowledges diversity (Dumitru et al., 2016). The labels include information on producers, the plant varieties or animal breeds used, cultivation techniques, areas of origin and animal welfare to allow consumers to consider environmental and social justice criteria in their purchase decisions. However, such a place-based perspective can also be beneficial to food governance, as it can bring focus to the 'uneven spatial consequences' of processes of change and foster inclusion of diverse identities, experiences and knowledge (Marsden et al., 2018; Sonnino and Milbourne, 2022). Recognition of the diversity of values in relation to food can ultimately foster place-based food economies that deliver societal, ecological and material benefits (Moragues-Faus et al., 2020).

8.3.5 *Anticipation is key for just transition policy*

For EU food policy to enable a just transition, the policy mix needs to consider and reflect justice in a multidimensional manner. Addressing the repercussions of processes of change by focusing on distributional effects alone will not secure a just transition in food systems. A multidimensional understanding of justice calls for policy and decision-making that guide action in the present, while being able to engage with the uncertainty and complexity of the future (Muiderman et al., 2022). Such an anticipatory perspective to sustainability transitions can support the making of place-based and reflexive policy that enables European citizens and food system actors to play equal parts in sustainability transitions (Sanz-Hernández et al., 2020). In addition to EU-level measures, the EU can push and support Member States in creating anticipatory and participatory just transition policies at national and regional levels.

Anticipatory methods are increasingly used to make sense of dynamics of change in complex and unpredictable systems, such as food systems (Vervoort and Gupta, 2018). While diverse approaches to anticipation exist, research shows that the use of anticipatory methods in governance often lean on prediction-oriented forms of planning that encourage risk management, rather than approaches that embrace plurality and encourage reflexive governance (Muiderman et al., 2022). To recognise and harness the diverse values of food across Europe and to enable more just policy, it is crucial that policy and governance engage with the future in a reflexive manner and open up to more plural understandings of systems change. Cultivating such reflexivity vis-à-vis the future, or 'futures literacy', can support in particular the procedural and recognition elements of justice by questioning whose world views, values and assumptions are considered, and if predominant ideas can be challenged (Mangnus et al., 2021).

9

Does EU policy provide a coherent framework and directionality towards a sustainable food system?

9.1 Directionality and policy coherence in sustainable transitions

In contrast to the emergent transitions that have taken place in the past, sustainability transitions are 'purposeful and directional' in that they aim to address sustainability problems and achieve desired environmental and socio-economic outcomes (Kemp and Rotmans, 2004; Schot and Steinmueller, 2018; EEA, 2019a). According to sustainability transitions research, this need for directionality implies an important role for governments in 'making social choices over alternative pathways of development' (Schot and Steinmueller, 2018) and influencing the speed and direction of transitions (EEA, 2019a; Köhler et al., 2019).

Transforming socio-technical systems, such as Europe's food system, is necessarily a hugely complex and uncertain process, which cannot simply be planned and managed in a top-down manner (Brzezina, 2020). Yet, governments have an essential role in orienting and facilitating change by creating long-term ambitious visions, missions and targets that can guide decisions and investments, and create a sense of a direction of travel (EEA, 2019a). More specifically:

- Visions can be used 'to specify a desired end-state' for socio-technical systems (Berkhout, 2006; EEA, 2019a), helping to identify alternatives to dominant ways of meeting social needs or to redefine such needs, drawing attention to sustainable alternatives and their acceptability, helping to mobilise resources from actors and guiding investments, and creating a framework for designing more specific missions, setting targets and monitoring progress (EEA, 2019a).
- Missions aim to direct innovation activities in ways that respond to societal needs, identifying opportunities and providing solutions that address sustainability challenges (Mazzucato, 2018; Wittmann et al., 2021). Wittmann et al. (2021) emphasise that mission-oriented innovation policies provide a means to coordinate diverse actors in

ways that can deliver transformative systemic change.

They do this by 'involving and affecting numerous sectors, political/institutional levels and stakeholders. Thus, this new generation of MOIPs [mission-oriented innovation policies] necessitates the coordination and cooperation of actors across established responsibilities' (Wittmann et al., 2021).

- Targets such as achieving specific cuts in fertiliser use or greenhouse gas (GHG) emissions by a certain target year can make a vision or mission more concrete and measurable. Such targets are often used by the EU to drive change in desirable directions.

Having a long-term ambitious vision and missions can also provide the basis for developing coherent policy strategies, goals and consistent instruments across different policy areas (EEA, 2019a, 2019b; Bock et al., 2022). As noted in previous chapters, this combination of directionality and coherence is essential for driving forward and enabling innovation, phase-out and just transitions.

Policy goals are coherent when they can be achieved simultaneously without substantial compromise or trade-offs (Kern and Howlett, 2009). Policy instruments are consistent when they 'reinforce rather than undermine each other in the pursuit of policy goals' (Howlett and Rayner, 2013). Coherent policy goals and consistent policy instruments are likely to produce more effective and sustained outcomes (Kern and Howlett, 2009), while providing directions of change that are more credible, transparent and stable over time. Assessing policy mixes in terms of their coherence is therefore often used as a proxy for the potential to achieve their objectives.

In practice, however, policy coherence is often difficult if not impossible to achieve because the actors involved in designing policy have contrasting goals, governance styles and interests (e.g. Smith and Kern, 2009; Flanagan et al., 2011; Howlett and Rayner, 2013; Kaljonen et al., 2021). The idea that policymakers are equipped with a catalogue of instruments and the ability

to design and implement coherent policy mixes ignores the inherent complexities of policy processes (Howlett, 2009). In addition, new policies are seldom designed on a blank slate. Instead, new policy goals and instruments normally build on existing ones through a process of 'policy layering', which may mean changing policy goals without replacing the connected instruments (Kern et al., 2017). The result can be ambiguous policy mixes that send confusing signals to target groups. Kern and Howlett (2009) argue that 'the existing empirical evidence shows that many policy regimes or mixes have developed haphazardly through processes of policy layering, or repeated bouts of policy conversion or policy drift, in which new instruments and objectives have been piled on top of older ones, creating a palimpsest-like mixture of policy elements'.

Two strategies have been proposed to address the challenges linked to policy layering: 'policy packaging' and 'policy patching' (Howlett and Rayner, 2013). Policy packaging involves discarding established policies and introducing a completely new policy package, and is rarely a realistic possibility. Much more common is the strategy of policy patching, which involves gradually changing policies 'much in the same way as software designers issue "patches" for their operating systems and programmes in order to correct flaws or allow them to adapt to changing circumstances' (Howlett and Rayner, 2013).

While the European Green Deal (EGD) looks superficially like a policy packaging process in that it introduces a set of new packages, such as the F2F strategy, Circular Economy Action Plan and the European Industrial Strategy, in reality these new packages sit alongside existing EU regulations, directives and decisions, rather than being replacements. As a consequence, the policy mix is likely to provide mixed signals. Such incoherence undermines effective governance, making it hard to channel investments into specific transition pathways.

Achieving sustainability transitions not only requires coherent and consistent policymaking horizontally (between policy areas) but also vertically, across different levels of governance, including the EU, Member States, regions and local governments (EEA, 2019a). Indeed, as highlighted in preceding chapters, Member States and regional or municipal authorities have many important roles in transforming food systems. Ideally, policy initiatives at EU, Member State and local levels will reinforce each other and establish a sense of urgency and direction across target groups. Broad and ambitious visions and targets on the EU scale can provide the basis for developing much more detailed and varied visions on more refined scales of governance, reflecting the diversity of local contexts.

Visions also provide a valuable tool for creating alignment between different stakeholders if these visions are broadly shared. Developing and implementing shared visions can help to coordinate actors, create new actor networks or act as a common reference point that brings actors together (EEA, 2019a). Governments can play an important role in such

processes by facilitating the engagement of diverse societal actors, giving them the opportunity to present and debate their contrasting and often conflicting ideas about possible futures (Kemp et al., 1998; Rotmans et al., 2001; Smith et al., 2005). Duncan et al. (2022) argue that 'transformative policies demand new relational patterns between society, science, action and policy ... based on shared goals, mutual learning, co-construction and openness'.

In practice, combining the divergent interests and perspectives of diverse actors is difficult and adds 'complexities to mission-orientated transitions and innovations policies' (Wojtynia et al., 2021). Governing sustainability transitions is a political project in which the direction of travel and the means are often highly contested (Kivimaa and Kern, 2016). Even engaging a broad range of stakeholders can be difficult. For example, the transition management literature argues that policymakers should bring together actors from policy, business, NGOs and academia to establish shared visions, focusing on ambitious 'frontrunners' who can think outside the box, rather than dominant actors in existing unsustainable systems (Loorbach, 2007; Wittmayer and Loorbach, 2016). However, when transition management ideas were used to support Dutch energy policy, the visioning processes by transition platforms and the transition taskforce were dominated by established energy firms rather than frontrunners. This limited the space for innovation, led to legitimacy issues and limited 'buy-in' from other societal actors (Kern and Smith, 2008; Loorbach and Kemp, 2008).

9.2 Assessing the EU policy mix

As outlined in Section 9.1, sustainability transitions research argues that policymakers can create directionality for transitions by establishing long-term, ambitious visions, missions and targets; that such directionality needs to be translated into coherent policy mixes horizontally and vertically; and that visions can provide a valuable tool for creating alignment between different societal stakeholders.

Seen against these criteria, the EU policy mix governing Europe's food system has some gaps and limitations. First, EU policy does not yet articulate a clear vision for a sustainable food system. As discussed in Section 7.2, the F2F strategy mentions organic farming and organic aquaculture but remains vague about the desired characteristics of a sustainable food system. It describes the direction of travel using very generic terms such as 'sustainable (agri-)food systems', 'sustainable agricultural practices' or 'sustainable consumption and production', without mentioning specific production or consumption practices or ways in which the food system is organised.

Turning to policy coherence, the question emerges of whether or not the many goals and targets in EU policies affecting the food system together provide a coherent framework for

delivering a fair, healthy and environmentally friendly food system, in line with the aspirations of the F2F strategy. As noted in previous chapters, the evolution of Europe's food system is influenced by goals and targets in a wide range of EU policies, ranging from environment and climate policies to the bioeconomy and circular economy strategies. This creates a very complex policy landscape that is challenging for governments to coordinate and hard for target groups to navigate because of incoherencies. To keep the present analysis manageable, the assessment focuses on synergies and contradictions between the goals of the F2F strategy, CAP and CFP. For an overview of core policy goals of the CAP, CFP and F2F strategy, see Annex 1.

The assessment then explores opportunities and challenges for increasing policy coherence, focusing on ongoing efforts to develop a legislative framework for a sustainable food system, as foreseen in the F2F strategy. The proposed framework aims to accelerate and facilitate the transition to a sustainable food system and to promote 'policy coherence at EU level and national level, mainstream sustainability in all food-related policies and strengthen the resilience of food systems' (EC, 2022m).

9.2.1 Synergies between core EU food policy goals across the F2F strategy, CAP and CFP

Assessment of the goals of the CAP and the F2F strategy reveals synergies in terms of (1) aiming to ensure access to affordable, nutritious, safe and sustainable food, (2) safeguarding that farmers make a reasonable living and supporting rural economies, (3) addressing climate change through mitigation and adaptation measures, (4) supporting the sustainable management of natural resources and (5) addressing biodiversity conservation.

Regarding farmer incomes, for example, there are synergies between the CAP goal to 'safeguard European Union farmers to make a reasonable living' (EC, 2022a) and the F2F strategy goal of 'generating fairer economic returns in the supply chain' (EC, 2020a). Interestingly, the CAP 2023-2027 adopts the F2F strategy's focus on the supply chain as a whole but focuses on improving 'the position of farmers in the food chain' (EC, 2022l). A persistent criticism of the EU food system is that 'the balance of power in the food system is effectively shifting from farmers and processors to global retailers' (Garrone and Swinnen, 2017). Based on an analysis of the functioning and economic sustainability of the food supply chain, the authors find 'that farmers have a significantly higher volatility of mark-ups compared to other agents in food value chain, such as food processors, wholesalers and retailers' (Garrone and Swinnen, 2017).

Addressing mark-ups and economic returns across the food value chain may also contribute to the CAP goals of 'strengthening the social, environmental and economic sustainability of rural areas' (EC, 2022s) and 'keep[ing] the rural economy alive by promoting jobs in farming, agri-food

industries and associated sectors' (EC, 2022a). The CFP similarly aims to increase decentralisation and regionalisation, which strengthens rural fishing communities.

There are also potential synergies between the CAP and CFP goals and the F2F strategy in terms of the sustainable management of natural resources. The CFP in particular has many goals relating to the sustainable management of fish with the aims of not depleting fish stocks and allowing overfished stocks to recover. These goals include adapting the fishing capacity to fishing opportunities, aligning fishing quotas with the maximum sustainable yield and using multiannual plans to manage fish stocks sustainably to ensure the conservation of fish stocks or to develop alternatives through promoting sustainable aquaculture. The post-2020 CAP includes a strategic approach to 'improve targeting, consistency of approach and overall performance, and improved funding and incentives to improve the CAP's impact on natural resources' (EC, 2021d). A European Commission evaluation of the CAP's impact on natural resources identifies 'a good level of internal and external coherence between the CAP schemes and measures addressing sustainable management, but a limited number of inconsistencies were identified (e.g. risk of direct payments facilitating intensification with resulting biodiversity impacts' (EC, 2021a).

In principle, the CAP and CFP goals on natural resource management have synergies with the F2F strategy's goal of ensuring that the food chain has a neutral or positive environmental impact. In practice, however, achieving the F2F strategy's goal is likely to be extremely challenging, since it goes far beyond the sustainability commitments in the CAP and CFP and will require major shifts from current fishing and agricultural practices rather than just alignment.

9.2.2 Incoherencies between core EU food policy goals across the F2F strategy, CAP and CFP

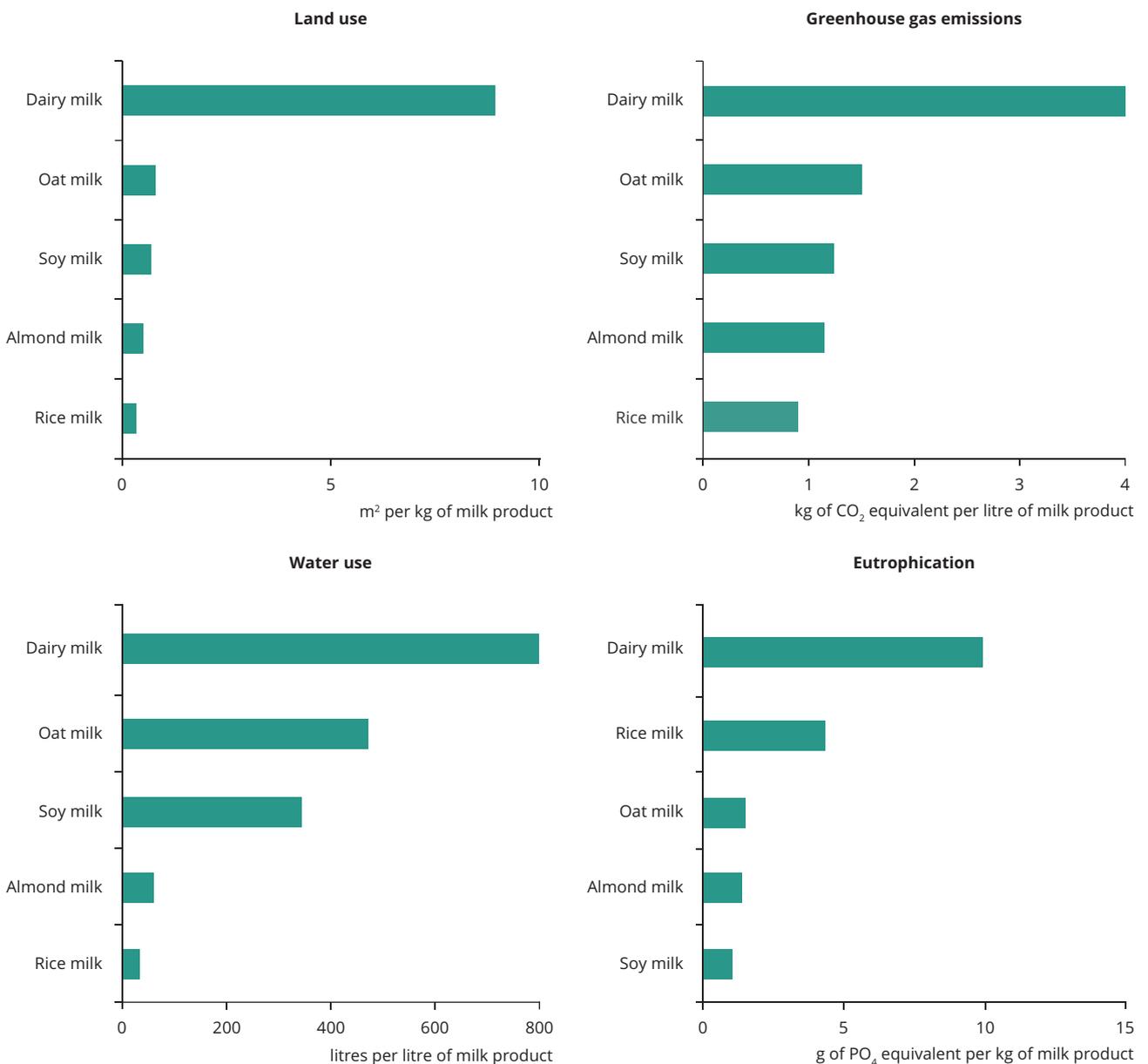
Alongside the synergies identified, there are also incoherencies between the transformative goals of the F2F strategy and the existing logics of the CAP and CFP (see also Galli et al., 2020a). Such incoherencies multiply when looking at the CAP reform and its translation into Member State CAP strategic plans (Metta and Lakner, 2021), which highlights the difficulty of policy coherence across governance levels (vertical coherence).

For example, the CAP's 'school fruit, vegetables and milk scheme' (EC, 2022t) has been critiqued 'for its doubtful contribution to sustainable nutrition' (Galli et al., 2020) and questions have been raised about promoting milk on sustainability grounds (EPHA, 2015). Although milk can play a role in healthy diets, milk production creates substantial environmental pressures relative to plant-based alternatives (Figure 9.1), and Europe's consumption of milk is high compared with the rest of the world (EPHA, 2015). According to the European Public Health Alliance (EPHA, 2015), 'the

scheme should not be regarded as ... an additional outlet for "dumping" excess milk, but should primarily be an educational measure'. Yet, Galli et al. (2020) argue that there is currently limited coordination between the education policies that are connected to the scheme, and question whether or not children learn about the benefits of healthy eating and nutrition and of creating greater connections with agriculture. Responding to such concerns, the European Commission is currently reviewing the scheme and has carried out a public consultation with a view to 'enhancing its contribution to sustainable food production and consumption in line with the objectives of the new CAP 2023-2027' (EC, 2022r).

The school milk scheme can be seen as one among a number of policy measures that aim to support milk production and consumption. For example, Mylan et al. (2019) show that, despite being increasingly debated and contested, policies on primary production, market regulation and nutritional or dietary guidelines continue to protect and promote dairy milk over plant-based alternatives. Therefore, this example highlights a broader tension between the CAP and F2F strategy (i.e. CAP actions to support and improve the efficiency of established practices with substantial environmental impacts may not be fully in line with the F2F strategy's goal of creating a food system with neutral or positive environmental impacts).

Figure 9.1 Environmental footprints of dairy and plant-based milks



Note: Impacts are measured per litre of milk and are based on a meta-analysis of food system impact studies across the supply chain, which includes land use change, on-farm production, processing, transport and packaging.

Source: Poore and Nemecek (2018).

Turning to agricultural production, the CAP aims to 'support farmers and improve agricultural productivity, ensuring a stable supply of affordable food' (EC, 2022a). While important policy goals, it may be difficult to increase productivity when also pursuing the F2F strategy goal of supporting more sustainable agricultural practices (e.g. organic farming or agroecology), which often have lower outputs per unit of land.

While productivity remains an important goal of the CAP, its prominence has declined over time. The early emphasis on maximising output to ensure food security has been moderated through subsequent reforms addressing overproduction and environmental pressures. The post-2020 CAP illustrates this shift, emphasising the goal of 'support[ing] viable farm income and the resilience of the agricultural sector across the EU, in order to enhance long-term food security and agricultural diversity' (EC, 2022l). Following Russia's invasion of Ukraine, however, some agricultural industry representatives and EU Member States have pushed back against the implementation of some F2F strategy goals, arguing for the heightened importance of food security and against the existing environmental objectives, timeline and targets (Willard, 2022b). Responding to the situation, academics have argued that 'tackling the short-term shock [of the Ukraine crisis] must be done with a vision in mind of the larger-scale and longer-term threats of the climate- and biodiversity-crises' (Pe'er et al., 2022).

This example shows that the policy mix may include a range of goals that cannot all be addressed simultaneously, and that the relative importance of goals can vary over time or be contested by different actors. This example also illustrates that transitions are not linear processes but can be derailed or fostered by crises, depending on which political agendas and actors succeed in shaping the political response. In the case of the Ukraine crisis, the political effects on food system transition are not yet clear.

Incoherencies also exist between the level of support provided to more sustainable agricultural practices and conventional, unsustainable ones. The CAP provides support

for organic farming (see Chapter 7) and more recently for other kinds of more sustainable practices through eco-schemes and enhanced conditionality rules for direct payments. However, dominant, high-input food production is heavily subsidised through the CAP. Although most payments are now provided on a per hectare basis, most agricultural land within the EU is farmed using intensive methods to maximise income. The CAP does not have strong rules in place to prevent this from happening. So, even if this is not explicitly the aim of the CAP, the CAP indirectly ends up funding agricultural practices that are unsustainable.

In the CAP 2023-2027 period, the enhanced conditionality rules mean that all beneficiaries will have to fulfil a stronger set of mandatory requirements. For example, all farms must dedicate at least 3% of arable land to biodiversity and non-productive elements. In addition, in the CAP 2023-2027 period, at least 25% of the budget for direct payments will need to be allocated to eco-schemes, 'providing stronger incentives for climate-and environment-friendly farming practices and approaches (such as organic farming, agroecology, carbon farming, etc.) as well as animal welfare improvements' (EC, 2022u).

While this is certainly a positive development compared with previous CAP periods, it still means that 75% of the direct payments are used to fund less environmentally friendly agricultural practices. This is important because transitions research emphasises the role of policies in driving the phasing out of unsustainable practices and fostering the emergence and diffusion of sustainable alternatives (Chapters 5-7). Despite the claimed alignment with the F2F strategy, the general structure of CAP policy instruments remains largely unchanged (Galli et al., 2020) and therefore unlikely to drive the needed transformation of the agri-food system.

Table 9.1 summarises the identified policy synergies and incoherencies across the F2F strategy, CAP and CFP.

Table 9.1 Synergies and incoherencies across policy goals of the F2F strategy, CAP and CFP

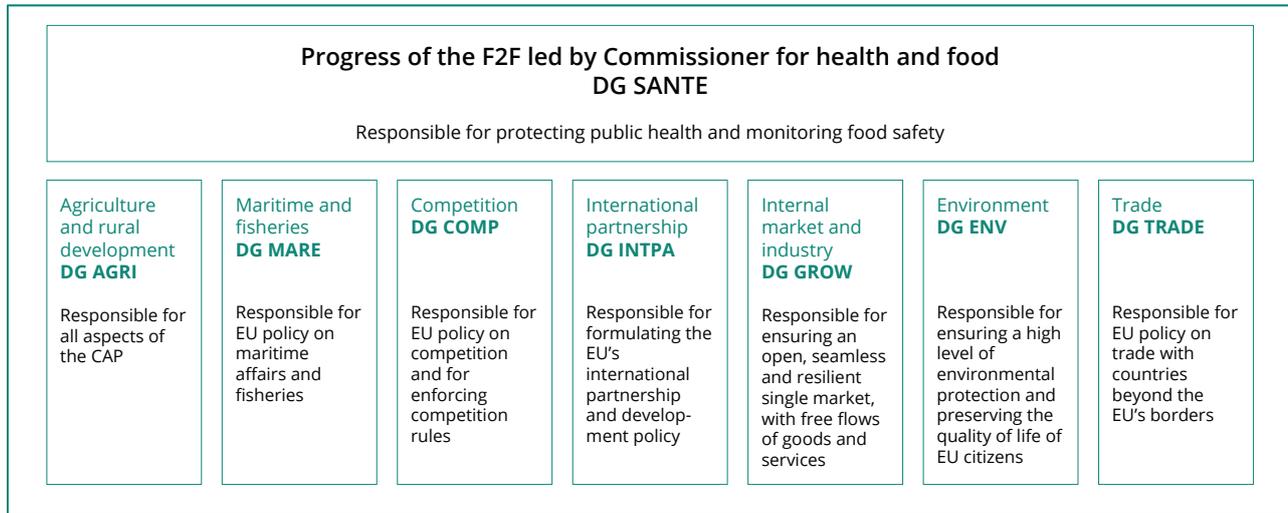
Theme	Synergies	Incoherencies
Food security	CAP and F2F both promote affordable food for everyone	CAP focus on farmers contrasts with F2F's focus on consumers
Nutritious, sustainable and safe food	CAP and F2F both promote nutritious, safe, sustainable food	CAP provides continued support for practices with high environmental impacts
Economic profitability	CAP and F2F both aim to ensure farmers can make a reasonable living and fairer economic returns in the supply chain	CAP aims to increase agricultural productivity and supports conventional practices while F2F supports sustainable practices, often with lower productivity.
Support rural economies	CAP aims to maintain rural areas across the EU and sustain the rural economy. CFP aims to increase decentralisation and regionalisation	
Climate change adaption and mitigation	CAP and F2F address climate change through mitigation and adaptation	
Sustainable resource management	CAP, F2F, CFP promote sustainable management of fish stocks (several goals) and foster sustainable development and efficient management of natural resources.	F2F more ambitious, aiming to 'foster sustainable development and efficient management of resources' and 'neutral or positive environmental effects'.
Biodiversity conservation	F2F and CAP commit to biodiversity conservation	F2F more ambitious in aim to 'reverse the loss of diversity'

9.2.3 Improving coordination across the European Commission

The development of coherent and consistent food system policies depends in part on coordination and collaboration across government. In practice, however, this is seldom straightforward. The stakeholder interactions that informed the development of this assessment highlighted that understandings of sustainability and its perceived relevance differ across directorates-general. Similarly, Parsons and Hawkes (2019) looked at the food-related policy goals of 19 directorates-general of the European Commission and identified multiple potential tensions and misalignments. For example, 'producing animals is associated with greenhouse gas emissions, and eating excess meat also has adverse health implications. Yet, at the same time, meat is a key export product and holds important cultural significance' (Parsons and Hawkes, 2019).

Potential misalignments between policy areas are inevitable, and partly reflect differing interests and policy trade-offs. Nevertheless, there may be opportunities to increase coordination and create greater policy coherence by identifying, mapping and making use of the connections between the goals of different directorates-general and ultimately developing a shared vision for a sustainable food system (Parsons and Hawkes, 2019). As noted by Massot Marti (2020), the F2F strategy promotes collaboration by making different combinations of directorates-general jointly responsible for delivering actions in the F2F strategy action plan (Figure 9.2). However, the fact that food system changes are increasingly cross-sectoral (e.g. linking to health issues) and in some cases cross-technological (e.g. digital agriculture) points to the need for further action to improve collaboration and coordination (Klerkx and Begemann, 2020).

Figure 9.2 Directorates-general involved in the F2F strategy (and those that might potentially be affected or influenced by the strategy)



Other possible DGs that may be affected by the F2F strategy



Source: Based on Massot Marti (2020).

9.2.4 *Legislative efforts to increase directionality and coherence*

Pursuant to the F2F strategy, the European Commission is developing a proposal for a legislative framework for a sustainable food system, which 'will promote policy coherence at EU and national level, mainstream sustainability in all food-related policies' (Bock et al., 2022; EC, 2022m). Metta and Lakner (2021) argue that addressing sustainability issues such as biodiversity decline will require 'a strong political stand and unity' within the European Commission. In the terms of the policy mix literature introduced above, this can be seen as an attempt at 'policy patching' of the diverse policies addressing agriculture and food issues across the EU, since the legislative framework is meant to provide overall guidance and promote the mainstreaming of sustainability concerns into all food-related policies.

In developing the legislative framework, the European Commission has published an initial inception impact assessment (IIA) and invited citizens and stakeholders to provide feedback in 2021. As specified in the IIA, the legislative

framework's overall objective is 'to ensure that all foods placed on the EU market increasingly becomes sustainable' (EC, 2021g). In addition, it 'could act as a guiding framework instrument that coordinates and drives changes across the food systems as well as operational tool within and across its different sectors to overall improve the sustainability of the EU food system' (EC, 2021g). The IIA proposes four policy options: (1) baseline, (2) voluntary approaches, (3) reinforcing existing legislations and (4) a new comprehensive framework legislation on the sustainability of the EU food system. In addition, the European Commission has proposed several 'indicative elements' that might need to be considered, such as sustainable principles and objectives, processes to ensure synergies and mechanisms, governance mechanism(s) and EU-wide monitoring framework(s) (EC, 2021g).

The European Commission carried out an open public consultation in the summer of 2022. A total of 230 consultation responses were received, mainly from business associations, NGOs, EU citizens and company or business organisations. Examining a selection of the responses (selected with the aim of representing a diverse range of

associations, NGOs and companies that replied in English and are based within Europe), our assessment focused on statements on issues such as governance, policy coherence and policy options. The aim was to identify differences and commonalities to examine whether or not the responses indicate the existence of shared visions for a sustainable EU food system and how policy can support such a transition.

The analysis showed that respondents believe that a clear definition of sustainability and/or related parameters, criteria, principles or concepts is an essential part of the legislative framework. However, it also shows that there is currently no shared vision of a sustainable EU food system or even an agreement on top-level policy goals across relevant stakeholders. For example, responses put varying emphasis on the three dimensions of sustainability (environmental, social, economic), although most responses stated that all three dimensions need to be considered. Some responses advocate making sustainability a top-level policy goal alongside food safety and food security (e.g. IFOAM), whereas other responses advise against it (e.g. Independent Retail Europe, FoodDrinkEurope). Some responses point to the need for data, methodologies and assessment methods linked to sustainability. Rather than taking a production-centric approach, some of the environmental NGOs and think tanks argued for a food system approach, including production and consumption processes (e.g. slow food). Three environmental NGOs pointed to a need for an overall vision towards sustainable food systems (e.g. BirdLife Europe, WWF European Policy Office).

With regard to the policy options proposed within the IIA, some of the environmental NGOs, organic farming associations and think tanks contend that a new comprehensive framework legislation (i.e. policy option 4) would be most appropriate. Some (e.g. BirdLife Europe, the Institute for European Environmental Policy) argued that it would need to be further strengthened, for example through mandatory approaches and regular evaluation processes. The European Commission's Joint Research Centre (JRC) (Bock et al., 2022) also points to the need for mandatory approaches. Other organisations (e.g. Nestle) advocate a more mixed approach between different policy options and pointed to exploring the role of technologies for sustainability (e.g. Tetra Pak, EDA). The need for policy coherence and integration was also highlighted in several of the responses, particularly by think tanks and environmental NGOs, but also for example by FoodDrinkEurope. Other responses argued for a 'one in, one out' approach to address policy contradictions and duplications (e.g. Independent Retail Europe). The need for multi-level governance structures and mechanisms was also mentioned, including new governmental institutions and architectures (e.g. IFOAM).

Generally, the responses point to the need for definitions and principles around sustainability; the further pursuit of policy coherence; the need for data and capacity to measure, report on and assess sustainability; and the establishment

of new governance processes and architectures (see also IEEP (2021a) for similar findings). However, the consultation responses collected show that stakeholders have different understandings of sustainable food systems and how to achieve them. The responses also differ in their emphasis on policy goals, the role of technologies and practices (e.g. digital technologies, agroecology), and the preferred speed and direction of change. Therefore, it seems that the EU has not yet succeeded in fostering shared directionality towards a sustainable European food system.

EU actions to develop a legislative framework for a sustainable food system provide an important opportunity to increase directionality and coherence. Yet, the Ukraine crisis and the related debate about productivity and food security may influence the design of the framework. There is a risk that ambitious plans for creating an overarching legislative framework with binding elements will be shelved in favour of more voluntary approaches, which will do little to provide the coherence and directionality needed.

9.3 Towards a transformative policy mix

As outlined above, directionality and policy coherence (both horizontal and vertical) are important for governing sustainability transitions. Despite the adoption of the F2F strategy, incoherencies and uncertainties about the direction of travel persist, providing 'mixed' policy signals that hinder progress towards the goals of the F2F strategy and the EGD. This section explores options to make the policy mix more transformative.

9.3.1 Providing directionalities towards sustainable food systems

While the EU still lacks a concrete vision for a sustainable food system in Europe, the outlines for such a vision are increasingly emerging in policy and research. For example, the EU and its Member States have defined the broad outcomes of sustainable food systems through instruments such as the United Nation's Sustainable Development Goals, the EGD and more recently the F2F strategy. The Standing Committee on Agricultural Research (SCAR) Foresight Exercise Expert Group, a think tank composed of EU Member State representatives, and the European Commission's JRC have analysed how to enable sustainable food transitions and have carried out foresight studies, for example on global food security up to 2030 (EC, 2015). Experts from research and civil society have also contributed, for example through IPES-Food's Towards a common food policy for the European Union (IPES-Food, 2019).

While such actions and initiatives have provided much relevant information on possible future sustainable food systems, they have not yet established a clear sense of directionality. As such, one way to make the existing EU food policy mix more transformative would be to open up political spaces to engage

diverse actors, including representatives of marginalised sustainable practices, to develop alternative pathways to sustainable food systems. For example, the 5th SCAR Foresight Exercise Expert Group exercise identified three interconnected pathways and argued that 'directionality should emerge from deliberation and debate, with procedures that ensure space for dissenting positions, and that a diversity of directions is coherent with negotiated, and largely shared, goals' (EC, 2020d).

Missions can provide a means to enact broader visions and thereby provide directionality towards sustainability. By mobilising resources and institutional support at the EU level and connecting to bottom-up experimentation and national and sub-national levels, missions can also help create mutually reinforcing dynamics across multiple levels of governance (EEA, 2019a). As argued by Klerkx and Begemann (2020), it is possible to identify both explicit and implicit food system transformation missions and sub-missions in EU policy, addressing themes such as plant-based transitions, urban farming, agroecology and digital agriculture. Similarly, the 'Food 2030' framework and its 10 pathways for actions can be seen as including several missions. Still, there is currently no sense of a coherent mission-oriented approach that provides a sense of direction towards sustainable food systems. An important step towards achieving sustainable food systems would therefore involve creating a transparent and coherent mission map (Klerkx and Begemann, 2020). Implementing such a map would require open and inclusive processes and skilled policymakers so that projects are not stopped prematurely and to maintain openness to alternative technological trajectories (EEA, 2019a). To achieve its transformative objectives, such a mission map would also need to be supported with policy instruments and targets.

9.3.2 Improving coherence across policy areas and levels

In its work supporting the proposed EU legislative framework for sustainable food systems, the European Commission's JRC underlines the importance of horizontal and vertical policy coherence, and stresses the need for an integrated food system approach rather than a product-based approach (Bock et al., 2022). The JRC identifies principles to facilitate policy coherence, such as taking a long-term perspective, aligning priorities and subsidies for primary production, ensuring transparency and access to evidence, and rebalancing the distribution of power. The JRC also argues for coherent multilevel governance of the EU food system, including collective understandings and processes, robust monitoring and assessment towards the F2F strategy goals, and structures for exchange across governance levels.

Transitions research also emphasises the need for governance mechanisms 'to promote dialogue between different levels and increased flows of information and resources' (EEA, 2019a). By making different actor's perspectives and interests

visible, such structures can potentially create conflicts. However, Skrimizea et al. (2020) argue that such conflicts need to be 'recognised as an important motor for redistribution of power and leverage for social learning', which they see as necessary in such processes. The JRC likewise recognises the need for dialogue and flows of knowledge and information, particularly to take into account the 'multiple realities across the EU' i.e. acknowledging local knowledge and visions, being inclusive and creating connective governance structures through co-design processes and collective ownership of food strategies (Bock et al., 2022).

Developing a clearer directionality for the food system transition at the EU level and increasing policy coherence is therefore important. However, there is also a need to explore and elaborate the implications of these macro-level goals and targets at national, regional and local levels. Creating obligations to develop food system strategies at different levels of governance could provide a powerful means to increase directionality, improve multi-level governance and embed a systemic, transformative perspective in policy across Europe. National, regional and local food transition strategies are likely to differ significantly across EU regions, reflecting the wide variations in national and local contexts. By providing room for experimenting with different solutions and transition pathways, this diversity has the potential to boost innovation and promote resilience (Knickel et al., 2018). Active food system transition strategies and policies at Member State level are also needed to fill the policy gaps identified in EU-level policies (e.g. taxation on environmentally harmful food production and consumption practices).

There are also a variety of attempts by local governments to push for a local food system transition, for example through experimenting with local food policy councils and setting sustainable food targets (Marsden et al., 2018). Sonnino (2019) points out that cities may offer the optimal scale for food policy innovation. Sonnino's (2019) study finds the relevance of urban-based governance innovations in enhancing multi-actor participation in food policy locally (i.e. horizontally) but also points out that vertical governance (in the sense of involving actors from regional or national government) is limited. De Schutter et al. (2020) argue that:

Bottom-up 'alternative food system' initiatives, from community supported agriculture schemes to local sourcing for school canteens, are among the most promising steps towards healthy diets and sustainable food systems in Europe... However, EU policies are ill-equipped to support these initiatives. Firstly, there is an eligibility and access problem. Local food system initiatives are often too small and diffuse to be eligible for CAP Pillar 1 funding; many are also urban-based and therefore ineligible for rural development funding. Where supportive policy frameworks do exist, the opportunities have not been sufficiently communicated.

This finding suggests that the European Commission could usefully play a more active role in engaging with and supporting food transition strategies at Member State and regional levels, beyond funding research and innovation projects. Such support could potentially be delivered via existing funding streams, such as the European Regional Development Fund, or new funding mechanisms.

Finally, institutional and governance innovations may also be needed (EEA, 2019a; FIT4FOOD2030, 2020; Bock et al., 2022). For example, De Schutter et al. (2020) point out that following the introduction of the F2F strategy an increasing number of organisations have identified an urgent need 'to adopt a new,

integrated governance approach for food systems: these include scientific panels, civil society groups, and even EU institutions and in-house scientific advisory bodies'. The IPES-Food blueprint for a 'Common Food Policy' process led to a variety of proposals to change the EU institutional setting for a common food policy, which included proposals to appoint a European Commission vice president for sustainable food systems, a 'head of food' in every directorate-general, a 'sustainable food taskforce' under the European Political Strategy Centre and an EU Food Policy Council, which would channel grassroots actor perspectives into EU decision-making (De Schutter et al., 2020). The EU could even consider creating a directorate-general or agency with a dedicated focus on the food system.

10 Conclusions

This report takes a novel approach to analysing the EU policy mix shaping the food system. It draws on insights from the growing body of research into the governance of sustainability transitions, which emphasises the need for coherent policy mixes to stimulate, facilitate and guide systemic change. But it also takes as its starting point the logic of the EU's flagship strategic policies. For example, the European Green Deal (EGD) states that 'all EU actions and policies will have to contribute to the European Green Deal objectives... It will require intense coordination to exploit the available synergies across all policy areas' (EC, 2019). The F2F strategy further provides for the development of a legislative framework for a sustainable food system that will 'promote policy coherence at EU and national level, mainstream sustainability in all food-related policies and strengthen the resilience of food systems' (EC, 2020a).

The need to focus on the EU food system as a whole and the coherence of relevant policies brings challenges. The EU policies affecting the food system are diverse and complex, and are implemented in different ways by EU Member States. As a result, it is not possible to assess the policy mix in a comprehensive way. This assessment therefore focuses on the overall structure and coverage of the policy mix and in particular the F2F strategy, CAP and CFP, identifying potential gaps, misalignments or limitations. The assessment largely leaves aside issues such as the design, stringency and implementation of individual instruments, and the ways that EU policies are complemented by instruments at national, regional and local levels.

Although the analysis needs to be understood in the light of these caveats, it nevertheless provides valuable insights into the strengths and limitations of the current EU policy mix addressing the food system.

10.1 Key messages from the assessment

As presented in Table 10.1, the analysis in Chapters 4-9 provide a rich set of ideas about ways in which the EU could target the policy intervention points identified by Kanger et al. (2020) to make the policy mix addressing Europe's food system more transformative. Viewed collectively, several cross-cutting themes stand out. In particular, it is clear that there is a strong interdependence between the possible actions targeting the different intervention points (see also Hebinck et al., 2022). For example, there is an important interplay between policy measures aimed at driving the

phasing out of harmful practices and those stimulating more sustainable innovation. Stringent regulations or market-based instruments can simultaneously disrupt established actors, incentivise innovation and create a favourable environment for new practices to upscale. Indeed, achieving successful phase-outs and avoiding new lock-ins to harmful practices depends in part on more sustainable alternatives being available. This points to the importance of coordinating and sequencing actions targeting multiple intervention points.

The need for measures that provide directionality likewise emerges as a critical cross-cutting issue. Clarity about the overall direction of change on the European scale and what is understood by a sustainable food system provides the basis for developing a coherent and consistent policy mix and targets, as well as missions to guide innovation. This in turn can help to focus resources on selected innovation pathways, as well as enabling established actors to plan investments and allocate resources, potentially mitigating resistance to change. It can also provide a foundation for engaging stakeholders at national, regional and municipal levels in developing visions and strategies that are aligned with Europe's sustainability goals and reflect local contexts.

The need for a just transition is another important recurring theme. Addressing existing injustices and achieving a socially fair transition is essential. It is also fundamental to the political feasibility and social acceptability of measures to promote disruptive innovations and phase out harmful practices, products and substances. Such changes will inevitably affect producers and consumers alike, not simply by affecting profits and household budgets but also by disrupting established routines, norms and identities. For these reasons, Chapters 5-9 repeatedly highlight the need to create processes and institutions that can provide for recognitive and procedural justice, as well as distributive justice.

There is also a clear need for policy actions that target actors with the potential to shape the food system (Bock et al., 2022). This sometimes involves addressing actors that existing policies have tended to neglect in the past, such as the powerful actors in the middle of the food value chain. It sometimes means encouraging stakeholders to engage in novel roles and responsibilities, such as consumers as innovators and decision-makers. It also sometimes means finding ways to mobilise and empower potentially influential groups. For example, advances in life cycle assessment (LCA) and corporate sustainability reporting provide increasing opportunities for

civil society groups to pressure retailers or to take legal action for impacts across value chains. Correspondingly, the actions outlined in Table 10.1 would engage a broad range of actors

across the intervention points: from generating new ideas and practices, through driving phase-out, to participating actively in defining the direction of change.

Table 10.1 Possible actions to create a more transformative EU policy mix, based on the intervention point framework of Kanger et al. (2020)

Policy intervention point	Action
Stimulating and promoting the emergence of diverse forms of innovation (niche stimulation)	<ul style="list-style-type: none"> • Engage consumers as innovators and decision-makers — designing and delivering sustainable new social practices, institutions or business models, and remedying the democratic deficit of food systems • Improve multi-actor engagement with local authorities, NGOs and others that currently lack access to R&I funding (e.g. via smart specialisation) • Develop food system missions to stimulate, connect and accelerate experimentation • Encourage food system innovation and transdisciplinary perspectives in the exploration and evaluation of alternatives through R&I funding, such as Horizon Europe
Upscaling, replicating and institutionalising innovations and sustainable practices (niche acceleration)	<ul style="list-style-type: none"> • Support the upscaling of food production that builds resilience of natural systems and reduces environmental impacts • Create markets for more sustainable products and services by changing the food environment guiding consumption patterns (e.g. using LCA information better, fiscal reforms and regulations on food availability, accessibility and desirability) • Address financial barriers to upscaling (e.g. with public guarantees, and support for mini-bonds and crowdfunding) • Support upscaling of multi-actor initiatives, and encourage bolder experimentation with upscaling of promising innovations and evaluation of effects (e.g. by expanding successful programmes like LIFE) • Promote changes in behaviours and norms (e.g. regulating marketing and advertising of food, changing availability of food in key micro-environments, linking sustainability to other motivations such as health) • Improve synergies between policies for upscaling innovation (e.g. linking Horizon Europe better with EU regional policy funding)
Phasing out unsustainable practices (regime destabilisation)	<ul style="list-style-type: none"> • Further reorient EU subsidies and support for farming and fishing away from environmentally harmful practices towards supporting more sustainable practices • Make food industry actors more accountable for the impacts of their business activities (e.g. by increasing corporate sustainability reporting and due diligence requirements as a basis for future legislation, civil society action and consumer empowerment) • Navigate resistance from powerful interest groups by providing compensation, incentives, recognition and engagement in processes, and building consensus on the way forward • Signal the long-term direction of phase-out measures (e.g. relating to practices, harmful substances, dietary patterns) to enable planning and reorientation of investments, and sequence measures to enable the emergence of alternatives • Take actions to curb corporate influence in phase-out policy processes

Table 10.1 Possible actions to create a more transformative EU policy mix, based on the intervention point framework of Kanger et al. (2020)

Policy intervention point	Action
Anticipating and managing social and economic disruption (repercussions of regime destabilisation)	<ul style="list-style-type: none"> • Embrace a multidimensional understanding of justice in policy, including distributive, recognitive and procedural justice • Create distributional mechanisms, like the Just Transition Fund, for the food system • Enable stakeholder agency and recognition by promoting governance for solution co-creation on appropriate scales and promoting 'futures literacy' • Support a just transition for consumers (e.g. via 'carbon dividends' or school meal programmes) to ensure universal access to healthy, sustainable food • Encourage long-term planning for reconversion by aligning educational, innovation and labour force skill development policies
Harnessing synergies and ensuring that policies are coherent and consistent (coordination of multi-regime interaction)	<ul style="list-style-type: none"> • Create a strong EU legislative framework and targets for Europe's food system to guide reforms across EU policy areas and to inform strategic planning and policymaking at other levels of governance • Create new EU roles or institutions to improve coordination across policy areas and engage frontrunning stakeholders in decision-making • Promote the development of national food system strategies to translate EU-level goals into national contexts, embed a transformative, systemic perspective in national policy and promote horizontal and vertical coherence • Enable more direct EU support for community-level initiatives to boost multi-actor participation and vertical governance • Encourage regular evaluation of policy mix consistency and coherence
Giving direction to innovation and system change (landscape tilt)	<ul style="list-style-type: none"> • Create political spaces to deliberate and develop a broad but ambitious vision for Europe's food system • Develop concrete food system visions at national, regional and local scales through engagement of relevant stakeholders and frontrunners • Promote action towards Europe's shared goals with ambitious targets and policies • Develop 'mission maps' to make sense of the directionality implicit in EU policy and provide the basis for future policymaking

10.2 Knowledge to support action

This assessment was a first attempt to map and analyse the EU policy mix driving the transformation of Europe's food system. While it offers valuable insights, there are ways in which it could be strengthened and extended. First, a more comprehensive analysis could include a broader range of relevant EU policies. For example, the important issues of cohesion and trade policy are not addressed and deserve further consideration. Second, the main focus of the assessment is on policies at EU scale, whereas much of the policy mix shaping Europe's food system is at national and local scales, and is influenced not only by policy design but also by implementation processes. Assessing policy mixes at national or regional levels and analysing vertical coherence of policy mixes across levels of governance would yield valuable additional insights. Furthermore, the temporal development of the policy mix and how different policy instruments interact with one another over time was only indirectly assessed. There is also a lack of information on the combined impact of policy instruments on target groups.

The present assessment provides a foundation for such analyses, which would strengthen the knowledge base on the potential impact of policy mixes, the remaining gaps and how policy mixes can be made more transformative.

This assessment has also identified some specific knowledge development needs. For example, in terms of enabling behaviour change, there is a need for more interdisciplinary analysis to improve the alignment of policy interventions with the psychological realities and understanding of the role of social and cultural norms and motivations. In terms of identifying and upscaling sustainable practices, there is a clear need to develop credible definitions and principles of what food and food system practices are sustainable, which would enable more detailed analysis of the potential impacts of upscaling. The development of definitions and principles is also fundamental to developing alignment among stakeholders about the desired direction of change and for supporting improved policy coherence. Such definitions and principles should be part of a broader framework that assesses the sustainability of the EU food system. The Joint Research Centre has developed some initial ideas in this regard (Bock et al., 2022).

The EGD and 8th Environment Action Programme both identify knowledge as a key enabler of transformative change. In addition to generating new knowledge, there is a need to improve knowledge uptake and use. In the context of sustainability ambitions, a knowledge system that guides knowledge development, uptake and use as an iterative and holistic process is essential (EEA, 2021). Currently, knowledge production is often disconnected from action, limiting learning from experimentation and implementation. This assessment highlights the importance of strengthening partnerships and multi-actor approaches, as well as the need for institutional structures that facilitate networking and knowledge exchange. This includes strengthening synergies by design between EU funding programmes (e.g. Horizon Europe) and national and regional research and innovation programmes (see Chapter 7). Networks such as the Agricultural Knowledge and Innovation Systems network can also achieve more if aided by clearer directionality regarding a sustainable food system.

10.3 Next steps: windows of opportunity

The EGD and the F2F strategy represent vital advances in the uptake of a transformative, systemic framing in EU policy. Yet, they are clearly only first steps. As set out in this report, the EU policy mix governing Europe's food system is characterised by gaps and inconsistencies that limit its transformative potential. The actions set out in Table 10.1 could make the policy mix more transformative, but their strong interdependence means that this potential can only be fully realised through a strategic and coherent approach.

The development of a legislative framework for a sustainable food system — announced as a flagship initiative of the F2F strategy — provides an important opportunity to address these limitations. An ambitious framework has the potential to set the direction for broader changes in EU policy under the next European Commission and in the post-2027 financial period. In doing so, such a framework can make a decisive contribution to EU efforts to achieve a just and sustainable European food system.

Abbreviations

AKIS	Agricultural Knowledge and Innovation Systems
CAP	Common Agricultural Policy
CFP	Common Fisheries Policy
CSRD	Corporate Sustainability Reporting Directive
EEA	European Environment Agency
EGD	European Green Deal
EIB	European Investment Bank
EIC	European Innovation Council
EMFAF	European Maritime, Fisheries and Aquaculture Fund
EPHA	European Public Health Alliance
EU	European Union
EU-27	27 Member States of the European Union
F2F	Farm to Fork
GAEC	Good agricultural and environmental condition of land
GHG	Greenhouse gas
Hestia	Harmonised Environmental Storage and Tracking of the Impacts of Agriculture
IIA	Inception impact assessment
JRC	Joint Research Centre
LCA	Life cycle assessment
MSY	Maximum sustainable yield
NGO	Non-governmental organisation
R&D	Research and development
R&I	Research and innovation
SMR	Statutory management requirement
TAC	Total allowable catch
VAT	Value added tax



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Annex 1

Core policy goals of the CAP, the CFP and the F2F strategy

	CAP (2021-2027) ^(a)	CFP ^(b)	F2F ^(c)
Food security	Support viable farm income and resilience across the EU to enhance food security		Preserve the affordability of food
Nutritious, sustainable food	Improve the response of EU agriculture to societal demands on food and health, including safe, nutritious and sustainable food, reducing food waste, as well as ensuring animal welfare		Make sure that everyone has access to sufficient, safe, nutritious and sustainable food
Economic profitability	<p>Improve farmers' position in the value chain</p> <p>Increase competitiveness and agricultural productivity in a sustainable way to meet the challenges of higher demand in a resource-constrained and climate uncertain world</p> <p>Modernise the agricultural sector by attracting young people and improving their business development</p>		Generate fairer economic returns in the supply chain
Support rural economies	Promote employment, growth, social inclusion and local development in rural areas, including bio economy and sustainable forestry	Increase decentralisation and regionalisation	
Climate change adaptation and mitigation	Contribute to climate change mitigation and adaptation, as well as sustainable energy		
Sustainable resource management	Foster sustainable development and efficient management of natural resources, such as water, soil and air	<p>Adapt fishing capacity to fishing opportunities</p> <p>Align fishing quotas with the maximum sustainable yield</p> <p>Manage fish stocks with multiannual plans to ensure the conservation of the fish stocks</p> <p>Enforce the discard ban</p> <p>Promote sustainable aquaculture</p>	Ensure European food systems have a neutral or positive environmental impact
Biodiversity conservation	Contribute to the protection of biodiversity, enhance ecosystem services, and preserve habitats and landscapes		Reverse the loss of biodiversity

Notes: ^(a) https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/new-cap-2023-27/key-policy-objectives-new-cap_en#nineobjectives
^(b) https://ec.europa.eu/oceans-and-fisheries/policy/common-fisheries-policy-cfp_de
^(c) https://ec.europa.eu/food/horizontal-topics/farm-fork-strategy_en

Annex 2

Policy instruments categorised and mapped in the first phase of the assessment

Common Agricultural Policy

Pillar	Policy instrument
European Agricultural Guarantee Fund (first pillar)	1 Basic payment scheme (BPS)/single area payment scheme (SAPS)
	2 Cross-compliance
	3 Green direct payment
	4 Young farmers payment (YFP)
	5 Farm advisory system (FAS)
	6 Areas of natural constraints (ANCs)
	7 Voluntary coupled support (VSC)
	8 Small farmers scheme (SFS)
	9 Redistributive payments
	10 School fruit, vegetables and milk scheme
	11 Directive on unfair trading practices
	12 Regulations on market transparency
	13 Tariff rate quotas
	14 Promotion of EU farm products
European Agricultural Fund for Rural Development (second pillar)	15 Agri-environment-climate measures (AECMs)
	16 Organic farming support
	17 LEADER
	18 Natura 2000 and Water Framework Directive payments
	19 Animal welfare
	20 Cooperation including EIP-AGRI
	21 Knowledge transfer and information
	22 Advisory services, farm management and relief services
	23 Quality schemes for agriproducts and foodstuffs
	24 Investments in physical assets
	25 Natural disasters: restoring production potential and preventing damage

Common Agricultural Policy (cont.)

Pillar	Policy instrument
European Agricultural Fund for Rural Development (second pillar)	26 Farm and business development
	27 Basic services and village renewal in rural areas
	28 Investments in forest area development and improvement of the viability of forests
	29 Setting up of producer groups and organisations
	30 Forest-environmental and climate services and forest conservation
	31 Risk management
	32 Technical assistance through the National Rural Network

Common Fisheries Policy

1	Total allowable catches (TACs)
2	Landing obligation
3	Fishing effort limits
4	Deep-sea access regulation
5	Monitoring systems (electronic catch reporting, remote electronic monitoring)
6	Technical measures regulation
7	Fleet register
8	Illegal, unreported and unregulated (IUU) regulation
9	Fleet capacity ceilings
10	Support of small-scale coastal fishing and young fishermen (European Maritime, Fisheries and Aquaculture Fund (EMFAF))
11	Funding of innovations (European Maritime, Fisheries and Aquaculture Fund (EMFAF))
12	Setting up of producer organisations
13	Marketing standards
14	Mandatory disclosure standard
15	The European Market Observatory for Fisheries and Aquaculture (Eumofa) products
16	Aquaculture guidelines
17	Sustainable fisheries partnership agreements (SFPAs)

Farm to Fork strategy

Pillar	Action/initiative
Food production: ensuring sustainable food production	1 Adopt recommendations to Member States' CAP strategic plans
	2 Propose revision of the 'Sustainable Use of Pesticides' directive
	3 Revise relevant regulations under the 'Plant Protection Products' framework
	4 Propose to revise the 'pesticides statistics' regulation
	5 Evaluate and revise animal welfare legislation
	6 Propose a revision of the 'feed additives' regulation
	7 Propose a revision of the 'Farm Accountancy Data Network' regulation
	8 Clarify the scope of competition rules in the Treaty on the Functioning of the European Union (TFEU)
	9 Legislative initiatives to enhance cooperation of primary producers
	10 Propose EU carbon farming initiative
Food processing and distribution: stimulating sustainable food processing, wholesale, retail, hospitality and food services practices	11 Improve the corporate governance framework
	12 Develop an EU code of conduct for responsible business and marketing practices
	13 Stimulate product reformulation of processed food
	14 Set nutrient profiles to restrict promotion of food high in salt, sugars and/or fat
	15 Propose a revision of EU legislation on food contact materials
	16 Propose a revision of EU marketing standards
	17 Enhance coordination to enforce single market rules and tackle food fraud
Food consumption: promoting sustainable food consumption, facilitating the shift towards healthy, sustainable diets	18 Propose harmonised mandatory front-of-pack nutrition labelling
	19 Propose mandatory origin indication for certain products
	20 Determine best modalities for setting minimum mandatory criteria for sustainable food procurement
	21 Propose sustainable food labelling framework
	22 Review EU promotion programmes for agricultural products
	23 Review the EU school scheme's legal framework
Food waste: reducing food loss and waste	24 Propose EU-level targets for food waste reduction
	25 Propose a revision of EU rules on date marking
Horizontal actions and initiatives: legislative framework improving sustainable food systems and ensuring food security	26 Develop contingency plan for ensuring food supply and food security
	27 Propose legislative framework for sustainable food systems



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