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The Chef and the Supplier: The Role of the Supply Chain in Fine Dining Creativity

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Abstract

This article studies the relationship between culinary creativity in fine dining restaurants and the supply chain that supports them. Fine dining has experienced a renaissance in recent decades, with chefs pushing the boundaries of culinary innovation. However, little attention has been given to the pivotal role that suppliers play in this creative process. Based on the exploration of four case studies of Michelin-starred restaurants in Denmark, the paper uncovers the ways in which the supply chain influences the dynamics of high-end restaurants, proposing a social-material perspective on culinary creativity. Results show how sourcing practices impact fine dining creativity, and highlight the role of nature and quality as the foundations of the relationships between chefs and suppliers. This research innovatively sheds light on the behind-the-scenes processes that drive fine dining and shows how different restaurants think differently about the role of suppliers in the creative process. The strategies involve more traditional chef-centred approaches to culinary creativity, as well as ambitions to become self-sufficient. Results also show that the restaurants put the farmers first, seeing the supply chain and the food system as central to culinary creativity. We argue that these approaches seem to be essential to the development of more sustainable forms of Michelin restaurants.

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Introduction

The iconic 2010 Cookbook *NOMA:Time and Place in Nordic Cuisine* (Redzepi, 2010) is remarkable for its unique minimalist aesthetics, its tissue cover, the included maps and travel diaries from the Nordic region. Even more remarkable is the impressive catalogue of artistic photos of food, people, and materials essential to the restaurant. The catalogue produces a quintessential 'new Nordic' feeling. In this regard, it is noteworthy that it attributes substantial space to the restaurant's suppliers. In the photo catalogue there are several portraits of fishermen, foragers, and famers, always portrayed in 'their element' where they fish, forage or farm. There is also a section in the book called 'The Raw Material' written by NOMA's head chef René Redzepi, which is composed of nine portraits of the most important suppliers, including Roland Rittmann, Swedish collector of wild herbs and mushrooms. He started collecting mushrooms to make ends meet when unemployed, and now is one of the leading experts. Another example is Roderick Sloan, a loquacious Scottish fisherman operating in the northern part of Norway. NOMA was his only customer when the book was published. Yet another example is the Danish farmer Søren Brandt Wiuff, the 'king of asparagus'.

In recent decades, fine dining seems to increasingly acknowledge suppliers and use their name as a sign of quality, local connectedness, and sustainability (Batat, 2020; Bertella, 2023). In some cases the suppliers' personalities are important for the restaurants, and the special bond between the two is a salient feature in a restaurant's storytelling, as the NOMA cookbook example illustrates. This development is particularly significant as some scholars have started to talk about a kind of 'celebrification' of farmers (Phillipov and Goodmann, 2017). While much has been written on the role of local food in food tourism (Hjalager and Richards, 2003; Roy et al., 2017; Leer, 2020, Ren and Fusté-Forné, 2023) and the increased focus on food suppliers among foodies and chefs (Johnston and Baumann; 2014, Roy; 2016), very little has been written on how chefs consider the supplier as a part of their creative process (one of the few examples is Fusté-Forné and Noguer-Juncà, 2023) in the context of luxury gastronomy in food tourism (Batat, 2021). This is the main contribution of this paper which focuses primarily on the relation between chefs and suppliers, with a view to understanding the behind-the-scenes in fine dining creativity. More specifically, we are interested in exploring the role of suppliers in the creative work of the chefs (see also Madeira et al., 2022). Hence, our research question is: what role do suppliers play in fine dining chefs' creative processes? By suppliers we understand the system of people and businesses providing produce and products to the restaurant, and by creative processes, we understand the design of dishes and menu as well as the development of the restaurant's identity and storytelling.

Our empirical data was generated in the context of the Copenhagen restaurant scene which has undergone radical transformation since the early 2000s with the rise of the new Nordic movement conceptualized in 2004 (Skårup, 2013) to protect and promote a Nordic *terroir* (Gyimóthy, 2018). Before this movement, Copenhagen restaurants were to a large extent replicating French gastronomy and often the most prestigious restaurants sourced their produce in France. One of the dogmas of the new Nordic cuisine was to exclusively use ingredients from the Nordic region. This cuisine thus generated renewed interest in local food and Nordic suppliers (although these were sometimes not very local as the Nordic region is vast), a trend also observed in other areas such as the Mediterranean (see Noguer-Juncà and Fusté-Forné, 2022). Additionally, many chefs in the movement have promoted local, Nordic ingredients that were often foreign to fine dining, such as beets, herbs, and novel protein sources (shells and ants), and a novel minimalist creative expression (Leer, 2016). The region was celebrated by international food guides and by the global food intelligentsia (Müller and Leer, 2018).

We believe that this transformative food scene with a renewed attention to Nordic and local ingredients, along with a high influx of creative figures in gastronomy, make this context particularly relevant for our study of the role of the supply chain in fine dining creativity. This is notably so as the scene has diversified in recent years, with new generations of chefs (Leer, 2021; Krogager and Leer, 2022) who are often less inclined to embrace the exclusive Nordic focus and are often more globally oriented. Yet sustainability and local food are

still important buzzwords, and we feel that it is particularly intriguing to explore the role of the supplier in a scene that is so dynamic and filled with negotiation around local-global dimensions of food.

The paper opens with a theoretical section, followed by a method section where our four cases are presented along with the research design and the data. The analysis follows and finally, in our conclusion, we discuss the distinct ways in which chefs think and work with the suppliers.

A social-material perspective on culinary creativity

The fine dining sector has garnered keen attention in the media in recent decades and chefs are often highlighted as inspirational creative figures in contemporary Western cultures (Leer, 2016). With this increased interest, the specificity of culinary creativity in the fine dining sector has fascinated many scholars from various perspectives and for different reasons. Analysing Michelin restaurants in Spain, Vargas-Sánchez and López-Gusmán (2020) stress among other things the need for systematic and formal processes to achieve innovative creativity. They argue that innovative creativity in restaurants refers to the ability of chefs to craft dining experiences, based on the combination of artistry and originality through elements such as business models, the design of the menus, experiential dining formats, or sustainable practices. Drawing on a social media analysis, Aubke (2013) has highlighted the importance and nature of social networks in restaurants' creative process. Abbate et al. (2019) emphasize that, beyond internal creativity and external sources, the economic side should not be forgotten, if culinary creativity is to be successful. Highlighting the similarities between chefs' creativity and other artistic practices, Madeira et al. (2021) explore how Portuguese Michelin chefs work creatively. They present a model with three stages: the inspirational moment (mostly individual), the team moment (collective development and testing), and finally the moment of truth where the creation meets the guests in a commercial context.

One of the most elaborate studies of culinary creativity is by Vanina Leschziner (2015) who carried out an in-depth exploration of the creative processes in American Michelin restaurants, focusing on New York and the San Francisco areas. The study highlights the complexity of the creative process that might be perceived as highly individual but depends on many individuals and is shaped by various economic logics. Leschziner also identifies the dynamics of the tradition/innovation and purity/impurity dichotomies as a tool to understand the differences in the chefs' creative processes. The study is informed by a Bourdieusian perspective, using the idea of field as a central prism. In the creative processes, the rules of the field are affirmed and negotiated, and the chefs position themselves in the field to capture the meanings attached to the processes and the actors, from production to consumption.

It is interesting that these studies on culinary creativity do not fall into the cliché of the individual genius. All of them stress, to varying degrees, that culinary creativity should be understood in relation to economic, cultural and social context. In our paper and with our focus on the supply chain, we want to build on this approach and perhaps push it even further away from the lonely genius romanticism by proposing a social-material theoretical perspective. Here, we are inspired by Hvidtfeldt (2019), a study of creativity in the music industry, and Tanggaard (2015). In particular, Tanggaard (2015) argues that a social-material perspective on creativity 'consists in following not only the individual thinking processes or the influence of context on the individual creative process, but more precisely the movement of ideas and the continuous and productive re-associations found in the relational spaces during a creative process' (p.111). In the context of culinary creativity and the role of suppliers, this means that we focus not on the individual, but on the social and material basis of a creative process. Creativity is thus not a matter of individual and isolated acts, but of social and collective ones that are concrete and materially grounded in specific spaces, rather than being theoretical and abstract.

This perspective is particularly important as we consider the role of suppliers in culinary creativity, for they represent both the material ground for the creativity and the social bonds to the people and places involved

in the process. Analytically, this theoretical lens means that we, in our study, have been looking beyond the individual level and focusing on the material and social context of our four cases. In particular, we have explored the material and relational entanglements between the chefs and the restaurants, the materiality of the food, places and practices, and the suppliers.

Methods

This paper adopts a qualitative research design focusing on the perspectives of the chefs to understand the role the suppliers play in fine dining chefs' creative processes. The city of Copenhagen was chosen as the context because it is well-known for its innovative fine dining scene, notably as the epicentre of the new Nordic movement in which rethinking the sources of products was central. In the most recent Michelin Guide (2023), the city has fifteen restaurants that have earned a Michelin star. All of these Michelin-starred restaurants were invited to participate in the research, and four of them consented. The first researcher conducted in-depth interviews with the chefs from these restaurants, three of them at the venues and one of them online. Table 1 below shows the restaurants. At Alchemist, the head of development was interviewed. At Alouette, the two co-owners (one of them the chef) were interviewed. At Kadeau, the sous chef was interviewed. At The Samuel, an assistant chef and the co-owners (one of them the chef) were interviewed.

Table 1. Description of the restaurants (adapted from the Michelin Guide, 2023)

Restaurant	Michelin Stars	Type of Cuisine	Description in the Michelin Guide
Alchemist	2 (+ green star)	Innovative	"An immersive and perfectly choreographed experience, eating here is a highly theatrical affair at the pinnacle of destination dining. Dinner is divided into acts and set across several locations, including a balcony, a play area and a spectacular planetarium-like dome with images projected onto the ceiling. Dishes are technically complex and highly creative with dramatic contrasts. Chef-owner Rasmus Munk believes food is a great way to communicate with people, so accompanies his cooking with statements and ideas about the world."
Alouette	1 (+ green star)	Modern cuisine, Creative	"There's an underground, rock 'n'roll vibe to this modern restaurant hidden away in the old industrial part of town, which is housed inside a former envelop factory and accessed via a graffiti-covered lift. The experienced chef works closely with local farmers to ensure ingredients are at their peak, and dishes are pared-back, balanced and sublimely flavoured, with sauces being a highlight. The open fire is used to great effect."
Kadeau	2 (+ green star)	Creative, Modern cuisine	"This beautiful restaurant offers a memorable, multi-course dining experience; the chefs are on display in the open kitchen and often serve and explain dishes themselves. The owner hails from Bornholm and he and his team are passionate about the island's ingredients, which are dried, cured, preserved, smoked and pickled to maximum effect in complex, skillfully crafted dishes. Serene, well-paced service and a warm atmosphere help to make this an occasion to remember."
The Samuel	1	Creative, Modern cuisine	"Named after the chef-owner's first-born son, this red-brick villa has a herb garden, a vintage interior and a superb on-view cheese cabinet. The set, multi-course menu offers dishes which might be simple to look at but are full of creativity and distinct natural flavours."

In total, seven interviews were conducted, together with a visit to the facilities of three of the restaurants (Alchemist, Kadeau and The Samuel). These visits were important, given our social-material perspective, and allowed for detailed and concrete accounts of how culinary creativity was performed in these specific settings. The interview questions were designed by the researchers, drawing from existing academic literature mentioned in the previous section, and with particular attention to concrete examples of practices of creativity and the suppliers' role in these processes. In particular, the chefs were asked about the supply chain management, the process of designing the dishes, and the promotion of restaurant values through the

relationship between chefs and suppliers.

Data collection and analysis

The interviews and the visits were conducted in the months of November and December 2022 and January 2023. Each interview lasted approximately one hour, and all conversations were conducted in English, except one which was in Spanish and later translated into English. All the interviews were recorded and transcribed for later analysis. As part of the analysis of the interviewees' responses, a thematic analysis was performed. The quotations from the interviewees were employed by the researchers to exemplify the results in the next section, together with visual materials obtained from the first researcher while he conducted the field work at the restaurant facilities. In particular, guided by the research objective and the relevant literature, the results derived from the interviews were organized into three thematic categories to structure the findings: (1) the notion of agriculture as the starting point of restaurant menus; (2) the meanings of quality as per their role in fine dining supply chains; and (3) the connections that arise between a chef's creativity and the origin of the ingredients.

Results

Agriculture is the starting point

The restaurants that participated in the study showed a deep appreciation for the origin of the products. Yet the importance they gave to locavorism clearly differed. Kadeau was one of those focusing most explicitly on origin and locality in their concept. It has a sister restaurant (the original first) on the Danish island of Bornholm, where most of the produce comes from and where the team gets its inspiration, as the Kadeau participant explained:

> *What we do in Kadeau Copenhagen is to show what we do in Bornholm. We are a restaurant that is deeply rooted [in the Bornholm identity]. We have our garden that has evolved over the years, which is quite large and what we do is to preserve. That's what it's all about, the product. The garden always comes first.*

Kadeau's sous-chef affirms that 'if you want to have the identity of a place, you have to cook with local products'. In this sense, the menu design relies heavily on nature, and the preserves they prepare in Bornholm are available at the restaurant (see Figure 1):

> *We try to make everything fresh. We have one of our chefs who became our gardener a few years ago, and he has a garden-wide programme, and we have all the preserves on Bornholm. So, the way it works in Copenhagen is, once a week we have a delivery from Bornholm. The gardener tells us 'well, we have so much, so much, so much left'. And then we base the menu on what we have. Also, through the years, we learned that if something ends, it's not the end of the world, we just go for what we have. So, I think that Kadeau's idea of using preserves during the winter, plus what's in season, for example, now that it is November, the mushrooms are running out a bit, but the ducks are there. Then you combine what you have in season plus all the work that was done in spring and summer.*

Figure 1. Preserves at Kadeau

Source: Fusté-Forné

Seasonality connects intimately with the rhythms of nature, and the staff at Kadeau are encouraged to stay in Bornholm for some time to learn about all these processes firsthand, with the intention of improving the experience at restaurant's table. It is vital for creating the Bornholmian experience that not only the products come from the region, but also that the staff have a strong sense of the place of Bornholm and the environment in which the products are sources; the staff should to a certain extent 'be rooted' in this milieu. As the sous

chef commented, 'when you talk to people about something you did, it's very different from something you learned how to do by reading, right?'. This is observed in Japanese quince cultivated in Bornholm, which is on display and served at the restaurant (Figure 2). Handmade preserves show the importance of 'doing' through a commitment to culinary authenticity and craftsmanship. These preserves not only reflect the restaurant's origin but also how the restaurant supports local food heritages and traditions. In Kadeau, this product appreciation is also manifested in the use of the black currant, as the sous chef explained, 'I think there is no other restaurant that uses it as much as we do, we use the leaves, we use the berries, and we also use the wood to make oil'. In this sense, black currant is the identity product of the restaurant which comes from the knowledge skills they obtain at their own growing facilities in Bornholm.

Figure 2. Japanese quince

Source: Fusté-Forné

The owners of Alouette also highlight the importance of the knowledge the restaurant gathers from the farmers with whom they work. They explain that their relationship with the farmers and producers is quintessential for their creative work:

> *We see the passion of people, they are very passionate about the land, and we always want to put farmers first. We want to use our dishes as an opportunity to draw focus to individual farms and celebrate sort of the diversity and terroir of Denmark.*

The restaurant was actually founded on their indignation as to the difficulties faced by alternative biodynamic farmers. The owners mentioned that one of their favourite farmers, a small biodynamic business, had to close, because certain clients failed to pay for their products. This episode saddened them, and they decided that the mantra for their business would be to always 'put the farmer first'. Hence, in Alouette's modus operandi there is almost a political ambition for changing the food system: 'We want to use our dishes as an opportunity to draw focus to individual farms and celebrate sort of the diversity and *terroir* of Denmark'. They stress that they are deeply engaged with all their suppliers, and they visit all the production spaces, explore what farmers have and what they may have. Sometimes they even interfere with the production, for instance by providing the seeds of what they would need in the restaurant and then purchasing the produce back after harvesting.

The way they shape the creative work in restaurant menus is manifested through the connection with farmers. Alouette's chef gives an example of what it means 'to put the farmer first':

> *a farmer called me and said, 'we have a hundred kilos of plumbs that don't have a home, because you know farming is… you start the season and don't know how much you're going to produce, you don't know how the season is going to be, you don't know who will buy it', and if we want to try to make farms more sustainable and efficient businesses we have to be very active actors in that, and so with that farm we took all the hundred kilos and we found a solution for them in house, so we got a wonderful product, they don't have any waste, they don't have to pay for a freezer or cooler or store… and sustainability is an opportunity to not just look at what we do in house but to look one step further in the full chain and try to create solutions for full systems.*

Here, the social bond and the material surplus lays the ground for an unusual creative process which is driven not by the chef's singular vision of a dish, but by a material and social context which is embedded in a collective agreement. The menu of the restaurant is changed because of this context, as plumbs became the dessert for a period, which was not the plan. Hence, the relationship between chefs and suppliers is also about the interconnectedness of the restaurant and its suppliers, beyond their role as actors in the market. They are members of the same food system and share a responsibility for making it sustainable. While this material aspect explains the farmers' relationships with the land and the produce that reaches consumers, the socio-material approach also includes the machinery, the physical spaces of farms, and the natural elements that the suppliers engage with daily, such as soil or water, and weather conditions that shape farming practices

and decision-making processes through the food supply chain.

In particular, we also noticed that in all the restaurants, seasonality plays a part to the design of dishes and how they change throughout the year. At The Samuel, although it seems a little more 'chef centered' than Alouette and Kadeau, it is the chefs' and the sommeliers' vision, rather than local available produce, that shapes the menu. However, they do remain sensitive to seasonality. An example is seafood, as an assistant chef at The Samuel explained 'There are certain times of the year when scallops are better than other times, for example, it can be hard because in Norway when there is bad weather it's hard to get scallops and then we need to work it out and change the menu a bit'. While seasons play a role for everyone, it is clear that Alouette and Kadeau are the most ambitious in this regard and let seasons dictate the menu to a far greater degree than for instance The Alchemist and The Samuel. The chef at Alouette explained that:

> *We like to joke that Denmark has like 20 micro seasons and each of them lasts about two weeks except for one which lasts you know three four months, which is winter, but the reality is that when products come into season here in Denmark that window is quite short and we want to work within that moment, so we are constantly transitioning our dishes, we have a five course menu plus snacks, sweets and bread, a total of ten servings, we transition some dishes per week on a constant basis, that means that often when guests come, anything from eighty to hundred per cent is different from one month to the next.*

The appreciation of local products and local landscapes also comes from the Nordic movement manifesto, as described by the head of development at Alchemist. However, there are not many references made to the New Nordic in the interviews, mentioned as the foundations of the current Copenhagen culinary scene.

> *We have amazing producers all over the country, small producers that make amazing cheese or meat, or amazing vegetables, and I think maybe thirty years ago you were not as aware of these things as you are now and I think that is how the Nordic movement really has made all our chefs aware of the origin (Alchemist).*

This signals that although the new Nordic movement and its focus on locavorism have changed the awareness of local food in the Copenhagen context, it is used in different ways by the restaurants and to generate very different types of restaurant identity, creative processes, and storytelling.

Balancing sustainability, quality and locality

The restaurants work with proximity products, and even they have their own cultivation spaces, such as Kadeau and their garden in Bornholm. However, even in this case, it is underscored that

> *realistically not everything can be from the island. Then we work with suppliers on… many organic farms around Copenhagen. And if the products cannot come from Denmark, they always come from the Nordic region. There is a lot of seafood that you don't have in Denmark. It needs much colder waters such as Norway, Iceland (the interviewee at Kadeau).*

In this respect, all the restaurants affirm that they look for quality products, which is also observed in the narrative of The Samuel which, with its strong connection to French cuisine, is probably the least locavore of the restaurants in our study. The chef affirmed that they are restricted by quality only (not locality): 'where we can get the best food, and also wine'. There are multiple players when it comes to food and beverages, and quality and sustainability often go hand in hand.

> *When you look at ten different caviars of foie gras suppliers, eight of them are well, now it has become easier to do the right thing, because a lot of the producers have learned if you do this right, if you do not use pesticides and if you take care of the animals when you have them, then you get a good product and that is basically what we want (the co-owners at The Samuel).*

The restaurants are also concerned about the environmental practices of their suppliers, and that they work 'not just for business', as our interviewee at Kadeau pointed out:

> *For example, spider-crab. That is not available in Denmark because it needs much colder water. So there we go directly to Norway. There are also some types of clams that are not here. We worked with a gentleman who was going to do the diving by hand.*

This approach with regard to the suppliers also contributes to having unique products which are normally inaccessible. 'I mean, it's not that they can't be found elsewhere, but also the way they're treated is all super… just for the restaurant. It's not like they're doing this work to sell it to the world', commented the sous chef at Kadeau.

They also establish meaningful relations with the suppliers. The narrative about the product and its origin is important, but so are the facts as to who is behind it and how they work and how they care about the environment and everything that creates added value: 'With farms we are always talking to farmers, to people who have… we go to see places. Also to tell you an experience, we want to see how the whole process is and how the animals live', explained the sous chef at Kadeau. In a similar way to other restaurants, the representative from the Alchemist reports that

> *we work together with a fishing company that really strives to do sustainable fished fish so it is also very important for us that we can kind of say that all the fish we use in the restaurant is sustainable that we do not overfish, also the techniques (head of development at the Alchemist).*

There are of course various considerations in relation to sustainability. The sustainable practices of the supplier around the product is one. Transportation is another. Here it seems that although local food is a strong ideal for Kadeau, this ideal can be bent due to concerns for quality, by getting the fish and shellfish from the northern part of Norway. In doing this equation, Alouette seems always to prioritize locality: 'We only use cheese that is grown locally and organically, we have one farm, keep cows in the field, you take only ten litres of milk per cow per day, so you get the best milk'.

Figure 3. Cheese cabinet at The Samuel

Source: Fusté-Forné

By contrast, Alchemist and The Samuel prioritize the quality of the product regardless of its origin, although they do aim for local or regional products. They also insist that the sustainability of the product remains central. The participants from The Samuel furthermore explained that sometimes they could change the ingredients to secure quality: 'If you don't get first class scallops you change the scallops for another ingredient'. She also commented that 'it's the same with cheeses, it's also again about the weather, what the cows eat, like how the milk is, and how the cheese will be'. This is illustrated in the restaurant with a cheese cabinet that includes many different cheeses, most of them from France (see Figure 3), which again demonstrates that what they see as quality is more important than locality. Alouette, on the other hand, exclusively serves local cheeses.

The sustainable choices are not only visible in relation to the suppliers, but also in the management of the restaurants.

> *We are really a small team and we are a small restaurant, for us it's easier than others I assume to be sustainable, not using too many tea towels, and the greens, we use all the scraps, the leftovers, we use all that stuff, for us it's simple to keep it the right way (The Samuel representative).*

Alouette worked with Copenhagen University to create a carbon emissions report for the restaurant. This

environmental quality awareness is also illustrated by the head of development at Alchemist:

> *some products we get from France, like pigeons, or Spain, like ham, if we find that products are better than the ones you can get in Denmark, we strive to do seasonal regional food here at the restaurant as much as possible because it just tastes better and is also kind of the philosophy that we do not want to have avocados flying from South America if we can get a similar product in Denmark, that is better (Alchemist).*

This is also reflected in a variety of products from Denmark, as the Alchemist representative affirmed in relation to seasonality, getting back to agriculture and nature as the starting point of the culinary experience:

> *All the fish we have and shellfish are amazing here from Denmark, we have amazing asparagus in the season, we have amazing potatoes, we have incredible celery and stuff like that in the wintertime. I think it's just seasonal, we have a lot of very interesting products that we can offer here.*

The chef's creativity between tradition and inovation

At The Samuel, 'tradition and innovation are in the chef's mind', affirmed the assistant chef interviewed. While tradition is evocative of the inspiration in French gastronomy, as explained in the introduction, innovation represents the incorporation of new products and culinary techniques. The chef at Alouette explained that the expertise also comes from knowledge about the local environment and context, which again relies on the relationship between the restaurants and their suppliers:

> *I had to learn a lot about the way that people worked in Denmark, the way that people ate in Denmark, the way that products were grown and appreciated or not in Denmark, so I spent the first three or four years in this country really having to research and understand the land, the people and the systems, and I did that by working in a couple of different restaurants in the role of chef but also doing some consulting, not just in Copenhagen but all over the country, in a full range of restaurants.*

Although they have distinct starting points, the restaurants all emphasize the whole value chain, from production to consumption, in the design of the menus, including the meaningful connections with the territory as explained in the previous sections. This means that they need to rely extensively on nature and its changes, in terms of the products provided and how they change not only over the seasons, but in some cases almost from day to day. This shows the whole value chain and acknowledges the pivotal role of the environment. The sous chef at Kadeau commented that 'you also have to have a little open mind, so that you also work with nature. And there are [unexpected] things that happen'. This means that there is a need to be able to adapt to the situation, for example, a lack in supply, which may also encourage creativity and innovation.

The owners at The Samuel explained that if there was a shortage, they saw this not as the exception but rather as an integral part of their ongoing work process:

> *If you see what the menu is and you come back next week, and there are some changes in the dishes, that is due to our creativity and path changing, nature, instead of buying something in a pocket, that is part of our DNA …the ability to always adjust and change. When you book it says changes may occur on the menu, and it may not even be a storm [that changes the availability of a product] but his mood can change, it's part of our DNA, we're not fixed, it has to be this menu for next month, no.*

In some cases the dishes could change to pair a specific wine. It stands out from the Kadeau interview that the product that is available is the source of the menu and is then developed through a collective process with the possibility of adapting to contexts and situations. This represents a dialogue between tradition and innovation, a conversation rooted on the distinct creative processes that, either traditionally or innovatively, inform the relationships between chefs and suppliers.

> *First you think about the ingredients, about what you can have, and then, when you have these things, you think about what you can do. Here comes the product first and when you have the product you say what we do (sous chef at Kadeau).*

What they do is from what they have, after a brainstorming of ideas among the staff. This identity reflects the leitmotiv of the restaurant.

> *You know what Nikolaj [the chef] always says that sticks in my mind, he always says 'perfect imperfect', and it's very difficult, like it has to be perfect, but I don't know, it can't be, it doesn't look perfect, but it's perfect. That's Kadeau, he always says perfect imperfect.*

There can always be something better or something different, especially when you work with nature, which is unpredictable.

> *And it is always adapting and the things that are done are not closed, do you understand me? So it's not the end. That is what I always say: here what we do is not the end of the world. When you create a dish and one of the ingredients is missing, it's not like you have to create another dish, no, you adapt to the situation with what you have. If you need acidity, you've got vinegar, you've got berry juice, you've got, you've got pickle juice, then you've got a billion chances to play with that.*

Innovation also comes from day to day practice which is observed in the test kitchen at Alchemist, where they also work with unusual ingredients, such as butterflies (Figure 4).

> *We use so many products… we let's say for instance we have a dish with the eye, we changed it four to six times a year with seasonal produce exactly to ping pong the season for example with asparagus or long fish haul, it is difficult to choose one ingredient that would be typical for Alchemist because there isn't any locally because we change as much as we can seasonally. (head of development)*

Figure 4. Butterflies at Alchemist

Source: Fusté-Forné

In this context, he affirms that innovation is also crucial, which emerges as a bidirectional process between chefs and suppliers.

> *We always try to innovate, you can change tradition with taste, I think that for all the dishes we do here at the Alchemist it always originates from some that we think tastes really good, feel people like to eat, it can be challenging but it has to taste good.*

This brings us back to the quality of the products discussed in the previous section.

Discussion and conclusion

Our study of the role that suppliers play in fine dining chefs' creative processes shows that all the case studies, the chefs appreciate, and celebrate, quality products and are interested in the origin of the product (see, for example, Fusté-Forné and Noguer-Juncà, 2023). While the results reveal the relevance of the suppliers in the creative process of gastronomy (Madeira et al., 2022), the relationship between the chefs and the suppliers differs, notably regarding the centrality of suppliers in the development of restaurant menus and storytelling. This contributes to the understanding of the processes that lead to innovative creativity (Vargas-Sánchez and López-Guzmán, 2020). For example, Kadeau is evocative of an island's (Bornholm's) micro-cosmos, and its narrative inspires a dream of self-sufficiency illustrated by its own garden on the Danish island. This self-sufficiency is also exemplified in unique products, such as the black currant. Similarly, the focus of Alouette is on agriculture, and the restaurant's philosophy shows that it does largely allow the farmers' products to dictate the creative process, and sees it as the chef's social responsibility to adapt to the available material. This accentuates the role of seasonality. On the other hand, for Alchemist and The Samuel this seems to be

less essential. While they demonstrate interest in origin, the role of quality is central to their selection of products. Here the creative process seems to start in the kitchen with an idea of the chef, and then it is a matter of finding the best quality products and the best suppliers, bearing in mind prices as well (see Abbate et al., 2019). In this approach, the supplier is secondary in the creative process. This does not necessarily mean that the supply chain is less relevant. At Alchemist, for instance, several dishes comment on unsustainable practices in the food system, like their dish with langoustines from the Danish Island Læsø, famous for this delicacy. The dish both celebrates this local Danish food, and also criticizes certain fishermen's trawling that destroys the seabed.

Our main contribution is to point out that while all the chefs in our study see the supply chain as extremely important for their restaurant, they perceive its role in the creative process very differently. If we resume the four different restaurants and their positions about the relationship between suppliers and the creative process, we have to bear in mind that all the restaurants are within a paradigm that values sustainable and local products. At one end of the spectrum we have Alouette that represents what could be called 'locality and farmers-first' approach. The restaurant is driven by a wish to support small producers, with particular concern for the environment. It seems that its goal is to help small producers and then adapt everything else around that goal. For instance, it could 'adopt' a batch of 'homeless' plums, even though it did not have plums on the menu. Thus, the supplier shapes the creative process.

Kadeau's position could be called 'self-sufficiency, local storytelling and collaborative creativity'. The restaurant's uniqueness is the powerful storytelling linked to the identity of Bornholm, even though it is situated in Copenhagen, and the ambition to be self-sufficient, at least to some degree. The Kadeau chefs also emphasized that when they used products from other suppliers, it was essential to visit them, not only to secure quality and sustainability in the production, but also to enhance the storytelling around each dish (see, Orea-Giner et al., 2024). Storytelling linked to the local area thus seems to play a more explicit role than for Alouette. In the creative process, the ingredients are the starting point, which are then explored in a collaborative creative process that materialises at the table (Madeira et al., 2021).

The Samuel and Alchemist have a more 'quality first' approach. Although both are engaged in local and sustainable food, they are not as dogmatic about it at Alouette. For instance, The Samuel mostly prefer to serve French cheeses over local Danish ones, because they have found French cheese to be of higher quality. This also represents a combination between national and international cuisines, which in turn evokes a dialogue between tradition and innovation (see Leschziner, 2015). Both restaurants are open to replacing a product with another one, according to season and supply. Many of the dishes at Alchemist have a strong conceptual and performative dimension; for instance the emblematic 'tongue kiss', a tartar that is served on a silicone tongue and has to be licked off by the guest without the use of forks or any other cutlery. The actual ingredients of the tartar change frequently and according to season, but the concept and the storytelling stays the same. This is notably because the most important element is the transgressive nature of the dish, rather than the ingredients or their origin as in the case of Kadeau and its Bornholm identity.

At Alchemist, the starting point for the creation of dishes is very often not the ingredients (although they might be, as in the example of langoustines from Bornholm), but rather a concept or an idea, as in the case of the tongue kiss. The restaurant then tries to adapt the idea to seasons and supply. At The Samuel, the wine plays a central role in the creative process and is often the starting point; hence, the aim is to make a dish that fits a specific wine. This is also a unique approach which does not take a local terroir or product with various potential applications as inspiration; rather, the inspiration is found in a 'finished' product originating far from the Danish shores. This reflects not only the complexity of the creative process, as stated by Leschziner (2015), but also the dynamic and collective nature of creative processes (Tanggard, 2015), which informs and is informed by the relationships between people, places and practices.

We argue that a socio-material approach in the context of restaurants affords a framework to understand how human and non-human elements interact to shape the dining experience. This perspective moves beyond human agency – such as that of chefs and suppliers – to consider the role of materialities, including kitchen equipment, dining spaces, ingredients, and sensory elements that are part of the spaces and contribute to the co-creation of experiences in restaurants. The socio-material perspective highlights how the provenance and the sourcing of ingredients embody connections to agricultural practices and sustainability discourses, which brings attention to overlooked structures of restaurant experiences, such as the relation between food stakeholders.

This leads us to call for more research into the interaction between chefs and farmers in fine dining and the restaurant industry more broadly. As the fine dining industry is increasingly faced with sustainability agendas and criticism for being environmentally and socially unsustainable, it seems important to look for ways that, through the creative culinary process, are a 'raison-d'être' for the industry to become more sustainable. In our study, these were particularly manifest in the examples from Alouette. This case can possibly help us to see how creativity can be integrated into sustainable development of food systems (see Gössling and Hall, 2021). We acknowledge that this also demands a shift from the chef-centred ideas of culinary creativity that are often popularised in food media's portraits of culinary geniuses, to the development of a more systemic and holistic understanding of culinary creativity.

In this regard, it seems pertinent to develop the social-material theoretical perspective to underscore the importance of understanding creativity in connection with social and material entanglements, and how closer attention to these dimensions might inspire more sustainable practices. We have demonstrated that culinary innovation is not solely the result of chefs' inspiration but is also co-created with suppliers and the ingredients that nature provides. In addition, the paper introduces an angle to investigate the different sourcing strategies within the context of culinary creativity, and highlights that these might be negotiating tensions between different ideals such as *local farmers* and/or *quality*. Hence this relation is not easy, and is of course highly dependent on local context. For example, the context of urban Copenhagen is obviously distinct from that of the isolated Faroe Islands (Fusté-Forné and Leer, 2023).

From a practical perspective, this research holds several implications for fine dining establishments. The findings emphasize the pivotal and somewhat overlooked role of the supplier-chef relationship in shaping creative restaurants. Moreover, the study highlights the potential of sustainable sourcing practices in fine dining, and restaurants' ability to adopt responsible sourcing methods and integrate these into their creative processes, which also responds to a growing demand for ecological dining options. The paper's findings also call for more research to explore the chef-supplier relationship in other contexts, including beyond the Michelin restaurant scene, where chefs are more at liberty to experiment and try new concepts to produce more sustainable food experiences.

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Knowledge on agroecology disseminated by the FAO: Assessment from a human-nature relationship perspective

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Abstract

This study assesses the knowledge on agroecology disseminated by the Food and Agriculture Organisation (FAO) through its Agroecology Knowledge Hub (AKH), from a human-nature relationship perspective. It focuses on the knowledge contained in scientific articles published between 2014 and 2023. Using a theoretical framework based on the concept of human-nature relationship and a methodology rooted in content analysis techniques, the study seeks to answer the following research question: What knowledge on agroecology that contributes to the reconnection between humans and nature has the FAO disseminated during the period 2014-2023? To this end, the study: (1) depicts the main trends and geopolitical distribution of the knowledge disseminated through the AKH during the specified period, (2) reveals the human-nature relationship perspectives embodied in this knowledge, and (3) delves into the state of this knowledge. The findings suggest that the knowledge disseminated through the FAO's AKH does not fully contribute to the reconnection between humans and nature within the agricultural realm. The discrepancy may be attributed to patterns of coloniality of knowledge, the preference for disseminating knowledge rooted in positivist/post-positivist foundations and in an extractivist logic and a mechanistic view of nature, and the potential perpetuation of the Western worldview in the production of knowledge. The study concludes by urging the FAO to take ethical responsibility for its knowledge dissemination, and recommends that knowledge producers challenge prevailing theoretical frameworks and epistemological positions guiding the generation of knowledge on agroecology.

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INTRODUCTION

The socio-environmental issues associated with conventional agriculture, characterised as being capital-intensive, large-scale, and highly mechanised (Knorr and Watkins, 1984), have epistemological roots. They emerge from ontological and epistemological criteria that establish an essential division and differentiation between humans and nature. Moreover, these criteria establish a foundation for knowledge that is detached from the social and natural bases underlying the cognitive process, giving rise to an extractive logic and mechanistic view of nature. This in turn leads to a destructive relationship between humans and nature within the agricultural realm (Domptail et al., 2021; Losada et al., 2023).

Several alternatives have been proposed to overcome these socio-environmental issues, such as climate-smart agriculture, sustainable intensification of agriculture, and organic agriculture, among others (Bernard and Lux, 2017). However, they fail to address the root problem of conventional agriculture, which can be understood as the disconnection between humans and nature (Nieto et al., 2013; Souza, 2018).

Agroecology, on the other hand, an initiative proposed from the global South as a response to the environmental, economic and social problems caused by conventional agriculture (Gómez et al., 2015; Guzmán et al., 2000), claims to be fundamentally different (Domptail et al., 2021; Leff, 2002). Based on alternative rationalities and perceptions of nature, it stems from ontological and epistemological criteria that reshape the relationship between humans and nature, to reconnect them (Aparecida et al., 2020; Domptail et al., 2023; Guzmán et al., 2000; Leff, 2002; Nieto et al., 2013; Souza, 2018). Agroecology is therefore a viable alternative to address the socio-environmental issues associated with conventional agriculture, as it tackles the root problem by reconnecting humans and nature within the agricultural realm.

Furthermore, agroecology transcends traditional scientific boundaries by incorporating non-scientific knowledge, which includes technical and spiritual wisdom passed down through generations by people engaged in agriculture (Fernández et al., 2021; Losada et al., 2023; Ruiz-Rosado, 2006). Unlike conventional science, which often disregards non-scientific knowledge, agroecology draws on this wisdom to strengthen its epistemological foundation and restore the connection between humans and nature in agriculture (Berman, 1987; Losada et al., 2023; Nieto et al., 2013).

Although agroecology emerged as a discipline in the 1970s, it did not achieve international prominence on the international agenda until 2014, primarily owing to the international forums organised by the Food and Agriculture Organisation (FAO) (Gómez et al., 2015; Gómez et al., 2013; Wezel and Soldat, 2009). This increased visibility prompted the FAO to establish the Agroecology Knowledge Hub (AKH) which disseminates, inter alia, knowledge from scientific articles produced worldwide to support the development of agroecology (FAO, 2023).

Debates on the misinterpretation and co-optation of agroecology, including its use for greenwashing and perpetuating conventional agriculture (Alonso-Frajedas et al., 2020; Giraldo and Rosset, 2016; Nyéléni, 2015), have nevertheless raised questions about whether the knowledge disseminated through the FAO's AKH truly supports agroecology's purpose of reconnecting humans and nature within the agricultural realm. Additionally, there are concerns that the guiding concepts and values behind knowledge production might legitimise political agendas that exacerbate problems like socio-environmental issues caused by conventional agriculture (Eschenhagen, 2022). It is therefore crucial to assess the knowledge disseminated through the AKH; specifically, from a human-nature relationship perspective.

In view of this context, this article addresses the following research question: What knowledge on agroecology that contributes to the reconnection between humans and nature has the FAO disseminated during the period 2014-2023? To answer this question, three specific objectives are outlined: (1) to depict the main

trends and geopolitical distribution of the knowledge on agroecology disseminated through the AKH during the specified period; (2) to reveal the human-nature relationship perspectives embodied in this knowledge; and (3) to delve into the state of this knowledge, determining its meaning for the reconnection between humans and nature and the discipline of agroecology.

STATE OF THE ART[1]

Multiple studies have aimed to examine, comprehend, define and classify human-nature relationships (Barbour, 1980; De Groot, 1992; Eversberg et al., 2022, among others), leading to a variety of interpretations. Many of these interpretations rely on limited and simplistic criteria, such as the positionality of humans and nature, and the nature of their bond (Flint et al., 2013). Other interpretations, while grounded in philosophical bases, power dynamics and material foundations, remain highly complex and challenging to operationalise (Eschenhagen, 2017). In contrast, some interpretations, such as Muradian and Pascual's (2018), incorporate ontological aspects and rely on comprehensive and operational criteria, including interests and practices, among others.

When studying agroecology and the human-nature relationship together, some studies have problematised these concepts (da Silva et al., 2020; Domptail et al., 2023; Garcia-Polo et al., 2021; Giagnocavo et al., 2022; Sivini and Vitale, 2023; Steinhäuser, 2020; Tifni, 2023; Vieira et al., 2016). Nevertheless, the assessment of the state of knowledge on agroecology from a human-nature relationship perspective remains an under-researched topic within these studies.

While numerous studies in the field of agroecology have focused on content analysis, only a small portion of them have examined the knowledge on agroecology contained in scientific articles (Fernández et al., 2021; Gallardo et al., 2018; Gallardo et al., 2019; Gazzano et al., 2022; Pinzón et al., 2023). This indicates that research endeavours aimed at assessing the knowledge on agroecology through content analysis techniques are relatively few and far between.

None of these studies employs the concept of the human-nature relationship as a theoretical framework to assess the knowledge on agroecology that contributes to reconnecting humans and nature. They moreover focus exclusively on the knowledge contained in scientific articles disseminated through academic databases and agroecology congresses, suggesting that the knowledge disseminated by the FAO through its AKH has yet to be assessed. It is worth noting that while some studies (Loconto and Fouilleux, 2019) have explored FAO initiatives, they have not examined the knowledge on agroecology contained in scientific articles. Additionally, the studies in question lack a temporal framework, indicating that research focused on specific periods is relatively uncommon in the academic literature.

Based on the above, there is a clear lack of studies assessing knowledge on agroecology from a human-nature relationship perspective, despite academic efforts to develop suitable frameworks to conduct such studies. Additionally, no comprehensive content analysis has been conducted on the scientific articles disseminated through the FAO's AKH, particularly one that uses the concept of human-nature relationship as a theoretical framework (to assess the contribution of the knowledge on agroecology to reconnecting humans and nature within the agricultural realm) and focuses on the period 2014-2023 (when agroecology gained prominence on the international agenda). Therefore, this article significantly contributes to addressing this critical knowledge gap.

[1] This section is grounded in a thorough search in the Web of Science and Google Scholar databases. The search aimed to find studies exploring human-nature relationships in agroecology, and efforts to assess knowledge on agroecology through content analysis.

THEORETICAL FRAMEWORK

Human-nature relationship: definition, types and grammar

Muradian and Pascual (2018) define human-nature relationships as the general ideas or structures that shape the perceptions and behaviours of humans towards nature, influenced by cognitive processes configured by a complex arrangement of social conventions inherent to particular social groups and periods. They note that the relationship between humans and nature is often viewed as a dichotomy between intrinsic and instrumental values – a perspective that does not resonate with many laypeople.

Muradian and Pascual (2018) also suggest that decision-making involves considering the properties of human-nature relationships (preferences, principles and virtues) rather than the inherent worth or instrumental benefits of nature. To address this, the same authors propose seven types of elementary and discrete human-nature relationship, each with its own grammar: Detachment, Domination, Devotion, Stewardship, Wardship, Ritualised exchange, and Utilisation.

The Detachment relationship is characterised by an indifference towards nature, since non-human entities are perceived as irrelevant. This attitude may stem from ignorance or lack of experience. In contrast, the Domination relationship reflects a sense of human entitlement over nature, coupled with a fear of it. This relationship is marked by a confrontational perspective, viewing nature as an obstacle to progress.

The Devotion relationship, on the other hand, portrays nature as possessing agency and divine attributes that transcend human capabilities. This dynamic is rooted in religious rituals and taboos that shape the foundational social conventions of human-nature interactions. The Stewardship relationship presents a different view, where nature lacks inherent agency, yet humans see themselves as integral to and reliant upon it. This interdependency fosters a sense of responsibility expressed through nature-centric management principles and self-imposed behavioural constraints.

The Wardship relationship shares similarities with Stewardship but emphasises a preference for untouched or pristine states of nature. It advocates for protecting natural spaces by isolating them from human activities or managing species for non-utilitarian purposes, acknowledging their intrinsic rights. The Ritualised Exchange relationship involves humans attributing agency to nature and engaging in exchanges governed by ritualised codes of equality, balance, and reciprocity, rather than proportionality and ratios. These exchanges aim to maintain cosmic harmony and compensate nature for its vitality shared with humans.

Finally, the Utilisation relationship is based on a utilitarian rationale for appropriating nature's goods and services through extraction and consumption. Nature is commodified for exploitative and conservationist purposes, highlighting instrumental values and a clear human-nature distinction. This utilitarian perspective underscores the exploitation and commodification of nature's resources.

As mentioned above, each human-nature relationship has its own grammar, which refers to the social conventions, rules, and norms that determine how and when humans relate to nature (Muradian and Pascual, 2018). The grammar is composed of five basic dimensions that characterise different domains of human-nature relationships: ontology, goal orientation, emotional drivers, practices, and main mode of interaction, and are governed by specific sets of social conventions (Muradian and Pascual, 2018).

Muradian and Pascual (2018) argue that Ontology refers to the cognitive framework defining the boundaries between self and otherness. It involves the degree of differentiation between humans and nature, whether nature (non-human entities) is considered to have agency, and how nature is positioned in relation to humans. For this article, this dimension can be interpreted as the position or limits established by the researcher (author of the scientific article) between humans (including himself/herself) and nature. Goal Orientation

encompasses the overall goals guiding human decision-making processes and evaluative criteria. In this study, it translates to the general purpose, preference, or perception regarding nature that motivates or guides the researcher throughout the research development. Emotional Drivers involve the emotions and state of mind influencing behaviour and decisions, as opposed to purely rational thinking. In this work, this dimension refers to the emotions or state of mind toward nature that the researcher is influenced by or intends to promote through the research. Practices pertain to formalised social conventions setting normative boundaries, especially concerning responsibilities and rights. In this article, they can be understood as the actions and conventions toward nature that the researcher encourages or suggests, based on their findings. Main mode of interaction relates to how the relationship is operationalised or made practical. For this study, it involves potential ways to operationalise the relationship between humans and nature, based on the researcher's arguments or findings. Table I shows the seven human-nature relationships and their particular grammar.

In summary, each of the seven types of human-nature relationship is characterised by specific assumptions within each dimension of the grammar. Consequently, the seven relationships proposed by Muradian and Pascual (2018) are discrete. Additionally, these relationships are elementary. According to the same authors, these relationships can be identified across cultures because they encompass key cognitive structures that underlie human-nature relations.

Table I. ***Types of human-nature relationship and their grammar***

	Ontology						
Human-nature relationship	**Human-nature distinction**	**Nature with agency[2]**	**Position of nature vis-à-vis humans**	**Goal orientation**	**Emotional drivers**	**Practices**	**Main mode of interaction**
Detachment	Yes	No	Nature as inexistent	Nature perceived as not important	Indifference	Lack of formalised practices	Isolation
Domination	Yes	No	Hierarchical relation: nature as subordinated	Preference for human dominance over nature Nature seen as a threat	Fear	Rules and norms based on human entitlement (for appropriation or annihilation of nature) and superiority	Destruction
Devotion	No	Yes	Hierarchical relationship: Nature as a deity	Preference for circumstances believed to be favourable to deities Nature seen as sacred	Pursuit of transcendence Duty	Sacredness leading to religious practices, including rituals and taboos	Worship

[2] Agency here refers to the attribution of conscious intentionality and social agency to non-human entities, implying that they can define the position of humans and influence or shape their actions (Roldan Muradian and Unai Pascual, 2024, personal communication).

	Ontology						
Human-nature relationship	**Human-nature distinction**	**Nature with agency[2]**	**Position of nature vis-à-vis humans**	**Goal orientation**	**Emotional drivers**	**Practices**	**Main mode of interaction**
Stewardship	No	No	Humans as part of nature	Preference for human restraint to respect nature Nature seen as a system that includes humans	Sense of belonging Identity Care	Rules and norms concerning nature-centred management and self-imposed behavioural limits	Integration of livelihoods with nature
Wardship	Yes	No	Nature as a distinct entity with intrinsic rights[3]	Preference for pristine spaces or conditions Nature perceived as a distinct entity that needs to be protected	Appreciation of beauty Care Tranquillity	Rules and norms that prioritise the preservation of pristine spaces or conditions and emphasise biocentrism	Conservation of natural landscapes Benevolent patronage
Ritualised exchange	No	Yes	Nature as equal	Preference for equality Nature seen as an interactive agent	Duty	Rules and norms grounded in a sense of partnership	Collaboration Pursuit of equilibrium
Utilisation	Yes	No	Nature as a distinct entity with no intrinsic rights	Preference for maximising benefit-cost ratios Nature seen as a provider of resources and services	Needs satisfaction Hedonic pleasure	Rules and norms grounded in rational calculation and market orientation	Utilisation (for exploitation or conservation) Maximising profits

Source: Adapted from Muradian and Pascual (2018)

[3] Rights of nature refers to the inherent entitlements attributed to non-human entities, irrespective of their instrumental value to humans (Roldan Muradian and Unai Pascual, 2024, personal communication). In this regard, nature with rights is reflected when human actions refrain from prioritizing human needs or (economic) interests over the inherent rights of non-human entities.

Knowledge on agroecology for reconnecting humans and nature

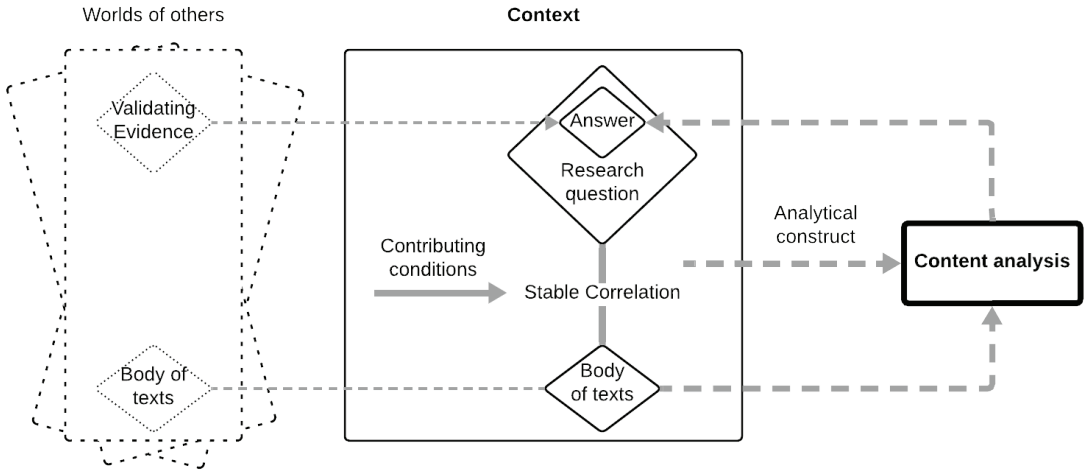
Knowledge is generated from theories grounded in epistemologies entailing particular norms and values tied to specific interests, as noted by Eschenhagen (2017, 2022). Additionally, Muradian and Pascual (2018) argue that these norms and values emanate from various cognitive frameworks that shape the relationships between humans and nature. Accordingly, given that the main purpose of agroecology is to reconnect humans and nature within the agricultural realm, the knowledge produced in this field can be associated with particular human-nature relationships. Knowledge that genuinely contributes to agroecology's purpose would thus be linked to human-nature relationships emphasising interdependence or unity between humans and nature.

According to the typology proposed by Muradian and Pascual (2018), the relationships indicating integration or connection between humans and nature include *Devotion*, *Stewardship* and *Ritualised Exchange*. Therefore, this article posits that knowledge on agroecology should inherently stem from research that integrates assumptions or fundamentals pertinent to the grammar of these three human-nature relationships within its constituent elements, including the research problem, theoretical framework, methodology, and findings.

Content analysis framework for assessing knowledge on agroecology

Content analysis is a research technique used to derive valid inferences from texts within their context, and involves six conceptual components: body of texts, research question, context, analytical construct, inferences, and validation of evidence (Krippendorff, 2019). Figure 1 shows the content analysis framework and its component interrelationships.

Figure 1. Content analysis framework



Source: Adapted from Krippendorff (2019)

According to Krippendorff (2019), the *body of texts* refers to the data available for analysis. In this article, it consists of scientific articles disseminated through the FAO's AKH. The *research question* guides content analysis, determining which texts to read and why. It is outlined in the Introduction section. The *context* is the conceptual environment used to interpret the body of texts and relate it to the research question. It includes: (1) the network of stable correlations connecting the texts to possible answers to the research question, and (2) the contributing conditions affecting the network of stable correlations predictably. In this research, the human-nature relationship framework proposed by Muradian & Pascual (2018) serves as the context, with the seven types of human-nature relationship as the network of stable correlations, and the five dimensions that characterise human-nature relationships symbolising the contributing conditions. The *analytical construct* operationalises the context to generate inferences from the body of texts. It operates as testable mini-theories of the context, verified through coded text features and involving conditional 'if-then' statements. In this article, the analytical construct is represented by Table 1. *Inferences* are premises that address the research

question and represent the content analysis outcome. They are primarily abductive inferences, which involve bridging the gap between descriptive accounts of texts and what they mean or refer to. Content analysis can also generate inductive inferences, which draw general conclusions from specific observations. In this study, abductive inferences determine whether the knowledge in the FAO's AKH articles contributes to reconnect humans and nature within the agricultural realm, while inductive inferences reveal trends and geopolitical distribution of this knowledge, and explore its state. Lastly, *Validation* of evidence involves confirming the content analysis outcomes. In this article, validation is achieved comparing findings within the study or with other studies.

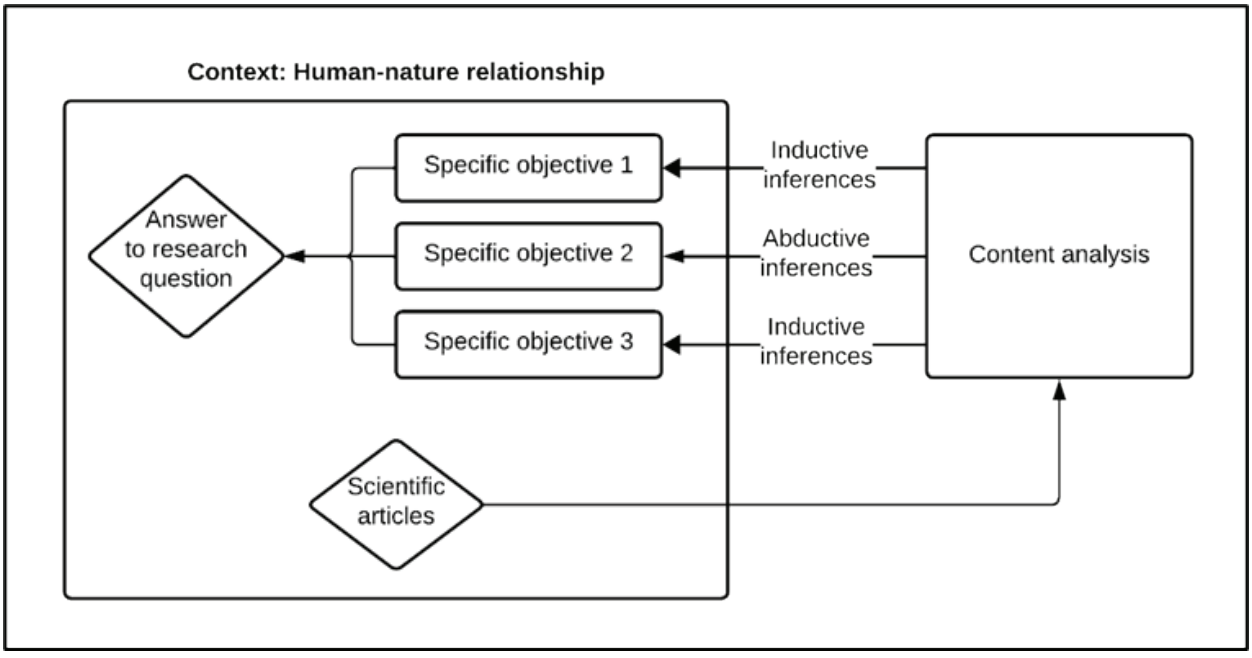
Considering this, content analysis is suitable for assessing the knowledge disseminated by the FAO's AKH. It also verifies whether this knowledge helps reconnect humans and nature in agriculture.

METHODOLOGY

Structure of the study

The structure of the study is simple but sound and effective. The study starts with a research question and three specific objectives, and aims to address them based on the examination of scientific articles. This examination is conducted through a content analysis, assessing the scientific articles within a context determined by the relationship between humans and nature. Content analysis is a suitable method to assess the knowledge on agroecology disseminated by the FAO's AKH, since it aims at revealing the non-explicit meanings or narratives of a text, produced in a specific context (Bernete, 2013). Figure II illustrates the structure of the study.

Figure II. Structure of the study



Source: Own elaboration

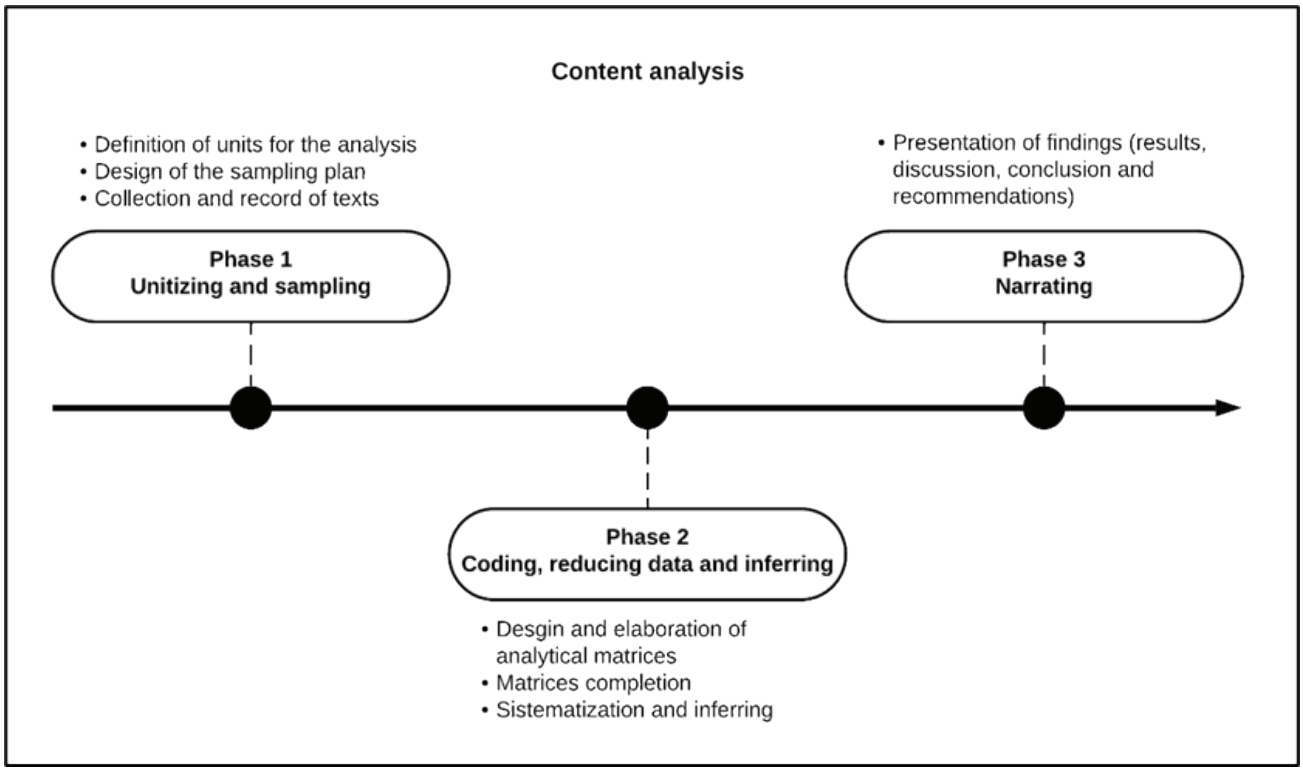
As shown in Figure II, the specific objectives that contribute to answering the research question are met through inferences derived from the content analysis. This study leverages both abductive and inductive inferences, with inductive inferences supporting objectives 1 and 3, and abductive inferences supporting objective 2.

Phases of the study

Although there are various ways to conduct a content analysis, this research adopts Krippendorff's (2019)

method for its simplicity, clarity, robustness, replicability, and academic recognition. The method consists of six steps: unitising, sampling, coding, reducing data, inferring, and narrating. However, in this research these steps have been consolidated into three phases. Figure III outlines these phases and the processes associated with each of them.

Figure III. Phases of the study



Source: Own elaboration

Phase 1: Unitising and sampling

This phase started by defining the units for the analysis, namely the sampling unit, coding unit and context unit. The scientific articles served as the sampling units, with quotations (pieces of writing taken from scientific articles) as the coding units, and the sections of the article from which quotations were taken as the context units.

Later, the sampling plan was designed. This encompasses defining the source and criteria for collecting sampling units. In this study, the FAO's AKH was the source, with criteria focused on publication year (2014-2023), language (English and Spanish), and download availability. The collection of scientific articles was straightforward, as the agroecology knowledge hub's search functionalities allowed filtering by document type, with 'journal article' selected for this filter. Only downloadable articles with valid links and no access restrictions were included, as the study targeted content accessible to regular users. No keyword filters were necessary since the FAO's AKH exclusively disseminates agroecology-related documents.

After outlining the sampling plan, scientific articles were collected using the FAO's AKH search features, which allowed for easy refinement to focus solely on scientific articles. The collection took place from 5 to 31 December 2023. All collected scientific articles were logged in an Excel sheet, documenting key details such as title, journal, publication year, and references, serving as the bibliographic record for the research.

Phase 2: Coding, reducing data and inferring

This phase involved three sub-processes. The first sub-process focused on the design and elaboration of three analytical matrices, namely matrix of trends and geopolitical distribution, matrix of human-nature relationship

and matrix of state of knowledge. The first matrix, related to specific objective 1, was elaborated using eight categories of analysis drawn from Gómez et al. (2013), with which overarching patterns of knowledge on agroecology can be examined. The second matrix, corresponding to specific objective 2, was elaborated using six categories of analysis drawn from Muradian and Pascual (2018), whose work was explained in the theoretical framework (see Table 1). The third matrix, addressing specific objective 3, was elaborated using eight categories of analysis drawn from Roca-Servat and Carmona (2020), with which key research elements for assessing knowledge in development-related fields such as agroecology can be identified. Appendix A provides a detailed description of each matrix's categories. These matrices were created using Microsoft Excel, as specialised text analysis software did not meet the study's needs for streamlined analysis.

The second sub-process involved completing the three analytical matrices by extracting and allocating quotations from scientific articles under appropriate categories, supplemented with data from SCImago[4]. It is relevant to mention that part of the third matrix, particularly the epistemological position category, required the application of Guba and Lincoln's (1998, 2002) fundamentals to properly characterise the quotations. Appendix B details these fundamentals.

The third subprocess centred on systematisation and inference, involving the reduction and analysis of quotations accumulated in the three analytical matrices. Each matrix was independently analysed to generate abductive inferences from the human-nature relationship matrix, and inductive inferences from the trends and geopolitical distribution matrix and the state of knowledge matrix. These inferences were supported by graphics depicting trends over time and proportions. Before analysing the matrices, an introductory analysis of the bibliographic record was conducted, describing the characteristics of the sample obtained in Phase 1.

It is worth mentioning that the individual analyses from the three matrices were compared to uncover connections between them, despite their distinct natures. Findings from one matrix were triangulated with those from the others to validate the content analysis outcomes. Additionally, these results were compared and contrasted with existing literature and arguments from other authors.

Phase 3: Narrating

The final phase focused on presenting the study findings, which included detailing the results and their discussion. This was followed by formulating the conclusions and recommendations based on insights from the previous phase. The subsequent three sections of this article provide a detailed account of these outcomes.

RESULTS

Sample composition

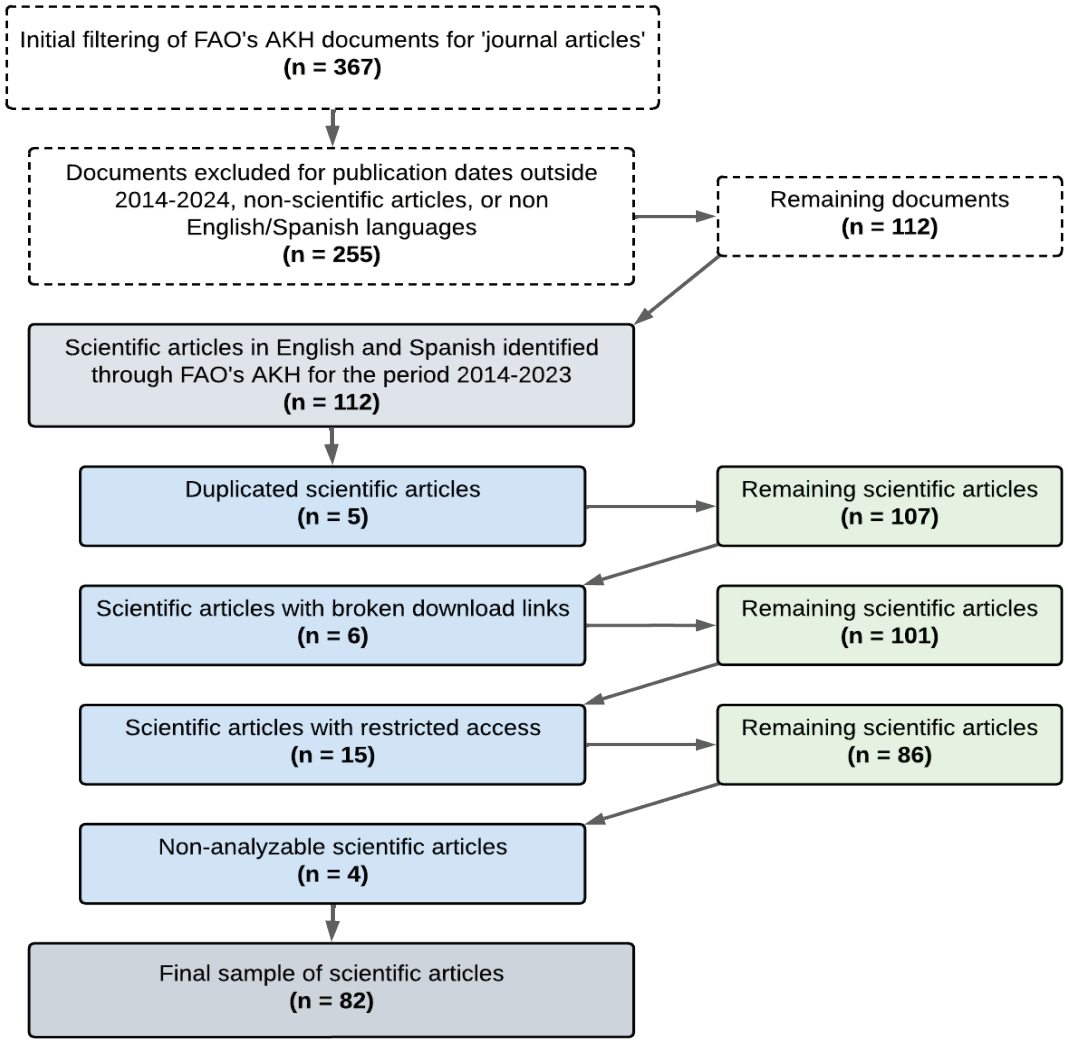
Initially, a quick filtering of the FAO's AKH documents was conducted by document type to display only those classified as 'journal article', resulting in a total of 367 documents. Of these, 255 were excluded because their publication dates fell outside the analysis period of 2014–2023, or because they were not scientific articles, or they were scientific articles published in languages other than English or Spanish. This process resulted in a sample of 112 scientific articles published in English and Spanish between 2014 and 2023.

This set of 112 articles was then further refined. Five duplicates were excluded, leaving 107 unique articles. Of these, 21 could not be included due to download constraints—6 with broken links and 15 behind paywalls—leaving 86 articles. An additional four articles were excluded because they lacked content related to human-nature relationships, focusing instead on descriptions of participatory research initiatives and agroecology courses without foundational ideas on agroecology, agriculture, or nature. The final sample consisted of 82 articles. Figure IV illustrates this sampling process. The complete list of these 82 articles is provided in the

[4] SCImago was used to obtain additional information missing from the articles to complete the matrix of trends and geopolitical distribution, such as the field and country of the journal.

bibliographic record in Appendix C. Similarly, Appendix D contains the completed analytical matrices.

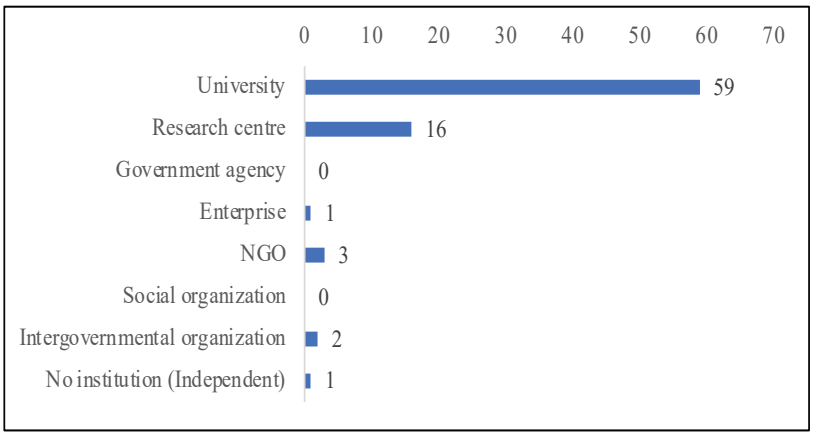
Figure IV. Sampling process



Source: Own elaboration

Trends and geopolitical distribution of the knowledge on agroecology disseminated by the FAO

Figure V. Number of scientific articles produced per type of institution



Source: Own elaboration

The knowledge on agroecology disseminated through the FAO's AKH comes from a variety of institutions, including universities, research centres, enterprises, non-governmental organisations (NGOs), and intergovernmental organisations, along with independent individuals, as shown in Figure V. Universities are the leading contributors, producing the majority of scientific articles, while government agencies and social organisations are not primary producers of agroecology knowledge.

Figure VI. ***Collaboration between different types of institution in the generation of knowledge on agroecology***

Source: Own elaboration

Regarding the collaboration patterns between institutions in the development of knowledge on agroecology, 75 of the 82 articles involved multiple authors. Among these, 31 featured authors from the same type of institution, while 44 included authors from different types of institution. Remarkably, only universities collaborated with social organisations—specifically farmer organisations—as seen in just one article. These organisations are not social movements. Figure VI illustrates these collaboration patterns.

Shifting to a geopolitical perspective, of the 75 multi-authored articles previously mentioned, 42 involve the collaboration of authors affiliated with different countries to generate knowledge on agroecology. Among these, 25 articles show collaboration between authors (and institutions) from the global North and South,[5] 16 involve collaboration between authors only from the global North, and one article features collaboration between authors from the global South.

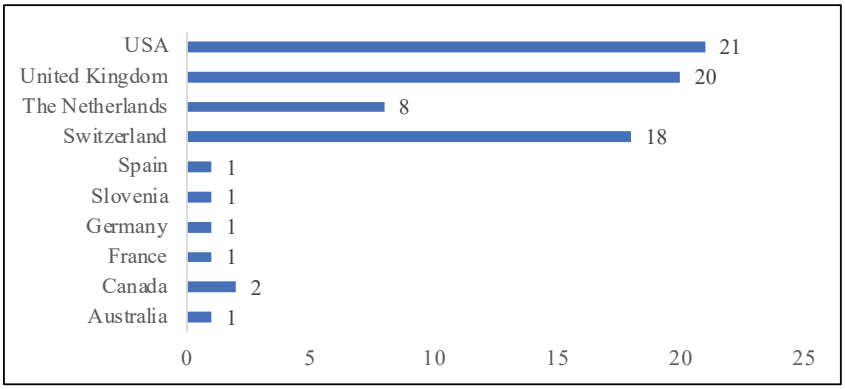
Regarding the role of countries (and regions) in generating knowledge on agroecology, 79% of all the analysed articles involved studying countries, or countries conducting studies, from the global North. These included Australia, Canada, France, Germany, Italy, Portugal, Spain, Sweden, Switzerland, the Netherlands, the United Kingdom, and the United States of America. In contrast, only 21% of the analysed articles involved studying countries from the global South. These included China, Colombia, India, Japan, Kenya, Mexico, Peru, and Uganda. This indicates that the distribution of studying countries is asymmetric: Europe and North America are predominantly represented, while Latin America, Asia, and Africa have less representation.

Similarly, there is an asymmetry in the distribution of studied countries, or countries under study. Specifically, 30% of all the analysed articles involve studied countries from the global South, including those from Latin America, Africa and Asia, while 21% involve studied countries from the global North, which includes European and North American countries. Due to its extensive nature, the detailed list of countries within each region is not included in this document. Furthermore, 10% of the analysed articles involve studied countries from both the global regions simultaneously, and 39% do not specify a studied country or region.

Concerning the publication patterns of the knowledge on agroecology, the study reveals a significant asymmetry: 74 out of the 82 analysed articles were published in journals from global North countries, while only eight were from global South journals. This suggests that the majority of knowledge on agroecology is disseminated through journals based in the global North. Specifically, ten countries are predominant in these publications,

[5] In this research, the terms global South and global North align with de Sousa and Meneses (2014). The global South refers to countries subjected to European colonialism (except Australia and New Zealand) and less economically developed, while the global North includes Europe and North America. These terms are used metaphorically, not just geographically.

*Figure VII. **Distribution of scientific articles among journals from global North countries***



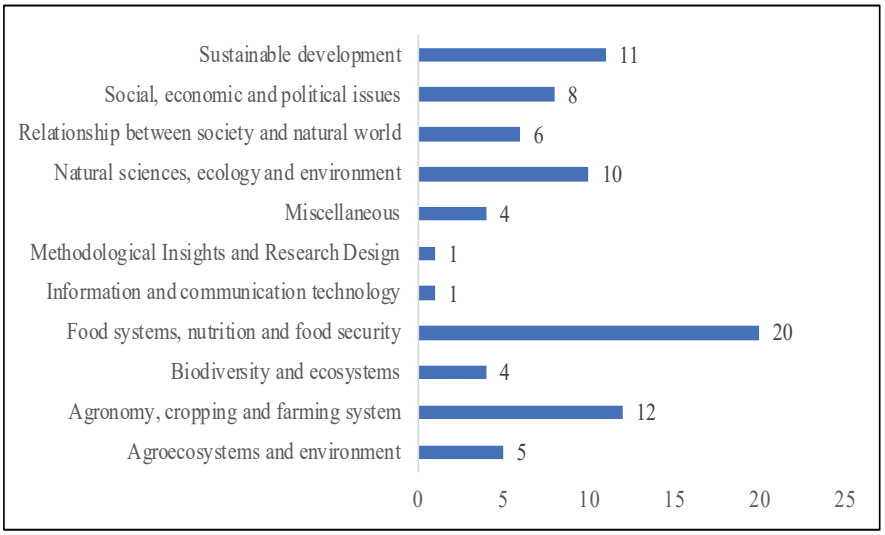
Source: Own elaboration

as shown in Figure VII. Notably, the United States of America, the United Kingdom, and Switzerland are the leading publishers, underscoring North America and Europe as the predominant publishers of this knowledge.

When it comes to language, the study reveals a clear predominance of English in publications, with 77 of the 82 analysed articles published in English and only 5 in Spanish. This disparity highlights the asymmetry in language usage for disseminating knowledge on agroecology.

Finally, regarding the topic of the journals that disseminate knowledge on agroecology, journals focused on food systems, nutrition, and food security are the primary outlets. Journals on agronomy, cropping, and farming systems are also preferred venues for disseminating this knowledge. In contrast, journals addressing topics such as social, economic, and political issues, societal-natural world relationships, and biodiversity and ecosystems are less favoured options for publication. Figure VIII illustrates these preferences.

*Figure VIII. **Distribution of scientific articles by journal topic***



Source: Own elaboration

Based on the aforementioned observations, it becomes apparent that universities are the primary generators of knowledge on agroecology disseminated through the FAO's AKH, collaborating extensively with various institutions and social organisations. Notable collaboration exists between authors and institutions from both the global North and South. However, global South countries are mainly studied rather than studying countries, whereas global North countries are dominant as both studying and publishing countries. This dominance of global North countries in publishing may explain the predominance of English in disseminating knowledge on agroecology. Additionally, journals focused on food systems, nutrition, and food security are the preferred venues for publishing this knowledge.

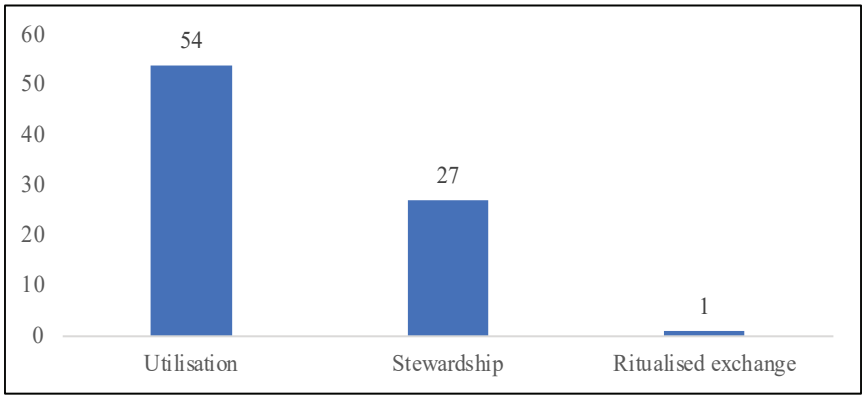
Human-nature relationship perspectives embodied in the knowledge on agroecology disseminated by the FAO

The knowledge disseminated through the FAO's AKH has been generated based on assumptions or fundamentals of three out of the seven human-nature relationship types proposed by Muradian and Pascual (2018), as shown in Figure IX. Specifically, the knowledge on agroecology contained in 54 articles is rooted in assumptions and fundamentals related to the Utilisation relationship type. Additionally, the knowledge contained in 27 articles is based on premises related to the Stewardship relationship type, while the knowledge of only one article aligns with the Ritualised exchange relationship type. From these observations, Utilisation and Stewardship are

the predominant relationship types shaping knowledge on agroecology, with Utilisation being more prevalent. No articles cover more than one relationship type.

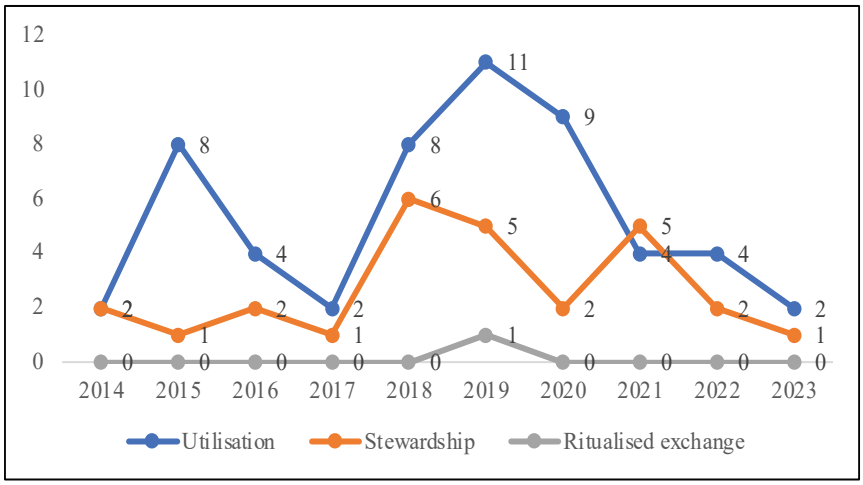
Shifting to a temporal perspective, Figure X illustrates the evolution of the knowledge on agroecology associated with Utilisation, Stewardship, and Ritualised exchange relationships. The figure reveals no clear trends in the evolution of knowledge associated with the Utilisation and Stewardship relationship types. However, it shows that the number of articles containing knowledge aligned with the Utilisation relationship practically surpasses those aligned with the Stewardship relationship across the period 2014-2023. Additionally, the figure reveals that the evolution of knowledge associated with the Ritualized exchange type of relationship is practically null throughout the same period.

Figure IX. ***Distribution of scientific articles by type of human-nature relationship embodied in them***



Source: Own elaboration

Figure X. Evolution of the knowledge on agroecology by type of human-nature relationship: Utilisation, Stewardship and Ritualised exchange



Source: Own elaboration

Based on these observations, Utilisation emerges as the hegemonic human-nature relationship shaping most of the knowledge disseminated through the FAO's AKH. While the Stewardship relationship type also plays a role, it does not match the prominence of Utilisation. This insight provides an initial view into the possible implications of the knowledge on agroecology for fostering a reconnection between humans and nature within the agricultural realm; however, this topic will be explored further on. Additionally, it is worth noting that the Utilisation relationship type maintained its prevalence throughout the 2014-2023 period, reflecting its enduring influence over time.

State of the knowledge on agroecology disseminated by the FAO

Knowledge on agroecology associated with the Utilisation relationship type

Most of the knowledge associated with the Utilisation relationship type has been developed without a clear definition of agroecology, indicating that some authors may not have a firm understanding of its meaning. A minority of this knowledge has been generated based on a conception of agroecology as a strategy leveraging ecological processes for socio-environmental benefits, or as a pathway guided by the operation of ecological (natural) systems for sustainable agri-food systems. Additionally, some knowledge has emerged treating agroecology as a contested concept with multiple definitions due to differing schools of thought.

Regarding the objectives guiding the generation of this knowledge, there is a primary focus on improving benefits to human health, nutrition, food security, and the environment, stemming from agricultural practices.

Other objectives focus on determining economic and environmental factors affecting agrochemical use, assessing alternative farming systems for increasing yields and ecosystem services provision, and exploring principles and challenges for resilient, productive and sustainable agri-food systems. Additionally, albeit to a lesser extent, there are objectives related to improving soil management to increase benefits from ecosystem services, elucidating economic and financial aspects of agroecological initiatives and products, characterising agroecosystems to determine yields, benefits and risks, and developing tools for measuring sustainability and productivity within agroecosystems.

In terms of theoretical frameworks, most of the knowledge in question lacks explicit theoretical foundations, possibly reflecting a view among some authors that theoretical explanations are unnecessary or that reality is understood only through their implicit theoretical assumptions. To a lesser extent, some of the knowledge has been generated with frameworks encompassing criteria and indexes for measuring, estimating and analysing the productivity and sustainability of agroecological practices, natural resources, and food security. Furthermore, concepts to explore the potential of agrochemical inputs and ecosystem services for yield and profit enhancement have been employed as theoretical frameworks. Other concepts, such as ecological intensification and the labour power of nature, have been employed to integrate approaches and practices for designing sustainable food production systems.

Most of the data employed to generate the knowledge aligned with the Utilisation relationship type is quantitative, with few contributions from mixed and qualitative data. However, a substantial portion of this knowledge has been developed without specifying the type of data used.

In the case of methods of data collection, the knowledge on agroecology has primarily been generated through interviews, surveys, focus groups, workshops, farm visits, and participant observations, which engage diverse actors and incorporate gender perspectives and agricultural seasons. Bibliographic compilation is also a common method, involving the collection of academic documents from databases such as Web of Science, Scopus, PubMed, Scielo, and Agricola, as well as technical documents from databases managed by governmental and non-governmental entities. Additionally, methods such as cloud data downloading and field measurements, such as sampling and assessing agricultural outputs, are used to collect data. However, a significant portion of the knowledge has been generated without specifying the methods of data collection employed.

Regarding the methods of data analysis, the knowledge on agroecology has primarily been generated using statistical analysis, including both descriptive statistics to characterise variables like yield and pesticide loads, and inferential statistics to compare the effects of different agricultural practices in yield and pesticide application. Bibliographic reviews are also commonly used as a method to analyse data. Other methods, though less prevalent, include economic and mathematical analysis (from basic data estimation to complex modelling), comparative analysis to assess agroecological interventions, and (bio)chemical analysis to measure substance concentrations and identify pest species. A significant portion of this knowledge has been developed without specifying the methods of data analysis employed.

Concerning the main findings, the knowledge associated with the Utilisation relationship type has significantly advanced understanding and inventorying of various agricultural practices and their impacts. It has primarily identified practices that enhance economic sustainability by improving yields, productivity, resource efficiency, income and profits, while also promoting food security and sustainable agriculture through the protection of ecosystem functions and the reduction of greenhouse gas emissions. Additionally, this knowledge has contributed to reducing agroecosystems' reliance on external inputs by utilising natural resources and ecosystem services. It has also highlighted factors affecting human health, including the adverse effects of pesticides, and the challenges of financial support for agroecology development. This knowledge has notably been instrumental in proposing elements such as theories, methods, and tools, to design strategies supporting transitions towards sustainable agri-food systems, fostering innovation and enhancing farmers' capacities.

In terms of epistemological position, the knowledge in question has predominantly been generated by adopting fundamentals from the Positivism / Post-positivism paradigm. This means that most authors of scientific articles conceive reality as external and apprehensible, consider the research object as independent of themselves, and favour experimentation, variable manipulation, hypothesis testing, and quantitative methods for comprehending the world.

Knowledge on agroecology associated with the Stewardship relationship type

Most of the knowledge associated with the Stewardship relationship type has been developed with a political understanding of agroecology, viewing it as a counter-hegemonic construction and reaction challenging the dominant corporate agri-food regime and advocating for socially just, economically fair, and ecologically resilient models, often linked to food sovereignty. Additionally, agroecology is recognised as polysemic, shaped by diverse values and worldviews, and is also understood as the ecology of food systems, applying ecological principles to mimic natural ecosystems in agriculture. To a lesser extent, this knowledge has been framed around the concept of agroecology as endogenous rural development, emphasising the use of social and ecological local resources to foster rural development. Only a small portion of this knowledge has been produced without a clear definition of agroecology, indicating some ambiguity among authors.

Regarding the objectives guiding the generation of this knowledge, there is a primary focus on proposing and examining theoretical and practical elements for discussing and navigating agroecological transitions. Additionally, significant objectives include identifying socio-political factors shaping agroecology and evaluating determinants crucial for scaling it up. To a lesser degree, some objectives aim to explore agroecology's capacity to reshape relationships between societies and ecosystems and propose new participatory research methodologies.

In terms of theoretical frameworks, most of the knowledge in question has been developed employing frameworks to explore interactions, reconfigurations, and tensions between factors that influence agroecological transitions. Frameworks such as the multilevel perspective and material and immaterial territories have been used, along with concepts to validate the legitimacy of non-scientific actors and knowledge. Additionally, frameworks for understanding the conceptualisation and reconfiguration of realities in agriculture, such as discourse, ontology, knowledge co-production and socio-ecological systems, have been employed. While less common, some knowledge has emerged from frameworks offering unconventional and disruptive conceptualisations of agri-food systems such as food sovereignty and zero-budget natural farming. Additionally, various frameworks defining various dimensions of agriculture have also been utilised.

Most of the data employed to generate knowledge aligned with the Stewardship relationship type is qualitative and mixed, with limited use of quantitative data. Additionally, some of this knowledge has been developed without specifying the type of data used.

In the case of methods of data collection, the knowledge on agroecology in question has primarily been generated through interviews, surveys, focus groups, workshops, farm visits, participant observations, and participation in meetings, engaging a wide array of stakeholders, including farmers, academia, government, NGOs, indigenous communities, and the private sector, while also considering gender perspectives. Bibliographic compilation is another prevalent method, gathering academic documents from databases such as Scopus and Web of Science, AGRIS and ERIC. Additional methods include cloud data downloading and participatory photography. However, a significant portion of the knowledge has been generated without specifying the methods of data collection employed.

Regarding the methods of data analysis, the knowledge on agroecology has primarily been generated using narrative and discourse analysis, along with bibliographic review. Content analysis, often combined

with statistical analysis for triangulation, has also been employed as a method of data analysis, along with sociocultural-historical analysis, visual analysis (thematic collage), and comparisons against indicators and criteria. However, a significant portion of this knowledge has been developed without specifying the methods of data analysis used.

Concerning the main findings, the knowledge associated with the Stewardship relationship type reveals a clear trend among peasants and family farmers: they are moving away from capitalist and neoliberal agri-food models, and favouring cooperative over competitive models, as well as local consumption and production practices that respect local diets, customs, and nature. This knowledge also contributes to identifying key socio-political determinants for scaling up agroecology as a life project, and emphasises the importance of valuing diverse knowledge systems for its development. Additionally, it explores the risks of agroecology's co-optation by dominant agri-food regimes, proposes alternative agri-food systems and regimes, and traces the evolution of agroecology's conceptualisation over time.

In terms of epistemological position, the knowledge in question has predominantly been generated by adopting fundamentals from the Critical Theory paradigm. This means that most authors of scientific articles conceive reality as shaped by social, political, economic, cultural, gender, and ethnic factors, see the researcher and research object as interactively linked with research outcomes mediated by values, and favour dialogic, dialectical, and participatory methodologies aimed at emancipation and socially significant results. Furthermore, a small portion of this knowledge has been shaped by the assumptions from the Constructivism paradigm, where authors of scientific articles view reality as apprehensible in the form of multiple mental constructs which are socially and experientially constructed, assume that knowledge is a human construction and never free of values, and prefer hermeneutic techniques for interpreting these constructs. Very few authors have used the positivism/post-positivism paradigm in generating this knowledge.

Knowledge on agroecology associated with the Ritualised exchange relationship type

Only one of the 82 articles analysed refers to knowledge on agroecology related to the Ritualised exchange relationship type. There is consequently insufficient data to provide a comprehensive analysis compared to the Utilisation and Stewardship relationship types. More details about the scarcity of this knowledge, and its implications, are provided in the next section.

DISCUSSION

Starting with the general characteristics of the knowledge on agroecology disseminated through the FAO's AKH, this study highlights the limited availability of such knowledge. A significant disparity exists between the 112 articles identified in the AKH spanning 2014-2023, and the substantially larger numbers of articles available in Web of Science (4426 articles) and Scopus (4692 articles) for the same period.[6] Furthermore, access is restricted to just 82 of the 112 articles.

In terms of the trends and geopolitical distribution of knowledge on agroecology, universities are the leading generators of such knowledge and collaborate with a broad range of institutions. They are the only type of institution documented to collaborate with social organisations, but this was observed in just one article where a university partnered with a farmer organisation. This suggests that the FAO's AKH may not fully embrace the transdisciplinary nature of agroecology, as emphasised by Fernández et al. (2021) and Ruiz-Rosado (2006).

Furthermore, findings show that collaboration among global South authors is rare, and was documented in only one article. This is noteworthy because, as agroecology is a global South proposal (Guzmán et al., 2000),

[6] This information was obtained from a Web of Science and Scopus search using the keyword 'agroecology' for the period 2014-2023, conducted on 26 February 2024, at 11:00 a.m.

one would expect more collaboration among authors from the South in the production of the knowledge disseminated through the AKH.

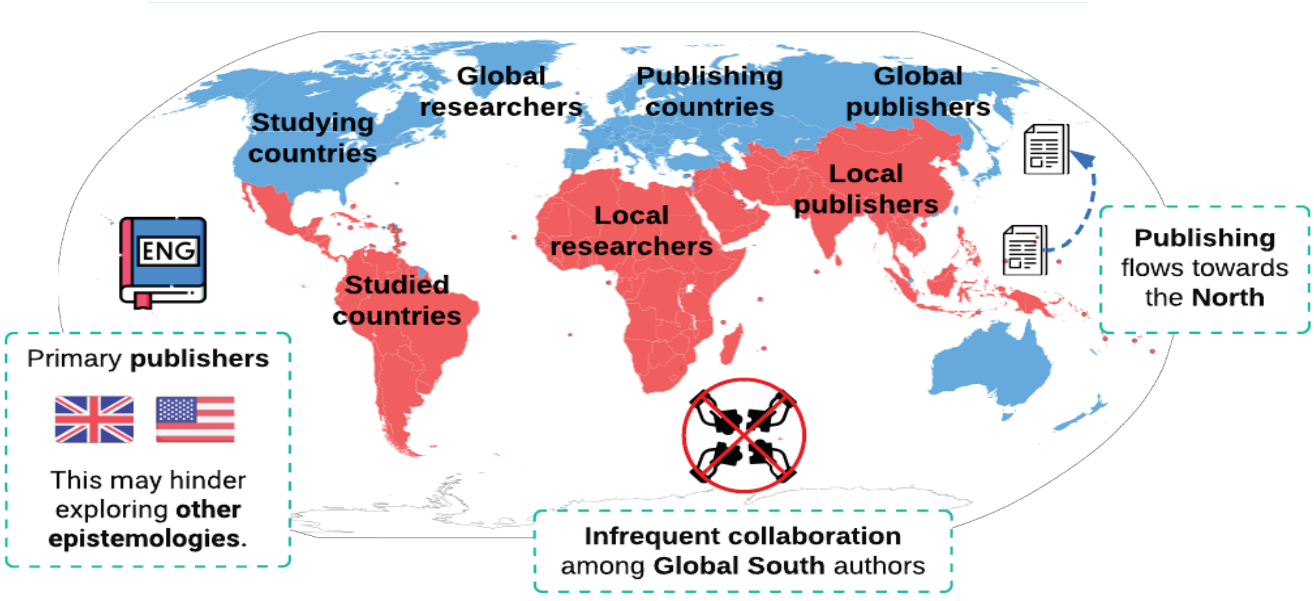
This study also highlights the roles of global North and global South countries in the production of knowledge on agroecology. Typically, global North countries often act as studying countries, whereas global South countries primarily serve as studied countries. global North countries tend moreover to investigate both global North and global South regions, while global South countries focus on their own regions. This phenomenon aligns with Gómez et al. (2013), who found global North countries to be global researchers and global South countries to be local researchers.

Additionally, global North countries dominate the publishing landscape, disseminating knowledge from both regions (acting as global publishers), whereas global South countries mainly publish regional knowledge (acting as local publishers). This pattern highlights a trend of publishing flowing towards the North, consistent with Gómez et al. (2013).

The study also reveals that English is predominant in the knowledge disseminated through the FAO's AKH, reflecting the influence of English-speaking publishers and primarily those in the United States and the United Kingdom. The predominance of English found in this study may be biased, as it only examined articles published in English and Spanish. Nevertheless, Gómez et al. (2013) identified a similar trend in their study, which included a broader range of languages. Ortiz (2009) argues, moreover, that English holds hegemonic status in fields dealing with social facts, such as agroecology. If this dominance of English reflects the entire knowledge base of the AKH, it could limit the exploration of other epistemologies, as unique meanings, representations and perspectives in other languages may not be fully captured in English, according to Lugo (2019).

Additionally, the findings show that academic journals on food systems, nutrition, and food security are now the main outlets for publishing knowledge on agroecology. This marks a shift from a decade ago when Gómez et al. (2013) found no agroecology publications in these journals. Figure XI summarises the key ideas discussed up to this point.

*Figure XI. **Trends and geopolitical distribution of knowledge on agroecology***



Source: Own elaboration

In the case of the human-nature relationship assumptions embodied in the knowledge on agroecology, this study reveals alignment with the Utilisation, Stewardship, and Ritualised exchange relationship types,

with the first two predominantly shaping the knowledge. This indicates that knowledge on agroecology is produced based on assumptions that emphasise a clear human-nature distinction with a utilitarian rationale, supporting the commodification and exploitation of nature (Utilisation). Additionally, it reflects assumptions of interdependency and human responsibility towards nature (Stewardship). To a lesser extent, it also embodies assumptions that acknowledge the absence of a clear human-nature distinction, viewing both as active agents in cosmic harmony through reciprocal exchanges (Ritualised exchange).

Although the knowledge on agroecology is primarily shaped by the Utilisation and Stewardship relationship types, about two-thirds is based on Utilisation assumptions. This suggests a prevailing view of humans and nature as distinct entities, with nature seen as a source of extractable and consumable goods for human welfare or progress. Therefore, the knowledge disseminated through the FAO's AKH does not fully align with agroecology's purpose of reconnecting humans and nature within the agricultural realm.

The incompatibility between this knowledge and agroecology's purpose may be partly explained by the remarks made so far. The dominant role of global North nations as both studying and publishing countries, along with limited collaboration from global South authors, may be perpetuating the Western worldview that has shaped agriculture over the last decades. This worldview often maintains a division between humans and nature, as noted by Domptail et al. (2021) and Losada et al. (2023), and supports an extractivist logic and mechanistic view of nature, according to Berman (1987). Additionally, the reluctance of the FAO's AKH to embrace agroecology's transdisciplinary nature and its preference for disseminating knowledge in English might be hindering the inclusion of knowledge generated from alternative epistemologies that emphasise the interconnectedness and interdependence between humans and nature, as Lugo (2019) argues.

Complementary to earlier observations, the identified asymmetries in the knowledge disseminated through the AKH suggest a pattern of coloniality of knowledge. This implies the existence of practices maintaining systems of thought that portray certain social groups as inferior based on race and geopolitical background (Gómez et al., 2013). Thus, the dominance of the global North and English as the main source and official language of (valid) knowledge may be marginalising knowledge from other regions and languages – a notion supported by de Sousa and Meneses (2014) and Gómez et al. (2013).

Additionally, given that universities are the primary sources of knowledge disseminated through the AKH, and that much of this knowledge does not facilitate the reconnection between humans and nature, Fazey et al. (2020) may be correct in their assessment. They argue that universities are failing humanity by not stimulating the societal changes needed to tackle contemporary challenges. This also raises concerns about universities' effectiveness in addressing critical socio-environmental issues, such as those stemming from conventional agriculture, which Gil (2012) identifies as a core aspect of their role.

Regarding the state of knowledge on agroecology, particularly that aligned with the Utilisation relationship type, it is noteworthy that most of this knowledge is produced without a clear definition of agroecology. When defined, agroecology is often framed within an extractivist and mechanistic view of nature, treating it as a commodity or replicable efficient machine, similar to conventional agriculture. This aligns with what Cerdan et al. (2019) describe as 'weak agroecology', which denotes greenwashed conventional agriculture. It is consistent with the objectives guiding the development of such knowledge, which focus on utilising nature to meet human needs and enhancing the efficiency and productivity of agri-food systems, often adopting only minimal social and environmental constraints. Theoretical frameworks supporting this knowledge also adhere to this logic. However, their frequent omission may suggest that the extractivist and mechanistic view of nature is deeply embedded in the authors' cognitive frameworks, as Eschenhagen (2017) argues, leading them to accept this perspective without question.

Methodologically, the knowledge on agroecology aligned with the Utilisation relationship type heavily prioritises

quantification. Although data collection methods may not always involve measuring instruments, they are primarily geared toward quantification, as evidenced by statistical analysis as the predominant method of data analysis, and the reliance on quantitative data. This focus probably stems from the need for measurements to assess benefits, impacts, and resource use — key concerns in this type of knowledge. The prevalence of quantification in this knowledge is unsurprising, as quantification is essential for 'utilising' nature. As Polo and Piñeiro (2019) argue, quantification reduces the world to measurable, lifeless objects, turning nature into inert commodities, distinct from and exploitable by humans.

It is worth noting that some authors classify organic agriculture, climate-smart agriculture, and sustainable intensification under agroecology. However, this contradicts scholars such as Domptail et al. (2021), Nieto et al. (2013), and Souza (2018), who argue that these practices still adhere to an extractivist logic and mechanistic view of nature, distinguishing them from (true) agroecology. This suggests a possible misinterpretation of agroecology's core fundamentals or even a risk of its co-optation, as warned by Alonso-Frajedas et al. (2020), Giraldo and Rosset (2016), and Nyéléni (2015).

Concerning the state of knowledge on agroecology associated with the Stewardship relationship type, it is noteworthy that this knowledge uses definitions of agroecology that diverge from conventional agriculture. These definitions challenge corporate agri-food systems, recognise diverse worldviews, and support principles of endogenous development, aligning with the 'strong agroecology' of Cerdan et al. (2019) and Leff (2002). This is consistent with the objectives guiding the development of this knowledge, which focus on facilitating transitions, validating non-scientific knowledge, and scaling up agroecology to reshape human-nature relationships. The theoretical frameworks used also reflect this perspective, addressing tensions and reconfigurations in agriculture and developing alternative agricultural models.

Methodologically, the knowledge on agroecology aligned with the Stewardship relationship type utilises data collection methods similar to those of the Utilisation type but not focused on quantification. Instead, these methods, along with pertinent methods of data analysis (narrative and discourse analysis, bibliographic review, content analysis, and sociocultural-historical analysis) aim to understand the sociopolitical processes in agriculture and agroecology and their impact on the representation of realities and transitions in these fields. This approach, which predominantly relies on qualitative and mixed data, stems from a desire to comprehend the drivers of agroecological transitions and the socio-political factors affecting the human-nature relationship.

The state of knowledge on agroecology associated with the Ritualised exchange relationship type remains unclear due to the limited corpus available for analysis. Despite this limitation, an examination of the predominant epistemological positions—positivism/post-positivism, critical theory, and constructivism—shows that positivism/post-positivism is the most prevalent. This is consistent with Pozzoli's (2007) view of its historical dominance. This epistemological position views reality as objective, external and governed by natural laws, and assumes a clear subject-object (or human-nature) distinction (Guba and Lincoln, 1998, 2002) reflecting a mechanistic view of nature. This perspective contrasts with the assumptions needed to understand the interconnection and interdependence of humans and nature, as seen in the knowledge associated with the Ritualised exchange relationship type. Critical theory and constructivism, which are more aligned with these assumptions, are less prevalent, and knowledge related to the Ritualised exchange relationship type is therefore scarce. These observations also elucidate why Stewardship-type knowledge, although present, is less prominent compared to Utilisation-type knowledge in the FAO's AKH.

From the above, the discrepancy between the purpose of agroecology—reconnecting humans and nature within the agricultural realm—and the knowledge disseminated through the FAO's AKH can be partially attributed to the prevailing state of this knowledge. As noted, it largely aligns with an extractivist logic and mechanistic view of nature, reflecting a clear separation between humans and nature. This tendency is further reinforced by the hegemony of positivism/post-positivism in knowledge production, driven by the predominance of global North countries in knowledge generation, which share certain affinity for this

epistemological position rooted in the Western world. Although there is some knowledge within the AKH that challenges this perspective, it constitutes only one-third of the total knowledge disseminated, which is insufficient to reduce the noted discrepancy.

In this context, the FAO must take proactive measures to effectively advocate and promote agroecology. Similarly, the generators of knowledge on agroecology, particularly those affiliated with universities, need to revise their research approaches to more effectively contribute to agroecology's purpose of reconnecting humans and nature in agriculture.

CONCLUSION

The study reveals that the knowledge disseminated through the FAO's AKH does not fully support agroecology's purpose of reconnecting humans and nature within the agricultural realm. This discrepancy may be linked to observable patterns of coloniality of knowledge observed in the dissemination of knowledge, as well as to the notable inclination towards disseminating knowledge rooted in positivist/post-positivist foundations and in an extractivist logic and a mechanistic view of nature.

Similarly, the study suggests that the Western worldview underlying conventional agriculture may persist in the knowledge disseminated through the FAO's AKH. This is alarming because agroecology should be based on fundamentals distinct from those of conventional agriculture, which emphasises a disconnection between humans and nature. Combined with the identified risk of co-optation of agroecology, this highlights the need for vigilance in how knowledge on agroecology is produced and disseminated.

These observations underscore the need for the FAO to take ethical responsibility in its knowledge dissemination if it aims to align with agroecology's purpose. The knowledge it disseminates may influence the configuration of agricultural territories and potentially shape the human-nature relationship within agriculture, with far-reaching implications for life and human welfare (Eschenhagen, 2022). This responsibility is even more critical considering that the FAO's AKH could become a leading source of knowledge on agroecology, given FAO's global reputation as an advocate for agroecology and its commitment to providing access to up-to-date knowledge on this field. Furthermore, these findings underscore the need to challenge the prevailing theoretical frameworks and epistemological positions guiding the generation of knowledge on agroecology, and to explore their contrasts with alternative perspectives, to facilitate more responsible decision-making (Eschenhagen, 2022). This would not only deter knowledge generators, such as universities, from 'just doing homework' but also encourage them to adopt more critical and discerning approaches to knowledge production.

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APPENDIX A: Categories of analysis of each analytical matrix

Table A.1. *Categories of analysis corresponding to the matrix of trends and geopolitical distribution*

N°	Category	Description
1	Type of institution affiliated with the lead author	It indicates whether the institution affiliated with the lead author is a university[1], research centre[2], government agency, enterprise, non-governmental organization (NGO), intergovernmental organization, or social organization.
2	Type of institution affiliated with the co-author(s)	It indicates whether the institution affiliated with the co-author(s) is a university, research centre, government agency, enterprise, non-governmental organization (NGO), intergovernmental organization or social organization.
3	Country of affiliation of the lead author	It refers to the country of the institution affiliated with the lead author. It represents the studying country (the country that conducts the study).
4	Country of affiliation of the co-author(s)	It refers to the country of the institution affiliated with the co-author(s).
5	Study area	It refers to the country, or region (in the case of studies with a regional approach), on which the scientific article is focused. It represents the studied country or studied region.
6	Field of the journal	It refers to the study field of interest of the journal.
7	Country of the journal	It refers to the country to which the journal, where the scientific article is published, belongs.
8	Language	It is the language in which the scientific article was written.

Source: Own elaboration.

[1] Including other high-education institutions.
[2] Certain universities have research centres under their jurisdiction. However, research centres here denote independent institutions that generate knowledge through research.

Table A.2. *Categories of analysis corresponding to the matrix of human-nature relationship.*

Nº	Category		Values
1	Ontology	Clear human-nature distinction	☐ Yes ☐ No
		Nature with agency	☐ Yes ☐ No
		Position of nature vis-à-vis humans	☐ Nature as inexistent ☐ Nature as subordinated ☐ Nature as a deity ☐ Humans as part of nature ☐ Nature as a distinct entity with intrinsic rights ☐ Nature as equal ☐ Nature as a distinct entity with no intrinsic rights
2	Goal Orientation		☐ Nature perceived as not important ☐ Preference for human dominance over nature ☐ Nature seen as a threat ☐ Preference for circumstances believed to be favourable to deities ☐ Nature seen as sacred ☐ Preference for human restraint to respect nature. ☐ Nature seen as a system that includes humans ☐ Preference for pristine spaces or conditions ☐ Nature perceived as a distinct entity that needs to be protected ☐ Preference for equality ☐ Nature seen as an interactive agent ☐ Preference for maximizing benefit-cost ratios ☐ Nature seen as a provider of resources and services
3	Emotional drivers		☐ Indifference ☐ Fear ☐ Pursuit of transcendence ☐ Duty ☐ Sense of belonging ☐ Identity ☐ Care ☐ Appreciation of beauty ☐ Tranquillity ☐ Needs satisfaction ☐ Hedonic pleasure
4	Practices		☐ Lack of formalized practices ☐ Rules and norms based on human entitlement (for appropriation or annihilation of nature) and superiority ☐ Sacredness leading to religious practices, including rituals and taboos ☐ Rules and norms concerning nature-centered management and self-imposed behavioral limits ☐ Rules and norms that prioritize the preservation of pristine spaces or conditions and emphasize biocentrism ☐ Rules and norms grounded in a sense of partnership ☐ Rules and norms grounded in rational calculation and market orientation

N°	Category	Values
5	Main mode of interaction	☐ Isolation ☐ Destruction ☐ Worship ☐ Integration of livelihoods with nature ☐ Conservation of natural landscapes ☐ Benevolent patronage ☐ Collaboration ☐ Pursuit of equilibrium ☐ Utilization (for exploitation or conservation) ☐ Maximizing profits
6	Human-nature relationship	☐ Detachment ☐ Domination ☐ Devotion ☐ Stewardship ☐ Wardship ☐ Ritualized exchange ☐ Utilization

Source: Own elaboration.

Table A.3. *Categories of analysis corresponding to the matrix of state of knowledge.*

N°	Category	Description
1	Definition of agroecology	It refers to the definition of agroecology adopted in the scientific article.
2	Objective	It refers to the goals or objectives that the research published in the scientific article seeks to achieve.
3	Theoretical framework	It refers to the corpus of concepts that adopted to propose, explain and address the reality (or research problem) that contextualizes the scientific article.
4	Type of data	It refers to the type of data or information required to develop the research published in the scientific article. This data or information can be of three types: qualitative, quantitative, and mixed (when the author works with both qualitative and quantitative data).
5	Methods of data collection	It refers to the procedures or instruments employed to collect the information required to produce knowledge on agroecology.
6	Methods of analysis	It refers to the procedures employed to systematize and analyze the information collected to produce knowledge on agroecology.
7	Main findings	It pertains to the results and contributions of the scientific article within the field of agroecology.
8	Epistemological position	It refers to the basic belief system or worldview that guides the researcher during the development of the research.

Source: Own elaboration.

APPENDIX B: Fundamentals to characterize the quotations corresponding to the category of analysis 'epistemological position'

The following Table outlines the fundamentals employed in identifying and characterizing quotations for the category 'epistemological position'. This table, adapted from Catalán and Jarillo (2010), synthesizes the fundamentals of Guba and Lincoln (1998, 2002) related to epistemological positions.

Table B.1. *Fundamentals to characterize quotations corresponding to the category 'epistemological position'*

Paradigm (Epistemological position)	Assumptions		
	Ontological assumption	**Epistemological assumption**	**Methodological assumption**
Positivism	There is an external, real, and apprehensible objective reality driven by immutable natural laws and mechanisms.	The researcher and the object of research are two autonomous entities: the researcher studies the object without influencing it or being influenced by it. Knowledge is value-free and independent to the social context in which it is produced.	Experimentation, variable manipulation, hypothesis verification, and quantitative techniques are the best way to discover the world.
Post-positivism	Reality is apprehensible, albeit imperfectly and only probabilistically.	Results are considered probably true, always subject to falsification.	Experimental methodology and variable manipulation are of significant importance.
Critical theory	Reality shaped by social, political, cultural, economic, ethnic, and gender factors.	The researcher and the researched object are interactively linked, so research outcomes are mediated by values.	Methodology is dialogic and dialectical, aiming for emancipation and promoting participatory methods. It seeks to direct research towards socially significant ends.
Constructivism	Reality is apprehensible in the form of multiple, intangible mental constructs, socially and experientially constructed, of a local and specific nature, dependent in form and content on individuals or groups.	The relationship between the researcher and the researched object is transactional and subjectivist; hence knowledge is a human construction and never free from values.	Through hermeneutic techniques, individual constructions are interpreted, extracted, and refined through the interaction between and amidst the researcher and their respondents.

Source: Adapted from Catalán and Jarillo (2010).

It is pertinent to indicate that while completing the matrix of state of knowledge, the epistemological positions of positivism and post-positivism were treated as a unified class. This was due to the considerable similarity in their fundamental assumptions (Catalán and Jarillo, 2010).

References cited in this Appendix:

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APPENDIX C: Bibliographic record

Table C.1. *List of 82 scientific articles analyzed*

Nº	Title	Journal	Year of publication	Reference (APA)
1	Food systems in depressed and contested agro-territories: Participatory Rural Appraisal in Odemira, Portugal	*Frontiers in Sustainable Food Systems*	2023	Horstink, L., Schwemmlein, K., & Encarnação, M.F. (2023). Food systems in depressed and contested agro-territories: Participatory Rural Appraisal in Odemira, Portugal. Frontiers in Sustainable Food Systems, 6, 1-24.
2	Friend or Foe? The Role of Animal-Source Foods in Healthy and Environmentally Sustainable Diets	*The Journal of Nutrition*	2023	Beal, T., Gardner, C.D., Herrero, M., Iannotti, L.L., Merbold, L. Nordhagen, S., & Mottet, A. (2023). Friend or Foe? The Role of Animal-Source Foods in Healthy and Environmentally Sustainable Diets. The Journal of Nutrition, 153(2), 409-425.
3	Assessing impact of agroecological interventions in Niger through remotely sensed changes in vegetation	*Scientific Reports*	2023	Mishra, V., Limaye, A.S., Doehnert, F., Policastro, R., Hassan, D., Ndiaye, M.T.Y., Van Abel, N., Johnson, K. Grange, J., Coffey, K., & Rashid, A. (2023). Assessing impact of agroecological interventions in Niger through remotely sensed changes in vegetation. Scientific Reports, 13(360), 1-12.
4	Ample room for reducing agrochemical inputs without productivity loss: The case of vegetable production in Uruguay	*Science of the Total Environment*	2022	Scarlato, M., Dogliotti, S., Bianchi, F.J.J.A., & Rossing, W.A.H. (2022). Ample room for reducing agrochemical inputs without productivity loss: The case of vegetable production in Uruguay. Science of the Total Environment, 810, 1-11.
5	Impact of Zero Budget Natural Farming on Crop Yields in Andhra Pradesh, SE India	*Sustainability*	2022	Duddigan, S., Collins, C.D., Hussain, Z., Osbahr, H., Shaw, L.J., Sinclair, F., Sizmur, T., Thallam, V., & Winowiecki, L.A. (2022). Impact of Zero Budget Natural Farming on Crop Yields in Andhra Pradesh, SE India. Sustainability, 14(3), 1-13.
6	The Role of Actor Networks in Enabling Agroecological Innovation: Lessons from Laos	*Sustainability*	2022	Castella, J.C., Lestrelin, G., Phimmasone, S., Tran Quoc, H., & Lienhard, P. (2022). The Role of Actor Networks in Enabling Agroecological Innovation: Lessons from Laos. Sustainability, 14(6), 1-18.
7	Global analysis of yield benefits and risks from integrating trees with rice and implications for agroforestry research in Africa	*Field Crops Research*	2022	Rodenburg, J., Mollee, E., Coe, R., & Sinclair, F. (2022). Global analysis of yield benefits and risks from integrating trees with rice and implications for agroforestry research in Africa. Field Crops Research, 281, 1-18.
8	Pollinator Deficits, Food Consumption, and Consequences for Human Health: A Modeling Study	*Environmental Health Perspectives*	2022	Smith, M.R., Mueller, N.D., Springmann, M., Sulser, T., Garibaldi, L.A., Gerber, J., Wiebe, K., & Myers, S.S. (2022). Pollinator Deficits, Food Consumption, and Consequences for Human Health: A Modeling Study. Environmental Health Perspectives, 130(12), 1-12.
9	Agroecology and Sustainable Smallholder Agriculture: An Exploratory Analysis with Some Tentative Indications from the Recent Experience of 'Natural Farming in Andhra Pradesh'	*IASSI Quarterly: Contributions to Indian Social Science*	2022	Reddy, D.N. (2022). Agroecology and Sustainable Smallholder Agriculture: An Exploratory Analysis with Some Tentative Indications from the Recent Experience of 'Natural Farming in Andhra Pradesh'. IASSI Quarterly: Contributions to Indian Social Science, 41(3), 234-271.

N°	Title	Journal	Year of publication	Reference (APA)
10	Thematic Collages in Participatory Photography: A Process for Understanding the Adoption of Zero Budget Natural Farming in India	*International Journal of Qualitative Methods*	2021	Walker, G., Osbahr, H., & Cardey, S. (2021). Thematic Collages in Participatory Photography: A Process for Understanding the Adoption of Zero Budget Natural Farming in India. International Journal of Qualitative Methods, 20, 1-13.
11	"The Innovation Imperative": The Struggle Over Agroecology in the International Food Policy Arena	*Frontiers in Sustainable Food Systems*	2021	Anderson, C.R., & Maughan, C. (2021). "The Innovation Imperative": The Struggle Over Agroecology in the International Food Policy Arena. Frontiers in Sustainable Food Systems, 5, 1-15.
12	A Nutrition-Sensitive Agroecology Intervention in Rural Tanzania Increases Children's Dietary Diversity and Household Food Security But Does Not Change Child Anthropometry: Results from a Cluster-Randomized Trial	*The Journal of Nutrition*	2021	Santoso, M.V., Bezner Kerr, R.N, Kassim, N., Martin, H., Mtinda, E., Njau, P., Mtei, K., Hoddinott, J., & Young, S.L. (2021). A Nutrition-Sensitive Agroecology Intervention in Rural Tanzania Increases Children's Dietary Diversity and Household Food Security But Does Not Change Child Anthropometry: Results from a Cluster-Randomized Trial. The Journal of Nutrition, 151(7), 2010-2021.
13	Bottom-Up Transformation of Agriculture and Food Systems	*Sustainability*	2021	Sandhu, H. (2021). Bottom-Up Transformation of Agriculture and Food Systems. Sustainability, 13(4), 1-13.
14	Pesticides and Soil Invertebrates: A Hazard Assessment	*Frontiers in Environmental Science*	2021	Gunstone, T., Cornelisse, T., Klein, K., Dubey, A., & Donley, N. (2021). Pesticides and Soil Invertebrates: A Hazard Assessment. Frontiers in Environmental Science, 9, 1-21.
15	Food forests: Their services and sustainability	*Journal of Agriculture, Food Systems, and Community Development*	2021	Albrecht, S., & Wiek, A. (2021). Food forests: Their services and sustainability. Journal of Agriculture, Food Systems, and Community Development, 10(3), 91-105.
16	Amplifying Agroecological Farmer Lighthouses in Contested Territories: Navigating Historical Conditions and Forming New Clusters in Japan	*Frontiers in Sustainable Food Systems*	2021	McGreevy, S.R., Tamura, N., Kobayashi, M., Zollet, S., Hitaka, K., Nicholls, C.I., & Altieri, M.A. (2021). Amplifying Agroecological Farmer Lighthouses in Contested Territories: Navigating Historical Conditions and Forming New Clusters in Japan. Frontiers in Sustainable Food Systems, 5, 1-18.
17	The political economy of agroecology	*The Journal of Peasant Studies*	2021	van der Ploeg, J.D. (2021). The political economy of agroecology. The Journal of Peasant Studies, 48(2), 274-297.
18	Can agroecology improve food security and nutrition? A review	*Global Food Security*	2021	Bezner Kerr, R., Madsen, S., Stüber, M., Liebert, J., Enloe, S., Borghino, N., Parros, P., Munyao Mutyambai, D., Prudhon, M., & Wezel, A. (2021). Can agroecology improve food security and nutrition? A review. Global Food Security, 29, 1-12.
19	Nicaragua's agroecological transition: Transformation or reconfiguration of the agri-food regime?	*Agroecology and Sustainable Food Systems*	2020	Schiller, K., Godek, W., Klerkx, L., & Poortvliet, P.M. (2020). Nicaragua's agroecological transition: Transformation or reconfiguration of the agri-food regime?. Agroecology and Sustainable Food Systems, 44(5), 611-628.

N°	Title	Journal	Year of publication	Reference (APA)
20	Potential of multi-species livestock farming to improve the sustainability of livestock farms: A review	*Agricultural Systems*	2020	Martin, G., Barth, K., Benoit, M., Brock, C., Destruel, M., Dumont, B., Grillot, M., Hübner, S., Magne, M.A., Moerman, M., Mosnier, C., Parsons, D., Ronchi, B., Schanz, L., Steinmetz, L., Werne, S., Winckler, C., & Primi, R. (2020). Potential of multi-species livestock farming to improve the sustainability of livestock farms: A review. Agricultural Systems, 181, 1-12.
21	The prefigurative power of urban political agroecology: rethinking the urbanisms of agroecological transitions for food system transformation	*Agroecology and Sustainable Food Systems*	2020	Tornaghi, C., & Dehaene, M. (2020). The prefigurative power of urban political agroecology: rethinking the urbanisms of agroecological transitions for food system transformation. Agroecology and Sustainable Food Systems, 44(5), 594-610.
22	The 10 Elements of Agroecology: enabling transitions towards sustainable agriculture and food systems through visual narratives	*Ecosystems and People*	2020	Barrios, E., Gemmill-Herren, B., Bicksler, A., Siliprandi, E., Brathwaite, R., Moller, S., Batello, C., & Tittonell, P. (2020). The 10 Elements of Agroecology: enabling transitions towards sustainable agriculture and food systems through visual narratives. Ecosystems and People, 16(1), 230-247.
23	Agroecological principles and elements and their implications for transitioning to sustainable food systems. A review	*Agronomy for Sustainable Development*	2020	Wezel, A., Gemmill Herren, B., Bezner Kerr, R., Barrios, E., Rodrigues Gonçalves, A.L., & Sinclair, F. (2020). Agroecological principles and elements and their implications for transitioning to sustainable food systems. A review. Agronomy for Sustainable Development, 40(40), 1-13.
24	Assessing Transitions to Sustainable Agricultural and Food Systems: A Tool for Agroecology Performance Evaluation (TAPE)	*Frontiers in Sustainable Food Systems*	2020	Mottet, A., Bicksler, A., Lucantoni, D., De Rosa, F., Scherf, B., Scopel, E., López-Ridaura, S., Gemmil-Herren, B., Bezner Kerr, R., Sourisseau, J.M., Petersen, P., Chotte, J.L., Loconto, A., & Tittonell, P. (2020). Assessing Transitions to Sustainable Agricultural and Food Systems: A Tool for Agroecology Performance Evaluation (TAPE). Frontiers in Sustainable Food Systems, 4, 1-21.
25	Towards redesign at scale through zero budget natural farming in Andhra Pradesh, India	*International Journal of Agricultural Sustainability*	2020	Pervez Bharucha, Z., Bermejo Mitjans, S., & Pretty, J. (2020). Towards redesign at scale through zero budget natural farming in Andhra Pradesh, India. International Journal of Agricultural Sustainability, 18(1), 1-20.
26	Beyond Sustainability in Food Systems: Perspectives from Agroecology and Social Innovation	*Sustainability*	2020	Marchetti, L., Cattivelli, V., Cocozza, C., Salbitano, F., & Marchetti, M. (2020). Beyond Sustainability in Food Systems: Perspectives from Agroecology and Social Innovation. Sustainability, 12(18), 1-24.
27	Agricultural diversification promotes multiple ecosystem services without compromising yield	*Science Advances*	2020	Tamburini, G., Bommarco, R., Cherico Wanger, T., Kremen, C., van der Heijden, M.G.A., Liebman, M., & Hallin, S. (2020). Agricultural diversification promotes multiple ecosystem services without compromising yield. Science Advances, 6(45), 1-8.
28	Ecological intensification and diversification approaches to maintain biodiversity, ecosystem services and food production in a changing world	*Emerging Topics in Life Sciences*	2020	Kremen, C. (2020). Ecological intensification and diversification approaches to maintain biodiversity, ecosystem services and food production in a changing world. Emerging Topics in Life Sciences, 4(2), 229-240.

N°	Title	Journal	Year of publication	Reference (APA)
29	Assessing agro-ecological practices using a combination of three sustainability assessment tools	*Journal of Sustainable and Organic Agriculture*	2020	Landert, J., Pfeifer, C., Carolus, J., Schwarz, G., Albanito, F., Muller, A., Smith, P., Sanders, J., Schader, C., Vanni, F., Prazan, J., Baumgart, L., Blockeel, J., Weisshaidinger, R., Bartel-Kratochvil, R., Hollaus, A., Mayer, A., Hrabalová, A., Helin, J., Aakkula, J., Svels, K., Guisepelli, E., Smyrniotopoulou, A., Vlahos, G., Iordanidis, Y., Szilágyi, A., Podmaniczky, L., Balázs, K., Galioto, F., Longhitano, D., Rossignolo, L., Povellato, A., Z□l□ns, A., das Jegelevi□ius, G., Fr□□il□, M., Iragui Yoldi, U., Astrain Massa, C., Bienzobas Adrián, J., Resare Sahlin, K., Röös, E., Frick, R., Bircher, R., Aalders, I., Irvine, K.N., Kyle, C., & Miller, D. (2020). Assessing agro-ecological practices using a combination of three sustainability assessment tools. Journal of Sustainable and Organic Agriculture, 70(2), 129-144.
30	The impact of long-term organic farming on soil-derived greenhouse gas emissions	*Scientific Reports*	2019	Skinner, C., Gattinger, A., Krauss, M., Krause, H.M., Mayer, J., van der Heijden, M.G.A., & Mäder, P. (2019). The impact of long-term organic farming on soil-derived greenhouse gas emissions. Scientific Reports, 9, 1-10.
31	Applying the Aboveground-Belowground Interaction Concept in Agriculture: Spatio-Temporal Scales Matter	*Frontiers in Ecology and Evolution*	2019	Veen, G.F., Jasper Wubs, E.R., Bardgett, R.D., Barrios, E., Bradford, M.A., Carvalho, S., De Deyn, G.B., de Vries, F.T., Giller, K.E., Kleijn, D., Landis, D.A., Rossing, W.A.H., Schrama, M., Six, J., Struik, P.C., van Gils, S., Wiskerke, J.S.C., van der Putten, W.H., & Vet, L.E.M. (2019). Applying the Aboveground-Belowground Interaction Concept in Agriculture: Spatio-Temporal Scales Matter. Frontiers in Ecology and Evolution, 7, 1-12.
32	An assessment of acute insecticide toxicity loading (AITL) of chemical pesticides used on agricultural land in the United States	*PLoS ONE*	2019	DiBartolomeis, M., Kegley, S., Mineau, P., Radford, R., & Klein, K. (2019). An assessment of acute insecticide toxicity loading (AITL) of chemical pesticides used on agricultural land in the United States. PLoS ONE, 14(8), 1-27.
33	Ecological illiteracy can deepen farmers' pesticide dependency	*Environmental Research Letters*	2019	Wyckhuys, K.A.G., Heong, K.L., Sanchez-Bayo, F., Bianchi, F.J.J.A., Lundgren, J.G., & Bentley, J.W. (2019). Ecological illiteracy can deepen farmers' pesticide dependency. Environmental Research Letters, 14(9), 1-12.
34	Agroecology and La Via Campesina I. The symbolic and material construction of agroecology through the dispositive of "peasant-to-peasant" processes	*Agroecology and Sustainable Food Systems*	2019	Val, V., Rosset, P.M., Zamora Lomelí, C., Giraldo, O.F., Rocheleau, D. (2019). Agroecology and La Via Campesina I. The symbolic and material construction of agroecology through the dispositive of "peasant-to-peasant" processes. Agroecology and Sustainable Food Systems, 43(7-8), 872-894.
35	The economic potential of agroecology: Empirical evidence from Europe	*Journal of Rural Studies*	2019	van der Ploeg, J.D., Barjolle, D., Bruil, J., Brunori, G., Costa Madureira, L.M., Dessein, J., Drąg, Z., Fink-Kessler, A., Gasselin, P., Gonzalez de Molina, M., Gorlach, K., Jürgens, K., Kinsella, J., Kirwan, J., Knickel, K., Lucas, V., Marsden, T., Maye, D., Migliorini, P., Milone, P., Noe, E., Nowak, P., Parrott, N., Peeters, A., Rossi, A., Schermer, M., Ventura, F., Visser, M., & Wezel, A. (2019). The economic potential of agroecology: Empirical evidence from Europe. Journal of Rural Studies, 71, 46-61.

Nº	Title	Journal	Year of publication	Reference (APA)
36	From Transition to Domains of Transformation: Getting to Sustainable and Just Food Systems through Agroecology	*Sustainability*	2019	Anderson, C.R., Bruil, J., Chappell, M.J., Kiss, C., & Pimbert, M.P. (2019). From Transition to Domains of Transformation: Getting to Sustainable and Just Food Systems through Agroecology. Sustainability, 11(19), 1-28.
37	Do field-level practices of Cambodian farmers prompt a pesticide lock-in?	*Field Crops Research*	2019	Flor, R.J., Maat, H., Hadi, B.A.R., Kumar, V., Castilla, N. (2019). Do field-level practices of Cambodian farmers prompt a pesticide lock-in?. Field Crops Research, 235, 68-78.
38	Structuring Markets for Resilient Farming Systems	*Agronomy for Sustainable Development*	2019	Valencia, V., Wittman, H., & Blesh, J. (2019). Structuring Markets for Resilient Farming Systems. Agronomy for Sustainable Development, 39(25), 1-14.
39	Ecosystem hero and villain: Native frog consumes rice pests, while the invasive cane toad feasts on beneficial arthropods	*Agriculture, Ecosystems and Environment*	2019	Shuman-Goodier, M.E., Diaz, M.I., Liberty Almazan, M., Singleton, G.R., Hadi, B.A.R., & Propper, C.R. (2019). Ecosystem hero and villain: Native frog consumes rice pests, while the invasive cane toad feasts on beneficial arthropods. Agriculture, Ecosystems and Environment, 279, 100-108.
40	Bases agroecológicas para la adaptación de la agricultura al cambio climático	*Cuadernos de Investigación UNED*	2019	Nicholls, C.I., & Altieri, M.A. (2019). Bases agroecológicas para la adaptación de la agricultura al cambio climático. Cuadernos de Investigación UNED, 11(1), 55-61.
41	Defining agroecology: Exploring the circulation of knowledge in FAO's Global Dialogue	*The International Journal of Sociology of Agriculture and Food*	2019	Loconto, A., & Fouilleux, E. (2019). Defining agroecology: Exploring the circulation of knowledge in FAO's Global Dialogue. The International Journal of Sociology of Agriculture and Food, 25(2), 116-137.
42	Transitioning to Sustainable Agriculture Requires Growing and Sustaining an Ecologically Skilled Workforce	*Frontiers in Sustainable Food Systems*	2019	Carlisle, L., Montenegro de Wit, M., DeLonge, M.S., Iles, A., Calo, A., Getz, C., Ory, J., Munden-Dixon, K., Galt, R., Melone, B., Knox, R., & Press, D. (2019). Transitioning to Sustainable Agriculture Requires Growing and Sustaining an Ecologically Skilled Workforce. Frontiers in Sustainable Food Systems, 3, 1-8.
43	Peasant balances and agroecological scaling in Puerto Rican coffee farming	*Agroecology and Sustainable Food Systems*	2019	McCune, N., Perfecto, I., Avilés-Vázquez, K., Vázquez-Negrón, J., & Vandermeer, J. (2019). Peasant balances and agroecological scaling in Puerto Rican coffee farming. Agroecology and Sustainable Food Systems, 43(7-8), 810-826.
44	Shifting from farming to tending the earth: A discussion paper	*Journal of Organics*	2019	Hes, D., & Rose, N. (2019). Shifting from farming to tending the earth: A discussion paper. Journal of Organics, 6(1), 3-21.
45	Agroecology as a Practice-Based Tool for Peacebuilding in Fragile Environments? Three Stories from Rural Zimbabwe	*Sustainability*	2019	McAllister, G., & Wright, J. (2019). Agroecology as a Practice-Based Tool for Peacebuilding in Fragile Environments? Three Stories from Rural Zimbabwe. Sustainability, 11(3), 1-21.
46	The Contribution of Agro-ecology as a Solution to Hunger in the World: A Review	*Asian Journal of Agricultural Extension, Economics & Sociology*	2019	Adidja, M.W., Mwine, J., Majaliwa, J.G.M., & Ssekandi, J. (2019). The Contribution of Agro-ecology as a Solution to Hunger in the World: A Review. Asian Journal of Agricultural Extension, Economics & Sociology, 33(2), 1-22.

Nº	Title	Journal	Year of publication	Reference (APA)
47	Challenges and Action Points to Amplify Agroecology in Europe	*Sustainability*	2018	Wezel, A., Goris, M., Bruil, J., Félix, G.F., Peeters, A., Bàrberi, P., Bellon, S., & Migliorini, P. (2018). Challenges and Action Points to Amplify Agroecology in Europe. Sustainability, 10(5), 1-12.
48	Contribution of trees to the conservation of biodiversity and ecosystem services in agricultural landscapes	*International Journal of Biodiversity Science, Ecosystem Services & Management*	2018	Barrios, E., Valencia, V., Jonsson, M., Brauman, A., Hairiah, K., Mortimer, P.E., & Okubo, S. (2018). Contribution of trees to the conservation of biodiversity and ecosystem services in agricultural landscapes. International Journal of Biodiversity Science, Ecosystem Services & Management, 14(1), 1-16.
49	Agroecological transitions: What can sustainability transition frameworks teach us? An ontological and empirical analysis	*Ecology and Society*	2018	Ollivier, G., Magda, D., Mazé, A., Plumecocq, G., & Lamine, C. (2018). Agroecological transitions: What can sustainability transition frameworks teach us? An ontological and empirical analysis. Ecology and Society, 23(2), 1-18.
50	Food Sovereignty and the regeneration of terraced landscapes	*Annals for Istrian and Mediterranean Studies - Series Historia et Sociologia*	2018	Pimbert, M. (2018). Food Sovereignty and the regeneration of terraced landscapes. Annals for Istrian and Mediterranean Studies - Series Historia et Sociologia, 28(4), 779-794.
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AFN as Bricolage: towards an alternative notion of 'alterity' as 'hybridity'

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Abstract

The alterity of alternative food networks (AFN) is increasingly difficult to define, given the multiplicity of their 'hybrid practices' that intersect both the 'alternative' and the 'conventional'. This article proposes the framework of bricolage to address the alterity-hybridity tension. Building on the post-binary construal that sees both the alternative and the conventional as hybrid collectives, bricolage registers the alterity of AFN and their transformative potential in the mode in which resources and values are hybridised. With the ethnographic account of how a famers' market in Beijing 'makes do' with the available resources in its multi-layered environment, and subsequently 'skews' and subverts the 'conventional' from within, the article demonstrates that it is through the distinct modus operandi of hybridity that the prospects of doing food otherwise are opened.

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Introduction

The hybridity-alterity dynamics became a central topic in AFN studies at the turn of the century, a time when the normative or 'prescriptive' (DuPuis and Goodman 2005) paradigm of alterity was vigorously contested and reconsidered. The introduction of actor-network theory (ANT) (Goodman 2001) to agri-food studies and the growing attention to how alternative ways of doing food are enacted in specific social, economic and historical processes (Jarosz 2008; Mount 2012) have prompted a shift from alterity to hybridity in the AFN research landscape. Through the lens of ANT, the conventional system is not an entity *a prior* but a process of 'performative ordering', and AFN are constantly in the process of becoming, as the associations and detachments among human and non-human actors have to be performed and negotiated (Whatmore and Thorne 2004; Holloway et al. 2010; Le Velly and Dufeu 2016). Empirical studies further shed light on how various 'hybridising strategies' are deployed by the farmers (Ilbery et al. 2010; Cerrada-Serra et al. 2018) and consumers (Holloway et al. 2010; R. Johnson et al. 2016) that compose AFN as hybrid spaces (Smithers and Joseph 2010) or hybrid collectives (Le Velly and Dufeu 2016). These theoretical and empirical works underscore that the conventional system and AFN are in practice intersected (O'Neill 2014), imbricated (McCarthy 2006), mutually constitutive (Sarmiento 2017), and symbiotic (Hopkinson 2017). Some have therefore proposed abandoning the notion of 'alterity' (Blumberg et al. 2020) which, according to (Le Velly 2019)'s acute reading, triggers unease and discomfort, in favour of other more open, processual, and relationally registered frameworks such as ecological embeddedness (Morris and Kirwan 2011), 'autonomous food space' (Wilson 2013), territorial assemblage (Lamine et al. 2019), market *agencement* (Le Velly and Dufeu 2016), and so on.

'What is alternative about AFN' remains pertinent, however, not only due to its centrality to the legitimacy and identity of AFN practices (Mount 2012), but also because it holds the key to deploying their transformative potential to actualise more sustainable and just ways of doing food. Considerable scholarly efforts have been invested to appreciate the alterity of AFN. Unlike the binary thinking of the 1990s which fetishises a romantic, counter-hegemonic notion of alterity, there is now a shared appraisal of *in situ* analyses (Beacham 2018a; Fendrychová and Jehlička 2018) which, by foregrounding 'what is alternative *in*' rather than 'what is alternative *to*'[1], find how alterity is contextually specific and geographically variegated (Holloway et al. 2010; Martindale et al. 2018). The post-binary and situated deliberations hence register AFN on an open ontology that sees them as undergoing a process of becoming. Alterity is defined not as what AFN are but as what they do, actually and potentially. By deploying the technique of 'reading for difference' of the diverse economies approach (Gibson-Graham 2008; Harris 2009), many have explicated that alterity manifests not only in alternative products and distribution networks (Watts et al. 2005) but also in novel, non-capitalist economic logics, relations and practices (Chiffoleau 2009; Rossi 2017; Corvo 2018; Matacena 2020; Rosol 2020) which are often crafted through hybridising strategies. Such outcomes are not definitive but evidence of the 'generative capacity' (Beacham 2018b), the 'promises of difference' (Le Velly 2019), and the 'possibility of an economic and political "other"' (Jonas 2010, 4) underpinning the alterity of AFN.

If hybridity does not necessarily undermine alterity, which lies in the prospects for doing food otherwise, then how and from what do these prospects emerge? If the boundary between the conventional and the alternative is porous, and if both are performative orderings or hybrid collectives, then what endows the latter with the promises of difference that the former does not behold? What enables the becoming of diverse economic practices and operational logics that stand as 'alternative' to the mainstream system? This article seeks to demonstrate that it is from the situated practices of hybridising conventional and alternative elements that the possibilities arise for food to be done differently. In other words, the alterity of AFN is nurtured precisely in their hybridity. To articulate this notion of alterity as hybridity, I construe AFN as 'bricolage', the act of 'making do' with what is already available and 'skewing' the resources from their previous, known uses.

[1] Campbell (2020)'s political ontologies approach is an exception. This work takes 'alternative to what' as the primary matter of concern, and seeks to underscore how other possible farming ontologies – indigenous and alternative alike – are silenced by the modernist one.

Bricolage emphasises not so much the *content* as the structural *form* of hybridity, and the central concern here is with the mode whereby heterogeneous resources, relations and strategies are *agenced* into a hybrid collective. Through the lens of bricolage, my ethnography of the operational dynamics of a farmers' market (FM) in Beijing examines the strategies deployed by AFN participants to start and substantiate various hybrid inventions and subversions (Sonnino and Marsden 2006; Jones et al. 2010; Cherrier 2017; Le Velly and Moraine 2020; Zwart and Mathijs 2020). In so doing, it seeks to shed light on alterity as registered on the specific *modus operandi* of hybridisation.

Theoretical Framework: Bricolage

Since Levi-Strauss first introduced bricolage as a theoretical notion in his seminal work *La Pensée Sauvage* (1962), the concept has proven to be productive in many research areas including cultural studies, educational research, entrepreneurship and innovation studies, social ethnographies, and so on (Phillimore et al. 2016). In his original writing, Levi-Strauss derived bricolage from the French verb *bricoler*, meaning to tinker and make do with what is at hand in pursuing an objective, and used it to denote the thought form of mythical thinking, 'the science of the concrete'. Bricolage is construed in contrast to engineering, which describes the thinking pattern in modern science, 'the science of the abstract'. According to Levi-Strauss, unlike the engineer who would start with a blueprint for the intended product and gather or/and create all the necessary instruments accordingly, the bricoleur begins with the readily available, and makes improvisations given the specific tasks to be fulfilled. Deleuze and Guattari also acknowledge that bricolage is founded on the multiple yet limited, hodgepodge-like stock of materials and that bricoleurs have the ability to 'rearrange fragments continually in new and different patterns or configurations' (Deleuze and Guattari 1983: 7). However, to them, 'bricolage' is characterized by an openness in the consequence, by an 'indifference towards the act of producing and toward the product, toward the set of instruments to be used and toward the overall result to be achieved' (Deleuze and Guattari 1983: 7). In other words, what bricolage produces cannot be deduced from – thus is not pre-constrained by – the stock of materials, the intention of the bricoleur, nor the mode in which bricolage is performed. Whereas Levi-Strauss used 'bricolage' to denote the intellectual system of a particular culture, Deleuze and Guattari understood bricolage' mainly as an ontologically primary process, 'a continually producing production' in which the act of producing and the product cannot and need not be distinguished (Deleuze and Guattari 1983: 7). Between the two articulations of bricolage, there exists a subtle yet by no means trivial difference. Interestingly, Viveiros de Castro, the Brazilian anthropologist who has rejuvenated structuralism by integrating it with Deleuze's philosophy of immanence and becoming, provides a novel reading of bricolage that goes beyond the disparity. He reinterprets the bricolage-engineering distinction in terms of 'examples' and 'models', in that 'Examples are borrowed horizontally—they diffuse—while models are imposed vertically—they emanate. Models give orders and enforce order; examples give cues, inspiring inventions and subversions' (Viveiros de Castro 2019: S301).

How does bricolage, by way of examples, inspire inventions and subversions? The answer lies in the three features that define a bricolage. First, it is an *ad hoc* response to the environment, and therefore often appears to follow no clear pre-determined trajectory. Second, it builds on a singular, limited yet heterogeneous repertoire, and therefore frequently requires situational improvisation. Third, as a corollary of the first two, it yields highly contingent results, meaning that the product is mostly unpredictable. The elaboration and expansion of 'bricolage' in different fields of study often tend to pay greater attention to the latter two attributes, whereby bricolage is equivalent to 'making do' (Hatton 1989; Muggleton and Eicher 2002; Baker et al. 2003; Baker and Nelson 2005). The recent new translation of *La Pensée Sauvage* helps highlight in the first feature a deeper layer of bricolage as 'skewing'[2], a situational deviation away from the set trajectory, 'a

[2] In the 1966 English edition, '*mais toujours pour évoquer un mouvement incident*' (Lévi-Strauss 1962, 26) is translated as 'always used with reference to some extraneous movement' (Lévi-Strauss 1966, 16), whilst 'the new translation' provided by Mehlman and Leavitt renders it into 'always to indicate a movement off the expected path' (Lévi-Strauss 2021, 20), putting more emphasis on the juxtaposition between the bricolage movement and the expected path. Besides, another notable disparity is with regard to

movement off the expected path' (Lévi-Strauss 2021: 20). Cultural studies theorists have mainly built on this dimension, as they address the power dynamics between the dominant and the dominated (yet by no means passive or docile) groups. For them, bricolage denotes the tactics of 'artisan-like inventiveness' (de Certeau 1984: xvi–xix) among subaltern groups to resist and subvert the hegemonic cultural norms, for instance by 'appropria[ting] [a] range of commodities by placing them in a symbolic ensemble which served to erase or subvert their original meanings' (Hebdige 1979: 104).

I would suggest that bricolage as skewing is always implicated in bricolage as making do; the emergent use of a given element for a new project is, very likely, to be skewed from its previous applications. It also indicates that at the heart of every bricolage is a subversive virtuality to be actualised. In this light, bricolage and its distinction from engineering add to the analytical troupe of market *agencement*. Markets are *agenced* 'hybrid collectives', but not all hybrid collectives are *agenced* in the same mode. The conventional one, once established and stabilised, is performed in the manner of engineering[3], a 'mode of creativity' that 'starts with a project, devises a conceptual blueprint, and orders cut-to-measure equipment and elaborate specific materials to accomplish the engineer's project', whereas AFN as bricolage 'relies on already available heterogeneous materials not originally designed with the bricoleur's contingent project in view' (Viveiros de Castro 2019: S300). To put this in ANT language, by engineering, the conventional system enrols actants and shapes them into 'intermediaries' which are mobilised *en masse*, whereas AFN, through bricolage, are emergent from the contingent associations among heterogeneous actants as 'mediators'. Therefore, what endows AFN with the 'promises of difference' is not so much the specific resources, strategies and values that are hybridised, but the *modus operandi* whereby hybridisation takes place. As bricolage incorporates contingency and mediation into the process, the possibility of difference is always present. As making do, bricolage prompts the associations and attachments to be created among elements that may very likely be excluded from the engineer's model-led projects; as skewing, bricolage hinges heavily on mediation and translation, which produce unexpected results, hence the prospect of becoming otherwise. This means that bricolage is always open-ended and cannot be pre-determined by any essentialist identity or 'nature'. It thus resonates with assemblage thinking that has been productive for highlighting the heterogeneity, the distributed agency, the open-endedness and the relational, immanent character of agri-environment governance practices (Loconto 2015; Forney et al. 2018; Forney 2021; Helliwell et al. 2022). If the focus of an assemblage lens is 'not so much on the specificities of the elements but rather on the multiple connections that make them exist in the whole' (Forney et al. 2025:15), then bricolage complements it with a micro perspective for tracing how such connections (and disjunctions) are drawn out.

In a nutshell, bricolage fosters a notion of AFN alterity as the mode in which hybridisation unfolds. A number of empirical studies have demonstrated the productive force of bricolage in elucidating how alterity arises from hybrid practices, through 'the ability to strategically navigate in a context' (Mangnus and Schoonhoven-Speijer 2020: 10), 'the production of new situated knowledges, objects and associations' (Feyereisen et al. 2017: 300) which 'build the capacity of the collective to act from within the system they want to change' (Feyereisen et al. 2017: 312), or 'the ability to attach new meaning and interpretation of materials', to 'creatively identify materials and resources within local contexts and use them to their advantage' and to creatively 'restructur[e] potential building blocks' (Grivins et al. 2017: 343). In what follows I introduce the bricolages of a FM in Beijing to further add to the empirical deliberations of the *modus operandi* of hybridisation in relation to alterity.

this line: '*Et, de nos jours, le bricoleur reste celui qui œuvre de ses mains, en utilisant des moyens détournés par comparaison avec ceux de l'homme de l'art*' (Lévi-Strauss 1962: 26), especially to '*des moyens détournés*', which is translated as 'devious means' and 'means that are skewed', respectively, in the 1966 and 2021 versions.

[3] The conventional market *agencements* in practice also entails bricolage, especially in the initial formation (see Xu (2023) for a discussion of transnational corporation's bricolage when developing local markets.) But engineering makes possible the mobilisation and coordination among the huge number of elements in the conventional system(s).

The FM and its Bricolages

The ethnography is part of a larger project that investigates the everyday food practices in contemporary Beijing in relation to the wider processes of urbanisation, stratification and individualisation after the late-1970s market reform. In part as a response to the pervasive food safety hazards, procuring safe and healthful foods for self-consumption has become salient in the quotidian foodways of ordinary Beijingers. Following my health-conscious and safety-concerned research companions, I came to From Farm to Neighbor (F2N), an emerging FM in Beijing back then. Trying to understand how personal concerns around food and eating become 'social' and addressed through AFN, I took F2N as a main field site. I visited the marketplace regularly as a shopper, attended the stalls with vendors when business was hot, and was involved in the organisation of special events with the F2N management team. Through these experiences I gained the insight, as discussed elsewhere, that F2N was an alternative social space where individuals with food safety and health concerns sought 'self-protection' collectively. The close engagement with the management team, however, further led to the recognition that such an alternative space could not be carved out only by the shared 'imaginaries' or pursuits of a more desirable future, but entailed 'fussy' and sometimes difficult logistic arrangements, giving rise to a range of interesting bricolages.

The ethnography below delineates, from the manager's point of view, how to navigate the particular material and institutional context, to gather and integrate various resources, in order to keep open the FM as an alternative space where care of the self becomes care of human and non-human others. F2N was founded in the summer of 2014. Unlike many FMs that mainly proffered agricultural products, F2N furnished artisanal food (hand-made cookies, fish balls, cheese, etc.) and sustainable goods (hand-made toiletries and clothes). Apart from weekly marketplaces, F2N also regularly organized workshops and public events, often in collaboration with NGOs and sustainability networks, to promote sustainable and healthy lifestyles such as zero waste and vegetarianism. My fieldwork at F2N took place between September 2015 and October 2016, a time when the organisation was at a unique stage of development. The FM had just managed to stabilise the network and was actively probing potential paths to go 'forward' – almost in the dark and not always with clear visions for the future. This provided a unique window for me to take note of the bricolages that F2N creatively put together. Specifically, I focus on three situated bricolages that re-*agence* the conventional system and open up other possibilities.

Before going into the details, I shall discuss how the ethnographic accounts were assembled from the multi-sensorial and multi-modal encounters in Beijing. I took 'participant sensation' (Howes 1991; Howes 2019) as the guiding methodology, which allowed me to attend to and be affected by the contingent and ephemeral 'intensities' that went way beyond the realm of representation. These affects and 'facts', often imperceptible to the conventional regime of signs, constitute the backbone of my ethnography, and the section on *renao* is written up from them. The sensorial and affective engagement is contextualised with 'textual' encounters. These include media reports on F2N, and social media posts that the management team, vendors and frequent shoppers shared about their experiences of and reflections on F2N and its marketplace or special events. From these materials I managed to gain insight into the FM's past, especially the exciting but logistically difficult early days of startup. The semi-structured interview with the founder and manager Erica was instrumental in filling in some of the gaps in the textual material, and enabled me to present the discussion on the venue as a bricolage in the current form. But more importantly, it was through the face-to-face conversation that I could feel the tensions between alternative ideals and regulatory, financial viability, which serves as the base of the part on entrepreneurship.

Bricolage 1: the venue

The interaction between producers and consumers is usually foregrounded in FM research. Indeed, these market forms stand out primarily in that they bring producers and consumers back into the face-to-face, un-anonymised encounter, helping them 'short-circuit' the elongated supply chain in the conventional system

(Sonnino and Marsden 2006). Kirwan writes that 'it is the interaction between producers and consumers that embodies the underlying dynamics of FMs' (Kirwan 2004: 408). FM is also understood to be 'a space in which producers and consumers can circumvent the consumption spaces constructed by powerful actors in the food chain' (Holloway and Kneafsey 2000: 293). Notwithstanding the significance of the producer-consumer dynamics, they depend on a physical site, a market*place*, to unfold and to expand the network of alterity. This material dimension has so far received little attention, with only a few exceptions (Spilková et al. 2013; Nigh and Cabañas 2015; Morckel 2017; Morckel 2018). The first bricolage I shall introduce pertains to how F2N found itself a venue to nurture the desirable producer-consumer dynamics.

I first came to know about F2N through the internet. The FM maintained a robust and active presence on social media, which is becoming a key site for AFN organisation and mobilisation in China (W. Chen and Tan 2019; Martindale 2020). After a month of engagement in the group discussion, I finally paid a visit to the F2N marketplace, following the direction indicated on their web page: Floor B1 of 'the Grand Summit'. When I arrived, I thought I was at the wrong address. The Grand Summit turned out to be a high-end shopping mall in one of the most privileged areas in Beijing. Immediately adjacent to it is the Diplomatic Office Building, and a Diplomatic Residential Compound. Across the street there is Hotel Kempinski, Westin, Hilton Beijing, and the skyscrapers that house foreign companies and Sino-Foreign joint ventures. Stepping inside, I felt even more perplexed: bright but soft lighting illuminating every inch of the space, fresh and elegant scent pampering the olfactory sense without overwhelming it, soothing music playing in the background, and contemporary art pieces adding a chic flavour to the cosmopolitan vibe. 'Intuitively', the Grand Summit seemed an unusual, if not a 'wrong' venue for a farmer's market: the built environment projected the spatio-economic strategies of the mall as a 'new enclosure' (Goss 1993), which stood in contrast to the sociality of marketplaces (Watson 2009). In short, the mall was too urban as an outlet for provisioning 'organic' farm produce, and too commodified as a space for nurturing and pursuing 'alternative' values.

But worse than a 'wrong' venue is no venue at all. Having a physical space where networks of people and produce can regularly cluster together to become a 'place' is crucial for the operation of FMs. The goal to restore face-to-face encounters and forge personal ties between producers and consumers is difficult to achieve without a physical site where people can meet and connect. A FM's development may be deeply constrained by logistic problems, especially the lack of a sufficient and secure space for direct interactions to unfold (Nigh and Cabañas 2015).

In the case of F2N, the venue turned out to be a key factor for personal endeavours of self-care and self-protection to evolve into social initiatives. F2N began with Erica, the founder, trying to heal herself with 'clean and pure' food. Originally from Taiwan, Erica came to Beijing in 2013 after spending eight years in North America and subsequently two years in Shanghai. Not long after this move, her physical and mental well-being deteriorated, which prompted her to become more 'mindful' about eating and to gravitate towards alternative foods. Due to the lack of existing access to locally grown, seasonal, chemical-free produce, Erica contacted as many farmers as she could find around Beijing, visited their farms to explore where and how food was grown, then built rapport with those who shared the same visions and values. Every weekend she travelled around and collected weekly food supplies from the farms. After a while, she decided that it would be more convenient for herself if she could bring the farm produce into her own neighbourhood. In the summer of 2014, she gathered six farmers, invited friends, colleagues, and neighbours, and put together the first F2N marketplace, in the 'borrowed' backyard of a pub, M, managed by her friend. It was in this open space behind the small bar that the relatively closed, private, personal network of self-protection became a social one.

The venue sponsored by the M pub was particularly instrumental to the emergence of F2N. The physical site allowed for the convergence of scattered actors, thus contributing to the condensation of the network connections during the early development. However, the use of space sometimes clashed with the for-profit activities of the pub, and the support was sporadic. Between December 2014 and October 2015, F2N became a mobile market. For ten months it had to float around the city for venues – mostly independent restaurants

and gastropubs but occasionally shopping malls – that would open to it at low or no cost. Such mobility allowed F2N to expand the network spatially and socially, reaching more neighbourhoods and communities across Beijing. This was however very costly, given that most of the limited management capacity was devoted to liaison and negotiation with potential venue providers. Moving the marketplace every other week was a hindrance for patrons and some of the vendors to commit to the network. In the end, the marketplace finally settled down in the Grand Summit in late 2015. The reason for F2N to accept this arrangement was simple: the venue promised stability, and it was free. The Grand Summit management offered the open space on Floor B1 for the marketplace to meet during the weekends, and provided other logistic support, including a housekeeping service and storage for keeping supplies during the week. The sponsorship was based on the acknowledgment of F2N's values, but also on the expectation that the marketplace would draw more visitors over the weekend. This firm rooting allowed F2N to expand its network and diversify the marketplace into various formats with a presence in different locations.

The seemingly unthinkable location of the FM points to how AFNs operate by bricolage rather than engineering. As organisations, AFNs usually do not have many resources to work with. The venues they choose and the forms they take are determined not only by the aspired social values but also by the resources they are able to mobilise. F2N had no means to 'engineer' itself an ideal, perfect venue that would embody its values in the purest form. Rather, it could only 'make do' and let the marketplace become wherever there was a space to appropriate – be it a restaurant, a backyard, a campus, a residential community or a shopping centre. This bricolage, far from subsuming F2N to a commercial logic or rendering it 'vulnerable to conventional co-optation', in fact skewed and subverted the spatial and sensorial politics of the mall, which is especially evident in the next bricolage I introduce.

Bricolage 2: Renao

FMs are often characterised by 'a positive atmosphere' and 'a sense of community' (A. J. Johnson 2013: 324). Inspired by the 'visceral approach' (Hayes-Conroy 2010), scholars demonstrate how this marketplace quality is attributable not only to the producer-consumer dynamics, but also the sensorial mobilisation of bodies, the spatial organisation of particular food settings (MacDonald 2013), and the affective nature of food (Carolan 2016). At F2N, material and sensorial resources were put together with the symbolic elements as the organisers crafted the network into a place of conviviality, a place of *renao*.

A visit to the F2N marketplace always felt somewhat surreal. To get there, one first had to enter the mall. This is a place to wander, to stroll about, in a leisurely, relaxed fashion. Haste and hurry would seem so incommensurate with the setting that anyone dashing by would be noticed. Hence, taking the escalator downstairs to the FM, where unmediated social interactions among strangers were endorsed and even encouraged, was a bewildering experience. The tranquillity of the mall receded whilst the lively and vibrant market energy embraced the sensorium. It felt as if two different 'realities' coexisted in parallel on and under the ground. The escalator was the gateway between 'being-in-the-market' that prompts engaged, intense interaction, and what resembled 'being-in-the-plaza' but in a more disengaging, serene mode (Richardson 1982).

Such 'being-in-the-market-ness', often referred to as *renao* in Chinese culture, is another bricolage created at the F2N marketplace. Literally meaning 'hot and noisy', *renao* is the spatial, sensorial and social quality that emerges from the gathering of people and things, a 'sociothermic affect' (Chau 2008: 488) which is 'more diffused than "feelings" and more complex than simple excitement' (Chau 2005: 163). As a traditional cultural idiom, *renao* makes manifest 'the "human flavour" (*renqing wei*) generated from enthusiastic human interactions' (Yu 2004: 138), and is key to the 'life' of any marketplace. Moreover, this positive quality often generates a greater convergence of people, since people like to '*cou renao*', that is, to be near and become a part of *renao*.

Considerable efforts and resources were invested to 'stir up' *renao* at the F2N marketplace. First and foremost, the spatial configuration of the physical environment created a close and intimate but also open and inviting aura. The stalls were made of simple long tables, laid out before the market opened then removed after the closing time. There were three sections for three categories of goods: fresh produce from local farms, artisanal foods, and eco-lifestyle handicrafts. In the latter two sections, the stalls were arranged at intervals. They were close enough so that the vendors, usually sitting behind the table, back against the wall or the escalator, could strike up casual conversations with one another when there was no business to attend to. They were also distant enough to allow one-on-one interactions and negotiations between vendors and curious shoppers. In this way, the marketplace became an open and engaging environment, welcoming anyone to join *renao*.

The farm produce was showcased on the most prominent spot. Here the spatial arrangement was slightly different. All the stalls were connected, with no gaps in between, and vendors sat or stood on the inner side, facing outwards towards shoppers who would stroll around the section space. This arrangement helped nurture an atmosphere of 'collective effervescence' for it enhanced the closeness of people as well as things. Vendors worked side-by-side and back-to-back. They would converse, exchanging useful farming or market information, as well as discussing affairs of a more personal and private nature. They would offer homemade farm specialties for one another to sample and to nibble. They would also collaborate, helping one another when shoppers crowded around stalls, handing over useful tools and bags to whoever needed them, and even directing customers to patronise 'neighbouring' vendors. Comradeship instead of competition was the ethos here, and the noises they constantly made filled the otherwise too quiet and solemn mall space. Every inch on the stall surface was occupied by farm products: bunches of fresh green leafy vegetables in large plastic bags, perfectly ripe red tomatoes in bamboo baskets, unpeeled corncobs arranged neatly in pyramids, and piles of clear food boxes containing tofu, braised baby potatoes and other ready-to-eat farm delicacies. The space beneath the tables was also taken up, by sacks bulging with brown potatoes or purple aubergines, multicoloured clusters of fruits, and huge ice boxes storing pork or beef portioned in vacuum bags. All these effectively created a charmingly copious scene that would immediately capture the attention of anyone entering the space, alluring more bodies into the co-production of *renao*.

Through a range of creative and *ad hoc* mobilisations of the material and sensorial aspects of things and bodies, a *renao* marketplace was established in the quiet and almost 'desolate' mall. This peculiar bricolage contributed to the steady growth of F2N. *Renao* is part of the reason why the Grand Summit management was willing to offer the space to F2N for free. But more importantly, *renao* may foster 'a sense of communal life through the sharing of a common space' (Chau 2005: 140) and, in the case of the F2N marketplace, through the sharing of food and food work. In *renao*, the 'sensorial production of the social' (Chau 2008) is at work: when people 'approach' *renao*, they immediately become part of it. The convivial, lively and vibrant ambiance built on and intensified the mutual responsiveness among different actors. This could develop further into active engagement, sustained interactions, and social bonds. When *renao* grew, the F2N network expanded, for *renao* sensorially bound producers, consumers, and others into a network of 'togetherness'.

Meanwhile, the *renao* bricolage subverted the spatio-sensorial politics of the mall and the broader urban experience. Once a quintessential feature of the urban neighbourhoods, *renao* is now a rarity. The ongoing government-led urban renewal under late socialism has drastically transformed the urban forms and how the city looks, smells, and feels, with profound implications on urban livelihoods and everyday life (Zhang 2006; Su 2015; Pow 2017). The liveliness and vibrancy of the streets and alleys are dying out as municipal governments seek to project 'spatial modernity' onto the urban landscape, often by 'upgrading' traditional food marketplaces into modern supermarkets (Maruyama et al. 2016; Y. Chen and Liu 2019). 'Loss of *renao*' has become a key trope through which popular discontents are expressed regarding the often forcefully imposed restructuring of urban space and experiences (Zhang 2006). In this context, the *renao* bricolage, by allowing unmediated connections and instantaneous engagement to play out among people who were not necessarily acquaintances, projected a specific form of sensorial 'alterity'. Within the enclosure of the high-end mall, the

FM cracked open a *renao* space where it was possible, once again, to do food in a convivial mood.

Bricolage 3: entrepreneurship

Another fascinating bricolage, pertaining to the governance complexity of AFN (Manganelli et al. 2020), is the 'entrepreneurial' path that F2N crafted for itself. There are two dimensions to it: first, F2N maintained a legal status as a commercial entity within the Chinese regulatory system; second, F2N operated by a 'business model' in order to 'compete' for resources on the market. The entrepreneurial path is a bricolage in the original sense of the word, being an *ad hoc* response to the environment, one that is deeply shaped by the post-socialist state *as well as* the neoliberal market.

While F2N, like many other AFNs in China, began as a personal endeavour, its continual becoming on the social scale depended on the acquisition of a formal, legal registration with the state. Although a charity or NGO registration would, ideally, be more commensurate with the pursuit of social and environmental values, the registered legal status of F2N is a company: a 'cultural development co. ltd'. It is a product directly resulting from the stringent government regulatory system over the non-public sector. The registration of NGOs is strictly confined to a few specific fields, and the 'permission' of an official sponsor, usually a government body, is essential. Sometimes it can take an organisation more than a decade to fight for but still fail to acquire its legal status (Wang 2012). Even if it is successfully obtained, the organisation is subject to the supervision, regulation, intervention and even mandatory administrative assignment by the government, mediated through the sponsoring agency. Under this regulatory framework, and without the necessary institutional resources, it was practically impossible for F2N to register as a charity or an NGO. In response to the tight control over the civil society space, grass-root organisations in China have found an alternative route to legal status. Instead of registering with the Ministry of Civil Affairs as NGOs, they turn to the State Administration of Industry and Commerce (Xu and Smith 2012). The AIC system grants the legal status of a commercial entity, that is, an enterprise. The procedure is less complex and not as time-consuming, and AIC status does not require direct supervision by a sponsoring body, thus allowing organisations more autonomy.

Though it was not a problem to 'register' F2N as a business, it was a painstaking decision an arduous task to 'run' it as a business. Erica was aware of the tensions here. After all, it was not her intention or aspiration to run anything as a business:

> *… During the first year, my understanding was that I was simply doing something for myself. I wanted to make a difference to my life and the life surrounding me. I do not aspire to be a boss of an enterprise, and I do not intend to turn F2N into a business model…*

As F2N was stepping into the third year of operation around mid-2016, the pressure to operate as an enterprise was felt intensely, to the point that Erica remarked that '… without a business model, others will look down upon you, and they will think that you don't have a future'. These words expressed a sense of frustration over the paradox that the farmer's market's future depended on the extent to which it was 'enterprised'. Astounding as it may sound, I was not surprised by her mention of a 'business model'. The remark pointed to the '*chuangye* fever' or 'entrepreneurial boom' that reached its climax in around 2015 and 2016. Starting from 2011, business startups became a new fashion. Entrepreneurialism gained further momentum from the state's launch of the Popular Entrepreneurship and Innovation plan in 2015. By mid-2016, entrepreneurship was the predominant fad in Chinese mega cities, to the extent that it was almost impossible to walk into a cafe without witnessing people discussing business proposals, series A, venture capital and so on.

It is evident that the entrepreneurial bricolage of F2N was a product of a specific context. The post-socialist state still maintained a relatively tight grip over the non-government sector. Meanwhile, the market dynamics nurtured an entrepreneurial boom, which was then captured by the state, appropriated and turned into a neoliberal social engineering project. This aligns with the general insights on the AFN in a post-socialist context: they have to negotiate vis-a-vis both the market and the state when seeking to carve out alternative trajectories

for food production and provisioning (Jung et al. 2014; Pungas 2019). In the case of F2N, we see how such negotiation is further complicated as the state and the market forces interweave, making entrepreneurialism almost the 'only game in town'. The FM was 'cornered' by a dual force into entrepreneurship.

The imperative to 'enterprise' an AFN was experienced even more painfully given the tight financial constraints presiding over the efforts to actualise alternative ways of doing food. An anecdote that Erica shared with me lays bare the emotions and sentiments when being 'forced' to negotiate the integrity of the FM with financial viability:

> *My friend just said to me: 'this (FM) is something those wealthy people do for fun. Are you rich? You are not. So you cannot run it like a charity.' I was so pissed and sad hearing this that I rushed out of the restaurant and cried hard for five minutes. He had to come out and apologise to me. But actually, he's got a point. We need to make money in order to survive.*

Erica's dilemma is indeed thorny, but not peculiar to her case. To stay in business, AFN organisers and operators often face the difficult task of balancing and negotiating between personal, collective commitment and financial needs (Avanzino 2013; Hodgins 2014), and sometimes they do resort to and incorporate the conventional system, for instance by seeking collaboration with large retailers for product outlets (Milestad et al. 2010). The dilemma is interpreted as an indication that alternative strategies 'seeking greater closure in food provisioning struggle in the face of the open economy' (Pratt and Luetchford 2013: 16), implying that the entrepreneurial path was an inevitable but necessary compromise.

The framework of bricolage reveals how the 'compromise' is nevertheless a creative product of the bricoleur appropriating, negotiating with and improvising from what is available to her in a given environment, and at the same time skewing and subverting it. In the end, Erica decided to go down the entrepreneurial path, recognising 'very discretely' that what she was doing with F2N was precisely *chuangye*, an equivocal term that may indicate creating a business but also starting a vocation. When asked about the decision, she replied:

> *I'm a non-conforming person. The more people want me to do something the more I rebel against it. … But when you have staff working for you, you have to be responsible for them. … when I look at these lovely people, I feel they are like my own children and I hope that working here can help them make a better living.*

Just as the entrepreneurial environment forced F2N into making a 'compromise', the entrepreneurial bricolage 'compromised' the notion of entrepreneurship. When Erica registered F2N as a business, she also affirmed a vocation. A skewing effect was moreover set in motion: the entrepreneurialism was no longer about profit but redefined as a means of 'care'. F2N thus started off as an initiative of self-care, and became a means for Erica to care for others. This 'others' were not only the staff members, but also the vendors who made F2N possible. To finance the daily operation, the F2N management team devised special 'consultancy services' to help vendors promote their products and values. One form of such consultancy was themed DIY workshops, with the input of planning and marketing from the management team, and the contribution of co-hosting vendors of necessary ingredients, tools and materials, as well as hands-on instructions on how to make artisanal foods or handicrafts. Through these workshops, vendors could make their visions and values known and appeal to more people, and F2N could retain a part of the attendance fees to fund the daily operation. While there was indeed the possibility that the introduction of a market logic, through consultancy, might 'taint' the mutual support and shared care. However, the point here is that the entrepreneurial bricolage added a latent meaning to 'consultancy', hence carving out the prospect of doing consultancy as comradeship. '[T]he "bricoleur" may not ever complete [her] purpose but [she] always puts something of [her]self into it' (Lévi-Strauss 1966: 21) – and it is this 'something of oneself' that makes such seemingly compromising bricolage creative and transformative.

Concluding Remarks

This article proposes the framework of bricolage to addresses the hybridity-alterity dynamics by focusing on the operational dynamics of AFN. The particular strength of post-binary thinking – ANT in particular – is the conceptual reconfiguration of the conventional-alternative relations as being interdependent and interactive, rather than dichotomous. The alternativeness of AFN is perceived no longer through the normative, essentialist notion of 'alterity' attached to 'assumed values', but instead with a more open and practice-oriented focus on the prospects of doing food otherwise – as AFN proffer within their respective socio-economic and geographical milieus. However, given the hybridity of AFN and their porous 'boundary' with the conventional counterpart, what makes them behold the 'promise of difference'? In addressing the question, some have highlighted the agentive capacity of AFN projects as the conception of a more desirable future (Le Velly 2019), while others point to the semiotic and material construal of alternative 'economic imaginaries' (Watts et al. 2005; Misleh Heller 2021). Both highlight the aspirations for an alternative as a condition for other possible futures to be virtually created and actualised.

Bricolage attends to the situated practices and processes of hybridisation as key to understanding AFN alterity. The ethnography from Beijing shows that when people 'make do' with what is readily available, they 'skew' the elements and resources from the previously set and known uses, thus opening up the prospect of difference. To strive for self-sufficiency, F2N engaged with hybrid practices, putting together the elements of the conventional system, cultural idioms and institutional strategies that are peculiar to the post-socialist context in Beijing. It 'made do' with the free venue despite the highly commercial mall setting, so that the rootless network could be anchored and further consolidated; it mobilised the cultural preferences for *renao*, crafting a convivial marketplace that was particularly attractive in a context of massive scale 'spatial cleansing'; and it acquired the status of commercial entity, even applying a 'business model' to maintain its operation under the regulatory system, while functioning as a vocation of care. Apart from attending to *what* is hybridised into AFN, the notion of bricolage is particularly concerned with the mode in which hybridity unfolds, proposing an understanding of alterity as hybridity, especially the *modus operandi* of hybridisation. It thus prompts researchers to examine not only the intersections between the conventional and the alternative, but also the manner in which novel associations and attachments are drawn up in practice.

The shift from the content to the form of hybridisation that bricolage enables and encourages also raises interesting questions regarding the transformative potential of AFN. The prospects of doing food differently, offered by AFN, now hinge on the alternative visions that participants individually and collectively construct, *as well as* the particular mode of putting together the resources from their immediate socio-material environment in order to substantiate those visions. Thus, what matters for bringing about sustainable futures is not only specific AFN as pockets of diverse economies but also, if not more crucially, bricolage as the mode of creation. In this regard, I concur with Dwiartama and Piatti that 'the most important thing for local AFNs to succeed is creating as much space as possible for the engagement process and relationships to occur' (2016: 162), given that the relationships are nurtured in the manner of bricolage rather than engineering, through examples that are 'differently alike' instead of models.

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Introducing "warm glow" as a key psychological motive on consumer willingness to consume organic food: A study of ethical consumption behaviour

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Abstract

There has been an upsurge of purchasing of green products in Indonesia in recent years, accompanied by increasing consumer expectations as regards the value of the products they consume. This study shows that one of the key factors influencing consumer attitudes and willingness to consume (WTC) organic foods is the warm glow effect, whereas altruistic and egoistic values were previously put forward as the main drivers of organic consumption. This study applied a partial least squares structural equation model (PLS-SEM) to 337 Indonesian respondents. The findings show that while altruistic and egoistic values influence consumer behaviour, the warm glow motive provides additional benefits for consumers of organic food. These findings have both theoretical and practical implications.

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Introduction

The growing awareness of social and environmental issues has spawned ethical consumerism (Dowd and Burke, 2013) in which ethical issues, primarily environmental food-related issues such as green and local products, have triggered a paradigm shift. Consumers choose products that suit their personal and moral beliefs (Iweala et al., 2019). Marketers have consequently begun to provide products that can complement consumers' needs and desires by embedding ethical claims in their products as a form of environmental and social welfare consciousness (Alzubaidi et al., 2021).

The food industry is one of the issues of concern in the ethical behaviour literature. According to several studies, human consumption habits are a critical environmental issue (Han, 2020; Yang et al., 2022). Public awareness of environmental protection has grown significantly, considering the various environmental impacts that threaten humans. Consumers are starting to buy organic food as it is considered environmentally friendly and a safer alternative for health (Akhtar et al., 2021; Malissiova et al., 2022; Yadav and Pathak, 2016).

Following numerous studies on consumer concerns about various food-related environmental problems (Molinillo et al., 2020; Wang et al., 2019), many studies have highlighted the importance of investigating the factors influencing consumers' selection of products based on sustainability principles (Ali et al., 2020; Hartmann et al., 2017; Septiani et al., 2019; Tandon et al., 2020). Considering that values are ideas or beliefs guiding behaviour (Schwartz, 1992), research on ethical consumption suggests that egoistic and altruistic values are critical factors influencing ethical behaviour (Cahyasita et al., 2021; Yadav, 2016). Ethical behaviours, such as supporting environmental sustainability and local farmers, are forms of altruistic values (pro-social and pro-environmental behaviour), whereas health benefits and self-expression are forms of egoistic values. One of the ethical products with the most significant growth is organic food, since it relates not only to altruistic values regarding the environment and society, but also to personal benefits, such as health.

In industrialised nations the green movement has given rise to organic products which consumers in developing countries, like Indonesia, are increasingly taking up (David and Ardiansyah, 2017; Septiani et al., 2019; Slamet et al., 2016). The main reason for adopting organic farming in Indonesia was that the green revolution in the 1980s seriously impacted socio-economic and environmental conditions (David and Ardiansyah, 2017). The government has also shown its commitment by implementing the '1000 Organic Village' programme (Septiani et al., 2019). Although there is no reliable statistical data on organic farming in Indonesia, the domestic and export organic market has been growing and this trend is expected to continue. The USA, Germany, and Malaysia, for example, have become targets for Indonesia's organic rice exports (David and Ardiansyah, 2017). Data released by the Indonesian Organic Alliance in 2019 show that most consumers of organic products still live in urban areas. According to the report, the reasons for consumers choosing organic products concern health, followed by environmental and social considerations, and product origin. Only 7.92% of consumers consistently consume organic products, and 50% are not ongoing consumers, mainly due to high prices and product availability (Institute et al., 2019). It is therefore intriguing to further investigate consumer willingness to consume organic food.

Numerous studies on organic farming have been conducted in Indonesia (e.g. David and Ardiansyah, 2017), particularly among organic consumers (Cahyasita et al., 2021; Septiani et al., 2019). A better understanding of consumer psychology will benefit both farmers and marketers. The present study aims to examine the motives – other than economic – of Indonesian organic food consumers, based on altruistic and egoistic values. In pro-environmental behaviour, pursuing happiness and enjoying oneself may also be important goals (Hartmann et al., 2017). The personal benefits derived from pro-environmental actions are called a 'warm glow of giving' (Andreoni, 1990). Individuals obtain psychological benefits in the form of moral satisfaction. We therefore introduced, the three motives (altruistic, egoistic, and warm glow) to investigate consumers' attitudes and willingness to consume organic food in Indonesia.

Theoretical framework and hypotheses

Ethical consumption has a broad spectrum, starting from social and ecological concerns that have developed to become a subjective term for consumers. Green consumption, such as choosing organic food, is often considered ethical (Cahyasita et al., 2021). For some individuals, 'ethics' covers one's conscience, which subjectively considers decisions. As a result, 'ethical consumption' refers to a thoughtful alternative in choosing what to consume according to a person's ethical values and personal convictions (Carrigan et al., 2004). Ladhari and Tchetgna (2017) have argued that an individual's decision to choose a product is based on ethical values, social norms, and environmental standards.

Willingness to consume organic food is not only influenced by a positive view of a product, it can also be an antithesis of the negative impacts of modern-day consumption (Ueasangkomsate and Santiteerakul, 2016). Consumers feel responsible both for various problems arising from their consumption choices, and for their own benefit and the common welfare. Previous researchers (e.g. Yadav, 2016) have argued that pro-self (egoistic) and altruistic values are two critical drivers of organic consumerism. These two values are said to be negatively correlated because concern for oneself and for others are conceptually different (Schwartz, 1992). Some studies have shown that personal benefit has been a more vital determinant of ethical consumption (Andersch et al., 2019; Yadav, 2016; Zagata, 2012), but some have also shown the opposite (Chen, 2007; Prakash et al., 2019; Singh and Pandey, 2018).

Both may nevertheless exist in individuals and influence consumer attitudes (Batson, 1987). Drawing on their study, Hartmann et al. (2017) have suggested that the prosocial motive is egoistic when the main objective is to promote private gain, and have debated the benefits and drawbacks of pure altruism, which is not motivated by personal goals. Andreoni (1989) points out that consumers can derive psychological benefits through prosocial behaviour, proposing the term 'warm glow of giving' to refer to 'impure' altruism. So far, the warm glow has rarely been shown to exist simultaneously with altruistic and egoistic motives. This work endeavours to overcome this gap.

Egoistic values

Rational choice theory shows that the motivation for human behaviour is self-interest (egoistic). This is understandable if consumers want to maximise satisfaction when consuming a product. Schwartz interprets values as prudent trans-situational goals underpinned by varying interests, which make a way of life (Schwartz, 1977). Personal health care or family care show the concept of pro-self, and so might be seen to reflect egoistic values (Magnusson et al., 2003). Most consumers use organic products because they are considered valuable products for themselves (Prakash et al., 2019).

Consumers perceive organic foods as safer and healthier because they reduce the utilisation of synthetic fertilisers and chemical pesticides. In addition, organic foods are often claimed to have no risk (e.g., of poisoning) and to contain more primary and secondary nutrients than non-organic foods (Chen, 2009). Based on the safety principle, it makes sense to choose organic foods. Studies in various regions have shown that consumers choose organic foods for health reasons. In Poland (Bryła and Bryla, 2016), health and sound quality are considered to be the two most important motivations for choosing organic food (Ditlevsen et al., 2019). Health reasons are also found in Asia, for example in China (Xie et al., 2015), Thailand (Roitner-Schobesberger et al., 2008), and Taiwan (Teng and Lu, 2016). The research findings confirm that consumers who care about health usually purchase organic food rather than conventional products (Ditlevsen et al., 2019; Nandi et al., 2017). The literature also adds egoistic value to positive attitudes toward organic food (Septiani et al., 2019; Yadav, 2016).

Based on the above proposition, the following hypothesis is proposed:
H1 Egoistic values significantly and positively influence consumer attitudes toward organic food.

Altruistic values

Green altruism has become a compelling issue in current research to explain attitudes underpinning individual behaviours (Ali et al., 2020). Several literatures have found environmental awareness to reflect altruistic values (Hartmann et al., 2017; Iweala et al., 2019; Prakash et al., 2019; Yadav, 2016). Food choice behaviour, an effort to support environmental sustainability, is an example of pro-environmental behaviour driven by altruistic values (Birch et al., 2018). Altruistic people are perceived to ignore their marginal welfare for the common good or future generations; they incur costs that do not increase their personal well-being (Batson, 1987; Hartmann et al., 2017; Kumar et al., 2020).

Preferring organic food products reflects consumers' concern for the environment, which is considered a common good (Kareklas et al., 2014). Findings show that individuals choose organic to express their values of supporting environmental conservation and animal welfare (van de Grint et al., 2021), and that environmental awareness significantly affects consumers' attitudes to organic food (Loureiro et al., 2001; Smith and Paladino, 2010). Individuals associate organic food consumption with a social responsibility driven by pro-environmental motives and altruism (van de Grint et al., 2021).

Based on the above, the following hypothesis is formulated:
H2 Altruistic values significantly and positively influence consumer attitudes toward organic food

Warm Glow of Giving (impure altruistic)

The concept of 'warm glow' is a substitute for the idea of 'altruism' in the context of 'public goods theory' with 'impure altruism', as it is seen to more fully describe the pattern of giving (Andreoni, 1990). Private utility is directly experienced when contributing to a public good, regardless of an escalation in the public good, which Andreoni (1989, 1990) called a warm glow. Furthermore, a warm glow can be adopted to explain the impure public good. Organic food is an impure public good because it is a private good with the characteristics of a public good. Organic products have contributed to the public good (benefits for the environment) (Bergstorm et al., 1983; Kotchen, 2005).

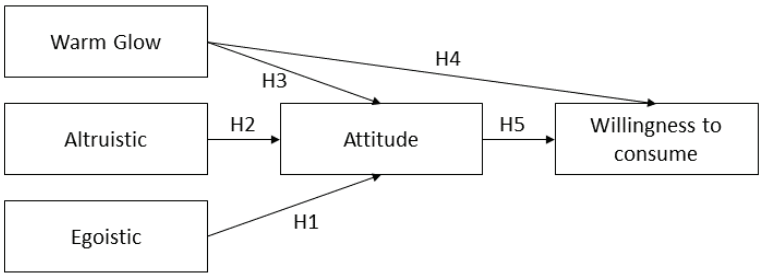
Based on pro-environmental values, individuals expect moral satisfaction from actions that are considered ethical (Iweala et al., 2019; Peloza et al., 2013). The warm glow that arises from pro-environmental behaviour is the moral satisfaction derived from voluntary actions to contribute to the public good (Kahneman and Knetsch, 1992). According to earlier research, warm glow influences organic consumers' attitudes significantly (Muntoro et al., 2020, 2022). It is furthermore interesting to see the continuity of actual behaviour (Feil et al., 2020; Neubig et al., 2022; Wang et al., 2022). In this study, we investigated consumers' willingness to consume organic food consistently.

Based on the literature above, the following hypotheses are proposed:
H3 Warm Glow significantly and positively influences consumer attitudes towards organic food
H4 Warm Glow significantly and positively influences consumer attitudes and willingness to consume organic food.

The result of belief and judgment about a concept or thing is attitude (Ajzen and Fishbein, 2008). Positive attitudes to organic food are frequently linked to behavioural intentions (Asif et al., 2018; Sultan et al., 2020). Sustainable consumption is the outcome of decision-making processes that examine product evaluation (De-Magistris and Gracia, 2016). Therefore, the following hypothesis is developed by taking product evaluation into account.

H5 Attitudes significantly and positively influence consumers' willingness to consume organic food consistently.

Figure 1. Conceptual framework



Materials and Methods

Data collection

The quantitative research for this study was conducted using a questionnaire survey method. Consumers from Indonesia who met the requirements of being at least 17 years old and eating organic foods, including rice, vegetables, fruits, and animal proteins (such as chicken, eggs, and meat), were included in the sample. The research was self-administered from September to October 2020 and published via an online platform. Information was collected through people responding to the forms distributed via various online channels. Online surveys have both strengths and weaknesses. It is convenient to take surveys utilising free platforms like Google Forms; surveys can be rapidly created and distributed worldwide. However, online surveys are only filled out by educated people who have access to the Internet and are interested in the topic; they may therefore miss those of the target respondents who cannot access the Internet. The reality of Indonesia's broad geographic coverage must also be taken into account (Andrade, 2020). Due to limitations, the small number of researchers means that the study's sample size might not make the results generalisable to all of Indonesia's organic consumer population.

The Google Forms platform served to set up this online survey that was distributed via individual emails, mailing lists, and social media sites used individually and in groups. Pretests were conducted with 50 online consumers to ensure the questionnaire was flexible and understandable. Ambiguity and imprecision were subsequently reviewed. To avoid multiple responses, every IP address was restricted to one-time fill-in. Respondents had to have purchased organic foods and be at least 17 years old to participate in the study (Scalco et al., 2017). Respondent answers were captured and filtered so that 337 participants satisfied the standard for the fourth step.

Measures

Study measures were collected from the preceding research and adjusted to this research (Cahyasita et al., 2021). The questionnaire in this research was written in Indonesian to help align the meaning of all measures. There were two sections in the questionnaire. Age, gender, education, marital status, and occupation were just a few demographic details in the first section. A series of questions in the second section of the survey were used to assess respondents' attitudes, and their altruistic, egoistic, and warm glow motives, as well as their willingness to consume organic food (WTC).

As suggested by Ajzen (Ajzen and Fishbein, 1975), a multi-item scale was applied to evaluate all measurement items. Respondents in this research were asked to rate their responses as agreeing or disagreeing with the statements made. Each variable was measured using a five-point Likert scale (from very low = 1 to very high = 5). Questionnaire components are shown in Table 1.

Table 1. Measurement Items

Variables	Items	Measurement Items
Willingness to consume (WTC)	WTC1	Consumers are willing to choose organic food consistently in future.
	WTC2	If consumers are offered organic food in future, they will be willing to purchase it again.
	WTC3	If they have to buy organic food for household needs, consumers are willing to do so.
	WTC4	As a form of consumer support for environmental sustainability, consumers are willing to buy organic food consistently.
	WTC5	As a form of consumer support for Farmers' welfare, consumers are willing to buy organic food consistently.
	WTC6	For health reasons, consumers are willing to buy organic food consistently.
	WTC7	Consumers are willing to recommend the use of organic food to friends and relatives.
Attitude (ATT)	ATT1	Buying organic food is a good idea.
	ATT2	For me, buying organic food is a wise decision.
	ATT3	For me, buying organic food is essential.
	ATT4	For me, consuming organic food has a benefit
	ATT5	For me, consuming organic food is a positive thing.
	ATT6	For me, consuming organic food is an exciting thing.
	ATT7	I like organic food because it is produced without chemicals.
	ATT8	I like organic food because it is more nutritious.
	ATT9	I like organic food because it is safer to eat.
	ATT10	I like organic food because it is an environmentally friendly product.
	ATT11	I like organic food because by consuming it, I can support the welfare of farmers.
Warm Glow (WG)	WG1	Buying organic food gives me a pleasant feeling.
	WG2	Eating organic food makes me happy because I have done something good.
	WG3	I feel happy eating organic food for myself and my family.
	WG4	I am happy eating organic food because I have protected the environment.
	WG5	By consuming organic food, I feel satisfied because I have helped support the efficiency of natural resources.
	WG6	Consuming organic food has helped maintain the quality of the earth (soil, water, etc.).
	WG7	Buying organic food makes me feel happy because I have done something that supports the welfare of farmers.
	WG8	By buying organic food, I feel happy because I have participated in the growth of the local economy.
Egoistic (EG)	EG1	I eat organic food in order to maintain my health better.
	EG2	For family health, organic food is my household choice.
	EG3	I choose to eat organic food to get more nutrition for my body.
	EG4	I choose organic food with the intention of getting products that are safer for consumption.
Altruistic (ALT)	ALT1	By consuming organic food, I have contributed to environmental sustainability.
	ALT2	I have helped maintain the balance of natural resources by consuming organic food.
	ALT3	By eating organic food, I have contributed to the environmental awareness movement.
	ALT4	The organic food I consume makes me participate in maintaining the quality of nature (soil, water, etc.).
	ALT5	By buying organic food, I have supported the welfare of farmers.
	ALT6	By buying organic food, I have contributed to the economic growth of the local area.

Results

Demographic descriptive

The respondents' demographic details are presented in the table below (Table 2).

Table 2. Demographic characteristics of the sample

Demographic Variable		N	%
Age	<30	240	71.22
	30-39	46	13.65
	40-49	29	8.61
	50-59	21	6.23
	>60	1	0.30
Gender	Male	95	28.19
	Female	242	71.81
Marital status	Single	210	62.31
	Married	127	37.69
Education attainment	High School	52	15.43
	University Graduate	283	84.61
	Nonformal Education	2	0.59
Occupation	Employed	171	50.74
	Unemployed	12	3.56
	Retired	2	0.59
	Homemaker	37	10.98
	Student	115	34.12

Most of the respondents consisted of young adults (17-35), namely 81.9% of the total, with the majority being single. According to a prior study, age is a significant determinant of organic consumer behaviour (Bamberg and Möser, 2007). Most respondents are women, which is consistent with data from other regions (Chekima et al., 2017; Scalco et al., 2017). This may be because women are responsible for household management. The majority of respondents are university graduates, primarily employees and students. More educated consumers are often better informed, including about organic food (Chekima et al., 2017).

Validity of measurement model

Indicators that reflect latent variables are used in this study model. The indicator reliability values, internal consistency reliability, convergent validity, and discriminant validity are examined to evaluate the measurement models (Hair et al., 2014). First, the reliability indicator is measured from the outer loading value, which should be > 0.7 (Hair et al., 2011). Indicators with an outer loading value of less than 0.40 must be removed, and the outer loading value between 0.40 and 0.70 needs to be analysed by looking at the AVE values. When the outer loading value satisfies the requirements, the indicator reliability can be deemed acceptable, so that the evaluation of other measurement models can be continued.

Second, the internal consistency reliability assessment derived from the composite reliability (CR) is shown in Table 3. The model is deemed reliable (exact, consistent, and precise) since the composite reliability value is more than 0.7 (Hair et al., 2011). Third, the average variance extracted (AVE) value shown in Table 3 is examined to confirm the convergent validity. The average variance extracted (AVE) must be more than 0.5 to be considered acceptable (Hair et al., 2014). Table 3 indicates that the total AVE value is more than 0.5. Therefore, the measurement model's convergent and discriminant validity is acceptable.

Table 3. Results for convergent and discriminant validity tests

Variables	CR	AVE	Fornell-Larckell				
			ALT	ATT	EG	WG	WTC
Altruistic	0.942	0.731	0.855				
Attitude	0.953	0.649	0.730	0.806			
Egoistic	0.943	0.806	0.596	0.755	0.898		
Warm Glow (Impure Altruistic)	0.959	0.747	0.708	0.728	0.646	0.865	
Willingness to consume (WTC)	0.950	0.731	0.261	0.396	0.368	0.390	0.855

Test of structural models

Table 4 displays the outcomes of the path analysis used in this investigation. It may be deduced that Warm Glow (= 0.0.237, p 0.05), Altruistic (=0.316, p 0.05), and Egoistic (=0.413, p 0.05) all have a favourable and substantial association with customers' attitudes towards organic products. As a result, the first hypothesis (H1), second hypothesis (H2), and third hypothesis (H3) are supported. Warm glow (=0.237, p 0.05) and consumer attitudes (=0.239, p 0.05) were also found to have a favorable and substantial link with willingness to consume (WTC). As a result, the hypotheses 4 (H4) and 5 (H5) are supported.

Table 4. Hypothesis test results

Hypothesis/structural path		Path Coefficient (β)	t-values	p-values	Result
H2	Altruistic -> Attitude	0.316*	5.187	0.000	Accepted
H5	Attitude -> WTC	0.239*	2.470	0.014	Accepted
H1	Egoistic -> Attitude	0.413*	8.599	0.000	Accepted
H3	Warm Glow -> Attitude	0.237*	4.399	0.000	Accepted
H4	Warm glow -> WTC	0.216*	2.822	0.005	Accepted

*p < 0,05

The endogenous latent variable's coefficient of determination (R^2) indicates interpretability, and Q^2 is the prediction accuracy criterion that measures the relevance of the model's predictions (Hair et al., 2017). The endogenous latent variable consumer attitude has a R^2 value of 71.6% and WTC of 17.9%, while Q^2 Attitude = 0.452 and Q2 WTC = 0.129 (Table 5) indicate a substantial effect. This model has predictive relevance because all Q^2 values are greater than 0.

Table 5. Test of structural model

Endogenous Variables	R^2	Q^2
Attitude	0.716	0.452
Willingness to consume (WTC)	0.179	0.129

Discussion

This study's purpose is to determine the impact of altruistic, egoistic, and warm glow values on the attitudes of organic consumers. We also identify the effects of warm glow and attitudes with regard to willingness to consume (WTC), which reflect consumer behavior in the future. PLS-SEM was used to examine the effects of different predictors.

The structural model results show a high degree of conformity. Consumer attitudes are found to determine the willingness to consume in the future. Additionally, the study's results demonstrate that egoistic and altruistic values significantly and favorably affect the attitudes of organic consumers. This shows that values, both personal and for the common good, play an essential role in shaping the positive attitudes of organic food consumer;. their perception of organic food may drive consumers' evaluation of such food. The findings indicate that consumers perceive organic food as healthier and safer. This perception is formed from consumer motives. The findings also indicate that consumers perceive organic food as a product that has environmentally and socially friendly characteristics. These findings align with those of several previous studies (Birch et al., 2018; Kareklas et al., 2014; Prakash et al., 2019; Septiani et al., 2019).

In this study, egoistic values are shown to be more influential than altruistic ones. This is consistent with a

previous finding (Yadav, 2016) that customers prefer the egoistic justification when purchasing organic food. Individuals will think about the personal benefits obtained when choosing to consume an item. Other findings from this study provide additional insight into pro-environmental behavior. Consumers who have already consumed organic food derive additional welfare from their altruistic actions, through psychological benefits, now referred to as a warm glow.

This study shows that warm glow positively and significantly impacts organic consumer attitudes – a finding that aligns with the results of earlier studies (Muntoro et al., 2020, 2022). People want benefits in the form of happiness, pleasure, and other psychological satisfaction for good actions (Hartmann et al., 2017); they develop a positive consumer attitude when encouraged by the feel-good warm glow (Cahyasita et al., 2021). This finding illustrates that consumers who behave altruistically, in this study by consuming organic food, obtain additional psychological benefits that can enhance their positive attitudes. The direct effect of warm glow on consumers' willingness to consume organic food was also found in this study. This finding is a new contribution in theory and management.

Theoretical contributions

This work adds to the findings of the organic consumer literature, particularly the new psychological benefits (Boobalan et al., 2021; Cahyasita et al., 2021; Iweala et al., 2019; Nguyen et al., 2017). It furthers the understanding of the role of altruistic, egoistic, and warm glow values in comprehending consumer behaviour. Whereas previous studies have generally focused on two categories of values: altruistic and egoistic (Hartmann et al., 2017; Prakash et al., 2019; Yadav, 2016), our findings add to the description of impure altruism. The warm glow motif is considered impure altruistic because consumers expect personal benefits from their altruistic actions (Andreoni, 1990). Whereas previous research (Boobalan et al., 2021) found that warm glow did not directly affect organic consumer intentions but had an indirect effect, the findings in this study provide a new picture, showing that consumer attitudes directly affect WTC, which, in this case, describes future behaviour. The endogenous variable WTC is complementary to the literature because researchers are trying to measure consumers' willingness to consume consistently in the future (behavioural sustainability).

Managerial and policy implications

This study shows that altruistic and egoistic values positively influence organic consumer attitudes, which in turn affect consumers' WTC. Therefore, marketers can develop strategies to emphasise the benefits of consuming organic foods. Access to knowledge about products is considered to be a factor likely to improve consumer evaluations. Marketers can emphasise the health and food safety benefits on product packaging and make information on environmentally friendly products more widely known. If the product is small-scale, the producer can use the claim to support a prosocial campaign (altruistic value). This will appeal to consumers' altruistic values and motivate them to buy organic food.

Policymakers may consider creating organic food campaigns and supporting organisations to disseminate information on the values embodied in organic food, because people are more likely to act altruistically when provided with reasons to do so (de Groot and Steg, 2008). Therefore, it is important to create campaigns related to issues that raise awareness among consumers (Yadav, 2016). The use of social media, including YouTube, can be a means of disseminating this information.

Another type of campaign could convey a warm glow effect. Advertisements of pro-environmental and prosocial values for organic food should emphasise the 'feel good when eating organic food', thus encouraging consumers to choose the product. The moral satisfaction that consumers expect if they buy organic food can be a strategy for marketers. Consumers are willing to consume because they want the satisfaction and warm feeling that is portrayed in video advertisements with scenes of positive feelings derived from doing good.

Limitations and future research

This study has sought to contribute to the literature, even though it. has certain limitations. Since the research was conducted using an online survey, it is possible that people without internet could not be reached. Moreover, as the data was obtained from several regions, it may not represent a whole country. As most of the consumers of organic food are young adults, future research should focus on young consumers. This study has sought to examine how behaviour will be sustained in the future, but behavioural variables from the past have yet to be taken into account. Based on their research, Conner and Armitage (1998) indicated past behaviour as a significant predictor of future actions. This is a suggestion for further research to involve the influence of consumption experience on consumers' willingness to consume organic food.

Conclusions

The results of this study show that the three motives proposed in the model, namely egoistic, altruistic, and warm glow values, positively influence attitudes. In turn, attitudes were proven to positively affect the willingness to consume organic food. Warm glow in particular had a direct positive effect on consumers' willingness to consume organic food. The findings of the study paint a new picture, showing that consumer attitudes have a direct positive effect on their willingness to consume, which, in this case, is an indication of future behaviour. The willingness to consume variable complements previous literature because this study measures consumers' willingness to consume consistently in the future (behavioural sustainability). Based on these findings, managerial suggestions for marketers include developing strategies to emphasise the benefits – both personal and socio-moral – derived from consuming organic food.

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Integrating Land-Use and Food Planning for the Re-territorialisation of Agricultural Activities: A Review of the Literature

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Abstract

The re-territorialisation of agricultural activities (RAA) refers to the promotion of local food production and its diversification geared towards local consumption. RAA helps to shape the local food system, a subject that is increasingly studied with regard to planning. Land-use and food planning are two local policy areas associated with RAA, yet the way in which they interact to facilitate RAA remains unclear. This research aims to provide a comprehensive understanding of the integration between land-use and food planning by reviewing the scientific literature in these planning fields in the Global North over the past 24 years. We reviewed 161 publications pertaining to RAA-related interests and instruments, intersecting action fields and governance mechanisms. The literature shows the complementarity between land-use and food planning in areas related to RAA, and the consequent need to develop coherent planning strategies to improve the effective implementation of RAA. Land-use planning has a spatial dimension with regulatory instruments, whereas food planning often has a food system and life cycle dimension with strategic instruments. Access to land, collective food infrastructures, and farming practices are three areas around which land-use and food planning can have synergies. Coherence and synergy can also be favoured by a well-established co-governance model, which implies collaboration between sectors, multi-level governmental actors, and a combination of top-down and bottom-up processes. We conclude with suggestions for planning practitioners and provide a future research agenda by appealing for more empirical studies on the intersectional fields of land-use and food planning.

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Introduction

Planning for local food systems has been a research topic for over two decades, since the seminal studies by Pothukuchi & Kaufman (1999, 2000). Local food systems involve food produced and consumed locally, creating closer links between consumers and producers, and addressing negative consequences of the global food system regarding product quality, climate, water quality and food security (Morgan, Marsden and Murdoch, 2006; Feagan, 2007; Sonnino, 2009; Allen, 2010; Morgan and Sonnino, 2010; Enthoven and Van den Broeck, 2021; Fei et al., 2023). The Covid-19 pandemic and climate change have boosted interest in local food systems, making them a current issue (Fattibene et al., 2023; Liu, Korthals Altes, Wallet, et al., 2024). Planning and local food systems share concerns about health, economy, land use, transportation and social justice (Pothukuchi and Kaufman, 1999; Brinkley, 2013; Mui et al., 2021; Morgan, 2013).

Creating a local food system requires producers to shift from global- to local-oriented activities, termed the "re-territorialisation of agricultural activities" (RAA), which includes local food production and its diversification geared towards local consumption (e.g., farming, local processing and sale, community-supported agriculture, and agritourism) (Liu, 2024; Liu, Korthals Altes, Melot, et al., 2024). RAA involves developing new relations between products and local specificity, between rural and urban, and between stakeholders across the supply chain (Liu, 2024). *Territorialisation* involves processes that strengthen the links between activities and the territory in the spatial, material, identity-related, organisational and political dimensions (Agnew, 2013; Cox, 2013; Felici and Mazzocchi, 2022; Ying and Egermann, 2024). Although the spatial boundary of 'local' or 'territorial' food systems is not standardised (Morgan and Sonnino, 2010; Carey, 2013; Sonnino, 2016; Battersby and Watson, 2019), the prefix '*re*' suggests a return from de-territorialised agrifood systems to the territory (Rieutort, 2009; Ying and Egermann, 2024). RAA extends beyond mere 'local' by encompassing *alternative food networks* based on proximity between producers and consumers, and *quality food improvement* through territorial embeddedness (Lamine, Garçon and Brunori, 2019; Liu, 2024). Although RAA does not ensure sustainability, and risks falling into the 'local trap' (Born and Purcell, 2006), it has the potential to improve socio-ecological sustainability and territorial development under the right conditions (Mundler and Laughrea, 2016).

Land-use and food planning are local planning policies that can significantly influence RAA. Land-use planning allocates spatial resources and building rights, among other considerations (Hengstermann and Hartmann, 2018). RAA creates needs for new buildings (e.g., for local processing or on-farm sales), which land-use planning must include while preserving farmland (Rouquier et al., 2024). Food planning emerged as a local response to the limitations of national and international productivism models (Sonnino, 2016). It is a 'local policy framework that is adopted to address one or, typically, more food system activities with the explicit aim of steering food system outcomes in a desired direction' (Candel, 2020, p. 922). Sonnino (2019) argues that food planning emphasises "translocalism" as a perspective integrating territoriality in a network of relations with other scales of the food system and governance such as urban regions. It uses foodshed as a strategy to holistically combine territoriality with social, economic, and environmental sustainability, and avoid the 'local trap' (Born and Purcell, 2006). Food planning projects vary in name – 'urban food strategy', 'food charter', and 'food system planning', but they are usually designed in a similar way to planning documents with a vision statement and an action plan (Sonnino, 2016).

While food planning is mainly strategic, land-use planning contains area-based rules that are legally binding. Several scholars have emphasised that food planning should be cross-sectional and coherent with land-use planning (Pothukuchi and Kaufman, 1999, 2000; APA, 2007; Raja, Born and Russell, 2008; Vitiello and Brinkley, 2014). The Milan Urban Food Policy Pact Monitoring Framework explicitly refers to land-use planning as a lever to achieve food planning goals to 'protect the local agricultural resource base and use' (FAO, 2019, p. 24). We posit that missing links between land-use and food planning can hinder RAA. For example, a multifunctional farming project supported by food planning can be hindered by overly strict mono-functional

land-use regulations (Crivits et al., 2016). A comprehensive understanding of how food and land-use planning can be integrated to support RAA is however missing.

This research aims therefore to further our understanding of the integration between land-use planning and food planning in a way that facilitates RAA, and thus to suggest ways to fostering synergy between them. To this end, we review scientific publications on land-use and food planning, focusing on the Global North because of shared agri-food system problems, socio-economic paths, and institutional patterns. This review considers the following questions: How does the emerging field of food planning tackle RAA? How does traditional land-use planning adapt to the new needs of RAA? What are the intersections between these two planning levers? What governance mechanisms can facilitate the coherence between land-use and food planning to improve RAA?

This paper is organised as follows. The next section outlines the methodology, followed by the presentation of results in three parts: RAA-related interests in food and land-use planning; the intersecting action fields; and governance factors affecting the integration between the two policies. We conclude with suggestions for future research.

Materials and Methods

Data Collection

We searched for scientific publications based on the literature review retrieval method of Hagen-Zanker and Mallett (2013). This method follows the core principles of a systematic review to broaden the data range and provide a transparent procedure while giving more flexibility to social science researchers. We searched academic databases using search strings, then screened results based on inclusion and exclusion criteria. We finally completed the literature search through snowballing and adding papers on specific topics after the initial retrieval.

First, we searched the SCOPUS database for two types of academic papers: papers on food planning and RAA, and on land-use planning and RAA. We searched for journal-style papers published in English over the past 24 years, since 2000, because in their article 'The food system: A stranger to the planning field', Pothukuchi and Kaufman (2000) pointed out the resurgence of awareness of food in the field of planning.

Table 1. Keywords of the Scopus database search strings

	Query string used in SCOPUS database, determining:	
Searching group	planning type and RAA (in title, abstract or author-keywords)	local level (in title, abstract or author-keywords)
Food planning	"food plan*" or "food strateg*" or "food poli*" or "food system plan*"	local* or municip* or communit* or territor* or urban or city or rural or region*
Land-use planning	("agricultur*" or "farm*" or "food*") and ("land use plan*" or "urban plan*")	

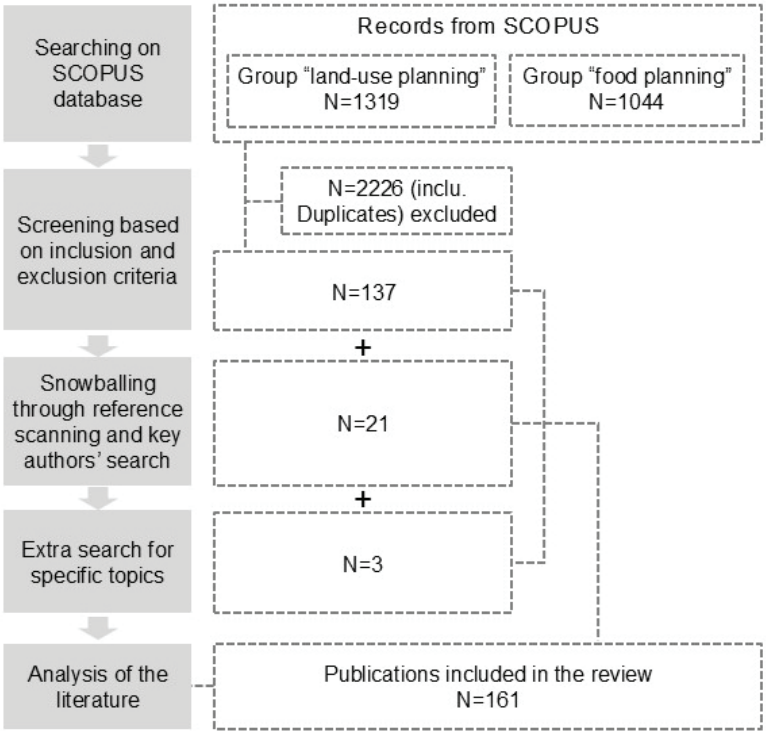
We identified keywords for SCOPUS queries (Table 1). To define 'RAA', we used broad terms ("agricultur*" OR "farm*" OR "food*") to capture a wide range of activities, as RAA cannot simply be defined by a few specific terms. For instance, direct on-farm sales, agritourism, and farmers' markets are related to RAA. We identified articles relevant to re-territorialisation at the screening stage, based on inclusion and exclusion criteria. The query ("land use plan*" OR "urban plan*") defined 'land-use planning' because urban planning refers to land-use planning in some contexts. The query ("food plan*" OR "food strateg*" OR "food poli*" OR "food system plan*") defined "food planning", covering its different names. We used (local* OR municip* OR communit* OR territor* OR urban OR city OR rural OR region*) to limit results to policy studies at

local levels. We used 18 July 2024 as the last publication date and identified papers in the 'land-use planning' group (n = 1319) and the 'food planning' group (n = 1044).

We screened the results based on the inclusion and exclusion criteria. We included papers that addressed planning projects (food planning, land-use planning, or both) and RAA-related topics in the same study. The criteria for identifying RAA referred to our definition, namely activities related to local food production and its diversification towards local consumers, including local supply chain activities (i.e., from local farming, processing, transport and logistics to local sale) and activities involving consumers (e.g., community-supported agriculture and agritourism). We focused on studies in the Global North, where most food planning projects were developed (Morgan, 2015; Candel, 2020), and where similar socio-economic contexts apply (Filippini, Mazzocchi and Corsi, 2019). We identified the Global North by referring to the advanced economies categorised by International Monetary Fund classification (2020). We excluded studies focusing on global- or national-level policies, performing from a technical perspective (e.g., archaeology, botanical issues, nutrition, water, flood, climate change, soil science, GIS and remote sensing), and those only dealing with case studies in the Global South. Each paper was initially screened by title and abstract, followed by the entire publication if necessary.

We completed the collection of papers using a snowballing technique. This involved searching for additional publications cited in the references of already identified papers and searching for work by key authors. Additionally, we conducted an extra search for articles on the specific topic of peri-urban agriculture. A total of 161 publications were reviewed (Figure 1).

Figure 1. Flow diagram of the literature selection process.



Data Analysis

The data analysis was guided by the research questions. Each paper was categorised as a 'food planning study', 'land-use planning study', or 'both', based on definitions provided earlier. To understand how food and land-use planning concern RAA, we identified papers based on empirical studies and recorded RAA-related interests, case study areas and planning types. For the intersections between these two types of planning policy, we first checked if land-use planning was mentioned in a food planning paper or vice-versa, and noted common topics and policy instruments. Three categories emerged: access to land, collective infrastructure, and farming practices. We then allocated papers to these categories. Regarding governance mechanisms that support coherent planning policies, we initially obtained information from papers discussing both types of planning policy, and identified major elements: cross-sector collaboration, multi-level governance, and innovative governance frameworks that involve diverse stakeholders. In the second round of the review, we included additional relevant papers that contributed to those elements and assigned them to these sub-categories. Appendix A (Supplementary material) provides details on each study.

Results and Discussion

The rising trend of the reviewed 161 publications in recent years confirms the pertinence of this review (Figure

2). Table 2 presents the classification of the reviewed publications according to the planning types. It shows that only 33 publications addressed both land-use and food planning, indicating that research explicitly linking these two planning policies is just emerging. Our review was hence primarily based on ex-post comparisons of papers dedicated to a single policy.

Figure 2. Number of reviewed publications on the topic per year

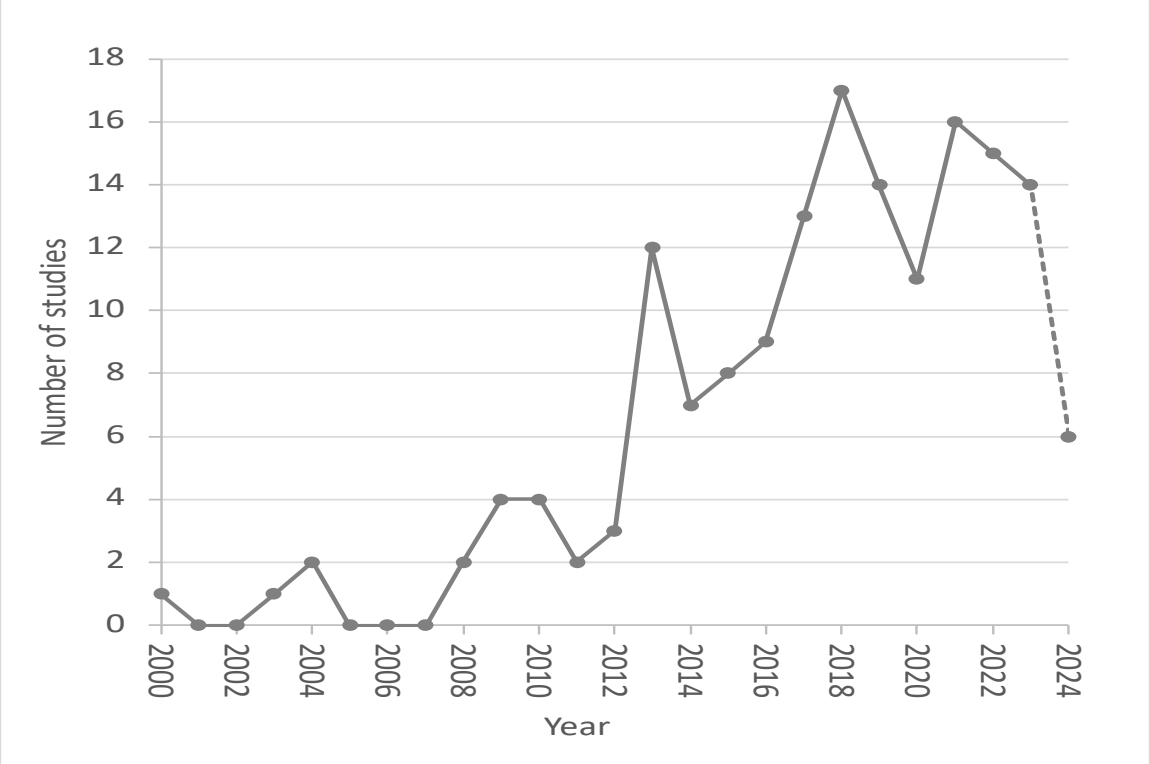


Table 2. Classification of the reviewed papers by studied planning types

Studied planning types	Number of reviewed publications
Both land-use and food planning	33
Land-use planning	56
Food planning	72
Total	161

Shared RAA-Related Interests in Planning policies

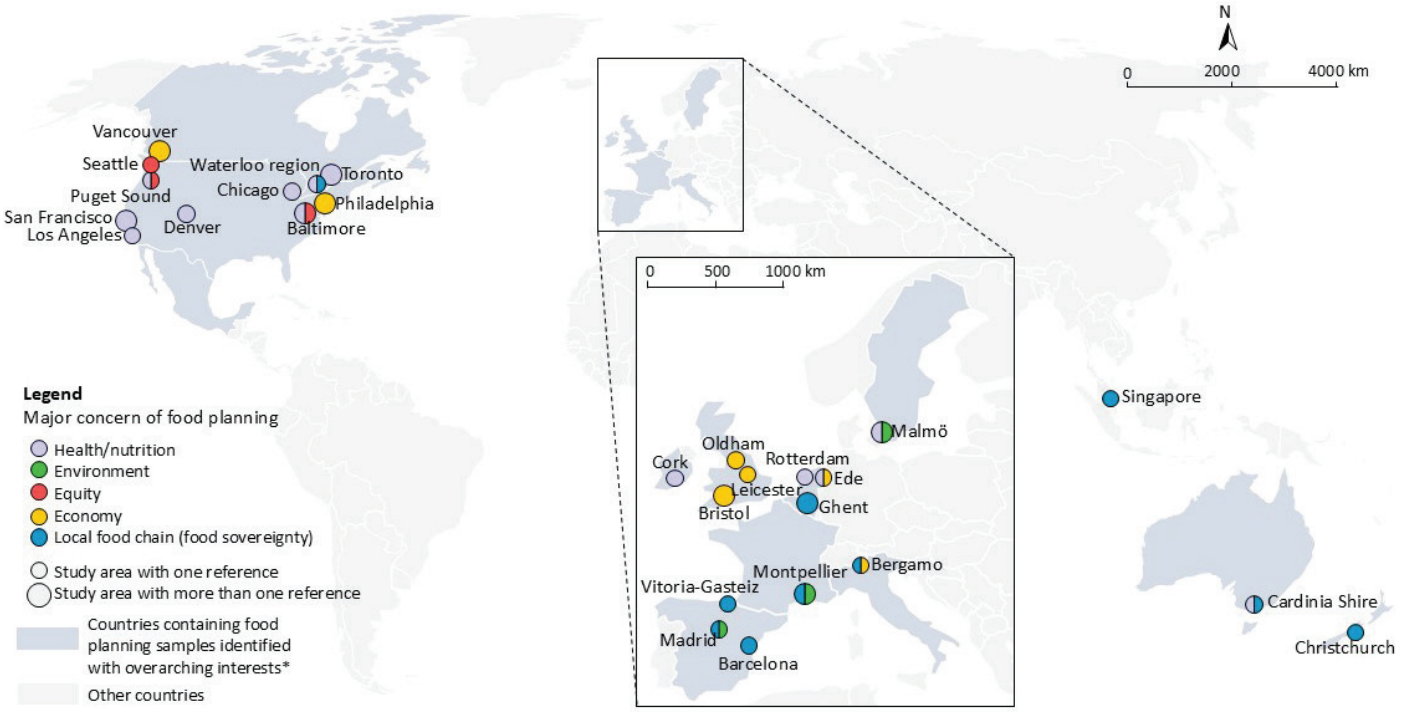
Food Planning: Regional Discrepancy on Approaches to RAA

The literature shows that food planning generally aims to achieve multiple goals, such as food justice, health, environmental protection, economic development, and food sovereignty, through RAA-related activities: local food production and local food supply (Sonnino and Spayde, 2014; Ilieva, 2017; Filippini, Mazzocchi and Corsi, 2019; Candel, 2020; Liu, 2024). The empirical findings of the review illustrate regional differences in the overarching objectives of food planning (Figure 3), which affect RAA priorities (Sonnino and Spayde, 2014; Moragues-Faus and Carroll, 2018; Liu, Korthals Altes, Melot, et al., 2024).

Empirical studies show that food planning projects in North America tend to prioritise health and equity, largely attributed to the profound impact of the food justice movement (e.g., Vitiello and Brinkley, 2014; Pothukuchi, 2015; Horst, 2017; Prové, de Krom and Dessein, 2019; Candel, 2020; Cohen and Ilieva, 2021). They therefore focus primarily on urban agriculture and urban food distribution, to increase food access and

promote a healthy, equitable environment (Horst, 2017; Prové, de Krom and Dessein, 2019; Candel, 2020; Cohen and Ilieva, 2021).

Figure 3. Distribution of the overarching objectives of food planning[1]



Sources: Appendix B (Supplementary material)

In contrast, food planning in European countries tends to emphasise the environmental and economic performance of local supply chains (e.g., Crivits et al., 2016; Prové, de Krom and Dessein, 2019; Candel, 2020; Giambartolomei, Forno and Sage, 2021; Zerbian and De Luis Romero, 2021; Liu, 2024). This emphasis can partly be attributed to the climate change policy framework and the European Common Agricultural Policy, which promotes endogenous economic development (Prové, de Krom and Dessein, 2019). Food planning in Europe appears to focus more on professional agriculture, addressing issues of farmland preservation, environmental protection and regional development at a larger scale than non-professional urban agriculture (Filippini, Mazzocchi and Corsi, 2019; Prové, de Krom and Dessein, 2019). More specifically, food planning in Southern Europe tends to explicitly emphasise RAA, highlighting local food supply, agroecology, high-value products and agritourism (Candel, 2020; Giambartolomei, Forno and Sage, 2021; Zerbian and De Luis Romero, 2021; Liu, Korthals Altes, Melot, et al., 2024). This specificity might be explained by the largely embedded culture of quality food products and a less de-territorialised food system in these areas (Calori et al., 2017; Ilieva, 2017).

Similarly, food planning projects in island countries such as Singapore, Australia and New Zealand place a direct emphasis on RAA. These projects aim to improve local food supplies to cope with uncertainties from natural and economic crises, thereby reinforcing resilience (Haylock and Connelly, 2018; Diehl et al., 2020; Lourival and Rose, 2020).

Land-Use Planning: from Farmland Preservation to Multifunctional Agriculture

In the literature, the integration of RAA in land-use planning can be categorised into farmland preservation and urban agriculture perspectives. Land-use planning in the Global North typically has the function of preserving farmland to contain urban sprawl and secure land for food production, although the local food provision

[1] Some studies on food planning projects in areas such as London, New York and Milan show that food plans have comprehensive goals. It is therefore difficult to conclude on what their specific 'overarching objectives' actually are. Accordingly, we have not included these areas on this map, which aims to present distinct overarching objectives of food planning.

dimension is not always explicit and is just emerging (Vitiello and Brinkley, 2014; Daniels, 2020; Perrin et al., 2020; Jansma and Wertheim-Heck, 2021). Critics argue that this preservation tends to prioritise the quantity of farmland over the quality of farming activities (Brinkley, 2013; James and O'Neill, 2016; Perrin et al., 2020). Other than farmland preservation, much of the land-use planning literature focuses on integrating agriculture into urban settings, a reversal of the historical separation between city and agriculture. Land-use planning usually addresses the multifunctionality of urban agriculture, including tackling food insecurity, increasing self-sufficiency, creating a healthy environment, increasing social inclusion, and promoting economic development (Lovell, 2010; Thompson and Kent, 2016; Meenar, Morales and Bonarek, 2017; Dias and Marat-Mendes, 2021; Slater and Birchall, 2022; Marini, Caro and Thomsen, 2023).

Interestingly, peri-urban agriculture occupies a particular position in both urban agriculture and farmland preservation discussions. Due to its proximity to cities and the unclear boundary between urban and peri-urban areas, it is often included in urban agriculture and is recognised for its multifunctionality and diversification (e.g., Panagopoulos, Jankovska and Bostenaru Dan, 2018; Corkery, Osmond and Williams, 2021; Hanna and Wallace, 2022; Jansma and Wertheim-Heck, 2022). Compared to intra-urban agriculture, peri-urban agriculture is typically larger in scale, more professionalised, and employs more diverse distribution methods, thus having a higher potential for urban food security (Castillo et al., 2013; Opitz et al., 2016). This proximity also subjects it to significant urbanisation pressure regarding farmland preservation (Opitz et al., 2016; Duvernoy et al., 2018; Lawton and Morrison, 2022). In their land-use planning, some areas are beginning to recognise the multifunctionality of peri-urban farmland and the diversification of peri-urban agricultural activities (Camaioni et al., 2016; Scheromm et al., 2019; Jansma and Wertheim-Heck, 2022). However, farmland preservation implemented via land-use planning is argued to remain 'urban-biased' (Gulinck et al., 2018, p. 5). Local food production often gives way to other priorities such as nature conservation, energy production, landscape, recreation, territorial marketing and cultural functions (Perrin, 2013; Brinkley, 2013; Olsson et al., 2016; Tedesco et al., 2017; Gulinck et al., 2018; Perrin et al., 2020). Some preserved farmland might thus be used for recreational purposes rather than farming (Perrin, 2013; Olsson et al., 2016; James and O'Neill, 2016). Scholars argue that peri-urban and urban agriculture are insufficiently addressed in planning (Opitz et al., 2016; Scheromm et al., 2019; Corsi et al., 2023). The process of adapting land-use planning to urban agriculture is not homogeneous everywhere, and some studies even claim that it inadequately incorporates and even hinders the development of urban agriculture (Gerster-Bentaya, 2013; Halloran and Magid, 2013; Koopmans et al., 2017; Klimas and Lideika, 2018; Panagopoulos, Jankovska and Bostenaru Dan, 2018; Hanna and Wallace, 2022). Moreover, although land-use planning does address local production, it is criticised for neglecting local food supply, such as transportation and distribution facilities for locally produced food (Desjardins, Lubczynski and Xuereb, 2011; Brinkley, 2013; Edmonds and Carsjens, 2021).

To summarise the RAA-related interests in planning policies, we find that in the emerging field of food planning, diverse situations across the world reflect varying overarching goals and foci on RAA. The literature on land-use planning highlights research recognising the multifunctionality of RAA, especially in urban and peri-urban areas, representing a renewed emphasis on agriculture. Their shared interests in the multifunctionality of RAA could serve as a basis for dialogue between land-use and food planning.

Complementary Policy Instruments and Intersecting Action Fields

Complementary Policy Instruments

Systematic studies on food planning instruments have been empirically conducted in different countries, such as Switzerland (Moschitz, 2018), Germany (Doernberg et al., 2019), the Netherlands (Sibbing, Candel and Termeer, 2021), Italy (Monticone et al., 2023), Australia (Vieira, Serrao-Neumann and Howes, 2024), Canada and the US (Schreiber et al., 2023), and France (Liu, 2024), as well as from an international comparison perspective (Filippini, Mazzocchi and Corsi, 2019; Candel, 2020; Mattioni, Milbourne and Sonnino, 2022; Liu, Korthals Altes, Melot, et al., 2024). A shared finding is that food planning mobilises a diverse range of policy

instruments, which include economic and informational, "soft" measures, rather than regulatory, "hard" ones, although measures do differ according to institutional context (legal context, authorities' competences, and human resources).

In contrast, land-use planning mainly employs regulatory instruments based on territorial strategies, often including legally-binding measures such as zoning and building regulations to preserve farmland or legalise RAA activities (e.g., Daniels, 2000; Wegener, Hanning and Raine, 2012; Lazzarini, 2018; Perrin and Nougaredes, 2022; Daniels, 2020). Two major criticisms arise from the literature. First, binding land-use regulations alone cannot ensure farmland preservation or the development of agricultural activities (Paül and McKenzie, 2013; McFarland, 2015; Abrantes et al., 2016; Pritchard, Welch and Restrepo, 2024). Second, inflexible, over-strict and mono-functional land use regulations designed for large-scale commercial farms are likely to hinder RAA activities that have different land-use and building needs; for example, small-scale peri-urban direct-sale farms might be incompatible with minimum lot size regulations designed for farmland preservation (Nichol, 2003; Korthals Altes and Van Rij, 2013; Horst and Gwin, 2018; Perrin and Nougaredes, 2022; Corsi et al., 2023).

Therefore, land-use and food planning integration at strategic and instrumental levels is advocated. At the strategic level, integrating food planning into land-use planning can help incorporate systematic approaches and align strategic orientations and resolve conflicts, such as between farmland preservation and urban development goals (Cabannes and Marocchino, 2018; Kassis, Bertrand and Pecqueur, 2021; Jónsdóttir and Gísladóttir, 2023; Vieira, Serrao-Neumann and Howes, 2024). It may also embed food system thinking in land-use planning, focusing on the needs of agricultural activities rather than merely the quantity of preserved farmland (Campbell, 2004; Perrin, 2013; Olsson et al., 2016; Slater and Birchall, 2022). For instance, Diehl et al. (2020) show that integrated planning bolsters RAA by emphasising farming for food security, stressing productivity due to land scarcity, and establishing flexible land-use rules for new types of farms. At the policy instrument level, land-use planning serves as a regulatory lever to implement food planning goals regarding the protection of farming spaces and to remove legal barriers (McClintock, Wooten and Brown, 2012; Perrin, 2013; Huang and Drescher, 2015; Crivits et al., 2016; Filippini, Mazzocchi and Corsi, 2019; Vieira, Serrao-Neumann and Howes, 2024). Food planning is highlighted for its ability to leverage diverse instruments to implement RAA activities, thus reinforcing the farmland preservation goals of land-use planning (Paül and McKenzie, 2013; Liu, Melot and Wallet, 2024). The combination of planning instruments is argued to lead to more effective RAA implementation (Marini, Caro and Thomsen, 2023; de Waegemaeker et al., 2023; Liu, Melot and Wallet, 2024).

The literature highlights key intersecting topics between food and land-use planning: land access, collective infrastructures, and farming practices. Table 3 presents an overview of measures identified in the literature, based on either authors' empirical findings or their recommendations. The remaining part of this section discusses each topic in detail. Several empirical studies systematically examined (potential) policy instruments in food and/or land-use planning (Raja, Born and Russell, 2008; Sonnino and Spayde, 2014; Moschitz, 2018; Doernberg et al., 2019; Filippini, Mazzocchi and Corsi, 2019; Candel, 2020; Sibbing, Candel and Termeer, 2021; Mattioni, Milbourne and Sonnino, 2022; Marini, Caro and Thomsen, 2023; Schreiber et al., 2023; Liu, 2024; Liu, Korthals Altes, Melot, et al., 2024; Vieira, Serrao-Neumann and Howes, 2024). Table 3 is used to identify more specific instruments based on thematic studies. Therefore, the sources with systematic studies usually refer

to many of the measures listed in the table and are not systematically cited within it.

Table 3. Planning instruments for RAA

Planning measures	Examples (sources)
Access to land	
Designing spatial strategies to respond to RAA needs in land-use planning	• Integrating agriculture into urban green spaces as a multifunctional part of green infrastructure in land-use planning (Andre et al., 2015; Salvador, 2019; Resler and Hagolani-Albov, 2021; de Waegemaeker et al., 2023). • E.g., the Continuous Productive Urban Landscape working method, in urban and city-region contexts (Viljoen and Bohn, 2009; Morgan, 2015; Cardoso and Domingos, 2023). • Grouping new agricultural buildings in rural areas to avoid dispersion while supporting farming activities (Perrin et al., 2018); • Managing urbanisation by preserving the most suitable farmland for traditional agriculture through a detailed assessment of high-quality agriculture (Camaioni et al., 2016).
Preserving farmland through land-use zoning and associated instruments	• Setting agricultural zones with regulations governing constructions (e.g., Perrin et al., 2020); • Establishing clear urban-rural limits such as urban growth boundaries and greenbelt buffers (Daniels, 2000; Wegener, Hanning and Raine, 2012; Lazzarini, 2018; Daniels, 2020; Perrin and Nougaredes, 2022); • Conservation easements (Daniels, 2020).
Removing legal barriers and applying regulations to urban agriculture	• Creating new zoning categories for urban agriculture (Shey and Belis, 2013; Meenar, Morales and Bonarek, 2017); • Establishing new urban agriculture districts or park with incentives (Thibert, 2012; Magoni and Colucci, 2017; Diehl et al., 2020); • Down-zoning vacant urban land for urban agriculture (Thompson and Kent, 2016; Coppola, 2019); • Authorising agriculture in selected urban zones by amending zoning regulations (McClintock, Wooten and Brown, 2012; Paddeu, 2017; Corkery, Osmond and Williams, 2021); • Setting regulations and guidelines for urban agriculture, such as withdrawal distances, garden plot sizes, community garden building heights, backyard animal requirements (McClintock, Pallana and Wooten, 2014; Meenar, Morales and Bonarek, 2017; Coppola, 2019; Halvey et al., 2020; Dias and Marat-Mendes, 2021; Slater and Birchall, 2022).
Applying incentives or imposing rules for developing urban agriculture	• Encouraging urban agriculture in the private sector by, for example, supporting roof farms through exemptions from gross floor area ratios (Diehl et al., 2020); • Creating rules that require residents to dedicate a certain percentage of their gardens to food production (Van der Gaast, Van Leeuwen and Wertheim-Heck, 2020; Jansma and Wertheim-Heck, 2022); • Incorporating food production spaces in new developments and social housing projects, and permitting rooftop gardens on public buildings (Huang and Drescher, 2015).

Allocation of publicly owned land for targeted types of agricultural activities	• To young farmers and alternative activities (Perrin et al., 2018); • To small farms practising agroecology (Perrin and Baysse-Lainé, 2020; Resler and Hagolani-Albov, 2021); • To disadvantaged producers such as social housing for young farmers (Poli, 2017) and immigrant communities (Olsson, 2018); • To government-run farms and gardens (Cretella and Buenger, 2016; Horst, 2017; Halvey et al., 2020; Jahrl, Moschitz and Cavin, 2021); • To farm incubators, social integration farms and agro-parks (Liu, 2024); • To local farming in general (e.g., Mansfield and Mendes, 2013; Cretella and Buenger, 2016; Horst, 2017; Perrin and Baysse-Lainé, 2020; Resler and Hagolani-Albov, 2021; Vara-Sánchez et al., 2021).
Collective models of ownership to provide tenure for farmers	• Establishing farmland trusts to allocate collective land to local farms (Andre et al., 2015; Léger-Bosch et al., 2020; Cohen and Ilieva, 2021); • Using land banks to acquire and redistribute vacant or derelict land for agricultural use (LaCroix, 2010; Crivits et al., 2016; Horst, McClintock and Hoey, 2017; Prové, de Krom and Dessein, 2019); • Negotiating property rights to preserve farmland, such as through the trade or purchase of development rights (Daniels, 2000; Perrin et al., 2020).
Modifying lease rules to improve tenancy security	• Fabricating long-term, renewable and/or flexible leases (Huang and Drescher, 2015; Meenar, Morales and Bonarek, 2017; Diehl et al., 2020);
Economic incentives to encourage local farming	• Providing direct investments, awards, grants and direct/indirect subsidies for farming activities (Cretella and Buenger, 2016; Horst, 2017; Morley and Morgan, 2021).
Informational support to encourage local farming	• Providing farmers with information and technical advice on land access and farm operations (Moragues-Faus and Morgan, 2015; Cretella and Buenger, 2016); • Making inventories of potential land for farming (Mansfield and Mendes, 2013; Huang and Drescher, 2015).
Collective food infrastructures	
Spatially organising food infrastructure networks in land-use planning	• Integrating diverse local food infrastructures in spatial planning, such as food hubs, public storage, transportation facilities and mobile food distribution (Sonnino, 2016; Tedesco et al., 2017; Siegner, Sowerwine and Acey, 2018); • Addressing accessibility and compatibility with neighbouring land uses (Nichol, 2003; Gerster-Bentaya, 2013; Salvador, 2019; Marat-Mendes et al., 2021); • Incorporating food infrastructures into local regeneration schemes when creating new public spaces (Nichol, 2003; Hamilton, 2011; Salvador, 2019). • E.g., designing food hubs as a complex for food aggregation, processing, distribution, tourism and community activities (Luoni, 2021).
Removing legal barriers and setting regulations for local food infrastructures	• Authorising farmers' markets in zoning plans and regulations (Hamilton, 2011; Thompson and Kent, 2016; Vara-Sánchez et al., 2021); • Designing regulations tailored to the food infrastructure characteristics • E.g., managing nuisances to inhabitants when permitting urban livestock slaughter (McClintock, Pallana and Wooten, 2014).

Local authorities help establishing different forms of physical infrastructure	• Allocating dedicated spaces for farmers' markets, local processing industries, wholesale markets and food hubs that connect local producers (Blay-Palmer, 2009; Morgan and Sonnino, 2010; Mansfield and Mendes, 2013; Vara-Sánchez et al., 2021). • E.g., addressing administrative barriers to develop an agroecological food hub within a wholesale market, considering the economic viability of the project, including agreements to lease the space and refurbishment works (Vara-Sánchez et al., 2021).
Promoting public procurement of local food	Mobilising government and school canteens to purchase from local farmers with criteria, such as requiring a certain percentage of organic food (Morgan and Sonnino, 2010; Michel and Soulard, 2019; Cohen and Ilieva, 2021; Vara-Sánchez et al., 2021).
Farming practices	
Integrating RAA principles in spatial land-use plans	• Restructuring land-use plans to incorporate principles of product diversification (Menconi, Giordano and Grohmann, 2022; Cardoso and Domingos, 2023); • Local authorities help establishing different forms of physical infrastructure

Designing tailored regulations according to desired farming practices	• Designing land-use regulations based on land-suitability investigations (Mason and Knowd, 2010; Haberman et al., 2014).
	  • E.g., Tailoring regulations for different types of urban livestock based on their characteristics regarding farm size requirements, conflicts with habitats and consumption destinations (McClintock, Pallana and Wooten, 2014).
	  • E.g., Adapting regulations of diverse and hybrid activities in peri-urban areas based on their land-use requirements, their landscape impacts and owners' financial capacities, such as distinguishing between small-scale obsolete greenhouses and new high-tech greenhouses (Korthals Altes and Van Rij, 2013).

Economic incentives to sustainable farming practices	• Leveraging agro-environmental compensations and providing financial support for ecological transition farmers (Liu, 2024); • Applying environmental lease for publicly- or collectively-owned land (Léger-Bosch et al., 2020; Liu, 2024).
Informational and organisational activities to promote sustainable farming practices	Providing information, communication and advice to facilitate farmers' ecological transition, including conducting analysis and providing strategies to help diversify local products (Liu, 2024).
Land allocation to desired farming practices	Allocating land specifically for agroecology farming (Perrin and Baysse-Lainé, 2020; Resler and Hagolani-Albov, 2021).

Access to Land

Access to land is the most recurring topic in both the land-use and the food planning literature. The specific needs of RAA broaden the usual concern of producers' access to land, which leads to the need for combined planning instruments. The instruments identified in the literature range from integrating farming into the spatial organisation of green structures, zoning regulations and associated instruments, allocation of publicly owned land and diverse forms of ownership, to providing informational support for farmers (Table 3). Discussions are heavily focused on peri-urban and urban areas, where proximity to cities offers favourable conditions

for RAA but also imposes constraints (Blay-Palmer, 2009; James and O'Neill, 2016; Sanz Sanz, Martinetti and Napoléone, 2018; Zasada et al., 2019). It should be noted that although many measures are proposed and applied in specific contexts, they are not necessarily widespread. For example, through empirical research, Vandermaelen et al. (2023) found that although using public land for food production is included in policies, it is mostly symbolic and occurs within the systematic sale of public farmland, rather than being part of a broader farming strategy.

Collective Food Infrastructures

Collective food infrastructure, such as farmers' markets, food hubs and mobile food distribution facilities, is a consistent topic in the food planning literature and an emerging one in the land-use planning literature. Sonnino and colleagues (2016; 2019) identified two types of infrastructure critical for connecting local food production and consumption: physical (e.g., farmers' markets, processing centres, wholesale markets) and invisible (i.e., public procurement leveraging purchasing power to connect producers and consumers). Instruments addressing these issues include measures for spatial organisation, removing legal barriers and supporting projects through dedicated land and investment (Table 3). The literature also highlights the fact that policy instruments evolve over time. Once identified as the 'missing middle' that needs greater attention in planning (Donald, 2008; Brinkley, 2013; Moragues-Faus and Marsden, 2017; Sonnino, Tegoni and De Cunto, 2019; Candel, 2020; Clark, Conley and Raja, 2020; Sibbing, Candel and Termeer, 2021), recent studies indicate progress in countries such as Spain (Vara-Sánchez et al., 2021) and France (Liu, 2024).

Interestingly, studies on removing land-use regulatory barriers for food infrastructure, especially farmers' markets, focus primarily on North America (Raja, Born and Russell, 2008; Desjardins, Lubczynski and Xuereb, 2011; Edmonds and Carsjens, 2021). For example, a study on incorporating food markets into municipal laws in Michigan, USA, shows that few cities explicitly allowed farmers' markets in zoning ordinances; the insufficient adaptation of food policy recommendations to land-use planning resulted in the illegal status of the markets (Edmonds and Carsjens, 2021). This reflects differences in research focus across areas, and it may result from varying institutional contexts. In many parts of Europe, farmers' markets remain active and are less constrained by planning regulations, which might explain the lower volume of research from this perspective.

Farming Practices

The transition of farming practices is highlighted in the literature as essential for achieving the embedded goals of food planning in improving local food self-sufficiency and environmental performance (Lulovicova and Bouissou, 2023). This transition includes shifting from conventional to agro-ecological farming (Michel and Soulard, 2019; Zerbian and De Luis Romero, 2021; Marull et al., 2023; López-García and Carrascosa-García, 2024) and developing alternative urban farming practices (Lovell, 2010; Mason and Knowd, 2010; Haberman et al., 2014). Diversifying local products is likewise crucial, as regional food self-sufficiency also depends on providing sufficiently diverse products rather than relying on industrialised systems, which are characterised by the oversupply of livestock and a shortage of market gardening in the studied areas (Wascher and Jeurissen, 2017; Tedesco et al., 2017; Zasada et al., 2019; Lulovicova and Bouissou, 2024). The transition therefore requires restructuring land-use plans to support diversified farming types (Menconi, Giordano and Grohmann, 2022; Cardoso and Domingos, 2023).

There is limited literature specifically addressing measures and instruments for farming practices. Identified measures include the spatial restructuring of land-use, investment in desired farming projects, adaptation of land-use regulations, and provision of informational support (Table 3). A few studies show that land-use planning may constrain farming practices. For example, in France, market gardening was constrained by regulations on farm buildings (Perrin and Nougaredes, 2022). In Detroit, USA, the absence of land-use regulations on farm sizes has tended to favour large farms over small-scale producers (Pothukuchi, 2015; Paddeu, 2017). Liu (2024) argues that the lack of attention to the ecological transition of farming practices results from power dynamics between conventional and pro-transition actors, which leads to the marginalised voice of ecological

transition in planning processes.

Overall, the three intersecting action fields identified suggest important policy implications for the design of policy instruments. First, policymakers should consider diversified food supply chain activities beyond food production. Integrating food planning could enable land-use planning to include the specific needs of RAA and create an enabling regulatory environment for it. Second, innovative land-use strategies should address the particular issues associated with RAA, such as balancing building rights and minimising land take. Local authorities could also provide spaces for collectively managed RAA as experiments. Third, a combination of policy instruments supporting RAA is needed, such as combining land-use regulations and market-led land-use instruments. The ability of food planning to mobilise diverse 'soft' and non-regulatory policy instruments has especially great potential in flexible policy design.

Governance Models Facilitating Planning Integration

Cross-Departmental Governance

Land-use and food planning projects are usually managed separately (despite a few cases, such as Bedore, 2014): land-use by traditional planning departments, and food planning by individual food policy offices or departments of health, environment, economic development or social development (see, for example, Sonnino, Tegoni and De Cunto, 2019; Mattioni, Milbourne and Sonnino, 2022). Yet food planning is inherently cross-sectoral. RAA, as a boundary object involving all the food system components, requires initiatives led by 'boundary spanners', who remove silos by linking internal and external networks (Clark and Jablonski, 2022). Therefore, planning policy integration requires collaboration between departments (Mansfield and Mendes, 2013; Morgan, 2013; Moragues-Faus and Morgan, 2015; Sonnino, Tegoni and De Cunto, 2019; Monticone et al., 2023).

We identified key forms of collaboration between the two planning-related departments from the literature. The communication of resources based on staff involvement in policymaking processes builds up bases for collaboration. It enables knowledge transfer, technical information sharing and consistent policy design (Wegener, Hanning and Raine, 2012; Michel and Soulard, 2019; Liu, Korthals Altes, Melot, et al., 2024). Institutional reform also fosters collaboration and reinforces RAA implementation. For instance, in Singapore, a coordinated process involving different agencies and authorities increased the approval of commercial farms on non-agriculture land (Diehl et al., 2020).

Cross-scalar and Trans-local Governance: RAA at a City-Region Scale

The food planning literature consistently emphasises planning RAA at the city-region scale, because this perspective addresses surrounding rural areas as 'foodsheds' to feed cities, links urban food insecurity with rural distress, drives regional development, and can improve living environments through rural-urban linkage (Sonnino, 2009; Carey, 2013; Morgan, 2015; Moragues-Faus and Marsden, 2017; Blay-Palmer et al., 2018; Cabannes and Marocchino, 2018; Valley and Wittman, 2019). The City Region Food System approach, developed and applied in multiple areas, is valued for its holistic approach that links rural and urban, and embeds sustainable goals. This approach addresses cross-scalar issues and is praised for its ability to unify stakeholders across jurisdictions, policies and scales (Blay-Palmer et al., 2018, 2022). Different cities within a city-region system also play varied roles (Van der Gaast, Van Leeuwen and Wertheim-Heck, 2020).

The scale of planning matters as it influences the participation of stakeholders, funding, resources and power (McPhearson, Hamstead and Kremer, 2014; Prové, de Krom and Dessein, 2019; Jablonski et al., 2019; Karetny et al., 2022). For example, when the governance scale is limited to urban municipalities, planners have difficulty addressing farmland issues beyond municipal boundaries (Hayhurst et al., 2013). Case studies on Greater London over time highlight how cross-scalar governance corrected mismatches in intervention scales

(Reynolds, 2009; Morgan and Sonnino, 2010; Parsons, Lang and Barling, 2021). London food planning managed at the metropolitan scale encountered implementation barriers because of the lack of implementation competency at the inferior local unit level (Morgan and Sonnino, 2010). As a solution, coordinated borough-level food policies facilitated effective implementation (Parsons, Lang and Barling, 2021).

Cross-scalar governance is particularly essential in the context where local authorities lack legitimacy or human resources in agri-food issues (González De Molina and Lopez-Garcia, 2021; Arcuri, Minotti and Galli, 2022). It has however been found to be insufficient in planning practices, although specific and emergent issues such as Covid-19 accelerated the process and triggered greater attention at government level (Fattibene et al., 2023; Sonnino, 2023). After reviewing around 400 publications in the US and Europe, Clark et al. (2015) found that local publications mainly focus on food planning, whereas state publications emphasise land-use policies, indicating a lack of a holistic approach to integrating food and land-use policies in research on the local scale of governance.

The 'city-region' spatial boundary presents a planning challenge and has sparked discussions about the appropriate scale for planning. Researchers have examined self-sufficiency levels of local food systems using geographical food provision scales (Wascher and Jeurissen, 2017; Zasada et al., 2019). However, territoriality extends beyond mere geographical space to social coherence and regional identity, jurisdictional boundaries, resource flows and data availability (Sonnino, 2016; Borrelli and Marsden, 2018; Cavallo and Olivieri, 2022). Some argue that there are no fixed boundaries, and different rationales for delimitations, such as administrative units, territorial areas and production areas, may be appropriate for different localities (Sanz Sanz, Martinetti and Napoléone, 2018; Blay-Palmer et al., 2018).

An Innovative Framework Combining Bottom-Up and Top-Down Approaches

The literature on both planning policies highlights that bottom-up initiatives and top-down planning can be complementary to achieve efficiency. The literature on land-use planning emphasises the importance of participatory planning (James, 2014; Skog, 2018). In contrast, studies on food planning move beyond the participatory planning discourse and address innovative governance mechanisms emerging in this new policy domain. Bottom-up and top-down approaches are mutually dependent; while civil society needs local government support (e.g., granting access to public space, subsidies), local governments need external resources and skills to effectively implement food planning actions (Moragues-Faus and Morgan, 2015; Sadler, Arku and Gilliland, 2015; Duvernoy, 2018; Sibbing et al., 2022).

Two notable features of governance in the new policy field of food planning are highlighted in the literature. The first revolves around Food Policy Councils (FPCs) as a new governance model for food planning. FPCs, with either a bottom-up or a top-down approach, create a space for different actors from both public and private sectors to engage and exchange ideas (e.g., Campbell, 2004; Bassarab, Santo and Palmer, 2022). FPCs can contribute to planning policy integration by persuading planning officials to modify land-use planning based on food planning, mobilising diverse actors to deliver professional knowledge to policymakers, and influencing political awareness by linking land-use and food issues via the mobilisation of citizens (Wekerle, 2004; Blay-Palmer, 2009; Hamilton, 2011; McClintock, Wooten and Brown, 2012; Shey and Belis, 2013; Camaioni et al., 2016; Sloane et al., 2019; Vara-Sánchez et al., 2021; Bassarab, Santo and Palmer, 2022). Leitheiser and colleagues (2022) comment that FPCs are a way of 'commoning' in food governance, which requires policymakers to refresh their understanding of democracy.

The second feature of governance revolves around the fact that food planning is developed in unusual policy frames that are sometimes contingent, unstable and contentious, therefore necessitating certain flexibility (Moragues-Faus and Sonnino, 2019; Blay-Palmer et al., 2022). Local stakeholders do not always agree on consensual visions or priorities; therefore, 'assemblage' has been applied to food planning network as it provides a 'non-prescriptive framework that helped to identify diverse, fluid and overlapping agencies […]

having rather undefined decision-making mechanisms […]' (Moragues-Faus and Sonnino, 2019, p. 14). Moreover, the vision of what should be the diversity of stakeholders is not consensual across territories, and is linked to divergent local ambitions of local initiatives – as mere debate arenas or as platforms leading to transformative actions (Santo and Moragues-Faus, 2019). Santo and Moragues-Faus (2019) address two sticking points: bringing together organisational representatives or grassroots communities, and involving stakeholders of both alternative and conventional agriculture in local groups. A recent study investigating the integration of land-use and food policies shows that procedural integration helps to incorporate multi-stakeholders of food planning into traditional land-use planning, thereby generating new dynamics and reshaping power relations (Liu, Melot and Wallet, 2024).

The identified models suggest policy implications regarding governance mechanisms. First, integrated planning requires cross-departmental collaboration throughout the planning process, from sharing technical resources and aligning regulations, to facilitating RAA-related permits. Second, we suggest adopting the city-region food system concept in planning and involving multi-level and trans-local stakeholders within the city-region to ensure coherence between stakeholders, and planning areas and break silos. Third, new governance strategies to integrate land-use and food planning should be further explored, potentially through FPCs. Fourth, it has been suggested that regional authorities and research institutes train local managers and planners in cross-sectoral, multi-level approaches to integrating land-use and food-related issues.

Conclusion: Integration of Food Planning with Land-Use Planning Needs – a Paradigm Shift

This review has applied a systematic review retrieval method adapted to social science, to further the understanding of how the integration between land-use and food planning could facilitate RAA,. The findings highlight their complementary and synergetic potential in enhancing RAA, particularly in access to land, collective food infrastructures and farming practices. Achieving this requires integrated planning governance mechanisms that are cross-sectoral, cross-scalar, and innovative in engaging multi-stakeholders – a framework that needs further development. This research is innovative in linking land-use and food planning, offering new insights into integrated planning and adding value to policy integration theories.

In our opinion, the integration of food planning with land-use planning calls for a paradigm shift. For land-use planning, this implies putting RAA on the agenda with other sustainable development issues and systematically paying attention to the various stages of local food supply chains, taking into account the diversity of stakeholders' profiles and practices. It also involves translating food planning into effective implementation by addressing land-use and property rights issues. To this end, policymakers need innovation in the design of policy instruments and governance mechanisms.

This review highlights the fact that research specifically on planning for RAA remains limited. More empirical analyses on diverse RAA-associated activities could provide a better understanding of their particular needs and corresponding planning strategies. There is also a need to broaden the scope of the topics associated with RAA; for example, the issues of biodiversity and adaptation to climate change are largely absent from the existing literature, and the question of social equity has yet to be attended to. This review reveals varied RAA planning approaches across territories, and shows that institutional contexts matter. International comparisons could enrich the understanding of contextual differences and their impacts on planning. Whereas this review is limited to English-language contributions and to the Global North, food planning is also developing in the Global South and is spreading across the world. Future research could include non-English-language publications and focus, especially on the Global South to identify local policy innovations in different contexts. Future research could also explore the relevant scale for RAA planning, while emphasising local particularities due to institutional diversity. While most reviewed literature has an urban or peri-urban focus, future research could focus on rural settings. This review provides an overall understanding of the intersections between

planning policies but should be validated by empirical studies and by assessing the implementation of these policies. Avenues for future research could include empirical studies on the following: integration of land-use and food planning; evaluation of the impacts of significant issues such as Covid-19 and aggravated climate change; assessments of their effects on RAA; and comparisons between different contexts.

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Supplementary Materials

Appendix A: Summary of 154 reviewed studies

Appendix B: Major focus on food planning and on RAA

These two appendices can be downloaded in an Excel file from:
https://ijsaf.org/index.php/ijsaf/article/download/608/446

Food systems, transformation, and politics: Examining nexus relations to advance a new research agenda

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Abstract

This paper argues agri-food scholars need to engage more critically with conceptualisations of food systems and politics of transformation, given current debates about food system sustainability, climate change, planetary boundaries, resilience and well-being, alongside new politics, social movements and forms of protest that disrupt established ways of deliberating, agreeing and enacting social change. As food systems exceed established 'thresholds', transformative change is needed. However, de- and re-politicisation, oscillating from post-political to new modes of hyper-politics, challenge not only food system knowledge production, but also the socio-material actions needed to enact food system transformation pathways at scale. Against this context, the paper summarises the contribution the Special Section makes to food system transformation politics, highlighting a 'politics of knowledge', 'politics of transformation' and 'politics of feeling' nexus of relations. We conclude by calling for further research on food-politics relations given their role in determining whether we achieve or not the food system changes necessary for the health of people and the planet.

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Introduction

Calls to radically transform food systems are not new, but over the last decade or so, agreement has solidified into at least a 'fractured consensus' (Maye & Kirwan, 2013)—that we need to change how we produce, process, consume, and govern food systems, even if exactly how to do this is still debated (FAO, 2025; HLPE, 2025; Rockström et al., 2025). One key driver informing this need for change is the impact of several increasingly intersecting crises (Holloway et al., 2025; Sage, 2022), from notable 'acute' system shocks (e.g., the Covid-19 pandemic, the Russia-Ukraine and Israel-Palestine wars, new tariff wars) to more persistent systemic 'chronic' stresses (e.g., climate change, the obesity crisis, biodiversity loss).

Crisis in food systems is also not new (Ericksen et al., 2009), but the intensification and intersection of issues is (Brunori et al., 2020). A growing body of scientific evidence is amassing to crystallise and validate the urgency for change, while also recognising likely contestations. The EAT-Lancet Commission (Rockström et al., 2025), for instance, has published the latest comprehensive analysis of global food system transformation, presenting clear and comprehensive evidence that food is the single largest cause of planetary boundary transgressions and strongly reasserting that we need to transform what we eat (less meat and more plant-based diets). Crucially, it recognises a need to enact necessary food system changes through a just transition framework, with a particular focus on food governance and policy to address distributional impacts. Recommendations include, for example, the strategic sequencing of policies for healthy diets, sustainable production, and social justice; the redesign of finance mechanisms and incentives; and greater participatory governance for decision-making. This matters because it recognises that food system transformation based on science and consumer choice strategies will not be sufficient, given underlying power relations and equity issues.

Transformative changes to our food systems therefore necessitate engagement with 'the political', given underlying political economy, power, and accountability dynamics (Arnold et al., 2022; Béné et al., 2019), as well as the need to capture social attitudes and values around different transformation pathways (Chinaglia & Duncan, 2025, this issue). However, relations between food systems, as the object of change (transformation), and the political, are highly contested, sparking debate about what food systems are for (food and nutrition security notwithstanding) and how best to transform (or even decelerate) them to protect planetary boundaries, support nature recovery, improve diets, and maintain farmer and rural livelihoods. The presence of multiple crises, when added to this mix, also questions how resilient food systems should be shaped. This can amplify difference and disagreement. Crises thus become drivers and mechanisms that enhance conflict and fracture agreement on transformation pathways.

We can already observe how these different demands on food systems are creating conflicts and challenging established political ideologies. The farmer protests in India in 2020–21, for example, were successful in reversing a market-friendly (neoliberal) policy. We have also seen farmer protests over proposed nitrogen emission cuts in several European countries (see Crivits et al., 2025, this issue), which have increased tensions between farmer groups and environmentalists over food production and rewilding. We have also witnessed rural-urban and increasingly intra-rural conflicts regarding land use and energy changes for net-zero ambitions (Wang et al., 2023). Mangnus and Candel's (2025) analysis of the European Farm to Fork strategy also usefully reveals the political (un)making of food policy, with food framed as a security issue to support agricultural output over more systemic changes that would support sustainable food futures.

These food system transformation debates and conflicts are intensely political, in that they generate 'antagonisms' (Wenman, 2013) because of the values and interests at stake. Thus, alongside a fractured consensus on the need to change our food systems, and a growing scientific evidence base explaining why this is essential for the health of people and planet, conflict and counter-politics under polycrisis can filter through to disrupt political action for change and polarise social groups. This reflects and intersects with political disruption in wider society and 'the great recoil' (Gerbaudo, 2021) from neoliberal hegemony to anti-globalist populism. We see, for example, increased national securitisation discourses, competitiveness, and populism, as well as

political tactics to maintain the status quo of incumbent actors. Politics plays out through physical arenas as well as on digital social media, where contrasts and emotions may be amplified (Kubin & von Sikorski, 2021). For political theory, this means the post-political critique of consensus politics—as the 'scandal of democracy' (Swyngedouw, 2009, p. 615) that depoliticised decision-making and suppressed contestation and antagonism in deliberation (Mouffe, 2005, 2013)—now sits alongside a 'post-truth' order defined by Trumpism, nationalism, and 'hyper-politics' (Jäger, 2024), where everything is politicised but not institutionalised.

Taking stock of these debates, and with the support of the papers in this Special Section, we observe a critical shift from a 'consensus framework'—based on Agenda 2030 and the Paris Agreement on climate change—to a 'post-truth' phase. The consensus phase unfolded through the elaboration of science-policy interfaces, multi-stakeholder participation, and official endorsement in international institutions. Despite overlooking underlying conflicts over power, justice, and distribution, this phase proposed clear transformation targets to the international community. In the 'post-truth' phase, a shared understanding of reality is undermined by alternative narratives strongly supported by media and political parties, even in matters where there is a significant consensus within the scientific world, such as climate change and biodiversity degradation. The current moment can be seen as a reaction to this fractured (now broken) consensus, wherein political polarisation undermines attempts to establish a shared ethical and cognitive mandate as the necessary condition for transformation by democratic means (see also Canfield et al., 2021a).

The political in this context is not only critical to collectively identify and agree upon pathways for change in food systems, but it can also present major obstacles to change. The challenge, then, is how to manage conflict within a democratic frame. Mouffe (2013), for instance, proposes an agonistic democratic frame, resulting in a post-political outcome. Researching what we term here emergent 'food-politics' as nexus relations is another means to address conflictual pluralism and signifies a critical juncture and future priority in studies of food system transformation. These processes will significantly determine whether it will be possible to achieve the changes necessary to maintain a healthy food system and a healthy planet.

We use the remainder of this introductory paper to call for a greater focus in agri-food research on the relationship between food system transformation and the political. This requires critical engagement with research in political studies and related disciplines to examine politicisation, post-politics, and hyper-politicisation, positioned alongside more critical and precise analysis of terms and concepts that have become increasingly popular but 'fuzzy' (Markusen, 1999) in food studies (notably 'food system' and 'transformation'). The rest of the paper proceeds as follows. First, we give a brief general overview of the Special Section and the way it was conceived, organised, and the papers that were selected. Second, we use the papers from the Special Section to develop and introduce three cross-cutting themes that emerge from the analysis presented in the main articles. We term these 'politics of knowledge', 'politics of transformation', and 'politics of feeling', revealing at each step what we regard as critical insights and future priorities for analysis on the intersection between food system transformation and politics. In the final part, we set out suggested themes for a future research agenda.

Food system transformation and politics: Special section overview

This Special Section was conceived as an opportunity to extend agri-food scholarship on the politics of responsibility and accountability (Arnold et al., 2022; Canfield et al., 2021b) by engaging more directly with ideas from depoliticisation (Mouffe, 2013; Swyngedouw, 2009) and repoliticisation (Gerbaudo, 2021; Jäger, 2024). The post-political and hyper-political signify an interesting and active provocation to the agri-food studies community. Take the post-political critique of consensus forms of statecraft, for example, and contrast this with the popularity of multistakeholder-type models in food system governance. In essence, can we use post-political and hyper-political theory to prompt new ideas and ways of engaging with politics in agri-food? This sits alongside the emerging sense of polycrisis and the increasing mobilisation and popularity of

terms and concepts related to food system transformation, which we assert need greater scrutiny to avoid hollowing them out.

Taken together, and set against intersecting emergent crises, we have a context that raises fundamental questions about how we understand food systems, warranting critical reflections, including political economy questions about responsibility, accountability, and equality. The polycrisis raises questions, for example, about which values or principles are most important in identifying pathways for transforming food systems, and the interplay between science and policy in democratic contexts to enact transformative potential. This is likely to require new language, methods, and research tools to deliberate food futures for citizens and the planet. Guided by these insights and underscored by the assertion that we needed to encourage more critical thinking about food system transformation and politics, the authors co-convened a highly successful and well-supported working group at the European Society for Rural Sociology (ESRS) conference in Rennes in July 2023. This provided the foundation for the Special Section. We have included several papers from that original meeting, as well as other key contributions to further extend the scope, geographical diversity, and thematic fit. The final Special Section comprises eight research papers in total. Each engages critically with the question of food system transformation and politics, particularly how we conceptualise and study food systems as an object of knowledge production and transformation and as a political project that influences visioning and social action. The papers draw on recently completed or on-going research projects related to food systems and include case material from Belgium, Brazil, France, Italy, The Netherlands, Switzerland, and the UK, as well as wider links with international systems.

Each paper observes food systems in a state of permacrisis and emergent political resistances to desired transformation goals. Nevertheless, the food system concept and emergent politics of transformation inevitably configure differently in different places. Individual papers show this context specificity, which is important. Here, though, we focus on the cross-cutting insights the papers collectively provide in terms of conceptual and methodological re-assessment of food systems and de- and re-politicisation. Three themes emerge that inform future research, related firstly to what we mean by the food system concept (politics of knowledge), then what transformation of food systems means, and the innovative practices and mechanisms needed to accommodate underlying changes (politics of transformation). This is linked to a final topic regarding the de- and re-politicisation of food systems and the increasing influence of emotion and affective polarisation in politics, including forms of protest (politics of feeling). We elaborate each of these themes below, linking clusters of papers and cases that speak directly to each theme and the relationship between them.

Food-politics I: Food system concept mobilisation and the politics of knowledge

This first theme relates to the food system as an analytical tool, concerning how the scientific community mobilises and theorises the concept and the implications of this for transformation, both in terms of how we research and communicate messages and design interventions for change. In the Special Section, three papers (Frick et al., 2025; Hasnain & Hill, 2025; Maye et al., 2025) speak directly to this first food-politics nexus, signifying what we call 'the politics of knowledge'. This is partly about recognising how food system models and frameworks are products of knowledge and mental constructs, but crucially also that, given increasing attention to the concept in food policy and practice, these relations have direct political implications in how we describe, organise, and communicate food-society changes. To be clear, we do not seek to critique or dispute the underlying value and contribution of the food system concept *per se*. All papers in the Special Section evidence the concept's inherent usefulness and value as an analytical tool. Here we implore instead a transformation in the research community and call on researchers to improve how the term is used in the food system literature and beyond. The critical point is to recognise terminology and the mobilisation of concepts as processes that are inherently political, with political imperatives.

Maye et al.'s (2025) paper, for example, recognises not only the prominence but the resurgence of the food system concept in agri-food studies literature in recent years, tracking uptake from 1987–2024. The paper

takes a deep-dive into two cases—a food system transformation case (process-based) and a food system urban case (place-based)—as well as summarising key features of food system thinking, extracted from key papers that explain what this approach involves and entails. Whilst observing general interest in the concept, connected to growing concern to address interlocking crises, the analysis reveals bipolarisation via two different styles of mobilisation: one which is more heuristic (the concept is essentially an organisational device) and the other which is systemic (applying characteristics associated with systems thinking). For most papers, the heuristic application is by far the most dominant, indicating much less systems thinking than one might expect. This is not necessarily a failure, but more explicit recognition of how the concept is employed is called for (cf. Brock, 2023), recognising critical issues for the future training of food system thinkers.

Hasnain and Hill (2025) build on these points, making a case for greater clarity of terminology, particularly for core concepts central to food system application, namely: 'drivers', 'outcomes', and 'feedbacks'. The field, they note, is relatively under-theorised, and the consequence of not having greater clarity is an inconsistent, ambiguous application of the food system approach. This is problematic because food system frameworks are not neutral representations of reality; they are inherently political, inherently subjective, and relatively simplistic, which means interpretations should be approached with caution, or at least with an awareness of limitations and the possibility for bias, requiring supplementation through additional forms of knowledge and perspective. Applying the concept requires, then, a reflexive approach and a rejection of a realist ontology. For Hasnain and Hill, clarifying how food concept terms are understood and applied is a critical step in this knowledge politics, alongside interdisciplinary collaboration, to advance how we design food systems and organise and implement transformational actions.

Frick et al. (2025) supplement this argument through an analysis of transformation pathways in agri-food. In a novel application, they show how the tacit knowledge of 11 researchers in an EU project shapes their understandings of socio-ecological transformation. The research subjects have expertise spanning 101 European transformation initiatives, covering different scales, approaches, and objectives. Using a repertory grid methodology, they assess respondents personal meanings of different pathways and observe convergences and divergences in the dataset. Researchers agree and converge, for example, on the need for stakeholder inclusion, autonomy, the scope of ambitions, and the link with farming practices when describing transformation potential. However, stakeholder personal constructs were in divergence regarding issues like market orientation and what makes initiatives transformative. This underscores a need to reflect on how stakeholder inputs to design agri-food transformation processes take place.

Food-politics II: Food system change and the politics of transformation

Visions for a sustainable food future, then, are political, subjective, and require careful management. This speaks to our second food-politics nexus, which we term 'the politics of transformation'. In general terms, this recognises transformation as necessary for food system sustainability and, crucially, that politics are necessary for transformation. Given the overarching focus of the Special Section, all eight papers address transformation in food systems to some extent. We have clustered three papers that speak particularly well to this nexus relation, advancing in different ways transformation and political agency (Arnold & Soppe, 2025; Chinaglia & Duncan, 2025; Lamine et al., 2025), but first some general points to contextualise how transformation is theorised in all eight papers. We observe a consensus that food systems need to change, with an active framing of food systems as sites of political action and resistance. Alternative Food Networks (AFNs) are prominent niche innovations and a means to do this (cf. Maye & Duncan, 2017). Transformation signifies an act of replacement and a re-making of the food system in a new image. The other form of transformation is of the dominant corporate capitalist regime, which contributors also identify.

This description of transformation is different from the Multi-Level Perspective in Transition Studies (cf. Geels & Schot, 2007), in that food systems analysis is framed as full system change in, for example, practices, policies, technologies, and knowledge, rather than just rules-based changes to socio-technical regimes. It also includes

a change to the image and objectives of the food system, so the outcomes are not just food but also health. This conceptualisation of transformation is implicit or explicit in many food system papers reviewed by Maye et al. (2025). The three papers we highlight here advance these ideas in different ways. Chinaglia and Duncan (2025), for instance, make the case for experimentalist governance as key to transformation. Using a case study of Campi Aperti, an AFN comprising a formal farmers' market association in Bologna that has been active for over twenty years, they examine the role of the political in the internal governance of the network. Applying an adapted version of experimental governance, the paper responds to critiques of AFN structures for their depoliticising tendencies (e.g., managerial processes that erase conflict) to show how internal structures facilitate engagement with the political, navigating power dynamics and strategic uncertainties and revealing the political potential of such arrangements. However, these innovations are more effective internally, with less influence outside the network. Their analysis shows that experimental governance can be a space of political agency and transformation.

The other two papers spotlighted in this section examine the politics of transformation as a market device and a territorial assemblage, respectively. First, Arnold and Soppe (2025) provide a rich longitudinal case study of the Swiss fair trade flower market, from 1990 to 2025. As a transformative politics, they argue that social movements signify key agents for politicising food systems, and a key strategy is to moralise markets. Employing Callon et al.'s (2007) idea of 'market devices', they reveal 'the sequencing of market devices' as a political process and moral enactment. Market arrangements thus work to 'heat up' and 'cool down' markets through specifying accountabilities and obligations. In the case study these finally became concentrated on one device—the certification standard for flower plantations as a 'mainstreaming' of fair trade. Movement-induced markets not only have unintended consequences through their political work, they also generate, through devising and 'the politics of scalability', intra-movement conflict.

Lamine et al. (2025) meanwhile take the territorial scale as their entry point, proposing a combined framework of pragmatist sociology and political ecology to assess how food system transformations can be enacted in a more re-politicised way. They provide rich accounts of three cases in France and Brazil. Critical in their piece is the way food system transformations can become depoliticised, even though we might observe institutional politicisation, and how these two perspectives combined can help to better identify how people in territories define and identify agri-food system problems and work together to identify solutions, whilst at the same time working to reconfigure power relations and push for a diversity of visions of food system transformation. They note, for instance, the role of collective knowledge production and how politicisation processes emerge through encounters between different types of knowledge (dialogue of knowledge). In the two French cases, we also see how depoliticisation can be both strategic (as some actors impose their vision of transition) and systemic (as mechanisms converge). Crucially, they argue that participation, if not studied carefully, can become homogenised and too narrow for capturing and discussing alternative views.

Food-politics III: Food system politicisation and the politics of feeling

In this final theme, we elaborate relations between de- and re-politicisation and their potentially disruptive implications for progressive food system transformation. Building on the arguments introduced earlier from political theory, we label this section 'the politics of feeling', taking inspiration from cultural political geographers Anderson and Secor's (2025) argument that politics in times of crisis (enacted as regimes of neoliberalism, progressivism, populism) have become increasingly a matter of emotion and feeling. For the papers in this Special Section, this idea speaks particularly well to the earlier remarks regarding new populist discourses as they infiltrate debate, including protests about the future of farming and rural landscapes, which often spill out as forms of demonstration and protest in towns and cities. It considers also how the dynamics of depoliticisation and repoliticisation work together, with depoliticisation, in certain contexts, not necessarily bad for decision-making if the alternative is inclined to ignore science and/or polarise debate.

Two papers in the Special Section speak well to this third nexus, starting with Brunori et al.'s (2025) analysis of

the depoliticisation and polarisation of CAP reform processes in the EU, particularly the recent Farm to Fork strategy. Their analysis makes several useful points, particularly their argument that analysis of (de)politicisation alone will not suffice, calling also for the inclusion of polarisation. As they explain, this signifies a tendency for the polity to divide into opposite fractions, often with little overlap in terms of values or interests, and is not present just for a single issue. It can be ideological, and affective polarisation can form a type of denial or rejection of politicisation. The consequence is that solution diversity can be reduced and a strengthening of binary approaches manifests. Farmer protests in Europe initiated a new phase of 'high politicisation and high polarisation', as affective polarisation, and crucially, polarisation in fact concealed nuances in the protests, highlighting certain aspects, such as the anti-European debate, whilst failing to reflect the politicisation of issues such as power distribution in the food system and supply chains. Interestingly, they point to the Strategic Dialogue initiative in 2025 as a de-polarisation strategy because of the explicit attempt to reduce levels of polarisation while maintaining high politicisation. Their analysis also revisits debates regarding deliberative arenas, critiqued by some because they depoliticise conflicts, suggesting these spaces, including for agri-food systems, could provide new tools for politicisation if employed as transformative tools for local consensus.

These points about revisiting how we consider consensus and compromise building as components for transformative change in democratic environments are welcome. The article by Crivits et al. (2025) is complementary in this regard, taking the case of nitrogen policy in Flanders as the entry point, and framed through politicisation, re-politicisation, and post-politics. The case examines how 'the post-political condition' gets expressed in the policy arrangements for nitrogen. What was initially a technocratic process became politicised after 2021 when a nature conservation group successfully filed litigation, in turn rupturing the 'neo-corporatist arrangement'. The analysis after this point shows increasing examples of dissensus and diverging interests and political expressions, alongside authoritarian efforts to contain the debate. The policy appraisal thus shows the top-down nature of the implementation process that eventually led to polarisation. One can productively re-politicise an issue, they argue, by embracing divergent and antagonistic discourses, identifying in turn a critical role a critical role for social scientists as 'democratic mediators'. This echoes Mouffe's (2005) political ontology that foregrounds dimensions of antagonism over consensus in democracy.

Conclusion: towards a future research agenda

This Special Section is a timely intervention for food system transformation studies for two reasons. Firstly, it pushes for the application of the food system concept to be more precise and explicit because of increased actor mobilisation. This call for greater clarity is reflexive in a methodological sense, because the research questions and methods applied are imprecise and to some extent under-theorised, so need more precision or at least specificity to enact meaningful change, as well as better interdisciplinary collaboration. The call is also political, recognising that work on food system transformation requires navigating questions of power, knowledge, and resources.

Secondly, this urgency around better defining the object we seek to transform (the food system) intersects in the articles here with an emerging contested politics of transformation, neoliberal reordering, breakdown, resistance, and hyper-political populist feeling. The papers reveal a critical shift from the Agenda 2030 consensus framework to post-truth politics. This identifies an urgent need, we argue, for both research and policy agendas to adapt to this new political reality. Several research questions emerge in this regard. For example, how will science-policy relations change in this new political context? What should the role of scientists be? Should the critique of neoliberalism be revised, or is this phase a new form of neoliberalism? What does 'transformation' mean in a context where power relations are no longer concealed by governmentality? How can local networks adapt to the new phase and develop forms of resistance and resilience? Where should empirical work be concentrated? Finally, to what extent can 'food system transformation' function as a genuine and democratic space for change; or is it inevitably also at risk of turning into yet another consensus narrative, following in the footsteps of Agenda 2030?

These are some of the critical research questions this Special Section raises and highlights here as essential for future research. The eight Special Section articles also demonstrate, in different ways, how political science and related fields already provide critical insights to help food system scholars assess the new politics of food system change. Theories of de- and re-politicisation help to open more radical conceptualisations of food system arrangements, as we see from the papers using ideas such as deliberative democracy, agonistic pluralism, affective polarisation, and experimental governance. For agri-food scholars in sociology, geography, and beyond working on these questions, greater alignment with political science will be key. We can see too how these ideas can be usefully combined with more established theory in agri-food rural sociology, such as pragmatist philosophy, political ecology, market sociology, and responsibility. In this new food politics, it is likely that political alliances will emerge in unexpected forms. The political and social contestations surrounding food system transformation—including debates, conflicts, and protests—are constitutive of the change itself. Consequently, these dynamics will redefine both the trajectory of transformation and our future scholarly interpretations of it, framing concepts such as localisation, food sovereignty, and food justice as forms of resistance (Maye, 2025). Insights from rural sociology, such as rural development counter-movements (Marsden et al., 2020; Wright, 2010), and Gramscian 'counter-hegemony' (de-commodification), can help here, as can new work in human geography on the politics of feeling, metabolic politics, spatial justice, and multi-species planetary geographies. In the articles, we see repeated recognition and emphasis on the fact that the food system is a sub-system. From a transformation perspective, this points to understanding multi-system interactions, a now growing theme in transition studies (Andersen & Geels, 2023). Future work should thus link the politics of change not only to food systems but beyond them as well.

The main contribution of the articles in this Special Section is the nexus relationship among the politics of knowledge, transformation, and feeling. We argue, and the articles show, that these are not separate dimensions of food system change but are instead overlapping and mutually influential. To advance our understanding of food system change, we must be prepared to pay attention to the overlaps of feelings and knowledge and how they work together to transform the people and systems needed to produce and consume food sustainably. Building on this contribution, emerging themes that can further advance the food system transformation politics presented herein include: building on the idea of the politics of knowledge, further critical perspectives are welcome on the food system concept, including new epistemologies, methodologies, and training of researchers and policymakers to map food system intersections with politics and justice; conceptual work on politics in food system transformation, including novel perspectives from post-political theory, hyper-politics, and other related studies of de- and re-politicisation. Understanding the role of knowledge production, use, and communication when mobilising the food system concept to enact change in times of crisis, and its relation with the policy process; and re-evaluating wider transformational and governance questions about the state, sovereignty, justice, rights, responsibility, legitimacy, and accountability. These latter points develop and extend work related to both the 'politics of transformation' and the 'politics of feeling' nexus relations identified here. Interestingly, this includes further supporting rather than reducing the role of participation and deliberative arenas to support democracy, and better discussion and training of researchers as 'democratic mediators'. In an era of uncertainty, elaborating these themes, research questions, and their connections is essential for supporting the future shaping of food system transformation pathways.

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Heating Up, Cooling Down: The Moralisation of Markets through Devices and Their Unintended Consequences

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Abstract

Social movements play a critical role in politicising food systems, often contesting and moralising markets to advance their social change agenda. To induce moralisation processes, social movements frequently deploy market devices. Examining the case of the creation and development of the Swiss fair trade flower market over time (1990–2005), we investigate how several market devices are being used in moralising a market, including the intended and unintended consequences of this process. Our findings reveal how the sequencing of devices—the gradual build-up of various devices upon one another—enabled the market-pioneering movement to first 'heat up' moral concerns and raise awareness, and later 'cool down' these concerns by specifying accountabilities and obligations to scale the market. However, the sequencing of devices resulted in a moralised market concentrated on a powerful device—a certification standard for plantations—which in turn triggered tensions within the fair trade movement. The market pioneers became marginalised, and the initial fair trade idea—supporting smallholders—became fundamentally renegotiated at international level. These findings advance our understanding of the mainstreaming process of fair trade, explain how fair trade has come to encompass its first non-food product (i.e., flowers) and planation production, and contribute to research on movement-induced markets by highlighting the unintended consequences and intra-movement conflicts of building moralised markets through devising.

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Introduction

Food systems are facing significant pressures to transform towards sustainable production and consumption patterns, with social movements playing a key role in challenging unsustainable practices and socially unjust conditions (Leach et al. 2020; Weber et al. 2020). By mobilising around societal issues, social movements address inequalities and seek to bring about justice and solidarity among producers and consumers (Motta 2021). While movements may target public authorities and politicians, a common strategy for advancing their demands and societal change agenda involves not only contesting established markets (King and Pearce 2010; Bartley and Child 2011) but also creating novel ones. Existing research has amply demonstrated how social movements are pioneering new 'moralised' markets (Fligstein and McAdam 2012; Rao 2009), such as markets for fair trade, organic food, and grass-fed meat (Gilding and Glezos 2021; Niederle et al. 2020; Raynolds 2000; Weber et al. 2008). Moralised markets differ from conventional markets in that consumers and producers adhere to higher moral standards, including environmental, ethical or health considerations instead of purely economic incentives (Balsiger 2021).

Moralised markets require morality to be made 'explicit' (Suckert 2018), and extant research has emphasised the crucial role of market devices in this process. Market devices such as labels, shopping brochures, certification schemes, and standards help distinguish 'moral' products from conventional ones (Dubuisson-Quellier 2013; Geiger et al. 2014) and can serve social movements as 'principal weapons' in their fight against inequalities in large food systems. Callon et al. (2007) introduced the notion of market device as 'a simple way of referring to the material and discursive assemblages that intervene in the construction of markets' (p. 2). Research on market devices has emphasised the material dimension of markets, explaining how supposedly mundane things (e.g., shopping carts, advertisements, prices, and lists) enable the exchange of goods and services (Callon et al. 2007). Market devices thus often take on an important coordination function in markets, supporting producers' and consumers' production, evaluation, and exchange practices (Dubuisson-Quellier 2013; McFall 2009; Karpik 2010). In the context of moralised markets, market devices are typically deployed with the aim to make 'the market "better" or more just' (Geiger and Gross 2018, 3).

Extensive research has focused on the effect and impact of specific market devices on target markets at a given point in time (e.g., Niederle et al. 2020; Bartley and Child 2011; Dubuisson-Quellier 2013; for a notable exception, Gilding and Glezos 2021). Only minimal work has considered the *process of devising*, that is, the development and interplay of various market devices over time in the creation and development of moralised markets. Such a process perspective on market devices is important for at least two reasons. First, the formation of moralised markets may take time and likely involves the deployment and interplay of various devices. Second, the process of devising performed by social movements for bringing about novel, moralised markets may not only have intended effects but may also be characterised by unintended consequences (Geiger and Gross 2018; McFall 2009; Velthuis 2020). We therefore ask: *How do social movements make use of market devices over time to bring about moralised markets? What are the unintended consequences of social movements' devising in the creation of moralised markets?*

Empirically, we focus on the fair trade movement, a paramount example of the moralisation of markets that has garnered significant attention within agri-food studies (e.g., Goodman 2004; cf. Raynolds and Benett 2015) and beyond (Reinecke, Manning, and Von Hagen 2012). Drawing on rich archival data and interviews, we study the moralisation and growth of the fair trade flower market in Switzerland over a time span of 15 years (1990–2005). Unpacking the process of moralising this fair trade market, our analysis shows that several market devices were critical in helping the pioneering social movement to evoke moral concerns and qualities, and to enrol conventional economic actors into the moralised market. The devices employed were built upon one another, yet changed radically over time — a process we refer to as *sequencing of devices*. They changed from devices that helped to 'heat up' and raise awareness of moral concerns in the consumption arena, to devices to 'cool down' these concerns, focusing on specifying accountabilities and obligations in

the production arena. The sequencing of 'heating' and 'cooling' devices (Callon 1998) eventually resulted in a moralised market governed by a single, powerful device that enabled market expansion, namely a certification standard.

Our findings however also reveal how the sequencing of devices and the establishment of a powerful governing device that enabled marketisation entailed a range of unintentional effects, creating tensions within the fair trade movement. First, it pushed the movement pioneers who had initiated the process of moral market building to the margins of the market, while a powerful standard-setter assumed the dominant position. Second, the devising of the flower market resulted in the integration of plantations into the wider fair trade system, which until then had exclusively focused on supporting smallholders, excluding larger plantations. In other words, the devising and moralisation of the flower market generated unintended repercussions on the fair trade movement and the adjacent food sector by introducing a standard for plantation production applicable for food products, such as bananas and other fruits. This step connects to the idea of 'politics of scalability' (Pfotenhauer et al. 2022), that is, helping and supporting as many producers as possible.

Our findings contribute to research on movement-induced markets by highlighting the unintended consequences and the movement dynamics of building moralised markets through devising. Specifically, our study illuminates important intra-movement tensions that can occur through market devising. First, we show how the sequencing of devices can backfire as market devices evolve beyond the control of the social movement that once established them, marginalising the market pioneers. Second, our results reveal unintended spillover effects across sectors—a rarely studied phenomenon. In our case, the devising of the flower market resulted in the highly controversial integration of plantations into the fair trade system (Raynolds 2017; Besky 2008)—a finding that resonates with the literature on the mainstreaming and marketisation of fair trade (e.g., Goodman 2004, Raynolds 2009, Tallontire and Nelson 2013). We identify the highly empirical source of the expansion of fair trade to large-scale plantations, and highlight that mainstreaming cannot be explained solely by the pressure of corporate market actors but also by the movement's use and sequencing of devices. Our results moreover show how devising underpins shifting politics that value market expansion, and contrast with the perspective that the mainstreaming of fair trade based on certification standards has occurred at the expense of politicisation (Edward and Tallontire 2009; Nelson and Tallontire 2019). Instead, devising emphasises these shifting politics as endogenous within the fair trade movement, akin to the observed changes in cultural politics toward the aestheticisation and celebritisation of fair trade (Goodman 2010, Goodman et al. 2012, p. 203-221).

Our article proceeds as follows. We first present our theoretical orientation on the role of market devices in the movement-driven moralisation of markets. After then presenting our case and methodological approach, we turn to our empirical results and conclude by discussing our findings.

Market devices in the movement-driven moralisation of markets

Existing research in this field has demonstrated how market devices are deployed to improve markets (Geiger and Gross 2018). Moralisation is one possibility of such 'improvement', leading to the formation of 'moralised' or 'concerned' markets that 'take into account the various concerns that are associated with the unfolding of economic transactions' (Geiger and Gross 2018, p. 2). The role of market devices has been widely studied in this context (cf. Velthuis 2020), and the literature exemplifies how social movements employ market devices to moralise existing markets or foster the emergence of new ones. Two functions stand out.

First, building on the seminal work on boundary objects that enable and stabilise coherence across social worlds (Star and Griesemer 1989), research has demonstrated how market devices facilitate domain-spanning interaction among actors of distinct social domains. Bridging domains is pivotal for moralised markets as they must overcome the divergence between morality and economy (Suckert 2018). Market devices help to create

new relationships fundamental to any moralised or concerned market (Geiger et al. 2014). They play a role in both 'hot' situations, where controversy arises, and 'cool' situations, where agreements are being settled and rendered feasible (Callon 1998). Devices can thus help to 'cool down' moral concerns (Steiner and Trespeuch 2019) and integrate them with economic mandates. Complementarily, devices can facilitate participation because of their materiality, as they are effortlessly handed over to multiple actors (Marres 2016). While we do not intend to reduce market devices to their materiality, it is important to note that they diffuse easily and help to bridge moral and economic concerns. Among others, these are important reasons why market devices can assist movements to mobilise other actors—business corporations in particular—to support their efforts, which matters for the scalability of moralised markets (Lee, Hiatt and Lounsbury 2017).

Second, market devices support moralisation through valuation processes. They evoke multiple values (not only economic value) and critically shape the valuation of products and services (Beckert and Aspers 2011). That is, rather than 'cooling down' moral concerns, market devices can also 'heat up' by raising awareness about societal issues and introducing new moral values. In an empirical study of shopping booklets that value products according to specific environmental criteria, Dubuisson-Quellier (2013) explains how social movements use this market device to introduce eco-friendly criteria to markets, such as local sourcing, reduced packaging, and environmental impact. Hence, market devices are an effective tool for social movements seeking to infuse markets with moral concerns and values. Moreover, market devices can validate moral meaning to such an extent that they become accepted by other market participants. However, with increased 'cooling down', in other words, abstraction and formalisation, devices can become so accepted in their role of validating moral values and concerns that their purpose is no longer questioned (Stinchcombe 2001). This can be observed, for example, in the case of mundane-looking food safety certificates, which are rarely critically scrutinised and instead are taken for granted as a proof of safe production and processing.

It would, however, be naïve to assume that market devices support social movements in moralising markets solely in intended, unidirectional ways. Like any other artifact, market devices are not neutral (Scott 2003); 'once in place, such market devices take on a life of their own' (Fligstein and Calder 2015, 6). This means that market devices and their unintended effects may vary, depending on the contextual setting (e.g., Erturk et al. 2013; Geiger and Gross 2018; Velthuis 2020). For example, Hawkins (2011) explains that food packaging, a highly accepted market device as it improves shelf life and enables brand strategies, leads to massive accumulation of waste that endangers our ecosystems. The unintended consequences do not have to be only ecological, they can also be social and organisational in nature. Erturk et al. (2013) detail how financial devices enable elites to privatise economic gains for themselves, while the losses are distributed. Similarly, the bitcoin was introduced as a market device to challenge the existing political-economic order, yet it has evolved into a good enabling opportunities for a range of investors (Lawrence and Mudge 2019).

Interestingly, however, the literature on market devices favours the study of the consumption side (for a notable exception, see Fürst 2018). This is exemplified by the expression 'devising of consumption' (McFall 2014) and can also be observed in the work of Cochoy (2007), who disentangles the ways in which rather boring market devices (e.g., trolleys, cards, labels, signs flags) animate everyday consumer behaviour in supermarkets. Karpik (2010) introduces the concept of judgment devices as a specific market device explicitly oriented toward consumers. Judgment devices, such as restaurant rankings, literary reviews, and wine ratings, are used by consumers to determine the (uncertain) value of incommensurable goods (e.g., wine, art, books). For the morality-oriented devising of markets, social movements tend to prioritise accountability devices (Neyland et al. 2019). These devices validate moral meaning by ensuring that the moral values propagated in the consumption arena are upheld on the production side. In food systems, accountability devices often include certification standards (Gilding and Glezos 2021; Fouilleux and Loconto 2017; Lee et al. 2017), while alternative devices, such as participatory guarantee systems, are under development (e.g., Niederle et al. 2020).

While much research has focused on specific devices in isolation, to better understand their effect and impact on a target market, we know a lot less about the interplay of various devices over time, including their unintended effects. In this empirical study, we investigate *devising*, the process whereby various market devices are developed and interact as they change a market. We study devising in the context of movement-driven markets, and also focus on the unintended consequences of devising in the process of market moralisation for market-pioneering social movements.

Methodology

Research design and setting

We employed a qualitative research design and conducted an in-depth, longitudinal case study to explore the role and consequences of a social movement's devising processes intended to moralise the market. We examined the moralisation of the flower market in Switzerland (1990–2005), a local setting in which fair flowers were locally invented before developing into an international market. Fair trade involves different products with different histories and pathways, recognised for 'operating both "in and against" the market' (Goodman 2004, 893), while being one of those movements that addresses inequalities related to a lack of solidarity and justice in food systems (Motta 2021). Even though fair trade has been extensively explored (cf. Raynolds and Benett 2015), the process whereby flowers were integrated into the fair trade system remains—to our knowledge—unexplored. The existing literature on fair trade flowers is limited to impact studies and does not address the historical origins of flowers within the fair trade system (e.g., Raynolds 2022).

We considered the case of fair trade flowers to be suitable for examining the ways in which a social movement deploys market devices for a moralisation process, because visual and textual devices have been substantial in fair trade practices (Goodman et al. 2012). These market devices, needing to disrupt existing norms and practices related to the production and trade of conventional flowers, introduced moral concerns and values. They connected various previously unconnected actors across the economic and moral domains (e.g., non-government organisations, social movement organisations, flower farmers, customers, florists' shops, retail chains, standard-setters), reframed consumer, producer, and sales preferences, and redefined the means whereby flowers are cultivated and traded between producers in the global South and buyers in the North. Nowadays, exchange practices are stable and coordinated through a range of actors (e.g., retailers, flower shops, standard-setter), but at the time, the idea of fair trade flowers marked a radical shift in the fair trade system away from food products cultivated by smallholders, to non-food products from large-scale plantations (Raynolds 2017; Besky 2008). The moralisation of the Swiss flower market was thus highly controversial and disruptive, as it represented a fundamental redirection of the fair trade idea.

Engaging with our case in-depth, we discovered an intriguing aspect in an otherwise typical movement-driven moralisation process. Although a range of market devices were used over time, the moralised flower market ended up being governed by a single device: a certification standard. In other moralised markets, such as markets for organic milk and food or sustainable coffee, multiple devices coexist, compete and collaborate (Suckert 2018; Reinecke et al. 2012; Fouilleux and Loconto 2017). In our case, however, the market devising consolidated around a single market device. This concentration is important to consider not only when seeking to understand how devising helps to moralise a market, but particularly when one is concerned with the consequences for the social movement that employs and backs up these devices.

Finally, our focus on Switzerland is justified for other reasons. Not only were fair flowers 'invented' there, but, according to the historian Steinberg (1996), Switzerland constitutes an ideal research context for case studies. Due to its small size, federalism, multilingualism, and high level of development, it is well suited for examining socio-organisational phenomena. Due to a strong fair trade movement since the 1970s, fair trade products are highly legitimate in Switzerland, enjoying the highest per capita consumption of fair-trade certified products worldwide (110 CHF/year) (Fairtrade Max Havelaar, 2023). This enabled us to place the main emphasis of

our analysis on the effects that devising had on the movement, rather than the legitimacy struggles in market creation (Arnold and Soppe, 2017). The timeframe of our study starts in 1990, when activists began stirring up the flower market. It ends in 2005, when the fair flower project had gained a paramount standing in Swiss retail and had turned into an internationally approved trade activity.

Data collection and analysis

We conducted data collection and analysis in two main phases, involving both the broader development of the Swiss fair trade movement and our specific case of interest. This provided us with a contextual understanding, as the history of fair flowers is interwoven with that of the broader fair trade movement. In the first phase, we reconstructed the history of the Swiss fair trade movement. The Swiss Social Archives in Zürich (SSA) offered us rich archival data about fair trade campaigns, initial alternative trading efforts, and the creation of the fair trade standard-setter Max Havelaar Foundation (MH) (Table 1).

Table 1: Overview of collected archival data, phase 1

Signatures*	Themes	Timespan
Site 1: SSA - Swiss Social Archives in Zürich, Switzerland (visited Jul and Aug 2012 as well as Jul, Aug, Dec 2013)		
Ar 430.27.1; Ar 430.27.2; Ar 430.28.1; Ar 43028.2; Ar 430.28.3; Ar 430.28.4; Ar 430.30.4; Ar 430.30.6; Ar 430.30.7; Ar 430.30.8	Pioneering fair trade campaigns that used jute bags, coffee, pineapples, and bananas as attention seekers	1973-1983
Claro 1101.1; Claro 1102.1; Claro 1103.1; Claro 1125.11; Claro 1010.12; Claro 1010.2; Claro 1011.1; Claro 1030.11; Claro 4511	First permanent trade of fair trade products in an alternative niche	1977-1995
Ar 435.10.1; Ar 435.10.2; Ar 435.10.3; Ar 430.10.4; Ar 430.10.5; Ar 430.10.6; Ar 430.10.6; Ar 430.10.7; Ar 435.20.1; Ar 435.20.2	First sales of fair trade products in world shops	1982-1995
Claro 4952; Claro 4953; Claro 4954; Claro 4955; Claro 4956; Claro 4957; Claro 4958; Claro 4959; Claro 4960; Claro 4961; Claro 4962; Claro 7104	Creation of the Max Havelaar foundation and first sales of fair trade products in mainstream markets	1988-1996
Site 2: Swiss libraries		
Holenstein, A.-M., Renschler, R., & Strahm, R. (2008). Entwicklung heisst Befreiung: Erinnerungen an die Prionierzeit der Erklärung von Bern (1968-1985) / Development means liberation: memories of the pioneering days of the Declaration of Bern. Zürich: Chronos Verlag, 324 pages.	Autobiographical narratives about the fair trade campaigns executed by the Declaration of Bern (DB)	1968-1985
Brunner, U. (1999). Bananenfrauen / Bananawomen. Frauenfeld: Huber + Company AG, 206 pages.	Autobiographical narrative about the origination and success of fair trade bananas in Switzerland	1970-1997
Schaber, C., & Dok van, G. (2008). Die Zukunft des Fairen Handels / The future of fair trade. Luzern: Caritas-Verlag, 182 pages.	History of the Swiss solidarity movement	1977-2005
Kuhn, K. (2011): Entwicklungspolitische Solidarität / Developmental solidarity. Zürich: Chronos, 461 pages.	History of the Swiss solidarity movement, including the fair trade campaigns	1975-1992

* These official signatures refer to the archive folders we consulted. The folders included various documents about the themes listed, such as letters, notes, brochures, flyers, media releases, protocols, and reports as well as articles published in newspapers and magazines.

Both authors jointly worked through reams of documentation and mutually reflected on their relevance. To triangulate and complement our insights, we conducted 28 interviews with key participants of the Swiss fair trade movement, which were purposefully sampled using snowball sampling (Table 2). All interviews were transcribed. To overcome retrospective bias, we consulted published documentation written by historians and activists. We content-analysed our data, identified key events and actors involved, including their varying motivations, interests and orientations, and paid specific attention to the market devices deployed. We then developed an 80-page case description of how the movement emerged and developed over time (2017).

Our second phase of data collection was focused on the morality-oriented devising of the flower market over 15 years (1990–2005). The main data source comprised archival data as highly appropriate for the study of shifts in relations, interactions, and meaning systems (Ventresca and Mohr 2002). Two archives, the SSA and the public Documentation Centre of Alliance Sud in Bern (DocA) afforded us access to original documents concerning the conceptualisation and practicalities of selling fair trade flowers. The documents were produced by individuals and organisations involved in the moralisation project, for both internal usage (e.g., minutes of meetings, reports, letters) and external communication (e.g., campaign brochures), as well as by external

observers (e.g., newspaper articles) (Table 3). These archival data allowed us to detect the market devices deployed by the movement and to grapple with the meanings, interactions, and dynamics they spawned.

Table 2. List of interviews

Nr.	Type of organisation*	Domain	Interview partner	Date	Record
1	Non-profit organisation	Social domain	Label officer	18.10.2011	52 min
2	Relief organisation	Social domain	Director of development policy	21.10.2011	89 min
3	Consumer organisation	Social domain	Director of nutrition and agriculture	24.10.2011	54 min
4	Standardiser	Social domain	Director of standards and pricing	21.12.2012	74 min
5	Individual retailer	Economic domain	Director	02.02.2012	63 min
6	Governmental organisation	Government	Director of trade promotion	13.02.2012	37 min
7	Fair trade association	Social domain	Management board member	14.02.2012	57 min
8	Relief organisation	Social domain	Manager development policy	15.05.2012	68 min
9	Standardiser	Social domain	Key Account Manager	18.12.2012	103 min
10	Standardiser	Social domain	Director	06.02.2013	148 min
11	Social movement organisation	Social domain	Activist	25.02.2013	97 min
12	Standardiser	Social domain	Communication officer	07.03.2013	70 min
13	Alternative trade organisation	Social domain	Monitor Producer Support	09.04.2013	36 min
14	Relief organisation	Social domain	Fairshop Director	07.05.2013	53 min
15	Civil society organisation	Social domain	Activist	22.05.2013	153 min
16	Retailer/supermarket chain	Economic domain	Label officer	17.09.2013	46 min
17	Standardiser	Social domain	Communication officer	18.09.2013	46 min
18	Alternative trade organisation	Social domain	Purchaser	24.09.2013	64 min
19	Standardiser	Social domain	Program officer	26.09.2013	30 min
20	Standardiser	Social domain	Producer relation officer	07.10.2013	49 min
21	Social movement organisation	Social domain	Activist	14.10.2013	33 min
22	Social movement organisation	Social domain	Activist	15.10.2013	50 min
23	Retailer/supermarket chain	Economic domain	Director of communication	22.10.2013	38 min
24	Standardiser	Social domain	Program Officer	31.10.2013	61 min
25	Civil society organisation	Social domain	Activist	06.11.2013	84 min
26	Retailer/supermarket chain	Economic domain	Label Coordinator	26.11.2013	46 min
27	Retailer/supermarket chain	Economic domain	Director of sustainability	13.12.2013	46 min
28	Alternative trade organistion	Social domain	Chairman of supervisory board	22.01.2014	59 min

* We used snowball sampling to select interviewees. We asked each interviewee to nominate decisive people/organisations for the historical development of fair trade in Switzerland. Once the interviewees were only nominating people/organisations, that we had already included in the sampling, we stopped the interview process.

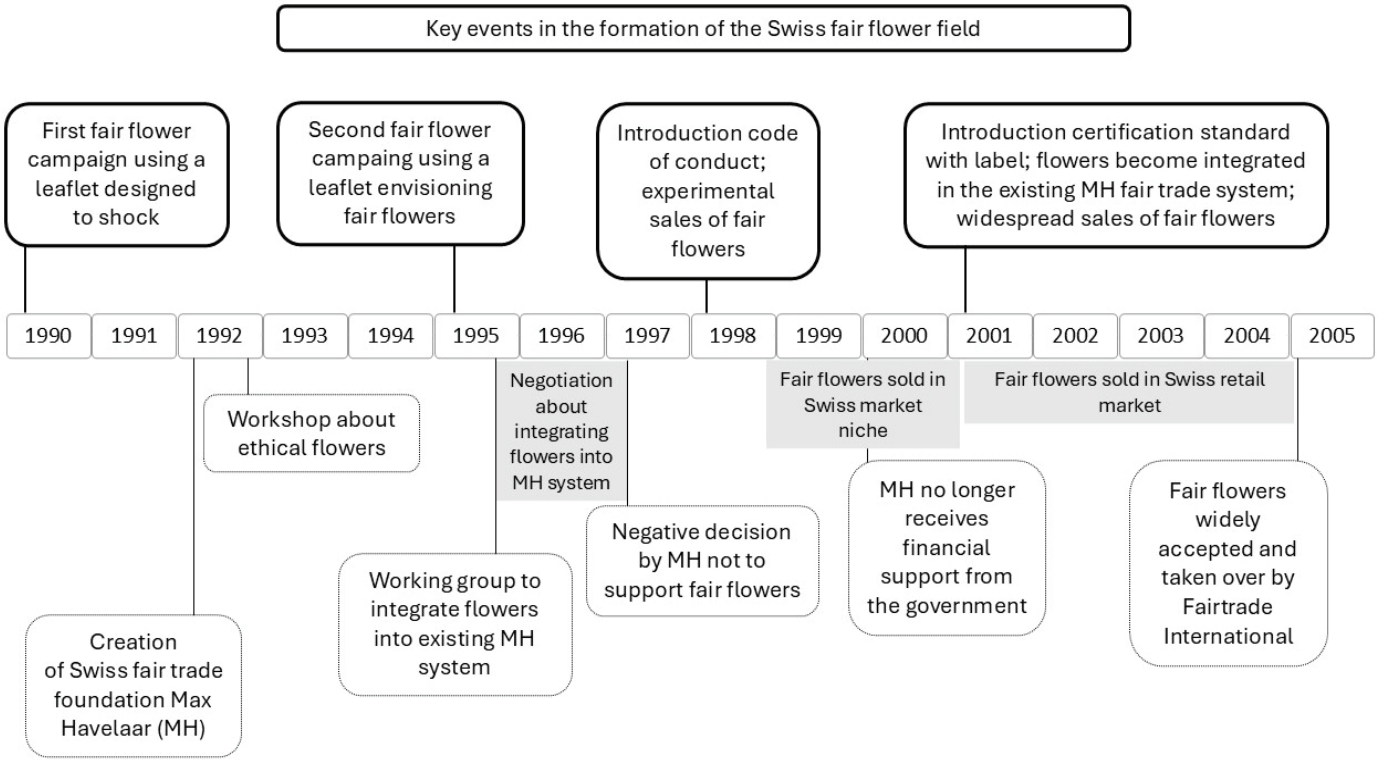
Table 3. Overview of collected archival data, phase 2

Signatures	Type of data	Timespan	Themes covered	Pages
Site: SSA Swiss Social Archives in Zürich, Switzerland (visited Mar 2014, Aug 2017)				
Ar 430.34.1	Letters, reports, notes, brochures, flyers, media releases, and protocols written by members of organisations (esp. Swissaid, Erklärung von Bern ask) involved in the awareness-raising campaigns about the flower industry and articles published in daily/weekly Swiss newspapers and magazines.	1984—1993	Social and environmental problems of flower production in developing countries (focus on Colombia) and injustice in international flower trade	approx. 800 printed pages
Ar 430.34.2	Letters, reports, notes, brochures, flyers, media releases, and protocols written by members of organisations esp. Swissaid, Erklärung von Bern ask) involved in the awareness-raising campaigns about the flower industry and articles published in daily/weekly Swiss newspapers and magazines.	1988—1992	Social and environmental problems of flower production in developing countries (focus on Colombia) and injustice in international flower trade – possible efforts against it	approx. 600 printed pages
Site: DocA Documentation Center of Alliance Sud in Bern, Switzerland (visited Mar 2014, Aug 2017)				
Topical folder: flower	Media releases and articles published in daily/weekly newspapers, magazines, weekly newspapers and magazines written by external observers (journalists) or personally involved members of field organisations.	1988—	Social and environmental problems of flower production in developing countries and injustice in international flower trade—and efforts to overcome these challenges (including the flower campaigns and the launch of fair trade flowers in Switzerland)	approx. 300 printed pages
Topical folder: fair trade	Articles published in daily/weekly newspapers, and magazines, weekly newspapers and magazines written by external observers (journalists).	1988—	Fair trade in Switzerland with a focus on the standardisation organisation Max Havelaar (including the launch and establishment of fair trade flowers in Switzerland)	approx. 500 printed pages
Magazine folder: reports WSC	Monthly, multi-page reports written by members of *ask*	1990—	Social problems in Columbia (e.g., political and human rights situation, drugs, war, resources, poverty) as well as statements on issues of development policy and activity reports (including flower campaigns and the launch of fair trade flowers)	approx. 1500 printed pages

We analysed our data using process analysis, investigating the devising and moralisation process by accounting for critical events and temporal embeddedness over time (Langley 1999). First, we arranged our data in chronological order to reconstruct the overall chronology of the case history and identify key events, actors, and market devices (Figure 1). Second, we analysed these data in depth, following an abductive process informed by our theoretical and empirical interests (Tavory and Timmermans 2014). This process consisted in the reading and rereading of data, mutual discussions of empirical and theoretical considerations, feedback from presentations, and constant probing of what market devices the movement was using, who they were intended for, what moral concerns the devices introduced, and what effects resulted from them. We found that the devising and associated moralisation proceeded through stages, each marked by the introduction of a new device that provoked actions and meanings, alongside a change in social movement relationships with market players.

We analysed each stage using temporal bracketing (Langley 1999), whereby we deconstructed the overall story into these stages and analysed the role of market devices in valuing flowers and relating various actors into the market project at each stage separately, before comparing our insights across the stages and illuminating the consequences on the movement. While identifying these stages is useful for explaining and understanding the devising process, they are not strictly linear; overlaps and deviations can be observed in the empirical realities. For example, the use of standards to ensure quality often appears stable, but in-depth empirical observations reveal manifold changes, deviations, and adjustments (Arnold and Dombrowski 2022). A clear specification of the stages is nevertheless beneficial for grasping the essence of the devising process. This is why we will present our findings along the four identified stages.

Figure 1. Chronological events in the moralization of the flower market in Switzerland, 1990-2005



Results

Our analysis revealed four successive stages, each orchestrated by a different market device that assisted

particular sub-groups of the overall fair trade movement in moralising the flower market. First, a shocking judgment device was used to *heat up moral concerns* (1990–1995), while in the second stage, the device helped in *tempering the heat and envisioning a moralised market* (1995–1998). In the third stage, the movement made use a code of conduct to *cool down and enact a market for fair flowers* (1998–2001). The last stage was focused on *scaling the market for fair flowers* (2001–2005) by employing a certification standard. Presenting each phase in detail, we start with a brief introduction to the contextual setting before analysing the device deployed by the specific social movement sub-group. We focus our narrative on the moral concerns and values evoked or established through each device, the relations that developed among movement and economic actors, and the resulting tensions within the movement. Furthermore, we clarify the transition dynamics across the four stages and highlight how the various devices built upon one another over time.

Heating up: Invoking moral concerns and approaching consumers (1990–1995)

From the mid-1970s, the Swiss fair trade movement, driven by various civil society organisations and activist groups, ran politically-motivated solidarity campaigns using coffee, bananas, pineapples, and jute bags as symbols to challenge the structural inequality between producing countries in the global South and consumer countries in the North. Like other social movements promoting market products that convey moral concerns, fair trade advocates were driven by a value-oriented agenda lamenting social and environmental shortcomings in conventional markets. Over the years, their campaigns resulted in alternative forms of trading and selling fair products.

Continuing this awareness-raising work, a coalition of several movement groups, including one of the most engaged civil society organisations in the movement, the Berne Declaration, turned its attention to flowers in 1990. A new campaign symbol was selected—a bunch of cut flowers—to challenge current practices in the trade and cultivation of conventional flowers in developing countries. The campaign preparation took off when the Berne Declaration engaged with a small, politically oriented activist group, the Working Group Switzerland Columbia (WSC) to organise a first flower campaign, with a focus on Columbian flowers. To ensure that the campaign launch gained wide attention, the activists chose the time around Mother's Day, when the Swiss give flowers to their mothers.

More than 100 activist groups publicly lamented the societal issues surrounding international flower production and trade; they campaigned at local markets, shopping malls, and in front of supermarkets in various cities and municipalities. As an activist from that time explained, these campaigns were not about boycotting, but rather about raising awareness about societal issues in the flower market, which also meant heating it up. The activist explained the motivation underlying the campaigns as follows:

> *It was always clear to us: no boycott, because we were in direct contact with many flower workers. And of course, it is preposterous to cultivate flowers on such fertile land, but that is simply a fact we cannot change. So, it became more about social justice in production and environmentally just production. (Interview Oct 15, 2013)*

Later in the interview, the same activist, laughing, recalled how their campaigns had offended the Swiss flower businesses: 'I still remember, it was always fixed on the calendar, [the campaigns on] Valentine's Day. The flower shops hated us' (Interview Oct 15, 2013). The centrepiece of these provocative campaigns was a specific market device: a leaflet in the form of a newspaper designed to shock consumers.

During a campaign preparation meeting, the activists came up with the idea of developing a leaflet in form of a four-page newspaper. This leaflet was provocative in several ways. First, to attract attention, its design emulated the popular Swiss tabloid, *Blick* ('View'). The tabloid, which typically reported trivia, was repurposed to lament concerns of inhuman and environmentally harmful flower cultivation in developing countries. Its content highlighted social and environmental grievances in flower cultivation. The headlines raised alarming topics such as 'pesticides should destroy' and 'no responsibility for the environment'. Evocative metaphors such as

the 'cocktail of poisons' made readers aware about the harmful overuse of chemicals in flower cultivation. The body text elaborated on unhealthy and inhumane work conditions, low wages and poverty, pesticides, and soil degradation by providing real-life examples. For example, Elena, a Columbian flower worker, is portrayed with her story:

> *'One day, I became sick […] It felt like my whole body was burning […] I went to the doctor, who told me: It's not good for you if you continue working with flowers, if you don't want to leave your children behind' (leaflet Apr 1990).*

The activists distributed the leaflets together with a flower to people passing by, asking them: 'Have you ever thought about the origins of floral bouquets?' (leaflet Apr 1990). The leaflet thus presented a typical judgement device providing an initial relational anchor to establish a link to consumers and inviting them to re-valuate their consumption choices. To facilitate these first touchpoints, the front and back page of the leaflet featured more welcoming images and text, inviting readers to 'Enjoy flowers, but care about how they have been cultivated' (memo Jan 8, 1990). In other words, the leaflet supported the social movement in heating up the market by making moral concerns salient, invoking alternative values, and encouraging consumers to reflect on their own consumption behaviour.

The insights so far highlight the devising process that was set in motion with a sensational judgment device deployed by social movement actors to make consumers understand the problems in flower production and trade. While the device was primarily intended to target ordinary consumers, it also had relational effects as it addressed—albeit indirectly—economic actors that offered flowers to consumers (e.g., florists, retailers) by challenging their market offerings. During the following years, the activists established interaction with those economic market players. For instance, in April 1992, they organised a workshop inviting florists, supermarkets, and other flower vendors to discuss 'if and how the flower industry could help to achieve socially and environmentally friendly cut-flower cultivation and trade' (invitation letter Apr 11, 1992). During the workshop, the participants agreed with the concerns raised, stressing that '[they] do not want plants to be produced under such bad conditions' (protocol Apr 11, 1992). However, no collective agreement was reached either during or after the workshop. The leaflet thus supported the activists in heating up and disrupting the conventional flower market by introducing moral concerns, but the moralisation was far from accomplished.

Tempering the heat: Envisioning a moralised market and enrolling conventional market actors (1995–1998)

In 1992, with the joint effort of six Swiss relief agencies, the broader fair trade movement founded the fair trade standard-setter Max Havelaar (MH). MH developed a voluntary fair trade certification standard for corporations to source and sell fair trade products. The certification standard first brought coffee onto the shelves of Swiss retail chains, followed by honey, cocoa, and sugar. In 1995, MH announced: 'Switzerland is the European leader of fair trade. In no other country will you find such a variety of fair trade products […]. The per capita consumption is […] the highest Europe-wide' (MH annual report 1995, p. 1). This success inspired the flower activists to project MH's fair trade market devices (a certification standard with label) onto flowers, to create a market for fair flowers. Several groups formed an umbrella organisation called Flower Coordination Switzerland (FCS) and initiated a second flower campaign on Mother's Day in 1995.

The activists again created and distributed a four-page leaflet in a tabloid style, primarily to raise awareness among consumers. In doing so, the devising process took its course as this market device resembled the preceding leaflet in design, yet differed in two main ways. First, this device was used essentially to project how a fair flower trade system could be accomplished. In doing so, this leaflet toned down the shocking concerns and marked a first step towards a 'cooling down'. Instead of disturbing imagery, it proposed a label that would reorganise flower cultivation and trade along fairer lines. The concerns invoked earlier were translated into a set of specific valuation criteria projecting what a socially and environmentally sound flower exchange system could look like: no child labour, fair wages, special protection for pregnant women, medical care offered by employers, and no usage of prohibited pesticides. The composition of the device, its headlines, body text,

and imagery presented the advantages of the proposed flower label as 'bringing humane working conditions to all countries' and 'preserving nature, as responsible gardeners do' (leaflet Apr 1995). The leaflet featured imagery of friendly gardeners and colourful bouquets. While the main text still raised issues associated with conventional flowers, the tone was less emotional and more scientific. Experts were quoted on the disadvantages of the flower industry, and statistics on market volume, jobs, and energy consumption in the flower industry were presented. The leaflet appeared to be a projection device that was less heated and controversial, and instead envisioned a fair flower market.

The second difference that distinguished this leaflet from its forerunner was that it combined moral and economic concerns and addressed economic actors from the consumption arena more directly, by appealing to potential business opportunities. Showcasing the results of a market survey, the leaflet explained that '81 percent want a flower label' and that 79% of Swiss consumers were ready to pay more for morally sound flowers. With this statistic—about which one activist scornfully commented: 'of course, you can control that [the market survey]' (interview Oct 15, 2013—moral concerns and changing consumer preferences started to be heard in the conventional flower market. In other words, this leaflet, including the suggested label, encouraged economic actors to participate in trading and selling fair flowers. Not only would the label help to establish new valuation criteria and serve as 'an instrument to obtain socially and environmentally sound flowers' (monthly report Apr 1995), but economic actors also saw new business opportunities and economic benefits.

The leaflet showcased the envisioned system. With a graph, it outlined the relationships and functional roles of key economic actors (flower producers, retailers and florists, consumers) in the fair flower system. The relationships invoked in the leaflet proved to become reality as dialog was initiated between the fair flower advocates and the various economic actors. Four months after the campaign, economic actors from the consumption arena (i.e., retailers, supermarket chains, florists, the Swiss Florists' Association), movement advocates, and some invited flower producers came together for a follow-up meeting. This meeting resulted in more persistent interaction, as the participants created a domain-spanning working group assessing the possibilities of integrating flowers into the MH system. The purpose of the working group was to clarify 'criteria for human- and environment-friendly flower production […], market volumes and delivery reliability of such flowers […], commercialisation and long-term market opportunities' (monthly report Feb 1997). The working group made great strides and MH publicly announced: 'In 1998/1999, human- and environment-friendly cultivated cut flowers with the label of MH will come to the market. Clarifications and preparations are currently in full swing' (undated press release). While this enthusiasm made it appear that all actors agreed to put the moral values into practice, reaching an actual compromise proved challenging. Surprisingly, MH ultimately blocked the development of a certification standard for flowers, justifying its decision as follows:

> *The development of effective mechanisms of monitoring and consultation for a consistent implementation of the criteria would require much effort […]. The certifiable volume of cut [flowers is] relatively low in the short- and medium-term. An acceptable cost-benefit ratio […] is not given, especially because the partner initiatives at the European level provide little support to the flower project. (Official letter reprinted in monthly report Feb 1997)*

A rift occurred throughout the fair flower movement as the pioneering activists doubted these political and economic rationales, inferring instead that '[t]he reason for this capitulation can probably be ascribed to conceptual problems. The original concept of coffee for smallholders cannot just be adapted to other products [such as flowers]' (monthly report Feb 1997). While a cornerstone of MH's fair trade standard and certification system had thus far been smallholders, flowers were produced only on large-scale plantations. Creating a certification standard for fair flowers cultivated on plantations would thus mean diluting the fair trade concept.

Given MH's decision and the intra-movement conflict that arose over a suitable device to support the

creation of a fair flower market, the provisional collaboration between the movement and economic actors came to a standstill. The device had nevertheless set a train in motion. Despite conflict within the movement over the appropriateness and usefulness of a fair trade standard for flowers cultivated on plantations, the moralisation project advanced because the trade had intensified and economic actors increasingly saw business opportunities in a fair flower market.

Cooling down and enactment: Standardising fair flowers and the plantations behind them (1998–2001)

By the mid-1990s, the fair trade idea was widely accepted among Swiss consumers, with retailers having identified its profit potential. They applauded the launch of new fair trade products and deplored the caution of MH. A retailer explained: 'We had to push them [MH] several times […] because for us [the retailers] everything was going too slowly' (interview Oct 22, 2013). Consequently, not only the FCS but also the leading retailer Migros took an interest in fair flowers. These overlapping interests resulted in an experimental ad hoc cooperation to provisionally create a first fair flower market. During spring 1999, a newspaper proclaimed: 'Flowers from "fair trade" fresh on the market' (*Basler Zeitung*, Mar 8, 1999).

To realise the project at this opportune moment, the devising process advanced further, this time by developing a code of conduct that formalised the required criteria for a socially just and environmentally sound production and exchange of flowers, as invoked by the previous devices. Specifically, the FCS, a flower-focused umbrella organisation comprising civil society organisations and activist groups, endeavoured to realise the claims of the preceding leaflet by developing the International Code of Conduct for the Production of Cut Flowers (ICC), which 'does not target a boycott of the products [from flower workers in Latin America and Africa], but strives for social and ecological improvements in their workplaces' (monthly report, Sep 1998). Unlike previous devices that focused on consumers and sales points, the ICC specified the obligations for producers, as is characteristic for accountability devices (Neyland et al. 2019). It encoded the idea of fair flowers in a standard by listing ten main valuation criteria: freedom of association and collective bargaining; equality of treatment; living wages; working hours; health and safety; pesticides and chemicals; security of employment; protection of the environment; child labour; and forced labour (ICC standard 1998). For each topic, FCS and its partner organisations specified standardised criteria that would account for higher moral standards of the production and trade of fair flowers.

Given that standards concern the producers behind the products (Arnold and Loconto 2021), the ICC started to specifically enrol the flower producers in the moralisation process. However, the producers were flower plantations (not smallholders as supported by the original fair trade idea), which meant that for the first time, a plantation-grown product became standardised as fair trade. As emphasised by an interviewee involved in the development of the ICC, they 'defined their own standard for flowers, [a standard] for fair trade flowers from large farms' (Interview Jan 22, 2013).

The addition of 'large farms' (i.e., plantations) was important, as this development was deepening the rift within the wider fair trade movement. Specifically, MH refused the idea of integrating plantations into the fair trade system, as a retailer recalled: 'Havelaar said, we don't do that [flowers], that is produced on plantations. We only work with *cooperativas*' (interview Oct 22, 2013). However, with the ICC in place, the participation of plantations in the fair flower exchange system became legitimate. The supplying plantations had to accept that the implementation of the criteria was subject to an independent audit. For instance, on this basis, experts inspected the first fair flower plantations in Zimbabwe, and recommended for admission those plantations that showed 'willingness to introduce social and ecological improvements' (monthly report Apr 1999).

The ICC became a key accountability device governing the nascent market for fair flowers. It determined who could participate and set the rules for doing so. It also played a key role in encouraging established players in the conventional market to join the fair flower project, and florists and retailers began selling fair mini roses. Thanks to the ICC, they could credibly participate in the project, as it would ensure that their

flower suppliers were accountable to the moral values codified in the standard. However, while the ICC was a central device in enacting the fair flower exchange system, it failed to enrol actors beyond those who pioneered the project. Fair flowers were sold in a market niche with limited scale, as a newspaper reported: 'At present, 7,500 bouquets of [fair trade] roses are sold weekly in municipal supermarket branches in Basel [major Swiss city]' (*Basler Zeitung*, Mar 5, 1999). Moralisation was achieved at this point because flowers with higher moral standards were being produced and consumed. However, the ICC lacked the acceptance that the established MH fair trade standards for food products enjoyed at the time, and such acceptance was needed to scale the moralised flower market.

Scaling the market: Certifying fair trade flowers and intra-movement conflicts (2001–2005)

Around the turn of the century, MH came under pressure to become self-funded. 'From 2001 MH will no longer receive financial support from the SECO [State Secretariat for Economic Affairs]' (MH annual report, 2000, p.14). MH's past experiences had shown that the launch of new products could generate more licensees and income. It therefore announced: 'The development of new products is of strategic importance for MH: the MH foundation has set the objective of launching one product per year' (MH annual report, 2001, p.5). This strategy and the contemporaneous initial sales of fair flowers pushed MH to revise its negative attitude towards plantation-grown flowers. It developed a certification standard including a label for morally sound flowers, and announced in April 2001: 'Now there are flowers with the MH certification seal […] Consumers now also have the possibility to support fair trade with flowers' (MH press release, Apr 3, 2001).

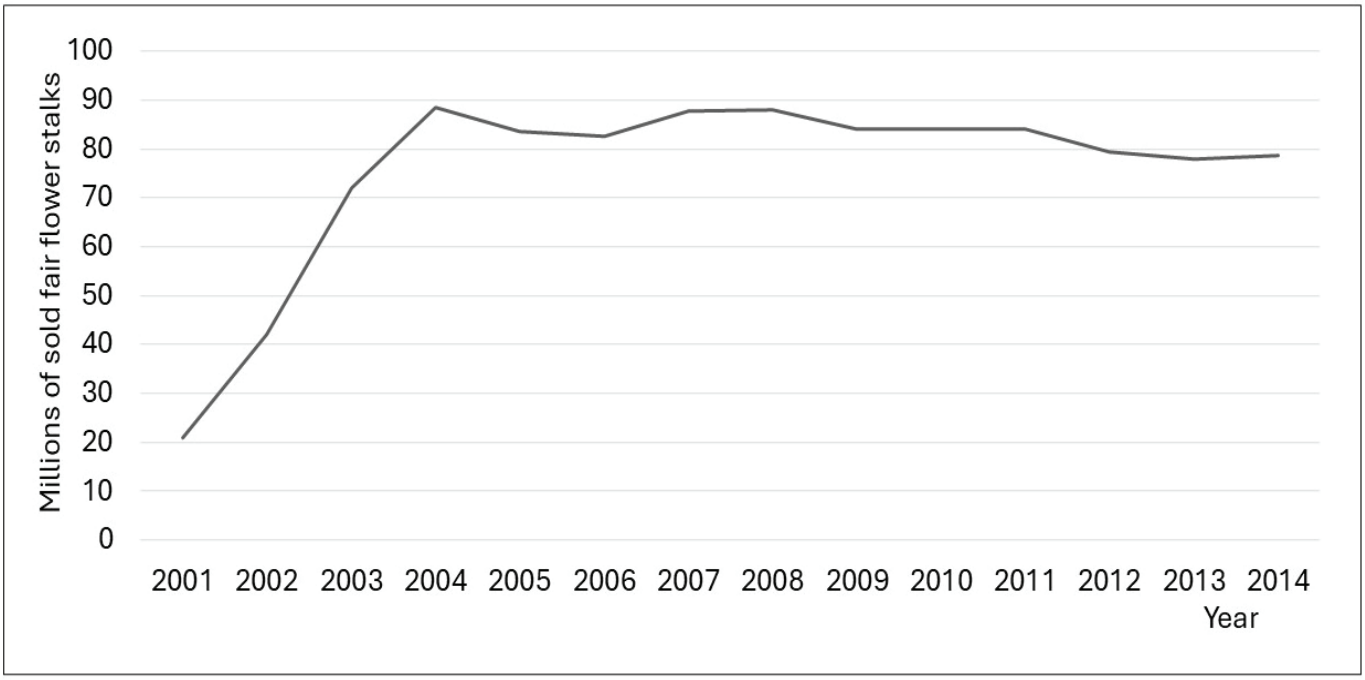
The MH certification standard remained closely tied to the idea of the ICC, adopting and building on its criteria. Hence, the devising process and the associated moralisation of the flower market moved gradually forward at this stage. Importantly, however, by specifying the obligations of flower traders and sellers, as well as flower plantations, the MH certification standard diverged from the stance that fair trade exclusively targets smallholders. Its certification standard specified over 13 pages the criteria that flower plantations had to meet. For each criterion, this market device defined specifications, according to which plantations were audited and certified. MH was determined to execute the audits, paid by the price premium charged for fair trade flowers. With the aim of strengthening accountability for the moral concerns propagated on the consumption side, the audits were later taken over by an independent certifier. Once plantation production was included in the fair trade system, the focus shifted from the question of whether plantation-grown flowers deserved to be supported by fair trade, to that of how to design and implement the standardisation and certification device in the best possible way to ensure optimum accountability.

Selling fair flowers required little effort, as Swiss florists and retailers simply had to source flowers from certified plantations, paying the defined minimum price and premium set by the device. By consolidating the meanings and practices associated with fair flowers into a single device, the certification standard triggered a substantial expansion of the moralised flower market. Fair flowers gained a strong foothold in the conventional market arena, with new conventional actors entering the moralised market, including two large supermarket chains and renowned florists. Their participation was driven by the acceptance of the MH certification standard, which the standard-setter proudly presented as the 'best-known sustainability label, with the highest confidence ratings' (MH report, undated).

Fair flowers met an unexpectedly large consumer demand. An employee of a retailer reported: 'At our house, Coop Switzerland, Havelaar flowers have reached 7 percent of total sales. This number is twice what we had expected' (*Neue Zürcher Zeitung*, Feb 14, 2002). In the two subsequent years, the number of stalks sold grew exponentially (Figure 2), achieving a market share of 28% in 2004 (MH annual report, 2004). Since the market shares of products certified by MH had usually been below 10%, this was outstanding. The certification standard lastingly linked multiple actors with varying motivations and interests, and assisted in scaling the moralised market. In 2005, fair flowers became internationally approved when the umbrella organisation Fairtrade International took over the responsibilities of managing fair flowers.

At international level, and after the timeframe of our study, the fair trade certification standard for flowers provoked far-reaching shifts in the fair trade system, as this standard for plantation production was soon applied to other product categories (e.g., bananas, pineapples, tea, vegetables). In the case of coffee, on the other hand, fair trade certification was possible only if the coffee beans originated from small farmers, to remain true to the original idea (support of smallholders). This was a highly controversial decision and caused Fair Trade USA to split off from the international fair trade system. From then on, and in contrast to European fair trade initiatives, Fair Trade USA also certified coffee (and not only flowers and bananas) from plantations as fair (Raynolds and Rosty 2021)

Figure 2. Sales of fair trade flowers in Switzerland since 200



Source: own compilation of annual reports

Overall, the certification standard, as advocated by activist groups and civil society organisations at the outset of the devising process, enabled the scaling of the moralised flower market by bridging moral criteria with standardised economic procedures. Yet, such politics of scalability imply that the result of the scaling efforts is not simply more of the same (Pfotenhauer et al. 2022), which, in this case, would mean more social movement actors supporting more flower producers through fair trade. Rather, once established, the market device that enabled scalability pushed the pioneers to the margins. While the flower-focused umbrella organisation FCS dissolved because, as one could argue, their work became superfluous once the MH certification standard appeared, WSC, the politically oriented activist group with a focus on Columbia, which had been central in initiating the first flower campaigns, continued to exist. However, to pursue its advocacy work for the Colombian population, WSC needed to identify a new campaign theme (Swiss drug policy and the demand for a legalisation of drugs). This marginalisation of those who had initiated the moralisation (FCS and WSC) was assessed differently by the activists involved, further sparking intra-movement conflicts.

Among the pioneering social movement actors were activists who accepted the progressive devising and their own marginalisation. They emphasised that, from the outset, the movement had aimed at establishing a market for fair flowers, which was why the introduction of the certification standard by MH was considered desirable. This attitude was exemplified in the role of an activist who was hired by MH to manage flower certification.

It was also reflected in the quote from an activist who had a leading role in WSC. While regretting that WSC had lost the flower issue, he accepted that MH was now in charge and the market was concentrated on their device:

> *As a working group, it has been clear, the flower issue has been handed over, it is now with Max Havelaar. […] And we [WSC] have always said that this is a success, and we are proud of it. […] Now, they [the flowers] are labelled. Although they are not from Colombia, are partly from Ecuador, Kenya, and from African countries. That's okay. […] I can live with it if they [MH] do it well and market it well and really stay true to these social obligations (interview Oct 15, 2013).*

However, some activists shared the feeling that, following this 'flower conflict', 'there was still a bit of resentment towards MH' (interview Jan 22, 2013). Another leading activist and member of FCS criticised MH for taking over the process without acknowledging the central role that FCS had played in pioneering the fair flower market, thereby deepening intra-movement conflict. Hence, and regardless of the fact that FCS had originally sought to motivate MH to include flowers in their certification assortment, FCS accused MH of having stolen their 'invention', the fair flower, without compensating for it. 'At the debt collection office [FCS] deposited on March 30, 2001, a debt collection request of CHF300,000 against the MH' (*aufbruch*, Nov 2002). An activist told the media that 'FCS is accusing Havelaar [MH] of unfair methods: "This is unfair competition, what Havelaar [MH] is doing." […] The foundation [MH], which is supported by the relief organisations and the federal government with considerable contributions, was said to have acted "highly arrogantly"' (*Cash*, Mar 30, 2001). This frustration occurred because the MH certification standard replaced the ICC developed by the market pioneers.

Discussion and conclusion

Considering that social movements play an undeniably important role in the politicisation of food systems (Leach et al. 2020; Weber et al. 2020; Motta 2021), often by challenging and moralising markets (King and Pearce 2010; Bartley and Child 2011; Balsiger 2021), this article analysed such moralisation processes. Specifically, we approached the moralisation of markets as a devising process (Geiger and Gross 2018; McFall 2009), examining how and with what consequences market devices support a social movement in moralising a market.

Our analysis revealed the *sequencing of devices*, a process of shifting market devices that build upon one another over time, interacting in market moralisation efforts. Initially 'shocking' judgement devices were employed to contest and 'heat up' the flower market, before gradually shifting to devices such as a code of conduct and a certification standard to 'cool down' these concerns and thus to facilitate the establishment and scaling of the moralised market. The devices also addressed shifting audiences, from market participants in the consumption arena, to integration in the production arena. In doing so, the sequencing of devices increasingly enrolled and connected a broad range of market participants. While it initially linked activists, selected flower producers, and niche consumers, over time a wide range of flower shops, supermarkets, retail chains, and mainstream consumers joined in, along with a growing number of supplying flower plantations. With the implementation of a powerful certification standard, the moralised market expanded and a local standard-setter assumed the role of market building and coordination, a step that resulted in the sidelining of the pioneering market movement activists. Hence, examining devices not in isolation, but in their interplay and over time (Dodier and Barbot 2016), provides an analytical lens to capture the shifting and at times unintended relationalities between social movements and various market participants in the process of mainstreaming moralised markets such as fair trade (Goodman 2010).

Focusing also on 'the restraining (instead of only the enabling) dimension of market devices' (Velthuis 2020, p. 90), our results highlight how devices can spark unintended consequences for those who employ them (Erturk et al. 2013; Fligstein and Calder 2015; Scott 2003). Some unintended consequences that have scarcely

been studied are the repercussions on those actors who engage in devising. Our study contributes to better understanding these effects, and highlights how devising in the service of market moralisation does not only come at the expense of politicisation, as others have claimed (Edward and Tallontire 2009, Tallontire and Nelson 2013); it can also involve a shift in politics from valuing contestation and controversy to focusing on the expansion and proliferation of the moralised market. In other words, our findings substantiate the insight that 'it really is the *means* that matter just as much as the ends' (Goodman 2010, p. 115). Specifically, the sequencing of devices—understood here as the very means referenced in the quote—can unleash novel dynamics within the market moralisation project, which can have unintended consequences as they gradually build on and interconnect with one another (Geiger and Gross 2018; McFall 2009; Velthuis 2020; Geiger et al. 2014).

We found that the social movement actors who initiated the devising and moralising of the flower market became marginalised in the process of deploying a certification standard, pushing the pioneering social movement actors to the margins of the moralised flower market. While the marginalisation of those who initiated the moralisation is not unusual (Balsiger 2021), our analysis differs from prior research showing that the exit of social movement actors often results from the entry of powerful corporations (Balsiger 2021; Raynolds 2009). Instead of emphasising tensions between social movement actors and corporations (e.g., Bartley and Child 2011; King and Pearce 2010)—a conflict often highlighted in the context of the fair trade movement, particularly with respect to targeted retailers and large-scale food traders (e.g., Goodman 2004)—our analysis highlights how the sequencing of devices can generate conflictual dynamics within the movement itself. These insights extend research on movement-induced, moralised markets and devising by highlighting that markets backed by a single, powerful market device often have a history of multiple devices, and that conflicts do not only occur in moralised markets, where multiple devices coexist and compete (Suckert 2018; Reinecke et al. 2012; Fouilleux and Loconto 2017).

The second unintended conflict that resulted from the devising involved spillover effects from the local Swiss fair trade movement to the international fair trade movement: the conflict over whether plantations could be fair and thus part of the fair trade system (Besky 2008; Raynolds 2017). Our analysis detailed how the flower market devising had important cross-sectoral effects by creating a fair trade certification standard for plantations. Detached from what the flower activists intended, this certification standard for plantations was later extended to other products in the international fair trade system, provoking disputes over the meaning and potential dilution of the fair trade idea, which was originally limited to smallholders. While the extent to which the integration of plantations into the fair trade system benefits producers in the global South remains controversial (e.g., Raynolds and Rosty 2021; Raynolds 2022), it is less disputed that those actors—such as the U.S. Fair Trade Initiative—who advocate for the integration of plantation production are considered the pragmatic wing of the movement and value the scaling of moralised markets over contestation (Tallontire and Nelson 2013). Our study sheds new light on this debate by showing that the integration of plantations into the fair trade system is the result of a devising process initiated by Swiss flower activists who certainly did not intend to push the entire fair trade system towards a politics of scalability; rather, their intention was to establish a local market for fair flowers.

Given that the devising we studied might give the impression that devising and moralisation undergo a linear process from heating to cooling until reaching an endpoint, it is crucial to emphasise that devising is never truly complete (Geiger et al. 2014). Furthermore, multiple and even competing or conflicting devices can simultaneously be at play, with new concerns constantly emerging (e.gl, Arnold and Dombrowski 2022; Niederle et al. 2020). However, based on our findings, specifically for these potentially messier devising processes, we encourage future research to pay attention not only to intended outcomes, such as the creation of a moralised market, but also to the unintended ones.

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Mobilising the food system concept: Unpacking debates and applications

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Abstract

The food system concept has become the 'go-to' framework to galvanise discussion and bring together academics, policymakers and industry stakeholders to debate changes needed in how our food is grown, made, sold, eaten and governed. The concept is not new, but the paper shows a resurgence in application across science and social science in recent years. What is lacking, however, is more critical analysis as to why this concept is increasingly mobilised and what it offers agri-food scholarship going forward. Inspired by Jackson et al's (2006) analysis of the food commodity chain as 'chaotic concept', this paper undertakes a critical review of the peer-reviewed, English language literature on food system(s) nationally in the UK and internationally. The analysis begins with a review of food system scholarship to explain concept origins and key features of systems thinking. The second part examines uptake in the wider literature. This spans 1987-2024 and reviews trends from Scopus and Web of Knowledge, followed by a structured review of social science articles for two case studies concerning respectively 'food system transformation and crisis' (process-based) and 'food system and the urban' (place-based). The analysis reveals a pattern of bi-polarisation: the first mobilises the food system as a heurist framing in contrast to the second more systemic framing. The former dominates the material reviewed. The paper argues that recognising not only different mobilisations but also the dominance of heuristic food system uses is important, given its prominence to support changes in the governance and politics of food.

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Introduction

The food system is a well-established concept. Lang and Wiggins (1985) wrote nearly 40 years ago about the 'dynamics of the food system' and the need for analysis to break out of an emphasis on individual sectors. Ten years later, Whatmore (1995) made the case for a food system approach in response to the globalisation of agri-food production, which demanded a systemic understanding of food provisioning to fully apprehend its growing complexity. However, it appears that 'food system' in the last decade or so has captured the academic and policy imagination with a previously unseen degree of intensity. Certainly it is having a particularly influential moment in policy with the call from The United Nations High Level Panel of Experts on Food Security and Nutrition "to adopt a food systems analytical and policy framework" (HLPE, 2020, p. viii), a call reiterated a year later at the 2021 United Nations Food Systems Summit. The increased interest in the food system concept is occurring in a context of, and possibly in direct response to, growing concern for multiple interlocking crisis that are imperilling food systems just as food systems are equally major contributors to these crises.

Academic efforts have also gathered apace to define food systems approaches (Ericksen, 2008; Ingram, 2011), understand food system transformation (Leeuwis et al., 2021; Sonnino et al., 2019; Sonnino and Milbourne, 2022) and work with food system concepts to examine a particular context (e.g. Greenberg, 2015; Berger and Helvoirt, 2018). We observe, then, a significant proliferation in the use of the terminology of food system within agri-food social science scholarship (Brunori et al., 2020; Sage, 2022). However, this proliferation does not necessarily indicate an increase in food systems thinking, a point suggested in Hospes and Brons' (2016) review of the food system governance literature.

Our aim in this paper is to examine the substance of this proliferation and undertake a critical assessment of the use and mobilisation of the food system concept in agri-food social science. The paper is situated in relation to a diverse body of scholarship that has sought to examine the conceptual trends emerging in a particular field of study, notably Jackson et al. (2006), Collier et al. (2006), Ribeiro et al. (2017) and Duminy & Parnell (2020). Inspired by this literature, we appraise the types of work that are being done when the 'food system' concept is mobilised. This complements reviews of the food system concept which frame it in relation to 'multiplicity' (Brock, 2023), 'governance' (Yap, 2023), and to enable a 'research agenda' (Sage, 2022). Critical assessment of mobilisation patterns of the food system concept is valuable because of how discourse can be appropriated or 'hollowed out' (ibid.).

To address this aim, we ask, then, what is the work that is being done by the deployment of the concept of food system? Relatedly, does this indicate an increase in systems thinking and perspectives? Moreover, what are the risks and opportunities of its future use within agri-food studies? The next section of the paper outlines approaches to analysing concepts to inform an analytical framework. The subsequent section sets out the research approach and methods. The results are organised into two parts. The first reviews selected 'foundational' papers from food system scholarship to trace conceptual origins and key features of this style of academic practice. The second examines uptake of the concept in wider food scholarship, first reporting general patterns of uptake across time and space and research disciplines, followed by deeper analysis of two case studies from the social science literature, the first, food system transformation and crisis, signifying a process-orientated focus, and the second, urban food systems, reflecting a spatially-orientated focus. We return to the questions that underpin the paper in the discussion to invite further reflections about future applications of the concept.

Analysing concepts: chaotic, contested, and multiple

Efforts to examine concepts and their diversity of application, interpretive flexibility, and different framings are well established in a wide variety of fields from Responsible Research and Innovation (Ribeiro et al., 2017), city

science (Duminy and Parnell, 2020), democracy and law (Collier et al., 2006) and food systems (Brock, 2023). Within this work a diversity of conceptual uses, definitions and interpretations is positioned as a source of potential confusion and contestation that can pose serious challenges to efforts in bringing together people with common purpose and approach (Jackson et al., 2006; Brock, 2023). Such analyses seek to provide greater understanding of the root of such differences. This includes, identifying implicit and explicit political interests mobilising concepts differently (Jackson et al., 2006), diverse definitions and framings, and gesturing towards more unified and coherent conceptual development and use (Collier et al., 2006).

Perhaps fittingly, this work is itself incoherent in approach and framing. Variously the literature situates concepts as being potentially 'essentially contested' (Gallie, 1955; Collier et al., 2006), 'chaotic' (Jackson et al., 2006; Duminy and Parnell, 2020), or as 'boundary objects' allowing 'multiple' enactments of a concept (Brock, 2023). However, what they share is a rejection of concepts as inherently fixed and stable. By invoking terms such as 'contested', 'chaotic', and the more neutral 'multiple', the aim is to foreground conceptual diversity, construct a ground for discussion of conceptual complexity, and examine the implications of said differences for both research and practical efforts to intervene in the world. One core difference is Gallie's (1955) framework which aims to ascertain whether a concept *can be* considered 'essentially contested'. In all cases, however, there is a desire to support reflection and practice amongst those utilising the concept of interest (Ribeiro et al., 2017) to identify productive pathways forward.

Drawing from across this work, we note several shared analytical elements, summarised in Table 1, which are utilised herein to structure analysis of the food system concept in academic literature. Our goal is not to ascertain whether food system concepts are 'essentially contested' or 'chaotic' but rather to trace the origins, definitions and evolution of the concept, to identify common features and patterns of uptake, and to examine applications and interpretations of the food system concept in particular cases and contexts, including reflections on the implications for food system theory and practice.

Table 1. *Dimensions of concept analysis*

1. Origins	From which authors does the concept originate? What were the theoretical, practical and political issues and debates that are being responded to?
2: Uptake	In what academic fields and geographical contexts is the concept being adopted? How does this change over time?
3. Definitions and essential features	What are the key elements / essential features of the concept? How does its definition vary amongst different authors?
4. Applications	To which topics and subjects is the concept being applied? How is the food system concept being utilised when it is applied and mobilised in different empirical and geographical contexts? How do these applications draw upon and utilise other theories and concepts?

Research approach and methods

This section describes our approach to the identification of relevant academic literature for review and analysis noting that this was limited to English language publications. The first stage involved discussion amongst the author team of influential and otherwise notable / significant social science articles, from different time periods, that seek to define the concept of the food system, and delineate an approach that explicitly seeks to develop food systems thinking as an analytical tool. In total, 14 of these 'foundational' research articles were

identified in this process, listed in Table 2, with each article closely read by the author team.

Table 2. *Selected foundational food system articles (see reference list for full citation details)*

Tansey and Worsley (1995), Whatmore (1995), Ericksen (2008), Ingram (2011), Allen and Prosperi (2016), HLPE (2017), Béné et al (2019), Sonnino et al (2019), Brunori et al (2020), Leach et al (2020), Leeuwis et al (2021), von Braun et al (2021), Sage (2022), and Yap (2023).

We acknowledge that the list of papers in Table 2 is by no means exhaustive and that their identification was informed by our collective experience, across several decades, of direct involvement in European agri-food research. It is emphasised that none of us was involved in authoring any of the foundational papers. This process enabled the *origins, definitions* and *evolution* of the food system concept, across different social sciences disciplines, to be clarified and understood.

Having examined in detail the foundational articles attention turned to a broader scoping of the use of the term 'food system' in the academic literature (via Scopus and Web of Knowledge)[1]. Review search start dates are often somewhat arbitrary, particularly when there is no obvious point of first emergence as was the case here. The Brundtland report, published in 1987, is often regarded as a key moment in the development of discussion about large scale, far-reaching – or systemic – transformations for sustainable development, including food and agriculture, and so this was selected as the baseline for the search. The report contains only one mention of food system. The end date was 2024, the point at which the scoping research was conducted. The search yielded 21,823 articles with 'food system' in the title / abstract. The initial search enabled insight into *uptake*, with a number of trends and patterns identified in use of the food system concept over time, space and in different academic disciplines.

Since our interest is primarily in the deployment of the food system concept within 'agri-food studies', an interdisciplinary field of interest within the social sciences, we then focused our attention on articles published in a selection of social science journals. These were selected because they are: agri-food and rural studies-oriented; have published the largest numbers of food system articles; are known to have published relevant work but the scope of the journal goes beyond the rural sphere. The selected journals were: Food Policy; Journal of Rural Studies; Journal of Cleaner Production; Agriculture and Human Values; Geoforum; Journal of Peasant Studies; Land Use Policy; Rural Sociology; Urban Studies; Cities; Sociologia Ruralis; and Energy Policy. Search terms were then identified to enable us to make further sense of the range of contexts – theoretical, empirical, spatial – in which the food system concept was being mobilised within this social science scholarship. Table 3 summarises the search terms and the number of articles featuring each term. This process provided further insight into concept *uptake* and an initial overview of concept *application*.

To help us to further manage the scope of our review and analysis we selected two different types of *application* of the food system concept, one that was more 'process' oriented, encapsulated by the search terms 'transformation' and 'crisis', and the other that was spatially focused, encapsulated by the search terms 'cities' and 'urban' (Table 3). Before conducting further analysis, articles were checked for duplicates. 14 duplicates from the merge of the transformation and crisis, and 67 duplicates from the merge of the cities and urban search were removed. A further seventeen articles were excluded as these mentioned only in passing the urban sphere (e.g. when referring to the process of 'urbanization' as a contextual factor) but otherwise this spatiality was not the focus of analysis. Twenty-six articles were removed due to lack of relevance from the transformation and crisis corpus resulting in 147 articles. The final total for analysis in the food system and the urban case was 127 articles.

[1] We acknowledge it would be both interesting and useful to undertake a similar search within the policy (grey) literature and print news media, to compare use of the food system concept in these different domains.

Table 3. *Food system search terms and article numbers per term, 1987-2024*

Search term	Number of articles
Food system	**731**
Food system + policy	**362**
Food system + global	**276**
Food system + local	**257**
Food system + sustainability	**225**
Food system + politics	**172**
Food system + governance	**146**
Food system + transformation	**132**
Food system + urban	**131**
Food system + national	**127**
Food system + cities	**80**
Food system + crisis	**55**

Note: Data covers only the selected social science journals not all social science publications in Web of Science.

The 274 articles within the four search term categories (i.e. 147 articles on food system transformation and crisis; 127 food system and the urban articles after duplicates and irrelevant articles were removed for each) were then subject to a more detailed interrogation involving a close reading and thematic analysis of abstracts and key sections of the papers. Informed by the framework in Table 1, this process enabled identification of the subjects and topics explored in studies within the particular search term category (e.g. 'food system transformation'), the different ways in which the food system concept is being applied within this search term category, and the theories and concepts (additional to the food system) that are employed to examine the particular search term category.

Analysis

The analysis is organised in two parts, each working to elaborate the dimensions in Table 1, in turn summarising findings from different parts of the overall corpus of papers reviewed. Part one begins with interpretation and thematic analysis of the foundational food system papers that explain concept origins, definitions and what we observe as an evolution in approaching the food system within those papers. It also identifies key features, characteristics and promises of food system thinking. The second part examines uptake and application in the wider literature, starting with an overview of uptake in the sciences and social sciences, but focusing mostly on a structured review of application within social science articles via the two case studies. The case studies in particular help to examine the different ways in which researchers make use of the food system concept alongside other concepts.

Food system concept - origins, definitions, evolution and essential features

Origins, definitions, evolution

As Béné et al (2019) observes, the food system concept can be traced back to the 1970s (Sobal, 1978). Initially the concept achieved limited purchase. For example, 'food system' is referenced only once in the 1987 Brundtland Report and only in relation to increasing food production. However, in the 1990s, scholars began to engage again with the food system concept in the context of understanding the processes of transformation of agri-food systems within capitalism (Whatmore, 1995). Authors such as Whatmore (1995), and Tansey and Worsley (1995), sought to reposition agri-food scholarship in relation to these changes by moving towards an approach that emphasised global connections, the embeddedness of agri-food systems in processes of capital accumulation, and the changing role of the agri-food sector in social regulation. This

work was not only extending analysis beyond the farm gate or more linear value chain concepts but was necessitated too by the changes wrought through modern capitalist food production that had destabilised previous conceptual categorisations.

However, the more recent burgeoning of scholarship elaborates what we interpret as a new food systems approach that advocates systemic thinking. It is this more recent literature on food systems that we examine in detail in the rest of this section to identify the essential features of a food systems thinking approach. These insights inform and guide the analysis of trends and cases in subsequent sections.

In reading the foundational papers, it is striking to observe the influence of two key references when it comes to defining food systems. The first is the report by HLPE (2017: 23) and the definition of food systems repeated below and widely quoted:

> *[A] food system gathers 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 the output of these activities, including socio-economic and environmental outcomes.*

The report links food system thinking to diet and nutrition, thereby moving discussions beyond just food production. The food system definition comes from an earlier HLPE report about food waste (HLPE, 2014). It is now a common reference point to define food systems for science and policy. The second key reference is Ericksen's (2008) conceptualisation of food system that proposes a framework to study 'the interactions of food systems within global environmental change' (p. 235). In early conceptions, food system scholarship organised around activities that covered production through to consumption (cf. Tansey and Worsley, 1995). Ericksen (2008, 234-5; emphasis added) broadens the definition beyond these activities to comprise:

> *[T]he interactions between and within biogeophysical and human environments, which determine a set of activities; the activities themselves (from production through to consumption); outcomes of the activities (contributions to food security, environmental security, and social welfare); and other determinants of food security.*

This definition is similar to HLPE but is more explicit in making food part of a wider, complex system. Food systems and food security are characterised by social and economic change and global environmental change. These processes are simultaneous, rapid and complex with uncertain consequences. Ingram (2011) defines the food system in similar terms, reiterating the idea of complex interactions that contribute to realizing a set of outcomes, including food utilisation, access and availability. The food system is therefore a constellation of things, activities, actors and outcomes realised through complex relations.

Allen and Prosperi (2016) employ similar vocabulary, explicit in this idea that food systems are 'complex socio-ecological systems', by which they mean multiple interactions between human and natural environments, that systems have 'intrinsic properties' to ensure 'essential outcomes' are maintained or enhanced and recognising also 'critical vulnerabilities' and 'resilience factors'. This includes connections to system thinking and the idea of uncertainty expressed as non-linear, complex and reciprocally causal processes.

This points, then, to a key development in food systems scholarship, particularly the development of systemic thinking. The foundation for these ideas is Ericksen (2008), with the thinking elaborated in recent contributions to situate global food systems as nested barometers for wider systemic socio-ecological crises. Sonnino et al (2019: 111) usefully elaborate this systemic definition of food systems as follows:

> *A systemic approach unveils emerging patterns, relationships and phenomena that would not be visible under a siloed approach […] when applied to the framing of problems, systems thinking helps to decompose them and analyse them from different perspectives, capturing differences in viewpoints and roles between stakeholders.*

This signifies a critical step change in food system thinking from production-consumption system heuristics to

applying input-output models as a framework to capture socio-ecological system interactions and complexities. Akin to Brock (2023), the mobilisation of the food system concept is equally 'multiple'. For example, the HLPE definition of food system acts as descriptive heuristic organising different elements important for considering food and nutrition, which is not necessarily the same as thinking systemically about food in the ways being articulated by authors such as Ericksen, Allen and Prosperi or indeed other aspects of the HLPE framework. This point is further underlined considering the food system is often undefined (as noted in a review of 69 of 79 papers – see Hospes and Brons, 2016) and taken as given.

Essential features of food system thinking

Having observed a move in food system scholarship to advocating a food system approach, in this section we elaborate the essential features of this food system thinking as evident from key themes identified in the foundational literature. The first essential feature is the intention to go beyond siloed thinking, that is to make connections between previously separated activities within food systems, connect the food system to other systems (Sage, 2022), to treat them as coupled environmental and socio-economic systems (Brunori et al., 2020), and to understand those interactions (Allen and Prosperi, 2016). There are several dimensions to this first point. As Sonnino et al (2019: 111) argue, for example, food policy tends to focus on either the supply (productivism) or demand (access-based) side of the food system. A new policy and research agenda now recognises the need for approaches that connect and account for system interlocking and which frame 'food as part of a complex system' (Brunori et al., 2020). Connecting to other systems also positions the food system as a 'sub-system' within wider political economic, environmental and organisational structures. More holistic examinations of food systems are in part at least attributed to the 2008 financial crisis, which brought the failings of food systems into relief, both for the hungry and the seemingly well fed (Sage, 2022). As we note in other points that follow, this opens up a new vocabulary when it comes to solution building and complexity. It also underscores the argument that outcomes like food security are closely connected to cross-scale and cross-temporal processes that drive vulnerability, highlighting the fallacy of attempting to address such issues without accounting for wider system connections and influences that lie beyond the food system (Ericksen, 2008).

The second essential feature relates to complexity. To think systemically requires addressing complex problems with multi-causality. This is essential in food system thinking, designed to understand key factors that lead to particular outcomes or interactions. Approached as a 'problem-determined system', food systems are "complex, heterogeneous over space and time and replete with non-linear feedbacks" (Ericksen, 2008: 237). This recognises structure and agency interactions as "… an interplay between structure, which is usually at a broader or macro-level, and agency, which is local or micro-level" (ibid.). The objective is to provide a means to understand interactions between the food system and other systems; to understand feedback loops and cross-scale interactions (non-linear feedbacks); and to address complex problems with multi-causality. The nature of food relations – i.e. nature-human interdependencies and interactions – requires systemic tools (Allen and Prosperi, 2016).

Food system thinking is about understanding interconnections rather than the components themselves to understand how a system functions (Brock, 2023). A third feature then is a contrast with linear, reductionist ways of characterising the world. This language broadens analysis beyond narrow food chain and economic perspectives. It promotes a more holistic approach to food production and provisioning, and challenges such as climate change, nutrition and food security, enabling a better understanding of the 'true cost' of food and engaging with the 'real' world in its complexity. This approach also promises to make connections. One aspect of this is to draw attention to wider food-related issues that might otherwise be ignored or closed down e.g. overconsumption, undernutrition (HLPE, 2017), as well as to consider changes along the food chain, such as 'supermarketisation' (Brunori et al., 2020). It is also open to, indeed may require interdisciplinarity in the investigation of food systems. As Ericksen (2008: 237) calls for, the intention is to "be fully inter-disciplinary, aiming for marriage of natural and social sciences". Sonnino et al (2019: 115) argue that thinking of and acting

on food systemically requires "the capacity to overcome pervasive fixities, rigidities and ontological divides, including those between disciplines". Their analysis asserts the need for new interdisciplinary collaborations and a relational approach to food in place-making.

A further key feature of food system thinking, as identified in Ingram (2011), is the potential to uncover and balance trade-offs and synergies across different societal goals. It can provide a framework for structuring dialogues aimed at enhancing food security; it can help to both assess the impacts of global environmental change on food systems and identify feedbacks to the earth system from food production activities; and, crucially, to identify intervention points to enhance food security and analyse synergies and trade-offs between food security, ecosystem services and social welfare outcomes. Béné et al (2019) also links the food system to achieving wider sustainability goals and in a more critical intervention implies system thinking is limited and even problematic when it does not have sustainability alongside it. One should think then in terms of 'sustainable food systems' when describing the system elements of food system thinking. Meanwhile, Leeuwis et al (2021) point to the promise of transformation and improving coordination and impact of interventions. Food system analysis, they argue, increases our understanding of the way in which components in the system interact, and thus provide insight in terms of trade-offs and synergies between development objectives.

Sonnino et al (2019: 115) capture the essence of what this mode of working gives to food scholars, picking up also on the last two features i.e. consideration of the non-human and relational ontology. As they put it, this way of working "gives analytical and practical emphasis to interactions, integrations and relationalities between actors and activities within the food system and between food and other relevant systems".

In summary, food systems are conceptualized in terms that emphasize connectivity and complexity. Interconnections extend not just between the human and non-human actors of the food system but also include connections with other socio-ecological systems, actors and structures. The resulting complexity requires methodological innovations with an emphasis on inter- and trans-disciplinarity in research. This is nested within a normative commitment to develop more sustainable and just food systems and signals a significant level of ambition and aspiration amongst scholars in imagining and envisaging a food system approach.

Uptake and applications of the food system concept: patterns and thematic cases

In this section we step back from examination of foundational food system articles to consider uptake and application of the food system concept in the wider academic literature, starting with the broadest optic across sciences and social sciences before focusing on two case studies that are used to illustrate the application of the food system concept within a particular area of agri-food research practice.

Patterns of uptake

Figure 1 tracks the use of food system over time across all article titles and abstracts in Scopus, with social science disciplines indicated in blue. The graph clearly demonstrates the significant growth in reference to 'food system', particularly since the mid-2000s, with wide application of the concept since the latter half of that decade.

As Figure 1 reveals, there is much broader engagement with the food system terminology than just within the social sciences. Figure 2 provides a breakdown of this engagement by subject / discipline across the time period of analysis i.e. 1987-2024[2]. Social sciences have the second highest use overall, after agricultural and biological sciences, suggesting that the social sciences have been a key field within which the food system has gained growing prominence. We noted that other aspects of the Scopus data showed increased use of the food system over time across all subjects.

[2] Articles can be in multiple categories.

Figure 1. Reference to 'food system' in article title / abstract (Scopus) 1987-2024 (total articles and social science articles as a proportion of the total)

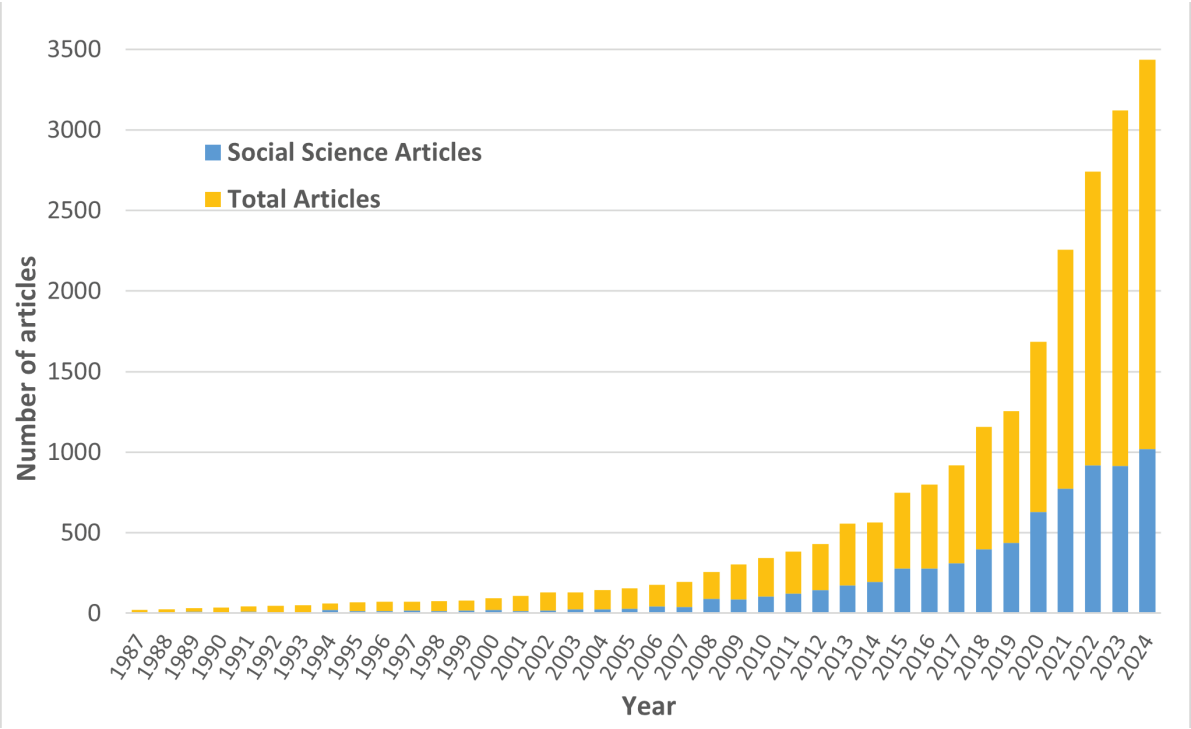
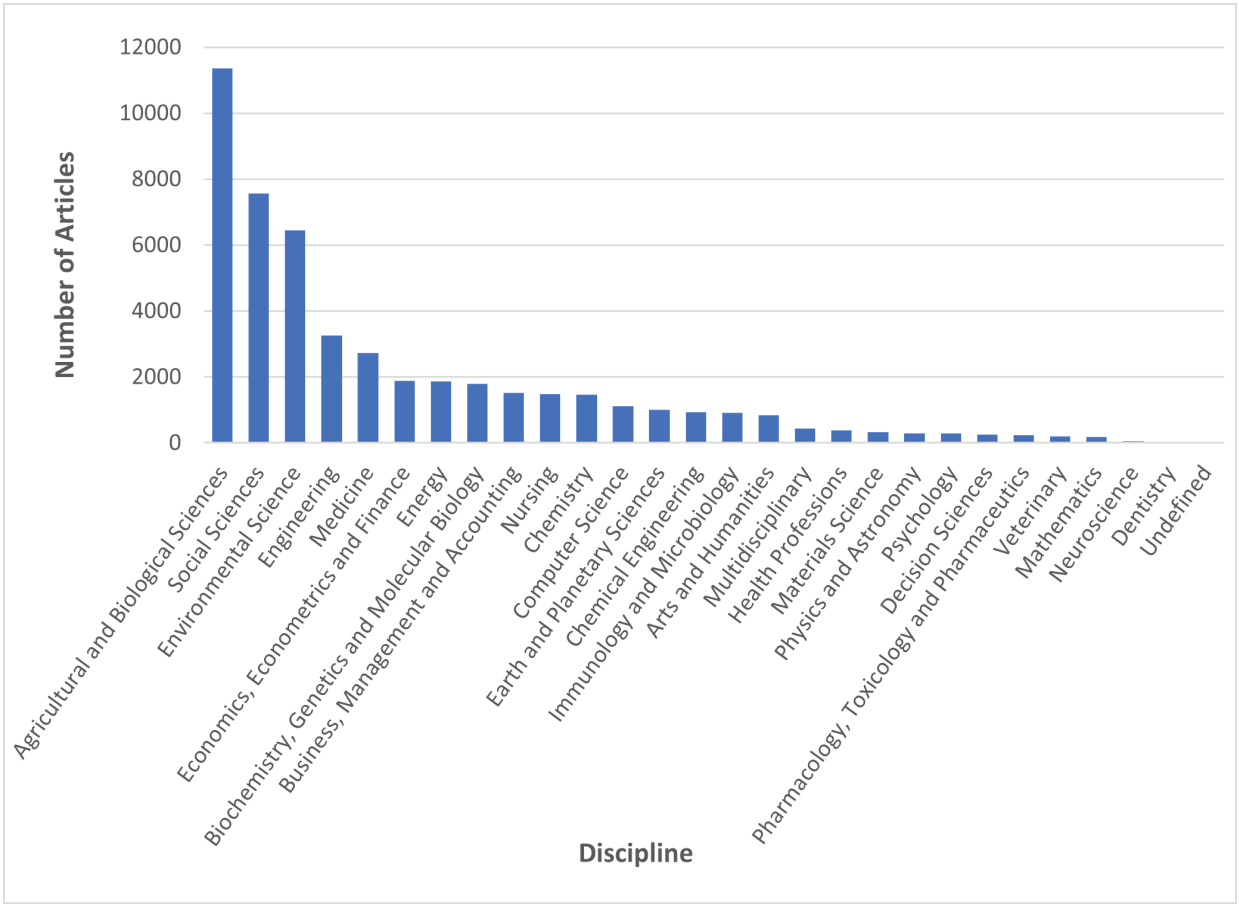
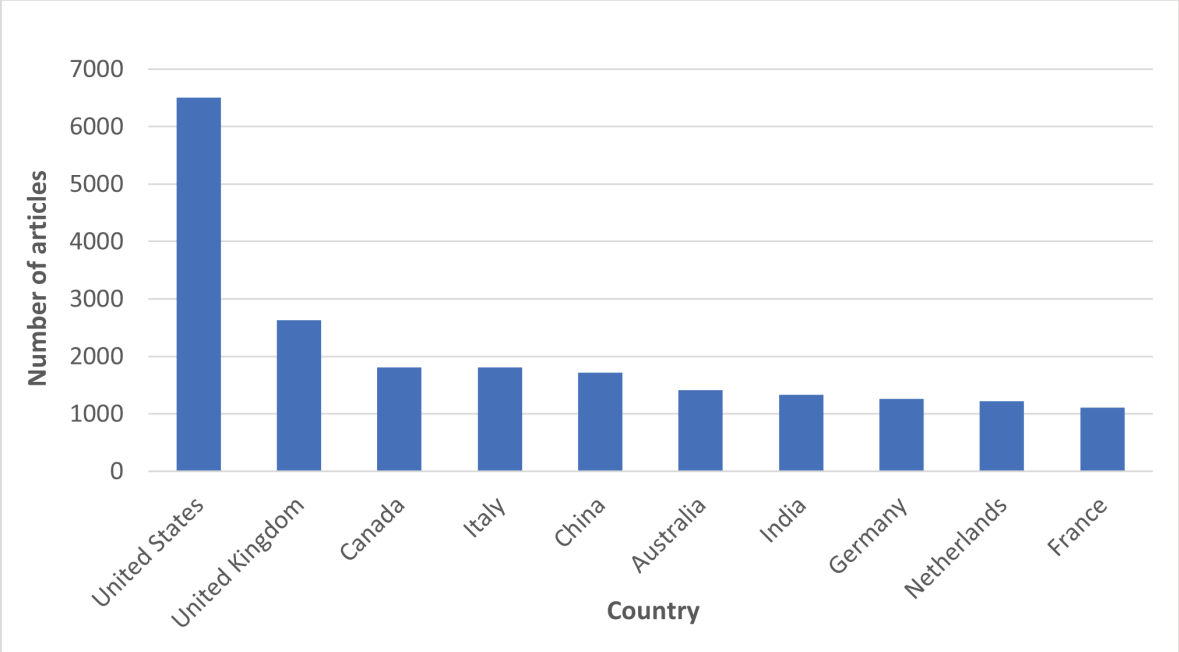


Figure 2. Reference to 'food system' in article title / abstracts from different disciplines



The geographical origin of English language academic studies referencing 'food system' is presented in Figure 3, again spanning 1987-2024. This shows a clear 'North Atlantic' focus.

Figure 3. Country of origin of the academic affiliation of the author referencing 'food system' in their title / abstract



Although these data demonstrate that food system terminology has been used extensively across many different academic fields, with use increasing substantially in recent years, such patterns of uptake do not reveal how the concept is being put to work and whether this use reflects all or some of the essential features of food system thinking discussed in the previous section. The two thematic case studies, presented next, aim to provide this insight.

Food system application, case study 1: 'Food system transformation and crisis'

The first case examines work with a 'process' orientation towards the food system, in that these articles emphasise processes of food system transformation and crisis. Over 90% of the corpus is published from 2008 onwards. Most papers are published in Agriculture and Human Values (56) followed by Journal of Rural Studies (26), Journal of Peasant Studies (22), Geoforum (13) and Journal of Cleaner Production (12). The empirical cases are diverse and include both the global North and South contexts.

The literature has three principal themes. The first is that the food system has been (or is being) transformed within the context of the 'status quo' of a dominant industrial, capitalist agro-food regime, primarily in the global North. Within these dynamics there is a focus on financialisation and concentration as a major driver of contemporary transformation of the intensive food system within capitalism (Burch and Lawrence, 2013; Isakson, 2014; Sippel et al., 2017; Keenan et al., 2023). Australia is an important context for this work, but it is not alone, with Europe and the USA featuring. Another transformative trend is the shifting power from processors to supermarkets (retailers) (Burch and Lawrence, 2009; Konefal et al., 2005). Work in this theme focuses on the global South and the ongoing transformation towards modernisation, marketisation and intensification (Appendini and Liverman, 1994; Mergenthaler et al., 2009).

The next two themes both share an emphasis on the need for transition and transformation to achieve a more just, sustainable food secure food system, but in relation to acute crisis events and more chronic unsustainability issues, respectively.

The focus of the second theme then is an imperative that the food system needs to be transformed as a result of intermittent crisis revealing the vulnerabilities of intensive, global agri-food systems. It is here that the focus on crisis is most prominent, although the specifics of the crisis shifts in relation to emergent events. This includes food safety scares and scandals in the late 1990s and early 2000s (e.g. Flynn and Marsden, 1992; Tanaka, 2008); global food price spikes, food riots and the food insecurity crisis in 2007-08 (e.g. Holt Giménez and Shattuck, 2011; Rosin, 2013), some of which connected the crisis to financialisation and neoliberal globalisation (Isakson, 2014; Bohstedt, 2016). More recent examples include Brexit and its impact on migrant labour (Milbourne and Coulson, 2021) and the Covid pandemic which exposed wider food and financial economy dependencies (van der Ploeg, 2020), and specific regional climate crises and disasters such as the Pakistan floods (Sargani et al., 2023).

The third theme relates to a chronic need for food system transition. Here there is a reoccurring focus on the development of 'niche' alternatives such as agroecology, regenerative agriculture, Community Supported Agriculture (CSA), and Alternative Food Networks (AFNs). Niches are situated as necessary to address justice and sustainability challenges of food systems. There is however a shift in the early 2020s from an emphasis on examining food system transformation and the success and failure of 'niche' innovations, towards supporting food system transformation through research approaches. Alongside this is a growing emphasis of power relations, and the need to more explicitly account for power dynamics when examining food system transformation and failures to achieve it (e.g., Bless et al., 2023; Coulson and Milbourne, 2022; Omar and Thorsøe, 2024; Voigt et al., 2024). In contrast to work on the corporate food regime, power relations does not necessarily just refer to the role of powerful actors, but a more heterogenous understanding of the role of power and agency. The literature emphasises ideas of food sovereignty (e.g. Desmarais and Wittman, 2014), food justice (e.g. Levkoe, 2014), food democracy (e.g. Godek, 2021), regenerative agriculture (e.g. Loring, 2022), and agro-ecology (e.g. Anderson et al., 2019).

How is the food system concept applied in studies of food system transformation?

In most cases the food system is positioned as a taken for granted 'thing' that can be transformed, needs to be transformed, or is being transformed. The food system is therefore an active site of political action and resistances with a juxtaposition between local, potentially more democratic, alternative networks and social movements pitted against a corporate, capitalist, globalized food regime. Consequently, the food system is also an arena for power struggles, over values, profits, and practices. However, because it is composed of different sub-systems that encompass the agri-food value chain, these transformations are not necessarily unfolding in the same ways.

In the majority of articles, the emphasis is therefore on particular processes and initiatives seeking to achieve transformative outcomes in specific contexts, notably AFNs (e.g. Matacena and Corvo, 2020) and regenerative agriculture (e.g. Seymour and Connelly, 2023). Distinct from this work examining specific initiatives, is a much smaller body of literature that seeks to apply and elaborate a food system perspective. Notably, food system approaches are positioned here as allowing a focus "on the underlying process-related attributes that could support a more sustainable food system" (Eakin et al., 2017: 757; Sonnino, 2023).

Alternatively, food system perspectives allow insights into the scalar interactions between the global and national food systems. Here the food system approach emphasises relational connectivity e.g. connections between 'the global agri-food system' and global financialisation to examine, for example, flex crops and commodity agriculture markets (Gillon, 2016) and relational processes of agro-food transformation (Greenberg, 2015).

What theories and concepts are employed to examine food system transformation?

A large number of studies seek to examine experiments in establishing transformative alternatives in specific locales and contexts. Within this literature, there is an explicit and implicit adoption of the niche concept drawing on the Multi-Level Perspective (MLP) and related transition theories that have adopted this formulation (e.g. López Cifuentes et al., 2021; Stempfle et al., 2024). The AFN is the most prominent niche innovation. Even in studies that do not mention the MLP in the abstract, there is a framing of AFNs, alternative methods and social movements in the language of the 'niche' innovation battling to transform the dominant regime (e.g. Coq-Huelva et al., 2017; Stephens, 2021; Zoll et al., 2021). It is here, in the niche, that different practices (e.g. agroecological, community supported) are established and tested whilst having the transformative potential to change dominant systems. Much of the literature remarks on the failure of niche innovations to move beyond the niche and transform the regime.

This explicit and implicit use of MLP concepts suggests that the food system is conceived in similar ways with an emphasis on the regime, niches and the landscape and the interactions between them as being important for change dynamics. In short, mobilising transition theory frameworks with an emphasis on niche, regime, lock-in, niche-regime interactions, and niche management. Transformation is positioned as something achieved through the combination of new (or old) technologies and practices, policies, strategies and more vaguely things that strengthen social movements that support alternatives.

In contrast, some of the literature is interested in examining the way in which the dominant corporate, capitalist food regime is also transforming and transforming particular locales. This work seeks to examine particular dynamics that are positioned as driving change, such as new processes of financialization and agri-sector concentration that are reshaping agriculture in particular areas (Burch and Lawrence, 2009; Burch and Lawrence, 2013; Clapp, 2023; Keenan et al., 2023). Although distinct from transition frameworks such as MLP, this literature is examining the way in which a dominant agri-food regime is continuing to transform food systems. It is concerned with examining new dynamics within capitalism that are changing agriculture in specific places. Although a much more limited emphasis in terms of the number of papers, it reflects an interest in examining the unfolding ways in which the dominant regime continues to be reshaped by capital and the diversity of capitalisms.

Finally, there are two sets of articles that each have a handful of cases. The first is a small number that use a Life Cycle Analysis approach (e.g. Benis and Ferrão, 2019), which differs from the majority of articles that are qualitative social science studies. The second are a handful of cases that adopt a food system approach (Fanzo et al., 2021; Sonnino et al., 2019), which contrasts with the majority using the 'food system' as a stepping off point to utilise a different conceptual approach from which to examine a specific set of dynamics within the food system. A major point of difference is that conceptually these papers stick with the food system approach. Sonnino et al (2019), for example, examine cities, but rather than conceptualising urban food systems in relation to concepts and theories developed in urban studies or transition studies, instead applies a food system approach to consider the urban dimensions of food system challenges and their multi-scaled and multi-dimensional interactions. This approach substantially retains the dimensions of a food system approach elaborated in section 3.

This raises a wider reflection concerning 'how is transformation being theorised?' Notably there is an emphasis on remaking the food system in a new image. Transformation is an act of replacement whereby AFN values and practices completely take over from the corporate food regime. This is also reflective of MLP conceptualisations of transformation, in which the niche transforms the former regime and configures a new set of dominant regime-level relations. In contrast, very little literature engaged with ideas of sustainable intensification for example, or other agendas that signify transformation through maintenance of productivist modes of production and the dominance of corporations and capital.

Food system application, case study 2: 'food system and the urban'

The second case study examines the various deployments of the food system concept within scholarship that has an urban food focus, published in the selected social science journals[3]. The first article in the sample was published in 2002 by Hendrickson and Heffernan in Sociologia Ruralis, examining alternative forms of food consumption in Kansas. The most recently published article was by Weller (2022) in Agriculture and Human Values, which focused on how rural and urban actors made sense of the inequalities experienced by farm workers in the craft cider industry in the Pacific Northwest. As these two examples begin to reveal the articles in the sample include a broad range of empirical case studies with those from the global North contributing the majority - 81 articles - although four of these were concerned with both the global North and South[4].

There is a clear distinction within the corpus between two groups of studies. In the first group cities and other urban spaces are approached as arenas in which the major focus of concern takes place or is particularly visible e.g. emplaced social movements such as those promoting food sovereignty (e.g. Moragues Faus and Marsden, 2017; Meek et al., 2019), food justice (e.g. Smaal et al., 2021), food democracy (e.g. López Cifuentes and Gugerell, 2021), community food security (e.g. Johnston and Baker, 2005), and food sharing (e.g. Loh and Agyeman, 2019); named initiatives that have their origins in particular urban places (e.g. Hendrickson and Heffernan, 2002); and wider processes taking place in food provisioning such as supermarketisation (e.g. Berger and van Helvoirt, 2018). In many of these instances, 'the urban' appears to be a convenient location in which to undertake an analysis of a particular food provisioning issue. Alongside these studies are those focused on specific activities that are distinctively urban with the most prominent of these being urban agriculture (e.g. Benis and Ferrão, 2017), but also featured are food foraging (Nyman, 2019), backyard livestock slaughter (Blecha and Davis, 2014), and public and wet markets (e.g. Zhong et al., 2020).

This first group of studies is distinct from a second group that is more centrally concerned with urban food policy or governance (e.g. Sonnino and Coulson, 2021) or that recognise cities as 'food policy actors' (Moragues Faus and Marsden, 2017). It has historically been the case that urban places have not featured prominently in food governance. However, this has begun to change over the course of the past two decades during which time towns and cities have been independently developing food governance arrangements in response to the absence or limitations of national level *food* (cf. agriculture) policy (Coulson and Sonnino, 2019). Urban places have therefore been attempting to fill a policy void and address a democratic food deficit (op cit.) through more localised, urban-based action to create more sustainable, secure, resilient, healthy and just food provisioning arrangements (Blay-Palmer, 2009).

How is the food system concept applied in studies of food and the urban?

It might be anticipated that an urban specific mobilisation of the food system concept, in the form of 'urban food system', 'city food system' or 'city region food system', would be to the fore in the reviewed articles. However, this is not the case, and is deployed in relatively few studies (approximately 10 e.g., López Cifuentes et al., 2021). Instead, the food system is usually a point of context for the investigation of another phenomenon such as urban agriculture, food sovereignty or urban food governance, or as a system the sustainability, resilience or security of which might be enhanced through that phenomenon. As such, the urban food system per se is not the focus of analysis nor is a formal 'systemic' analysis employed in the investigation.

This, somewhat passing, reference to and contextual mobilisation of the food system concept is evident across most articles within the corpus with 'system' being taken as read or as a given, and not requiring any further discussion or analysis. A common jumping off point is the 'global food system', 'dominant food

[3] Most of the 127 articles were published in the journal *Agriculture and Human Values* (34) while the urban focused journals *Cities* and *Urban Studies* together published 24 articles. A similar number were published in the geography journal *Geoforum* (13), the food-oriented journal *Food Policy* (10), the *Journal of Cleaner Production* (12) and the *Journal Rural Studies* (10).

[4] In a small number of articles, the geographical context or scope of the study was not stated.

system', 'current food system' or 'industrial food system' being identified as a system beset with a range of socio-ecological problems that require a different way of organising food provisioning, one (urban based) example of which is examined in the article. In such cases, the food 'system' is not the focus of analysis per se. An improved or 'transformed' 'food system' is also identified as a very broad, somewhat abstract end point or objective of many of the studies e.g. the realisation of food system sustainability, security, resilience, democracy, equality or ecological diversity. Again, in these cases this ideal system is not the focus of analysis. Other mobilisations of food system that appear in the articles include: local food system, national food system, alternative food system, community food system, agri-food system, food-energy-water-waste system, at times as a point of context or starting point and in other cases as a focus of the investigation.

In only a handful of cases is 'system' employed to do work other than as a point of context and / or as an 'object' that needs to be changed for the better through, for example, the more extensive implementation of urban agriculture or the pursuit of food sovereignty. In an analysis of the modernization of the food retail sector in Nairobi, Kenya, Berger and Helvoirt (2018, p. 12) make the case for "more holistic food policies *that stem from a food systems perspective*" (emphasis added) to build an inclusive urban food system that can tackle prevalent food insecurity in Nairobi. Abu Hatab et al. (2019) review interactions between urban sprawl, land and resource use changes, agricultural production and food security in developing countries and note a failure to take into account interactions between different aspects of urban food systems. They call for more attention to be paid to 'food system transformation pathways, system feedbacks and trade-offs' i.e. a more system-oriented approach to analysis in future research.

These two studies make the case for greater use of one form or another of system thinking or system analysis in future research. Distinct are two further studies that seek to understand how system framings or approaches are already mobilised in research and practice. Morgan (2015) considers the 'urban food question' in global North contexts, including understanding theoretical framings of food system in (the literatures on) urban planning, urban political ecology and community food security. Sonnino et al. (2019) investigate how 33 cities around the world interpret and apply a systemic approach to food and whether there is a gap between food system theory and practice.

What (other) theories and concepts are employed within studies of food and the urban?

Since the vast majority of studies in the corpus do not make central to their analysis a food systems approach (but instead refer to the food system concept as a point of context or end point) it follows that they make use, instead, of other theoretical perspectives. A wide range of theories are mobilised across the different studies including: social movement perspectives as these relate to the specific concerns of food justice, food democracy and food sovereignty; social-ecological embeddedness; (urban and educational) political ecology; assemblage theories; theories of justice; urban bias theory; willingness to pay; social practice theory; Bourdieu's theory of distinction; the MLP and transitions theories. Obviously, a system perspective can be open to a wide range of theories that bring important additional insights. However, the food system concept is a framing device for other types of analysis rather than something into which other theories are being integrated to develop original insights.

The diversity in concept and theory illustrates how, in most cases, studies of food and the urban are not explicitly undertaking an analysis of the food system even when reference is made to the concept suggesting in turn that a systemic analysis is insufficient or inappropriate conceptually to help answer the research questions that are posed. In some cases, no reference is made to a specific theoretical or conceptual framework and this is particularly apparent in studies that are empirically led. There are a handful of papers in the corpus that employ modelling and other quantitative approaches including Life Cycle Analysis and spatial analysis in their investigation of various urban food phenomena. In sum, the food system concept is rarely, if ever, utilised alone in studies of food and the urban.

Discussion and conclusion

This paper started life as a set of conversations between the authors over an observation that we seem to be witnessing a resurgence of interest in the food system concept in academia and policy discourse. Brock (2023) in particular provides valuable insights of how the concept is interpreted in policy domains using stakeholder interviews to develop the idea of 'multiple ontologies'. In this paper the focus was academia (specifically agri-food social sciences) and our original theoretical inspiration was Jackson et al's (2006) analysis of the commodity chain and the 'chaotic concept' (cf. Sayer, 1984). Inspired by these ideas of 'the chaotic' and 'the multiple', we developed our own framework to analyse food system concept mobilisation (Table 1), assessing patterns of uptake, empirical applications and how those interpretations reflect (or not) essential features of the concept. Below we summarise four key discussion points that emerge from the analysis, combining the data presented on general uptake and definitional work, alongside the case studies of food system transformation and crisis and food systems and the urban.

The first point concerns what we call 'the food system as boundary object', meaning a shared heuristic device. If a concept has valuable heuristic properties this is already a strength and we see from Figures 1-3 that the concept clearly has appeal to scholars in agri-food studies and beyond, which is important for work that increasingly calls for inter- and trans-disciplinary working. Think of various science-policy interfaces at international, national and regional levels, for example. Such exchanges require a collective language and object of common focus to meaningfully facilitate research practice working. This boundary making property is valuable and is not to be lost, even if we do not find that a food system approach is being explicitly applied in many surveyed studies.

The second point is we find a clear pattern of bipolarity in mobilisation between two styles of practice, which we label 'heuristic mobilisation' and 'conceptual mobilisation' respectively. Building on Brock's (2023) multiple ontologies idea, elaborated through knowledge claims, we regard these observable styles of knowledge practice also as 'epistemologies'. The heuristic mobilisation is the most common and is effectively epistemic, giving researchers a mental framework and vocabulary that works to hold a set of material and social relations together (although often not in their totality) as an object of study for empirical analysis and transformation. The food system concept is thus an organising framework that is more dynamic and less linear, production-orientated or econometric than e.g. commodity or value chains but somehow less nebulous than networks or assemblages. The conceptual mobilisation more explicitly uses food system thinking to shape these studies, but as noted in our analysis, such applications are much less common than the heuristic mobilisation.

Third, despite the promising features noted in the 'foundational papers' reviewed, the concept does not appear to be doing the type of work we were expecting to be reported. So, whilst we find saturation of food system terminology from the mid-2000s (Figure 1) this is mirrored also by much less evolution of the concept and a general trend towards using the term as a heuristic device. This is not to dismiss the value of the sampled studies but rather to note that we do not find the conceptual mobilisation initially anticipated when devising the research (i.e. systemic analysis). At one level this supports Leach et al's (2020: 102025) observation that the term food system "has become something of a development 'fuzzword' […] a shared language amongst diverse actors obscuring sometimes opposing viewpoints on meaning and implications". It may indicate also a shared approach emerging in the literature, hence less need for further conceptual development, even if that shared approach and application is at the heuristic level.

One explanation for this pattern of mobilisation is that food system thinking is in practice quite demanding and so researchers mobilise alternative theoretical resources, as evident in both case studies. The fourth point turns then to think about how to support more system thinking in future studies. To answer this question, analysis here started by mapping out what we termed 'essential features' of system thinking e.g. thinking beyond silos, attention to feedback loops, a focus on relationality, and incorporating the non-human. What is interesting in the case studies too is to observe the way researchers employ wider bodies of social theory

to address for example questions about justice, power or relationality. It seems important to encourage this continued cross-fertilisation between complementary theoretical frameworks. The other step is to identify and celebrate food system methodologies that researchers can apply when employing the food system concept (cf. Ericksen, 2008). In the systems thinking literature we have two quite distinct approaches between what are called 'hard' (more quantitative) and 'soft' (more qualitative) approaches (cf. Allen and Prosperi, 2016 and Sonnino et al., 2019), which should be more clearly incorporated in studies. Within food system studies useful methods (e.g. food system mapping) also exist to support, for example, boundary work, but more training is needed to support future generations of scholars to think in systems. This can materialise in different ways. For instance, food system training is located mostly in specialist research centres, postgraduate programmes and taught courses, but this could be expanded to undergraduate programmes and teaching in e.g. agriculture, food studies, environmental, health and nutritional sciences, particularly as learning needs shift to embrace greater interdisciplinary problem-solving skills. Another important step is to support and extend in-house training of system concepts in policy and research funding environments.

In conclusion, the food system concept has clearly attracted much interest and offers value to researchers. We observe dual mobilisations with different purposes. Whilst the food system is essentially a gatekeeper, this does not always mean using a food systems approach. We need to recognise these differences more explicitly to avoid a 'hollowing out' of the concept and to support future meaningful uptake to address increasingly complex food, environment and health transition challenges. Future research should consider also the impact that adopting the food system has on governance. Intuitively the food system discourse evident herein is shaping policy, but outcomes remain unclear. This requires systematic analysis across multiple domains of governance to better evidence food system approaches in this context and in turn support longer-term training needs.

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Gaining a Common Understanding of Transformation Pathways in Agri-Food: Shared Learning Among Partners of a Horizon Europe Project

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Abstract

Researchers across scientific disciplines widely agree that agri-food systems need transformation, yet they rarely agree on the specific form this transformation should take. This study makes researchers' views of desirable agri-food systems transformation pathways explicit. Using the repertory grid methodology, we elicited personal constructs from researchers with expertise in 101 European initiatives, representing diverse scales, approaches, and objectives of transformation. Embedded in this methodology, personal construct elicitation reveals researchers' tacit knowledge and implicit assumptions. Results from this study reveal high convergence among researchers on the importance of stakeholder inclusion, autonomy, scope of ambitions, and anchoring in farming practices in transformation initiatives. However, researchers diverge in their views on how market orientation relates to transformative potential. Our findings demonstrate that while researchers broadly agree on key dimensions for describing transformation pathways in agri-food systems, they differ in their assessment of what makes initiatives truly transformative. Implications from these findings highlight the need for interdisciplinary research projects to reflect on how, when, and to what extent to engage in stakeholder participation and farmer engagement, as well as on whether transformative actions should be planned or emergent, and adaptive or disruptive, depending on the desired agri-food systems transformation.

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Acknowledgments

We would like to thank the Editor, Prof. Damian Maye, and the two anonymous reviewers for their time invested in reading the manuscript and their constructive feedback. This study was conducted as part of the Horizon Europe Project ENFASYS, which aims to stimulate a just and robust transformation to sustainable, productive, climate-neutral, biodiversity-friendly, and resilient farming systems by improving policies and business strategies that encourage farmers to change their production systems. It does so by developing a theory of change that builds on both system and behavior research and by deriving political and private interventions to promote the transformation. Learnings from the experimentation will be used to reassess the theory of change.

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Introduction

The intersecting crises of climate change, biodiversity loss, and environmental degradation pose urgent challenges to agri-food systems worldwide (Turnhout et al., 2021) and threaten food security and agricultural sustainability (Muluneh, 2021). These crises can also be considered humanitarian, as marginalized communities, at both national and international scales, are more likely to experience existential challenges, such as worsening food security (Marshal et al., 2024). As the crisis deepens, large-scale, fundamental changes to our society and way of life are needed to slow and reduce global degradation and facilitate mitigation and adaptation to the worst impacts, particularly in agri-food systems (Muller and Huppenbauer, 2016).

Despite widespread recognition of the need for transforming agri-food systems and a growing body of knowledge about what a transformed agri-food system might look like, visions for a sustainable future are inherently political, involving winners and losers, and the associated aspirations and pathways for transformative change are often contested (Patterson et al., 2017; Hebinck, 2018). It is the task of science to provide evidence for alternative future scenarios, but these are shaped by normative frameworks that are not universally shared and cannot be applied uniformly across different contexts (Horcea-Milcu et al., 2019). Therefore, it is important to understand how questions of justice and their relation to transformative change emerge from, and are influenced by, the histories, needs, and interests of different national and local communities and contexts (Feola, 2015; Rice et al., 2019).

Transforming agri-food systems without sufficient reflection and consideration of context risks imposing frameworks and ideas from a few cultures and countries onto contexts where they may not be appropriate. For example, advocates of degrowth argue that halting the unending pursuit of economic growth can decrease consumption while increasing well-being (Büchs, 2021; Kallis, 2017). However, this concept faces challenges, particularly from poorer countries, which argue that it would deny them the right to grow (though this conclusion is refuted by many—see Hickel and Kallis, 2019). Meanwhile, the concept of "doughnut economics" (Raworth, 2022) examines how economies can meet needs without exceeding social and planetary boundaries. Doughnut economics, with its use of planetary boundary framing, also raises questions about the role of science in democracy and the relationship between science and society (Willis, 2020).

Reconfiguring agri-food systems by promoting and implementing sustainable farming practices requires actions to stimulate change, which in turn demands an understanding of the processes that have led to unsustainable farming practices (Moscatelli et al., 2016).

Questions remain about how to create change in these political economies, political systems, and infrastructures in democratic and just ways, while also recognizing that different countries and cultures may have varying understandings of democracy and may pursue different transformative pathways (Willis, 2020). Furthermore, such questions must acknowledge that transformation cannot occur in a static society, as the environmental context is already changing, and society is evolving both independently and in response to these changes. Transdisciplinary research is a response to these open questions, in which researchers from a wide range of disciplines collaborate with stakeholders and actors from the field to bridge the gap between knowledge production and the demand for solutions to societal problems (Hadorn et al., 2008).

Researchers from various disciplinary backgrounds approach these inherently complex, uncertain, and normative issues related to sustainability transformation while working in specific and diverse contexts and bringing individual professional experiences that shape their worldviews (Ejderyan et al., 2023). The interdisciplinary nature of transformation research means that there are different, and potentially contradictory, understandings of transformation pathways among members of research projects (Stirling, 2015). We recognize this diversity, but for scientists to be coherent in addressing sustainability issues in agri-food systems, there is a need to reach a mutual understanding of what constitutes transformation pathways according to the different

scientists and partners involved in transformation research projects.

The aim of this contribution is to provide insights into the process of making existing understandings explicit and to map and discuss common as well as diverging views held by scholars of agri-food system transformation. To address this aim, we locate primary research within the Horizon Europe project ENFASYS, which is highly inter- and transdisciplinary due to the complex, uncertain, and multifaceted nature of sustainability issues. The project brings together researchers collaborating to explore and enable a just and fair transition toward sustainable, productive, climate-neutral, biodiversity-friendly, and resilient agri-food systems (Ejderyan et al., 2023). We begin by reviewing conceptualizations of transformation pathways, starting from the position that understandings of transformation pathways toward sustainable farming systems are constructed according to individual ontological and epistemological positions. These influence analyses of current agri-food systems (AFS), the properties and desirability of newly configured AFS, and the design of innovative or transformative processes toward AFS. We then collect and collate the different ways in which individual AFS transformation researchers in the ENFASYS project conceptualize the phenomenon in their world and in their own words.

However, while transdisciplinary research is free in direction and methodology, it is bound by the need to agree on what is relevant to the field under study. Thus, a working definition—in this case, of what constitutes an agri-food system—is needed for both framing and interpreting the analysis. We define the agri-food system as the system encompassing all activities and actors related to the implementation of farming practices. This includes activities and actors operating outside farm boundaries that directly or indirectly influence the choice and implementation of farming practices. ENFASYS therefore adopts a perspective that goes beyond the farm level to consider and analyse the entire value chain and overarching governance. The analyses of the systems under consideration include perspectives on social relationships and the interplay of social and ecological components that determine the choice and change of farming practices (Ejderyan et al., 2023). Due to the boundaries of the ENFASYS project, systems are included in the analyses if they relate to farming practices on farms in Europe, though they are unrestricted in terms of scale or associated activities and actors.

Conceptualizations of Transformation Pathways

Although there appears to be a general consensus in the scientific literature that transformation pathways are the routes a society can take to achieve transformation, the terms "sustainability transformation" and "transition to sustainability" are not used consistently. Most scholars define transitions as limited, gradual, and less radical than transformations (Stirling, 2015). Transformation includes, for example, the redistribution of rights and responsibilities, a change in societal development visions (Pelling, 2011), and a strong emphasis on social movements, civil society, agency, and deliberation (Weber, 2020). We follow the common interpretation in the academic debate by using "transition" to refer to more (sectorally) limited and incremental processes in which innovations are introduced and advanced within a dominant system, while "transformation" refers to a more radical and contested process aimed at reshaping the underlying structure of a system.

Klerkx and Begemann (2020) established the analytical approach of mission-oriented agricultural innovation systems to help researchers reflect on the role of agricultural innovations in food system transformation and how they relate to transformative concepts and visions. They differentiate the what, why, who, where, and how of mission-oriented agricultural innovation systems.

The 'what' refers to the concepts on which the mission is built. These include low-input agriculture, optimizing resource use, agroecology, circularity, regenerative agriculture, sufficiency, distribution, commons, etc. Various types of solutions, encompassing both technological and social innovations, are sub-concepts that define more clearly how the mission can be achieved (e.g., precision farming, short supply chains, development of cooperatives). Hebinck (2018) emphasizes that where socio-ecological justice is central to transformative processes, the definition of the 'what' should emerge from a process involving individual and collective agency,

disagreement, and deliberation.

The 'who' relates to the actors driving the innovation. Feola (2015), Hebinck (2018), Weber et al. (2020), Anderson et al. (2021), and De Herde et al. (2022) each highlight the important role of inclusive participation for transformation and the adoption of innovative and sustainable practices in the agri-food sector, including the involvement of actors from different system levels, across industries, policy fields, and disciplines. Advocates of alternative food networks highlight the importance of (re)connecting consumers and producers (Goodman et al., 2012).

According to Feola (2015) and Weber et al. (2020), the consideration of alternative epistemologies, local knowledge, and cultural traditions are prerequisites for endogenous development that arises locally and is based on local knowledge, resources, and technical inputs.

The 'how' and 'where' refer to the number of possible pathways a transformation can take, their direction, speed, and scale. A transformation can arise from changes within the existing system or as the sum of several more radical innovations in niches (Geels, 2002) and can transcend national, sectoral, and technological boundaries. In the context of food system transformation, different authors highlight the need for cross-sectoral governance to achieve better alignment between rules, avoid conflicts, and overcome sectoral constraints to address the systemic nature of food system challenges (De Schutter et al., 2020; Weber et al., 2020; Bergeret and Lavorel, 2022; Edwards et al., 2024).

A transformation can result from a controlled process or a self-organized process without central control mechanisms. Strategies for managing change in agricultural systems include co-creation, support, simply doing, and forced change (Dentoni et al., 2017). Co-creation and support include, for example, knowledge sharing, capacity building, fostering learning networks, and collaboration (De Herde et al., 2022). Morrissey et al. (2014) emphasize the role of multi-stakeholder engagement processes for knowledge sharing and learning in transforming agri-food regimes, which facilitate the co-creation of knowledge, build stakeholder capacity, and enable stakeholders to make informed decisions and contribute to sustainable development. Special emphasis should be placed on close collaboration between research, teaching, and farmers, which Weber et al. (2020) identify as a prerequisite for promoting sustainable agricultural practices. Similarly, El Bilali (2018) and Weber et al. (2020) remind us of the importance of "simply doing", where farmers experiment with agroecology and alternative agricultural practices, thereby generating actionable knowledge and evidence that can contribute to the success of agroecological farming practices.

However, Anderson et al. (2021) emphasise that transformation can be influenced by individual actors or instruments to varying degrees and conclude that transformation can never be fully controlled. In this context, Feola (2015) distinguishes between two types of transformation pathways: deliberate transformation with predetermined outcomes and emergent transformation without predetermined outcomes.

Finally, the 'why' of mission-oriented agricultural innovation systems relates to the sources of innovations, such as reframing ongoing efforts or introducing changes with a truly novel focus. Bottom-up initiatives, for example, often bring a novel focus by redistributing power through the empowerment and self-organization of local communities (Feola, 2015; Patterson et al., 2017). Innovations can arise proactively or as a reaction to external pressures. They can result from supply-push processes related to agri-environmental policies or changing market demand, creating a favorable environment for sustainable food production (Kuokkanen et al., 2017; Linares et al., 2022). They can also result from demand-pull processes, involving changing consumer preferences and demand for sustainable and locally produced food (Klerkx and Begemann, 2020).

As this review demonstrates, the scientific literature on agri-food system transformation reveals both areas of consensus and significant divergence in how transformation pathways are conceptualized. While there is

general agreement about the need for inclusive participation and the consideration of multiple sustainability dimensions, perspectives differ on the roles of market mechanisms, the importance of local versus global approaches, and the balance between incremental and radical change. Klerkx and Begemann's framework of what, why, who, where, and how provides a useful analytical structure, but the literature suggests that researchers' disciplinary backgrounds and experiences may lead to different emphases and priorities within this structure. Our study addresses this gap by systematically examining how transformation researchers themselves conceptualize transformation pathways in agri-food systems, making explicit their convergent and divergent understandings through the elicitation of personal constructs. This approach allows us to move beyond general frameworks to explore the specific ways in which researchers make sense of transformation initiatives in their complexity and context-specificity.

Methodology

Gaining a common understanding within a specific group (in this case, project partners of a Horizon Europe project) of a particular phenomenon (in this case, transformation pathways to sustainable agri-food systems) is not the same as agreeing on an optimal or best-practice pathway. Rather, it involves collating the ways in which individuals think about the given phenomenon in their world. It is therefore important to identify and analyse personal and collective approaches to compare and differentiate these pathways (Bohunovsky et al., 2011). We do so by studying how 11 partners in the Horizon Europe project ENFASYS describe transformation initiatives and which factors are connected to their perception of the transformation potential of these initiatives.

The 11 project partners represent diverse disciplinary backgrounds and institutional contexts, which is important for understanding the range of perspectives on transformation pathways. They work at universities (4), other research institutions (6), and farmer associations (1) based in seven European countries (Belgium, France, Germany, Italy, Norway, Serbia, and Switzerland). Within the ENFASYS project, they hold different positions: work package lead (2), task lead (6), and case study coordination/data collection (10), with some respondents holding multiple roles. The disciplines in which they are trained and/or currently work include agronomy, environmental or agricultural engineering, agricultural economics, sociology, political science, interdisciplinary (including food system) research, and sustainable development. This diversity of backgrounds and roles provides a rich basis for exploring how transformation pathways are conceptualized across different disciplinary and institutional contexts.

We study how these project partners describe transformation initiatives and perceive their transformation potential by identifying the constructs they use to describe and understand 101 real-world case-study transformation initiatives from across Europe. These initiatives were familiar to the researchers, as they had recently completed a review of them as part of the ENFASYS project. In the review, the responding partners collected information about each initiative, including their emergence and goals; past experiences; the involved actors and their relationships; factors that led to or hindered their success; and lessons learned, with the aim of contextualizing the initiatives and providing insights into respective barriers, interventions, and transition pathways. The review methodology was guided by the Light Touch Review (LTR) approach (Fieldsend et al., 2020) applied in the Horizon 2020 project LIAISON.

The 101 transformation initiatives represent a diverse cross-section of efforts to change agri-food systems across Europe. They operate at various scales: local (approximately one-third), regional (one-third), and national (one-third), with 14 initiatives operating at the European multinational level. This multi-scalar approach allows us to examine how transformation is conceptualized across different spatial contexts. In the ENFASYS project, we understand transformation pathways as deliberately initiated pathways to stimulate change toward sustainable, productive, climate-neutral, biodiversity-friendly, and resilient farming systems.

The reviewed initiatives therefore include projects or institutions with activities that lead, or are intended to lead, to innovating or transforming farming practices toward greater sustainability. We consider pathways that involve incremental change within the dominant system and transformative niche-based innovations that might establish and transform the dominant system.

The initiatives vary in their aims and approaches. Approximately 37 initiatives focus on changing existing agricultural systems through, for example, the adoption of organic or biodynamic farming, regenerative agriculture, or circularity principles. A larger group (71 initiatives) aims to change specific agricultural management methods, including soil quality improvement, integrated pest management, water conservation, greenhouse gas reduction, and improving animal welfare. Twelve initiatives focus on changing agricultural products, while 17 work on structural changes such as establishing cooperatives or risk-sharing systems with consumers. Almost 40% (39) of initiatives aim to transform value chains by developing new labels, directly connecting producers and consumers, raising awareness, or engaging citizens.

The initiatives implement their goals through multiple approaches: 72 conduct practical advancement of sustainable farming practices, 33 focus on learning about innovation and transformation, 31 develop markets, 50 advocate for policy changes, and 16 engage citizens. This diversity allows us to examine how researchers conceptualize transformation across a wide range of contexts and approaches, rather than focusing on a single type of transformation pathway.

The initiatives were identified through a multi-stage process in which a long list of initiatives was drawn up for each country and then reduced to a short list of around 8–10 initiatives per country. This process was carried out by the project partners in the various countries in collaboration with the Light Touch Review team. The selection was guided by the following criteria: The initiatives impact farming practices (directly or indirectly) with the ambition to go beyond currently dominant farming practices and standards regarding climate, ecology, and social and/or animal welfare. Moreover, the initiatives are diverse in relation to their initiating actors, aims, functioning to fulfil the aims, geographical scale, age, and degree of success.

The 11 participating project partners were involved in the compilation and selection of the initiatives, conducted the interviews, reported the data, and assessed the initiatives' transformation potential. For this study, we analysed how the responding project partners describe the initiatives and how they perceive their transformation potential by identifying the constructs they use to describe and understand the initiatives. By including a large number of transformative initiatives—and therefore a wide variety of pathways—we could elicit the range of personal constructs used by the participating project partners to describe them. Collation and clustering of these constructs enabled the identification of commonalities and differences in project partners' understanding of the transformation potential of single initiatives and their perceptions of transformation pathways.

Personal Construct Theory

A methodology for eliciting such constructs is Personal Construct Theory (Kelly, 1955), which states that a person's understanding of objects they interact with is built from a collection of related similarity–difference dimensions, referred to as personal constructs. Furthermore, the theory postulates that we, as humans, reduce even complex phenomena, such as nature or justice, to manageable numbers of 'key' constructs: typically, around 10 (Jankowicz, 2004). The theory can be applied in research projects on human constructs (Whyte and Bytheway, 1996) and has been used for conceptual modeling across a very wide range of domains and topics (Gaines and Shaw, 2021). A common method to operationalize Personal Construct Theory is the Repertory Grid Technique (RGT), described by Jankowicz (2004), which systematically elicits and captures the unique, personal ways individuals perceive and differentiate elements within a particular phenomenon to provide thorough and structured insights that are both qualitative and quantifiable (Fransella et al., 2004). The Repertory Grid Technique has been used to identify and understand personal constructs and perceptions

of topics ranging from hotel brand development (Hu and Trivedi, 2020) to urban green spaces (Home et al., 2007) and has been applied in domains ranging from psychotherapy (Winter, 2003) to software engineering (Edwards et al., 2009).

Unlike other qualitative approaches, such as interviews or focus groups, RGT provides a structured yet flexible framework that allows for the systematic elicitation of tacit knowledge and implicit understandings that might not emerge through direct questioning. Compared to alternative techniques, such as laddering, which focus on hierarchical relationships between constructs when operationalising Personal Construct Theory, RGT allows a more holistic mapping of how individuals differentiate between elements (in this case, transformation initiatives). Furthermore, the production of data that can be analysed both qualitatively and quantitatively enables us to identify patterns of convergence and divergence across researchers while preserving the richness of individual perspectives. Based on these considerations, RGT was selected as the optimal method to address the goals of this study by eliciting the diverse personal constructs used by ENFASYS partners to understand and explain transformation pathways toward sustainable farming systems (SFS).

Method

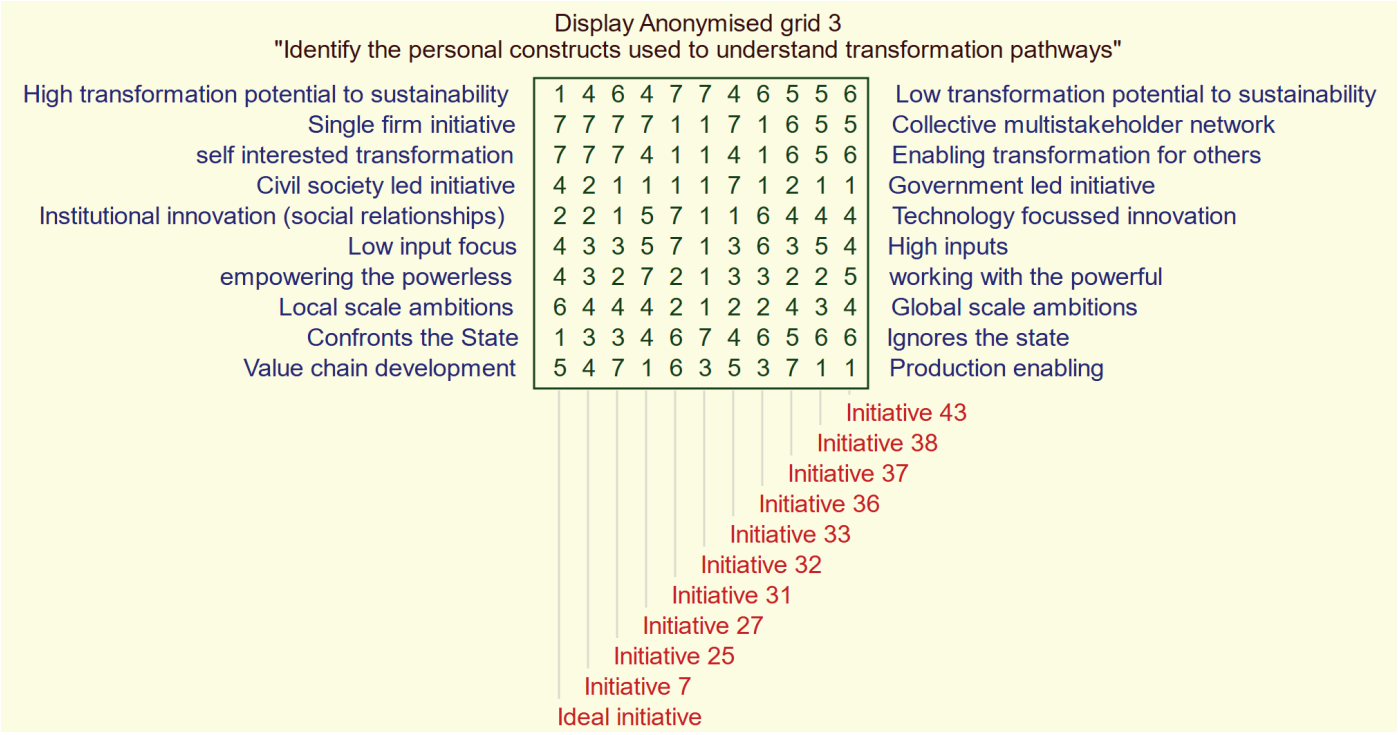
Specifically, 11 ENFASYS project partners were interviewed by FiBL researchers to identify the constructs they use to describe and understand the initiatives they had included in their case study reviews. For this reason, the respondents were the representatives of the ENFASYS partner institutions who had personally conducted the reviews, as they were deemed to have extensive knowledge about the characteristics of the initiatives they had reviewed. Researchers' familiarity with each initiative, particularly the initiatives' objectives, processes, outputs, outcomes, and impacts, enabled them to compare the initiatives by identifying their similarities and differences.

The interviews were conducted using online meeting software and were guided in the application of the RGT by the RepPlus tool (V 2.0), which provides "the capability to elicit, enter, edit, and analyze conceptual grid data, and to reflect back the underlying conceptual representations in graphic form" (Gaines and Shaw, 2021). Specifically, each respondent was asked to:

1. Rate the transformation potential of each of the initiatives for which they had conducted the LTR on a 7-point Likert scale.
2. Follow a triadic elicitation procedure to identify personal constructs, as described by Jankowicz (2004), in which randomly selected sets of three of the interviewed initiatives (elements) were presented in the RepPlus tool. This procedure was repeated until the partner was unable to nominate new constructs to differentiate between initiatives.
3. Rate each of the initiatives by the degree to which they comply with the elicited personal constructs, which had been formulated as a double-pole construct, using a 7-point Likert scale.

The ratings were then formatted into a grid—an anonymised example of which is shown in Figure 1.

Figure 1: Example Repertory Grid



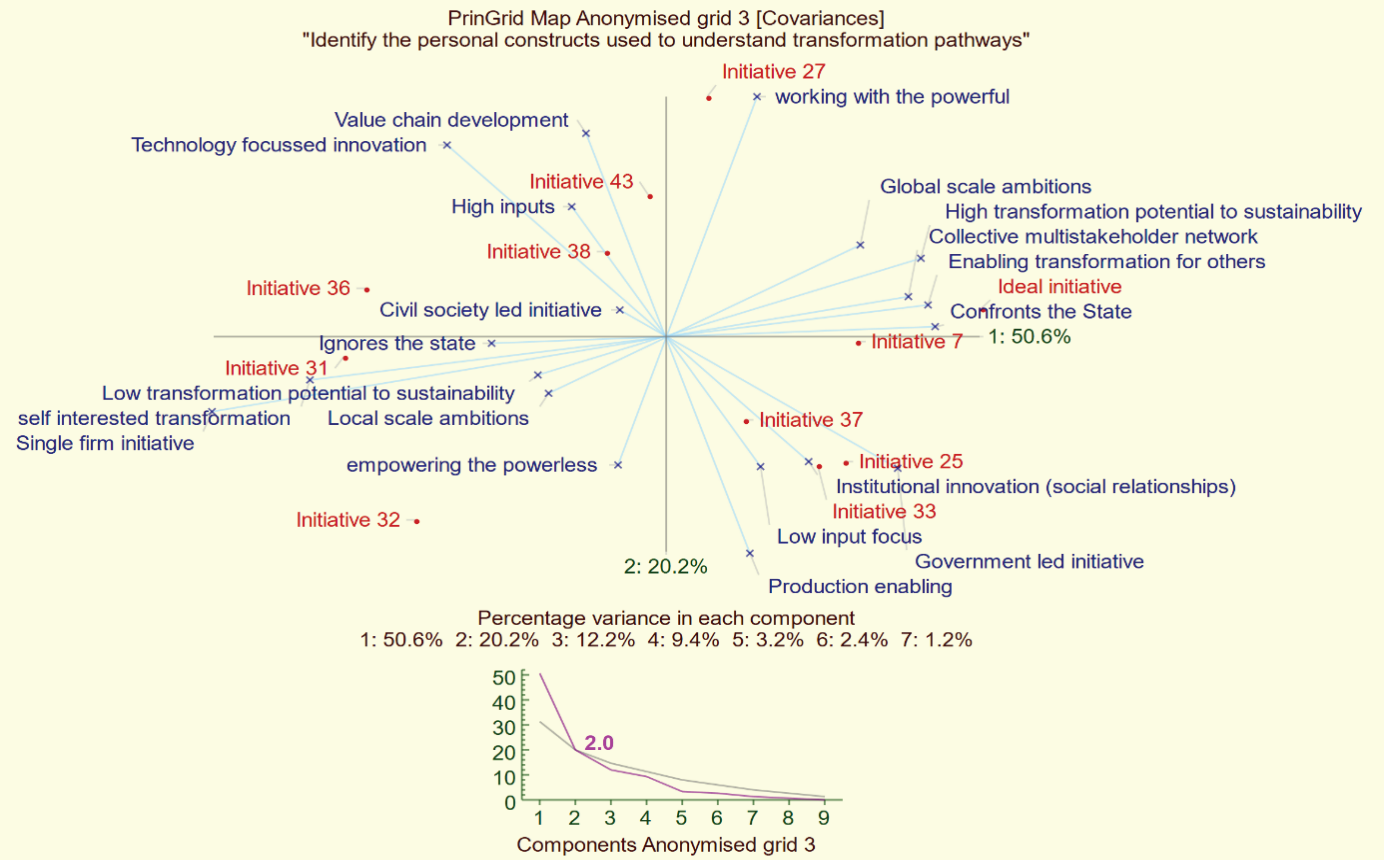
The rows represent the extremes of the constructs identified in the repertory grid procedure. The columns represent the initiatives that are the study elements. The numbers represent the rating of each initiative against each construct, on a scale of 1–7, with the left extreme coded as 1 and the right extreme coded as 7.

Analysis

Jankowicz's (2004) process provided a grid consisting of a comprehensive compilation of all the constructs used by a particular respondent to understand the phenomenon: in this case, transformation toward SFS. This follows the premise that the reviewed initiatives were selected based on maximum variety sampling and thus constitute a holistic perspective on all the distinct pathways toward SFS existing in the respective project areas. The individual grids were analyzed by means of a principal component analysis, which in every case explained more than 70% of the variance on the first two components alone, giving confidence in the comprehensiveness of the compilation of constructs. The principal components analysis results are depicted graphically in a principal component grid map of the first two components, which is also superimposed with the results of a multi-dimensional scaling analysis on the same axes. An example grid map is shown in Figure 2. This graphical depiction indicates the similarity between constructs while also showing the constructs that most closely correspond to the individual initiatives. The graphical depiction of each respondent's results was shown to them immediately following their interview to confirm that the constructs had been correctly understood by the researcher.

Although RGT is a powerful tool for identifying personal constructs for individuals, the outcomes are difficult to collate or analyse at the group level because they are inherently connected to specific examples of the units of study (Jankowicz, 2004): in this case, the case study initiatives. Honey (1979) provides a solution by suggesting the inclusion of a common and broad construct to serve as a reference point, so that distances of the constructs elicited by individuals from this common point can be calculated. The predefined common construct, to which the respondents' personal constructs could be related, was the "transformation potential (high or low)" of each initiative. In a subsequent process, the respondents' personal constructs were analysed in two steps:

Figure 2: Example Grid Map



A correlation coefficient for each construct was calculated using the method described by Honey (1979) to measure the relationship between the individual construct and the transformation potential of the studied initiatives. The correlation coefficient thereby quantifies the extent to which a construct correlates with the transformation potential of the initiative. The strength of correlation was evaluated following Mindrila and Balentyne's (2013) guideline that correlations with coefficient (r) < 0.3 are very weak; $0.3 \leq r < 0.5$ are weak; $0.5 \leq r < 0.7$ are moderate; and $r \geq 0.7$ are strong, although we added a further category of 'very strong' for correlations greater than 0.8.

We used a variation of Jankowicz's (2004) co-recategorization procedure to cluster the personal constructs into thematic groups, which enabled an evaluation of the similarity of each construct with the constructs elicited by the other respondents.

The result of this procedure is a table of the identified constructs, grouped thematically, so that each construct forming the thematic group is correlated with the transformation potential. This provides insight into the relative importance of each cluster in contributing to transformation potential.

Results

The RGT procedure revealed 103 personal constructs, which were grouped according to their content into 11 thematic clusters, shown in Table 1. We present findings focusing on the clusters with the highest convergence among the responding researchers, examining both where respondents agree on describing initiatives and where they diverge in connecting these descriptions to transformation potential.

Table 1: Numbers of Constructs at Different Levels of Correlation with Transformation Potential in Each Thematic Cluster

Thematic cluster	Number of constructs	Level of convergence	Correlation of constructs with transformation potential				
			>0.8	0.65-0.8	0.5-0.65	0.3-0.5	<0.3
Degree of stakeholder inclusion	19	High	16%	11%	5%	26%	42%
Degree of anchoring in farming	16	High	19%	6%	25%	13%	38%
Scope of ambitions	15	High	27%	20%	7%	33%	13%
Orientation to market/supply chain	14	Medium	0%	0%	7%	7%	86%
Degree of autonomy and self-determination	12	Medium	33%	8%	33%	8%	17%
Degree of research integration	7	Low	0%	29%	0%	14%	57%
Input focus	6	Low	0%	17%	17%	33%	33%
Clarity of aims	6	Low	0%	17%	17%	33%	33%
Funding	5	Low	0%	0%	20%	80%	0%
Planned longevity	3	Low	0%	33%	0%	0%	67%

The term 'convergence' refers to the frequency with which the respondents used constructs to describe transformation initiatives in the agri-food sector, as indicated by the number of factors that form the clusters. Clusters with many factors were considered to be highly convergent among the responding researchers in terms of their relevance for explaining transformation pathways. For example, the 'degree of stakeholder involvement' consists of constructs mentioned 19 times by the 11 respondents. In contrast, constructs related to 'planned longevity' were mentioned only three times, suggesting that at least eight of the researchers did not consider them important for explaining transformation pathways. By examining these patterns of convergence and divergence, we achieve our goal of mapping the shared and divergent views of transformation researchers and providing a more nuanced understanding of how transformation pathways are conceptualised in the field of food system transformation research.

However, this provides little insight into transformation potential. To address this, we examine the number of constructs in each cluster that are strongly correlated with transformation potential. The columns in Table 1 indicate groupings of constructs according to the strength of correlation, calculated using Honey's (1979) method, with the fixed term: "Transformation potential to sustainability." The numbers in the table indicate the percentage of constructs for each correlation grouping in each theme. In the case of 'orientation to market/supply chain', 12 constructs (out of 14) correlated very weakly, suggesting that the respondents agree that market/supply chain orientation is important for describing transformation initiatives but that this orientation says little about the transformation potential of the initiatives. Another example is the cluster 'degree of stakeholder inclusion', which contains five constructs that correlated strongly or very strongly with transformation potential but also eight constructs that correlated only very weakly. There is broad agreement among the respondents that the degree of stakeholder involvement is an important concept for describing transformation initiatives. At the same time, however, they disagree on whether strong stakeholder involvement always leads to greater transformation potential. Against this backdrop of understanding convergence and transformation potential, the results are explained in more detail below. We present the

clusters with medium and high convergence (those that include eight or more constructs), which include constructs that most respondents perceived to be important for describing transformation initiatives. We examine the individual constructs within the clusters for possible explanations of disagreement in relation to the clusters' correlation with transformation potential.

The thematic cluster labelled "degree of stakeholder inclusion", which contains 19 personal constructs (see Table 2), relates to the diversity of actors involved in the initiative, the level to which different actors are involved, the diversity of knowledge, and the extent to which deliberation takes place. While researchers consistently used stakeholder inclusion to describe initiatives (high convergence), they showed significant disagreement about whether this factor determines transformation potential. Some respondents perceive 'a high diversity of actors', 'the involvement of people who usually don't work together', and 'not only focusing on involving pioneers and/or open-minded people' to correlate strongly with transformation potential. One aspect of stakeholder involvement is the distribution of responsibility in terms of initiating and implementing the transformation. In this context, 'the distribution of responsibility among many actors in the value chain' correlates with transformation potential according to one respondent. On the other hand, 'the strong involvement of all actors of a regional food system' and/or 'the inclusion of people who are not interested in sustainability' is perceived by others as being correlated rather weakly with transformation potential.

In terms of diversity of knowledge, we see that one respondent perceives 'the inclusion of knowledge from a wide range of sources' to correlate strongly with transformation potential. 'Supporting diversity of knowledge' is also the construct used by another respondent to describe the initiatives' focus on very specialized knowledge correlating weakly with transformation potential. On the other hand, one respondent perceives a 'strong focus on deliberation' to be correlated weakly with transformation potential.

Table 2: Constructs in the Cluster 'Degree of Stakeholder Inclusion' and Their Level of Correlation with Transformation Potential

Correlation with transformation potential	Constructs mentioned by respondents (project partners)
>0.8	- Bringing knowledge from a wide range of sources - Strong focus on targeting a high diversity of actors - More responsibilities across many actors in the supply chain
0.65-0.8	- Collective multi-stakeholder network - Initiative is strong in gathering people who usually don't work together
0.5-0.65	- Actors are included in the process
0.3-0.5	- Strong involvement of all actors of a regional food system - Initiative manages well to gather all the actors that have interest in the issue - Institutional innovation (social relationships) - Inclusive of stakeholders - Very easy to keep up the energy among the participants
<0.3	- More harmonious - Small start-up (vs. Broad alliance) - Includes everyone - Including people who are not interested in sustainability - Strong focus on deliberation between actors within the initiative - Initiative is strongly focusing on involving pioneers, open minded people - Strong focus on peer to peer exchange of very specialized knowledge - Collective with low involvement from producers

The thematic cluster labelled "Scope of ambitions" relates to the extent to which an initiative aims for structural change (vs. adaptation of the current system), the extent to which it considers different aspects

of sustainability, and the geographic ambitions (see Table 3). There is a high level of convergence among respondents, with 16 constructs contained in this cluster, but the correlation with perceived transformation potential varies across the constructs.

The cluster contained seven constructs with strong or very strong correlation with transformation potential, with holistic (i.e., the desired change or transformation takes economic, environmental, and social factors into consideration) and disruptive (i.e., changes taking place at system level, including multiple sectors/products) initiatives being more transformative. Furthermore, constructs related to the scope of reach of the initiatives are perceived by some respondents to be important for transformation, including the aim to scale up or having the ambition to have an impact at a global scale. This is confirmed by constructs related to initiatives being based on pioneer work being perceived to correlate weakly with transformation potential. This perception, however, is not shared by all respondents, as shown by constructs such as 'broad reach' and 'high scope of application (many farms)' being associated with weak transformation potential.

Table 3: Constructs in the Cluster 'Scope of Ambitions' and Their Level of Correlation with Transformation Potential

Correlation with transformation potential	Constructs mentioned by respondents (project partners)
>0.8	- Truly aiming for change - Reconfiguration of current systems - More disruptive - Systematic approach with aim of upscaling
0.65-0.8	- High emphasis on incorporating all aspects of sustainability (combining economic, environmental, social and governmental aspects) - Strong focus on multiple sectors/products - Global scale ambitions
0.5-0.65	- Enabling transformation for others
0.3-0.5	- Highly based on pioneer work - Start-up transformation pathway - Broad reach (national level) - High scope of application (many farms) - Strong focus on the application in an urban agriculture context
<0.3	- Strong focus on implementing multi-functional landscape - Local scope of sales

The thematic cluster labelled "degree of anchoring in farming" contains constructs related to the extent to which the initiatives have strong links to farmers, focus on representing farmers' interests, enable farming, improve farmers' workload, and decrease pressure on farmers (see Table 4). There is a high level of convergence among respondents, with 15 constructs included in this cluster, but similarly to the thematic clusters labelled "degree of stakeholder involvement" and "scope of ambitions", the correlation of single constructs and transformation potential varies. Four constructs correlated strongly with transformation potential: 'emphasis on enabling farming (access to land, funding, knowledge, etc.)'; 'focus on compensating farmers for the risks taken when implementing sustainable farming practices'; 'aims at fairness towards farmers'; and 'initiative reaching a large number of farmers'. Although these constructs underline the importance of inclusion of farmers' voices in agri-food system transformation processes, several constructs only correlated weakly with transformation potential. For example, the two constructs related to the role of farmers in initiating the initiative correlate only weakly with transformation potential. Similarly, initiatives focusing on the agency of farmers and their sphere of influence are also perceived to be correlated weakly with transformation potential.

The responding researchers have varied perceptions of the constructs related to enabling sustainable farming (including aspects related to access to land, funding, compensation of risk, access to markets, knowledge transfer) in terms of their correlation with transformation potential.

Table 4: Constructs in the Cluster 'Degree of Anchoring in Farming' and Their Level of Correlation with Transformation Potential

Correlation with transformation potential	Constructs mentioned by respondents (project partners)
>0.8	- Strong emphasis on enabling farming (access to land, funding, knowledge, etc.) - Strong focus on compensating farmers for the risks taken when implementing sustainable farming practice - Aims at fairness towards farmers
0.65-0.8	- Initiative reaches a large number of farmers
0.5-0.65	- High focus on sharing resources and risks among different actors (related to farm capital/investments) - High emphasis on representing farmers interests towards retail - Strong links to farmers - Action at farm level
0.3-0.5	- Directly interact with farmers - Bottom up generated from a farmer
<0.3	- More farmer participants - Farmers being the most important actor in initiating the initiative - Strong focus on communicating to farmers what other farmers found to be successful farming practices - Farmers played a very important role in initiating the initiative - Strong focus on agency of farmers and their sphere of influence - Strong focus on enabling affordable access to land for sustainable farming practices

The thematic cluster labelled: "orientation to markets and supply chains" refers to the role of markets for the transformation initiatives, the importance of shortening supply chains, the distribution of power among market actors, building relationships with consumers, and establishing new value chains (see Table 5). There are 14 constructs in the thematic cluster, indicating its importance for describing agri-food system transformation initiatives. However, none of the constructs in the "orientation to markets and supply chains" cluster correlated strongly with transformation potential, suggesting that none of the respondents perceived aspects of market and supply chain orientation to be decisive for the transformation potential of agri-food transformation initiatives.

Table 5: Constructs in the Cluster 'Orientation to Markets and Supply Chain' and Their Level of Correlation with Transformation Potential

Correlation with transformation potential	Constructs mentioned by respondents (project partners)
>0.8	
0.65-0.8	
0.5-0.65	- Supply chain orientation
0.3-0.5	- Direct contact with consumers
<0.3	- Whole value chain (vs. Specific products) - Embedded in market that cares about sustainability - Fast reaction to market needs - No marketing aspect - Strong focus on creating of new value chains for short direct selling - Low power of retailers in price making (money that farmers receive) - High power of farmers in price making (money that farmers receive) - Value chain development - Perceive high value in advertising sustainability - Connection with producer community (rural vs. urban) - Set up own marketing channels - Narrow variety of products

The thematic cluster "degree of autonomy and self-determination" relates to the extent to which the initiatives can make a change by referring to autonomy in decision-making and action, and dependency on external conditions, such as legal requirements or governmental support (see Table 6). This cluster contains 12 constructs, so appears to be of medium importance for describing transformation initiatives. The degree of autonomy and self-determination is expressed by constructs about 'confrontation of the state', 'grassroots movements', 'following an overarching (and self-determined) vision', 'ability to make decisions they want', 'few restrictions', 'own funding' and/or 'low level of restrictions by funders'. The degree of autonomy and self-determination is also expressed by constructs related to 'the level of support from laws and regulations', 'government-led initiative', 'working with powerful actors' and/or 'being very institutionalised'. The constructs of this cluster showed the highest correlation with transformation potential, but there is some variation between the individual constructs. Among the constructs correlating strongly with transformation potential, we find mostly aspects related to a high degree of autonomy and self-determination ('no/small lock-ins due to preconditions', 'confronting the state', 'grassroots'). However, one respondent perceives 'legally binding and enforceable processes' to correlate strongly with transformation potential, while another perceives that a 'dependence on external factors' correlates with high transformation potential.

Table 6: Constructs in the Cluster 'Degree of Autonomy and Self-Determination' and Their Level of Correlation with Transformation Potential

Correlation with transformation potential	Constructs mentioned by project partners
>0.8	- No/small lock ins due to preconditions that need to be fulfilled to move forward - Legally binding process/enforceable - Confronts the State - Grass roots
0.65-0.8	- Success of initiative is strongly depending on external factors (e.g. market prices of inputs or consumer demand)
0.5-0.65	- Following an overarching vision (vs. Being heavily influenced by institutional requests) - High ability to make the sustainability decisions they want (e.g. no GMO) - Fully own resources (vs. Fully public funding) - Government led initiative
0.3-0.5	- Working with the powerful
<0.3	- Very institutionalized (controlled by high-level/mainstream institutions) - Low level of restrictions by funders

In addition to the clusters with a medium and high level of convergence among respondents, we also identified clusters that appear to be of less relevance for respondents to describe agri-food system transformation initiatives, including fewer than eight constructs. These are: "the degree of research integration", "the focus on reduction of agricultural inputs", "the clarity of aims", "source of funding", and "the initiatives' planned longevity".

Discussion

Below, we discuss the results by showing how they confirm or contrast findings from existing literature on the transformation of agri-food systems. We seek explanations for contrasts and discuss possible implications for research in this field.

In line with Morrissey et al. (2014), Feola (2015), Hebinck (2018), and De Herde et al. (2022), the respondents indicate a belief that stakeholder involvement is a key element in the transformation of agri-food systems. 'Degree of stakeholder inclusion' is the cluster with the most constructs, and the diversity of actors and knowledge are aspects associated with high transformation potential. However, the results also show that not all respondents necessarily associate aspects of stakeholder inclusion with high transformation potential. One striking finding is that, according to our study, the inclusion of 'everyone', including people who are not

interested in sustainability, does not correlate with transformation potential. This suggests that, according to some respondents, at least a certain common ground must already exist to initiate transformation. Nor is deliberation associated with high transformation potential by all respondents. The experience of food councils and similar direct democratic approaches shows that such deliberation processes are time-consuming and resource intensive. This poses important questions for researchers, managers, and activists seeking to support and accelerate agri-food systems transformation: to what extent, and under which circumstances, should stakeholder inclusion be integrated into processes of agri-food systems transformation? On the other hand, Stirling (2015) might ask how multiple voices and forces of agri-food systems transformation can coalesce toward a common vision without stakeholder inclusion.

There may also be a connection with the difficulty caused by initiatives involving a wide variety of actors having to develop a common vision. In the cluster labelled 'Clarity of aims', we have summarised constructs that also relate to the extent to which initiatives pursue specific objectives, address specific target groups, and/or are adapted to specific contexts. With six constructs, the convergence in this cluster is rather low. Intuitively, one would expect initiatives with clear goals and indicators to be more transformative, but only a few constructs were nominated in this category, and most of them correlated only weakly with transformative potential. Clear goals are important for an initiative to be effective, reach the right people, and adapt to specific contexts, but the results of our study raise the question of whether this expectation of deciding on clear and agreed goals is realistic for initiatives involving different actors with different backgrounds, values, and views.

It is also interesting that the respondents hardly describe the transformation initiatives in terms of the 'what', i.e., the concept or concepts that describe the sustainable agricultural practices to be promoted in more detail. Only six constructs were mentioned in this regard, and these all fall into the 'input focus' cluster, which refers to the efficient use of agricultural inputs. The finding that the concepts are not described in more detail is perhaps because, in terms of participatory transformation, the definition of the 'what' should ideally be the result of a process that involves all the stakeholders concerned (Hebinck et al., 2018). This finding poses the important question of whether transformative actions and interactions need to be planned (i.e., advancing toward predefined aims) or emergent (i.e., developing shared aims with the involved stakeholders). An alternative direction of future investigation could also be to examine under which circumstances transformative actions can be both planned and emergent.

Furthermore, the results show that, despite the important diversity of the actors involved, fairness toward farmers must be ensured. This is also reflected in the large number of constructs relating to the involvement of farmers and the direct link to agricultural reality, which we have summarized in the cluster 'Anchoring in farming'. The general attitude of respondents that farmers or agricultural reality must play a special role in enabling the transformation is in agreement with the results of Weber et al. (2020), but it is less clear exactly what this role might be. For example, we see a low correlation with transformation potential for farmer-initiated initiatives, which contradicts the principle of transdisciplinary processes, which suggests that affected stakeholders should play a central role in (research) projects and that these should be based on, and build upon, their needs (Hadorn, 2008). Constructs that refer to the direct involvement of farmers, their needs, their knowledge, and their cultural traditions, as emphasized by Feola (2015) and Wolfram (2016), do not have a strong correlation with transformation potential according to the respondents who mentioned them (e.g., 'emphasis on representing farmers interests', 'strong links to farmers', 'direct interaction with farmers', 'bottom up generated from farmer', 'focus on agency of farmers', etc.). The possibility of trying out and experimenting with sustainable farming methods, as emphasised, for example, by El Bilali (2018) and Weber et al. (2020) for transformation, was absent from the constructs used to describe the initiatives.

However, constructs were mentioned that relate to enabling sustainable agriculture, although here too there are some that correlate weakly with transformation potential. The constructs that correlate strongly have a focus on access to land, compensation for crop losses, and knowledge transfer. On the other hand, agricultural

policy instruments were absent from the constructs used by the respondents to describe the transformation initiatives, although Klerkx and Begemann (2020) and Linares et al. (2022) particularly emphasise the role of agricultural policy in promoting sustainable agricultural practices. Currently, and in the past, the transformation of food systems has been initiated mainly through agricultural policy instruments, with farmers being the main agents of change (Kuokkanen et al., 2017; Linares et al., 2022). The interviews confirm the focus on compensating farmers for the risks they take when implementing sustainable agricultural practices. Regarding the 'how' of this compensation and enabling sustainable agriculture, the results suggest that proximity to agricultural practice is important, but the degree of involvement of farmers does not positively influence the transformation potential. This point is particularly relevant to the political context: farmers constitute the backbone of European agri-food systems, yet researchers see them as actors with low levels of engagement in agri-food systems transformation. This raises the question of whether farmers have little interest in engaging in a transformation of their own industry or whether researchers are generalizing the example of relatively few 'non-transformative' farmers into a stereotype. An alternative interpretation is that individual farmers may lack agency in driving transformation of agri-food systems. In either case, it will be a challenge of future research to identify the transformative farmers and the visions they are developing, so that lessons can be learned about how to motivate engagement by farmers.

In addition to agricultural policy instruments, focusing on markets and supply chains is another approach to driving agri-food system transformation. The production of sustainable food does not depend solely on factors on the farm but also requires an environment that enables this production, and markets play a central role (Klerkx and Begemann, 2020; Liverpool-Tasie et al., 2020; Saviolidis et al., 2020). This focus was also emphasised by the respondents when describing the transformation initiatives. Interestingly, however, there is clear agreement among the respondents that the focus on markets and supply chains is not associated with high transformation potential. This may be related to a prevailing market logic that is not geared toward the provision of public goods and ecosystem services but rather toward profit maximisation. Respondents nominated constructs to address this deficit, including creating short value chains, direct relationships with consumers, and communicating the sustainability aspects of products, which are aspects that are part of the Alternative Food Networks approach (Goodman et al., 2012). However, few respondents appear to believe that such strategies are sufficient to drive change at the scale that is needed.

The respondents disagreed on how far-reaching the ambitions of individual initiatives should be and whether they should be designed to expand. This points to different transformation paths that exist in certain niches of the system in which the initiatives are located. Initiatives that attempt to change the system from within reach their limits when they are not compatible with the rules of the system. This is shown by constructs in the "autonomy and self-determination" cluster, which correlate strongly with the potential for transformation. The finding that the constructs in the "market and supply chain orientation" cluster do not correlate with high transformation potential suggests the need for political support, such as a change of the rules of the game, to overcome market-related obstacles (Linares et al., 2022). Constructs that relate to resistance to the existing system, on the other hand, are also perceived as very transformative.

These results can be interpreted against the background of the multi-level perspective (Geels, 2002): There are initiatives that seek change within the system (regime change), and there are initiatives that seek a radical break and establish a new niche (which could develop into a new regime of its own). A lack of autonomy and self-determination is primarily a problem for initiatives that seek change from within due to the prevailing rules of the system in which they find themselves. Niche initiatives, such as anti-state and/or grassroots initiatives, have a greater scope for change and a higher degree of autonomy and self-determination, but because they do not play by the rules of the prevailing regime, they have difficulty obtaining funding or generating sufficient market demand for their product.

The finding that both adaptive and disruptive constructs are perceived by the respondents as strongly

correlated with the transformation potential shows that there is no consensus among the respondents on which transition narratives are suitable for the transformation of the agri-food system. Alternatively, this result shows that the transition narratives depend on the local context and the given niche-regime constellation. It is also notable in this context that the respondents do not use any constructs to describe the initiatives that explain the 'why'. However, where transformation initiatives come from and what forces drive them are central to understanding and initiating transformation processes. This points to the need to consider and examine the emergence of transformation of agri-food systems and specific transformation initiatives against the backdrop of the prevailing niche-regime constellation in the local context.

Conclusions

A review of studies on food system transformation suggested that a constructivist approach is appropriate to investigate proposals for transformation pathways (Hebinck, 2018; Feola, 2015; Patterson et al., 2017), and Personal Construct Theory and the Repertory Grid Technique proved to be suitable tools for eliciting the researchers' personal constructs. To our knowledge, there are no studies that have examined the constructs of scientists from interdisciplinary agri-food research projects in relation to the constructs used to describe and make sense of transformation pathways. Using Honey's (1979) method, we were able to bring the individual constructs into a larger picture of constructs that were used to describe transformational pathways. Our findings provide a comprehensive account of the constructs used by transformation researchers to understand and evaluate transformation pathways. However, it is important to remember that the research is not intended to prescribe a distinct ontology and epistemology but rather to stimulate reflection on potentially diverging understandings of transformation pathways. A clear limitation of this study is that it was based on the understandings of 11 researchers in the context of transformation initiatives in European countries, so caution is advised when applying these results in different contexts. Despite these weaknesses, the robustness of the methodology and the selection of respondents produced a rich dataset that allows confidence in the interpretation that may be useful for researchers investigating similar phenomena in other contexts. By identifying areas where researchers' views converge and diverge, we have highlighted the common and contested aspects of transformation pathways, thereby fulfilling the main objective of this study.

According to Stirling (2015) and Scoones et al. (2015), sustainability pathways are influenced by contested values, multiple narratives of change, and the politics of knowledge. The aim of this study was not to create a blueprint for effective transformation pathways but rather to make explicit the constructs that researchers use to understand them. Such an understanding has the dual benefit of directing areas of future research into transformation pathways while also facilitating reflection on the reflexive way our understandings might influence our interpretations and implications of our further research work. In summary, the comprehensive examination of transformation initiatives and project partners' personal constructs delineated crucial elements for the transition toward sustainable agri-food systems.

Constructs strongly correlating with transformation potential were found in the thematic clusters "stakeholder inclusion", "anchoring in farming", "autonomy", and "change ambitions". However, each of these clusters also contained constructs that only correlated weakly. The differences in perceptions of the contribution of the various factors to transformation potential raise important questions about the nature of transformation itself, which warrant further investigation and highlight the complex, multifaceted nature of agri-food system transformation. Key areas for future investigation include:

1. The extent and the circumstances under which stakeholder participation in agri-food system transformation processes can be expanded, and how the diverse voices and forces driving agri-food system transformation can come together to form a shared vision without stakeholder participation.
2. The extent to which transformative actions and interactions need to be planned (i.e., advancing toward predefined aims) and/or emergent (i.e., developing shared aims with the involved stakeholders).

3. The extent to which farmers can actually support agri-food systems transformation, who transformative farmers are, and which transformative visions they are developing.
4. The extent to which the sustainability standards commonly used today provide sufficient information about the transformation potential of initiatives, as they are almost exclusively concerned with the assessment of environmental impacts and, to a lesser extent, economic and social issues. Questions of inclusion and networking, decision-making processes, the distribution of power, and the distribution of responsibility often receive insufficient attention. As a result, interactions in systems that lead to injustice between different population groups are commonly overlooked.

Recognition of the diverse ontological and epistemological backgrounds of these constructs facilitates reflection on potentially contrasting understandings, which has implications for the conclusions and recommendations of research into transformation pathways. By collating these findings through a clustering of constructs and comparison between the different respondents' assessments of transformation potential within each cluster, we have developed a shared understanding of which aspects are considered important to promote transformation.

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Localised experimentalist governance: A framework for understanding the political dimensions of Alternative Food Networks

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Abstract

There is widespread agreement on the need to radically transform food systems. Some scholars have argued that such transformations demand an engagement with 'the political': that is, with the competing understandings, values, and ambitions that mark society. However, it remains unclear how networks of actors govern processes in ways that make space for 'the political' without undermining collective action. In this paper, we explore the role of 'the political' in the internal governance of Alternative Food Networks (AFNs) by advancing a locally-adapted framework for experimentalist governance. Taking the case of Campi Aperti, an AFN in Bologna, Italy, we show how the internal governance structures of AFNs, when shaped by elements of a localised approach to experimentalist governance, can facilitate engagement with 'the political' by navigating power dynamics and strategic uncertainties that influence their capacity for transformative change. In turn, our framework and analysis make visible the political potential of Campi Aperti as facilitated through its internal governance. Our findings illustrate how governance innovations emerge predominantly inside the network but struggle to receive support from other actors, notably public policy actors like the Municipality and regional authority. In this way, we contribute to understanding the internal governance of AFNs and respond to calls for deeper inquiry into their political dimensions.

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Introduction

There is widespread agreement on the need to radically transform food systems (Webb et al. 2020). Transformation in this context is not only technological or economic—it implies shifts in social practices, values, and institutional arrangements, including infrastructures, policy models, and business frameworks (McAlpine et al. 2015; Duncan et al. 2022). These transformations are advanced by networks of actors, including producers, citizens, policymakers, and researchers who organise (i.e., govern) in ways that shape both their actions and their transformative potential (Duncan and Pascucci, 2017). Consequently, governance innovation becomes a central requirement for systemic transformation (Kimbell et al. 2020).

One space where such innovation occurs is at the municipal level, where alternative food networks (AFNs) actively experiment with practices aiming to transform food systems (Home & Nelson, 2015; Sage, 2014; Sonnino & Marsden, 2006). Empirical evidence (European Commission. Joint Research Centre. Institute for Prospective Technological Studies, 2013; Brandy, 2023) confirms that AFNs can bring needed innovations forward to support such transformations. However, their transformative potential is often constrained by a lack of alignment with local policymakers around ambitions and values or because their collective action becomes depoliticised (Moragues-Faus, 2017). This paper focuses on the political and depoliticising dimensions of transformation and argues that these can be understood by analysing the governance of AFNs.

One challenge is that the concepts of governance, transformation, and AFNs are contested. Some of the literature has critiqued their depoliticising tendencies, for example, by critiquing AFNs as consumer-driven or apolitical spaces (Bradley & Herrera, 2016; Guthman, 2008), governance as a managerial process that erases conflict (Swyngedouw, 2005; Wood & Flinders, 2014; Ansell et al., 2025), and transformation as a technocratic fix (Blythe et al., 2018). To address some of these critiques, we present a locally-adapted framework for experimentalist governance. Experimentalist governance has typically been applied to the study of international or national processes, such as the Water Framework Directive or the Montréal Protocol (Sabel & Zeitlin, 2012; De Búrca et al., 2014; Sabel et al., 2019). To date, however, experimentalist governance has been limited in its application at the local level or in grassroots contexts. In this paper, we argue that experimentalist governance—through its emphasis on local adaptation, inclusive participation, iterative goal-setting, and revision—can uncover the tensions, negotiations, and forms of contestation that animate the political within AFNs.

In what follows, we develop a locally-adapted experimentalist governance framework and apply it to the case of Campi Aperti, an AFN based in Bologna, Italy. Through this case, we show how experimentalist elements—such as recursive deliberation, the setting of provisional goals, and a commitment to diversity of views—can both enable and challenge political engagement. We analyse how these governance practices create spaces of contestation, negotiation, and horizontal power distribution while also encountering limits. We conclude by arguing that experimentalist governance, when locally adapted, can serve as an analytical tool for revealing the political in food system transformation—and for highlighting how grassroots actors articulate, navigate, and potentially transform uneven power relations.

Politics and the (de)political: a conceptual framework

According to Mouffe (2005, p. 9), politics refers to the "manifold practices of conventional politics": the ontic level. The political is then ontological and refers to the dimension of antagonism which is 'constitutive of human societies' (2005, p. 10). In this way, politics are the practices and institutions that govern societies in the context of conflict that emerges from the political. The differentiation between politics and the political allows for a distinction between a democratic condition in which the project of emancipation, through agonistic encounters of adversaries, is enabled (Mouffe, 2005; Rancière, 1992). Relatedly, depoliticisation refers to the processes that suppress or displace collective agency, contestation, and deliberation (Fawcett & Marsh, 2014).

This understanding of the political and depoliticisation grounds our analysis of how governance can either engage with or suppress contestation.

From our theoretical starting point, we understand that the political dimensions of AFNs, particularly concerning representation, contestation, and power, can be constrained by governance arrangements that fail to engage with the political (Mouffe, 2005). In turn, a failure to acknowledge the political dimensions of governance can restrict its transformative potential (Duncan and Claeys, 2018). This is because politicisation aims to open up pathways for counter-hegemonic possibilities (Moragues-Faus , 2017; Mouffe , 2005). Ignoring the political antagonisms inherent to human relations does not make them disappear. Instead, by making antagonisms visible and giving them an outlet, a radicalisation into violent, oppressive, and discriminatory forms of politics and increased confrontations over "non-negotiable moral values" may be prevented (Mouffe, 2002, p. 11).

Inspired by recent work that identifies the "political within collaborative governance" (Ansell et al., 2022; 2025), we argue that experimentalist governance, as a flexible and iterative mode of governance, offers a promising framework for making visible and analysing the political dynamics at play within AFNs.

From our theoretical perspective, the 'political' is not something to be avoided. Rather, it is a necessary dimension of transformation. Attempts to suppress disagreement and disruptive transformations in the name of consensus may weaken political practice by leaving dominant path-dependencies and hierarchies unchallenged (Mouffe, 2005; Marchart, 2018). Disagreement can be generative, especially when it leads actors to shift their role perceptions (Sørensen, 2014) or reconfigure their power relations (Rossi et al., 2019; Turner et al., 2020). Yet, how to govern such processes without undermining collective action remains unclear. We approach this dilemma by exploring the potential of experimentalist governance as a set of governance practices that can hold space for disagreement and deliberation.

Methods and Empirical Case

To address the research question, we adopt a case study methodology, which enables an in-depth analysis of complex social phenomena in their real-life contexts (Yin, 2009). Following Layder's (1993) theory-testing and theory-building model, the case was selected based on its theoretical relevance, using purposive-theoretical sampling (Silverman, 2018; Mason, 1996) to identify a case containing key features predictive of specific theoretical outcomes. The selected AFN, Campi Aperti, is a formal farmers' market association based in Bologna that has been active for over twenty years. It was chosen based on the following criteria: (1) self-identification as a farmers' market—relevant to Italy's cultural and political context (Aguglia, 2009; Galisai et al., 2009); (2) internal structures aligned with experimentalist governance; (3) political engagement with the Municipality of Bologna; and (4) involvement in activities extending beyond food sales.

Three methods were used to comprehensively analyse the experimental nature of AFNs and reflect on their transformative potential and political implications: questionnaire, interviews, and document analysis. A structured questionnaire, incorporating both closed and open-ended questions (Denscombe, 2010; Yin, 2009), was distributed to all 132 members of the Association in 2023. It explored members' views on decision-making, motivations, values, and the perceived impact of the Association on local food policy. Thirty-four members completed the questionnaire. Between June 2021 and November 2023, twenty semi-structured interviews (20–45 minutes each) were conducted with key stakeholders, including: Campi Aperti's key actors (president, coordinator, working group representatives); municipal actors (Bologna city councillors, neighbourhood presidents); and regional officials (Emilia Romagna's Directorate of Agriculture, Hunting, and Fishing). These interviews explored governance practices, political dynamics, and institutional perceptions of the Association, allowing for the emergence of context-specific insights. Questionnaire data is attributed to "respondent," and interview data is cited as "interviewee no. X." To enhance robustness, we triangulated interview and

questionnaire data with document analysis (Denscombe, 2010; Yin, 2009). A wide array of documents deemed relevant to the research question were reviewed, including: public records from Bologna and the Emilia Romagna region, research papers, content from Association websites, municipal meeting recordings, and internal communications—specifically, emails from the Campi Aperti mailing list spanning September 8, 2022, to September 8, 2023.

Case study description

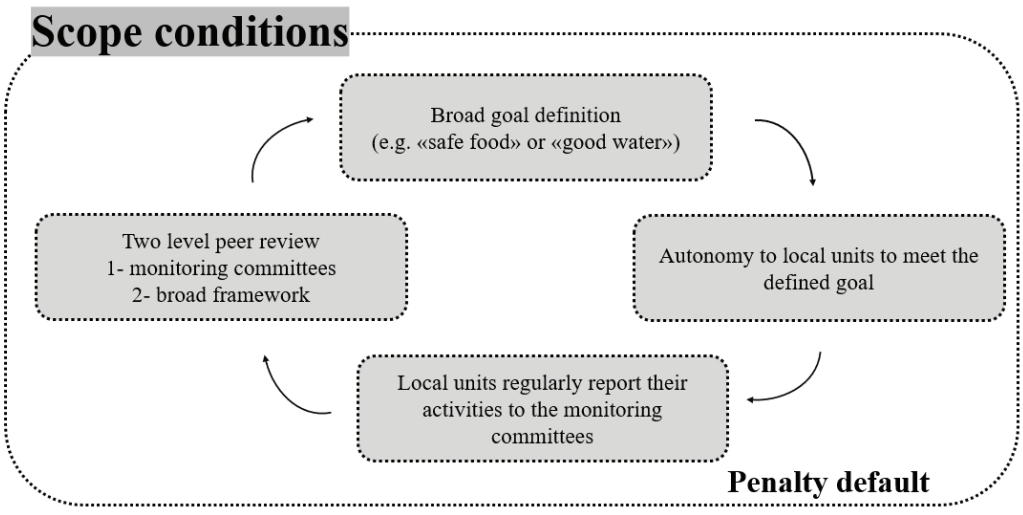
Campi Aperti is a farmers' and co-producers' association formally established in Bologna (Italy) in 2009, though its roots trace back to the late 1990s. At that time, a group of agronomists sought to support small-scale organic production outside speculative market dynamics, creating a network to connect farmers with consumers, who began to be referred to as 'co-producers'. This arrangement aimed to ensure fair pricing, determined by producers and consumers, and provide access to quality local food. The initial network comprised four farms and two university-based collectives, forming the '*Coordinamento per la Sovranità Alimentare*' (Coordination for Food Sovereignty). A crucial development occurred through collaboration with XM24, a historic social centre in Bologna, where the first version of the farmers' market took shape. In 2009, the group formalised into the Association Campi Aperti, enabling active engagement with the Municipality to secure market venues. The Association adopted a statute inspired by the Declaration of Nyéléni (Sélingué, 2007), reflecting its commitment to food sovereignty.

Campi Aperti operates through horizontal self-governance, with decisions made collectively in the general assembly and delegated to working groups when necessary. It defines itself as a "community fighting for food sovereignty" and currently organises eight weekly farmers' markets in Bologna and Casalecchio di Reno.

Making the political visible: local experimentalist governance in practice

Experimentalist governance is theorised as a form that emerges spontaneously—or pragmatically—in response to a shared and pressing problem when two scope conditions are met. The first condition is a polyarchic distribution of power. The second condition is strategic uncertainty. In its most complete form, experimentalist governance appears as a multi-level governance architecture with four main elements that function iteratively and cyclically, supported by a penalty default mechanism defined as "the threat to engage in traditional rule -making that is disruptive and produces dysfunctional results" (Sabel and Zeitlin, 2012, p.14) or as a "rule that everyone fears more than forms of mutual accommodation that no party might independently choose" (Sabel and Zeitlin, 2007, p.39). The features are: (1) a broad goal definition, (2) autonomy to local units, (3) constant reporting activity, and (4) peer review (see Figure 1).

Figure 1: A visual representation of experimentalist governance. Source: authors' elaboration



Building on literature on experimentalist governance and our empirical data, we put forward a locally-adapted experimentalist governance framework to support the identification and analysis of political practices in relation to the internal governance of AFNs.

Scope Conditions: polyarchic distribution of power and strategic uncertainty

When localising experimentalist governance, polyarchic distribution of power and strategic uncertainty (scope conditions) should be reframed based on the contextual specificities of local governance.

Polyarchic distribution of power

While a polyarchic power distribution is a key condition at the macro level, the local scale introduces more complex and sometimes contradictory configurations. On one hand, local authorities hold jurisdiction over specific domains (such as land use or public procurement). On the other hand, they also work under national or regional limitations, limiting their adequate room for manoeuvre. Nonetheless, local governance is often characterised by a plurality of actors—including food producers, civil servants, farmers' organisations, and citizens—who exercise influence through participation in councils, associations, and civic initiatives, resulting in a **de facto** polyarchy. However, this power distribution is uneven and dependent on the institutional openness of the local political environment, which must be carefully assessed in each case.

Experimentalist governance emerges where no single actor dominates (polyarchic distribution of power) and where strategic uncertainty prompts innovation. In the case of Campi Aperti, both conditions are present, although unevenly distributed across different relational scales.

Internally, Campi Aperti fosters a polyarchic structure through horizontal self-governance. It is structured around recursive deliberation and distributed autonomy. As such, polyarchy is practised through everyday mechanisms of inclusion, trust, and shared responsibility distributed across several "departments."

The General Assembly comprises producers and co-producers, all of whom participate equally. This flattens hierarchies and enables members to shape rules collaboratively, reinforcing the network's grassroots identity and political autonomy. While Campi Aperti is formally required to appoint a president and administrative office (as mandated by Italian law for registered associations), these roles do not hold decision-making power. Instead, all "departments" or groups, including the president, are ultimately accountable to the General Assembly. No actors prevail upon others. Campi Aperti's structure includes groups and actors, other than the general assembly, with specific responsibilities. The participatory guarantee system (explained below) group manages the monitoring activities and collects any reports. Bioregional assemblies are composed of producers within the same territory (e.g., producers from the mountains, or producers from drought-affected areas, etc.) that can discuss issues and proposals concerning their contexts. There are also assemblies for each market, where day-to-day practicalities and logistical problems are discussed and managed among the participants of that specific market. Permanent groups are created to manage particular issues or carry out projects. While the representation of Campi Aperti's structure may give the impression of compartmentalisation, every "department" operates as autonomous yet interconnected nodes within a horizontally organised network. Authority flows through deliberation and consensus rather than hierarchy. Externally, however, this power balance is disrupted. Campi Aperti's operations remain deeply contingent on the Municipality of Bologna, particularly in securing public space permits for market operations and recognition, and facilitating their activities. This institutional dependency introduces a hierarchical asymmetry, whereby municipal authorities hold discretionary control over the Association's visibility and continuity. Strategic uncertainty is thus entrenched in Campi Aperti's external relations, amplified by political cycles and administrative turnover. As one interviewee remarked, "Campi Aperti is a den of communists and anarchists who don't vote"—a quote that illustrates the cultural and ideological frictions that have historically strained the Association's legitimacy in institutional eyes.

Strategic uncertainty

The second condition is strategic uncertainty. While macro-level uncertainty, such as that driven by climate change, pandemics, or geopolitical instability, is widely acknowledged, AFNs face compounded and often more immediate forms of uncertainty. This includes opportunistic behaviours carried out by members of the networks as well as external uncertainties, shaped by asymmetric power relations with local political institutions. In our case, for instance, while the Municipality of Bologna has nominal responsibility for food policy, its fragmented administrative structure and political turnover often undermine continuity in support for AFNs. Moreover, resource limitations, bureaucratic inertia, or political alliances with corporate food actors can exacerbate grassroots initiatives' uncertainty. These dynamics reflect what De Búrca et al. (2014) describe as asymmetries of power and knowledge that prevent straightforward cooperation. Therefore, we reframe strategic uncertainty locally as emerging from complexity, power struggles, limited institutional trust, and the fragility of multi-actor collaboration. These issues are well-documented in AFN literature, highlighting how trust and informal cooperation often compensate for the absence of formal structures (Martindale, 2021; Thorsøe and Kjeldsen, 2016).

Given the more circumscribed range of action, we expect that the local architecture of experimentalist governance will look less formal, as actors participating in the process are more likely to be ordinary citizens with time and budget constraints. The autonomy of the local units becomes an implied characteristic rather than a formally granted one, as seen in more hierarchical cases like the Montréal Protocol. The focal point in this framework is the cooperation among the parties since values such as trust and community-building are shown to be central to the organisation of Alternative Food Networks (Martindale, 2021; Sage, 2003). For this reason, robust mechanisms to promote, stimulate, and facilitate cooperation must be conceived to promote, in particular, the creation of personal relationships, trust, mechanisms to enforce the common goal, and to stimulate the creation of networks outside the conventional system. Moreover, when mentioning the creation of novel networks, it is crucial to consider the interaction with institutional actors (such as the Municipality). In the traditional framework of experimentalist governance, the commonly shared problem is recognised by national or even international authorities. This means that authorities may provide autonomy to local actors and financial, institutional, political, or technical support. The same is not necessarily true for AFNs, which may arise for many reasons. What distinguishes local experimentalist governance is the extent to which institutional relationships shape the conditions for autonomy and iterative learning. Without formal mandates or top-down support, grassroots actors rely on navigating—and often renegotiating—access to space, legitimacy, and resources through fragile relationships with public institutions. These relationships can either hinder or enhance experimentation, making them a core variable in the success or failure of locally adapted governance models. With the scope conditions adapted, we move to the adaptation of the four key features: 1. broad goal definition; 2. autonomy to local units; 3. communication; and 4. peer review.

Broad goal definition: shared problem perception and political drive

The first feature of experimentalist governance relates to a collective defining a broad, shared problem that mobilises diverse actors toward collective experimentation. In Campi Aperti, this foundational problem is framed as a critique of the dominant food system and as a broader political struggle for autonomy, justice, and food sovereignty.

The Association defines itself as a "community fighting for food sovereignty," emphasising its collective ownership, ecological stewardship, and systemic resistance. This framing emerged from the unification of multiple grievances: dissatisfaction with agribusiness dominance, distrust toward institutions, and a desire to reassert community control over food production and distribution. Politically, Campi Aperti's roots are traceable to the 2001 Genoa G8 protests—a pivotal moment of anti-globalisation activism in Italy. These events shaped many of its founding members, viewing food system transformation as part of a wider counter-hegemonic project. Qualitative responses from the questionnaire and interviews confirm this political

orientation. When asked about their motivations to join Campi Aperti, respondents provided insights that can be clustered around three interrelated themes:

The need for alternative markets that protect small-scale producers from corporate dominance.

> *I understood almost immediately, as soon as I started farming, that a small producer cannot compete in the market without a support network and access to direct sales,* respondent 1 claimed.

Environmental stewardship, where farmers act as "guardians of the territory";

> *[I have decided to join Campi Aperti] mainly because you cannot buy and sell; you can only sell what you produce in your company. This means that farmers stay on the land and take care of it, guaranteed by a price list that protects them from the free market. The ethics of producing healthy food that nourishes and preserves soil, water, air for generations to come*, respondent 3 explained.

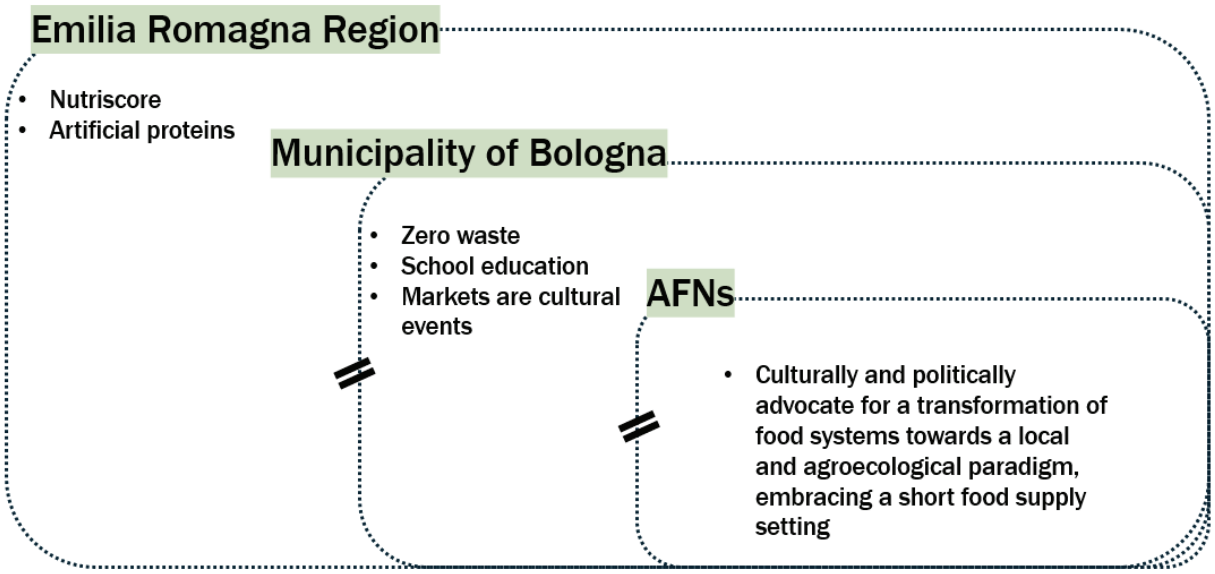
A desire for community-driven, politically aligned collective action. As confirmed by respondent 33, who noted:

> *[I decided to join Campi Aperti] Because it is a community of confrontation, struggle, debate, mutual support which has in its manifesto the values I believe in and which I think are worth fighting for.*

These shared motivations operate not as a fixed consensus but as a platform for pluralistic and contested engagement—precisely the terrain where 'the political' unfolds. Campi Aperti's members are united by a collective dissatisfaction with the status quo and a commitment to experimentation and collaboration.

However, this framing is not universally accepted. Both the Municipality of Bologna and the Emilia-Romagna Region articulate different priorities in their food-related policies. Campi Aperti's emphasis on autonomy, anti-capitalist critique, and trust-based markets often clashes with institutional concerns around legality, standardisation, and economic development. This lack of alignment limits formal recognition and support opportunities, yet it also sustains a necessary antagonism that energises internal political commitment.

Figure 3:** Representation **of the absence of alignment in priority areas among AFNs, Municipality, and Region. Source: authors' elaboration



As summarised in Figure 3, interviews with actors from the Municipality of Bologna and the Emilia Romagna region highlighted a misalignment of goals. While Campi Aperti (AFNs in the figure) advocates for transforming the food system, the Municipality is more focused on projects that receive funding and political approval, like the fight against food waste. The Emilia Romagna region is focused on even broader issues, such as artificial proteins. Moreover, the Municipality of Bologna and Emilia Romagna region still fail to consider these networks as political actors and still perceive them as cultural events, with a hint of romanticisation when asked to describe their perception of alternative food network initiatives.

Autonomy to local units: self-governance, innovation, and institutional navigation

The second key feature of experimentalist governance is granting actors the autonomy to pursue shared goals in context-specific ways. In Campi Aperti, autonomy is an operational reality embedded in their governance structure, interactions with institutions, and creation of parallel collaborations and networks.

Internally, Campi Aperti presents and exercises a robust form of self-governance. Membership requires adherence to a collectively developed **statuto**, which outlines production standards, organisational ethics, and decision-making norms. These rules are revisited and adapted, always after discussion in the general assembly, in response to emerging challenges. Importantly, autonomy is not understood as individual independence, but as a collective process of horizontal coordination. Members are free to innovate, as long as their actions align with the broader values of the Association.

Externally, Campi Aperti uses this autonomy to build networks outside formal institutional frameworks. Three prominent examples demonstrate this:

1. *Genuino Clandestino*, a national grassroots campaign that openly challenges EU and national regulations by promoting the unlicensed sale of processed products from production surplus. The network reframes "clandestine" production as legitimate political resistance, rooted in food sovereignty and anti-corporate critique.
2. *Emporio Camilla*, a self-managed cooperative grocery store that breaks from conventional retail by operating without profits, intermediaries, or formal hierarchies, and whose employees are volunteers.
3. *Mag6*, a solidarity finance cooperative with which Campi Aperti signed a mutual pact. This enables member producers to access capital outside the banking system through community guarantees, thereby avoiding debt that ties them to extractive financial structures.

Campi Aperti builds parallel infrastructures (financial, regulatory, and commercial) that reinforce its autonomy from dominant systems through these partnerships. These arrangements reduce reliance on state or market institutions and demonstrate viable alternatives rooted in solidarity, trust, and prefigurative politics.

Autonomy does not imply isolation. Members actively cooperate, both internally and externally. Data from the questionnaire show high levels of informal collaboration among members, particularly around production advice, input sharing, and event organisation. These collaborations function as distributed learning mechanisms, reinforcing the network's collective intelligence and adaptability. Nonetheless, autonomy is not limitless. Campi Aperti must still engage with institutions such as the Municipality of Bologna, particularly when accessing public spaces or influencing food policy. Tensions characterise these interactions. The Association's political stance often clashes with institutional norms, but strategic engagement remains essential. Members recognise that autonomy is negotiated, not given ("*Nothing is taken for granted here!*" interviewee 18 said vigorously) and that building credible alternatives requires confrontation and selective collaboration.

3&4- Reporting, peer review, and soft enforcement: trust as governance infrastructure

In experimentalist governance, continuous learning and mutual accountability are sustained through iterative

reporting and peer review. These mechanisms ensure that autonomy does not drift into fragmentation or opportunism. In Campi Aperti, these dynamics are embedded in everyday practices, structured around trust rather than official certifications, formal audits, or sanctions.

The general assembly functions as the primary site of reporting and decision-making. All major issues, from rule changes to conflict resolution, are discussed and decided collectively. However, Campi Aperti also supplements this structure with a highly active internal mailing list, which serves as a space for daily coordination, reflection, and dissemination of knowledge. Over a year, more than 1,200 messages were exchanged on topics ranging from regulatory updates to urgent logistical challenges and political mobilisations. This constant communication supports horizontal transparency and acts as a filter for discussing what arrives at the assembly level. According to an interviewee:

> *We are a community; therefore, sometimes there are arguments similar to the one you have with a partner," and "Deciding everything in an assembly is impossible. Once we had assemblies that lasted 15 hours. Now we are adopting tools to hold useful assemblies, using notions that are part of the consensus method, introducing sociocratic mechanisms, and ensuring everyone can talk. (interview no. 18)*

This model broadly empowers members: 82% of respondents say they feel part of the decision-making process, and 85% believe decisions are made collectively. Yet, this horizontalism is not without tension. Several members noted that assemblies can become chaotic or can exclude newer participants. Campi Aperti has gradually adopted sociocratic tools to improve facilitation and inclusivity, an example of reflexive governance in action.

Beyond procedural transparency, trust-based mechanisms monitor and enforce compliance with the Association's shared rules. The cornerstone is the Participatory Guarantee System (PGS)—an internal, peer-led evaluation and monitoring process that replaces formal organic certification. Producers applying to join Campi Aperti must undergo farm visits by peers (including co-producers) who assess practices based on criteria collectively established in the statute. Once inside, members remain accountable to this community through ongoing observation and mutual dialogue.

Importantly, PGS is not a symbolic element. Members who violate shared norms, such as failing to disclose product sourcing, engaging in exploitative labour, or resisting transparency, face the risk of exclusion. Over the years, Campi Aperti has expelled members when, even after repeated warnings, they failed to comply with the Association's statute. These decisions are grounded not in centralised authority but shared expectations and the reputational risks of violating community trust.

This soft enforcement model also mitigates external pressures. Campi Aperti's rejection of third-party organic certification is a practical and political choice. As interviewee 14 explains: "*I put my face in it because I declare it [my products to be organic] even without a certification. The farmers take responsibility for themselves.*" Responses from the questionnaire confirm that members see formal certifications as increasingly co-opted by agro-industry, detached from the real meaning of ecological farming, and financially inaccessible to small producers. PGS, by contrast, reclaims the authority to define "good" farming from below. This is crucial for the Association as "*relationships are the only thing we have that can defeat the neoliberal and capitalist system,*" explained interviewee 9.

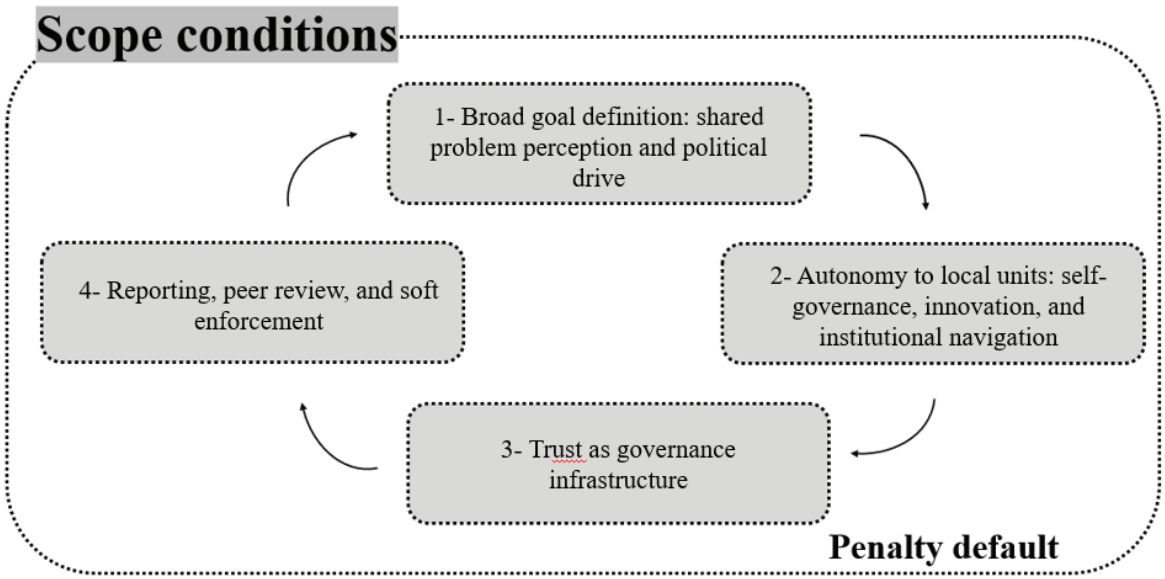
Penalty Default

The final aspect of experimentalist governance considers the penalty default. In the case of a local framework, the threat of engaging in traditional rule-making may not be suited to the local context, particularly given that AFNs are often characterised in the literature as governing themselves around relations of trust and transparency (Martindale, 2021; Thorsøe and Kjeldsen, 2016). For this reason, we argue that reputational loss or exclusion from trust-based networks functions as an informal yet effective penalty default at the local level.

In Campi Aperti, trust is the central value that holds the network together and fosters cooperation. It is at the basis of the Association's internal guarantee and monitoring mechanism, known as the Participatory Guarantee System (PGS). As interviewee no. 4 (referent of the PGS group) explained, members do not believe that third-party organic certifications can meaningfully bridge the gap between producers and consumers, particularly in local contexts. Instead, trust, built through direct relationships with fellow producers and co-producers, is a more legitimate and effective assurance. This trust-based approach facilitates monitoring, community-building, and collective learning. Members regularly exchange production advice, share inputs, and generate knowledge through informal interaction. Moreover, trust enables members to act politically beyond the confines of the Association—organising or participating in events and initiatives while maintaining transparency through internal reporting (e.g., the Association's mailing list). However, trust is not unconditional. Campi Aperti formalises accountability through its Participatory Guarantee System, which is envisioned in the Association's statute. This peer-based mechanism specifies the conditions for entry, continued membership, and potential exclusion. Members are expected to comply with collectively defined standards. Repeated violations, such as withholding information, breaking production rules, or refusing dialogue, can lead to expulsion. In this way, trust is both an enabler of cooperation and a disciplinary force. It replaces external enforcement with internal accountability, reinforcing the Association's political autonomy while maintaining cohesion through soft but effective sanctioning mechanisms.

Based on the above, the locally-adapted framework for experimentalist governance can be summarised as Figure 2.

Figure 2: A visual representation of local experimentalist governance. Source: authors' elaboration



Discussion

Our discussion is organised around two key insights: The relevance of the locally-adapted framework to an analysis of Campi Aperti's internal governance and to AFNs more broadly; and the political potential of a locally-adapted experimentalist governance approach.

Experimentalist nature of AFN governance and the relevance of the framework approach beyond Campi Aperti

Our analysis shows that the internal governance of Campi Aperti resonates with an experimentalist framework, particularly through recursive internal revision of rules throughout the organisation's history. Existing rules

were adapted, or new ones were created, in response to emerging challenges or when previous rules proved ineffective. Rules, codified in a statute subject to continual review, draw the line between what is allowed and what determines elements for expulsion. The shared definition of these rules creates a self-governed community in which trust is a fundamental building block and all members are allowed to actively engage in activities and collaborations to reinforce the goal of the Association.

Campi Aperti actively engages in the transformation of the current food system in two directions: first, by participating in political advocacy and engaging local institutions; second, by creating autonomous networks (such as **Genuino Clandestino**) that reinforce its practices and offer 'safe spaces' where farmers can keep carrying out their activities even without the support of the Municipality.

Analysing Campi Aperti through the lens of experimentalist governance sheds light on their goal, their internal power dynamics, the networks created, how decisions are made, how conflicts are addressed, how internal rules are reviewed, and the actors with which they collaborate. Broadly speaking, by analysing these elements, it was possible to capture the political nature of an alternative food network and its innovations and obstacles.

We note that these innovations described above are not unique to Campi Aperti but are also identified in broader literature around AFNs as summarised in Table 2. This points to the transferability of the framework beyond this single case. Moreover, it allows for an understanding of the political dimensions of these realities. This is important because AFNs are not merely social, economic, or environmental entities but inherently political. In the case of Campi Aperti, this is immediately noticeable from their organisational chart, which challenges the conventional hierarchical model by adopting a horizontal structure that revolves around a general assembly in which decisions are made using a sociocracy model.

Governance structures within AFNs have internal influence (defining who gets to participate, who benefits, and how decisions are made) and external (with which actors interact with, what innovations are transposed by other actors, and their relations to institutional actors), revealing underlying political dynamics. Our findings show that the experimentalist governance framework provides a critical lens through which the interplay of power, policy, and participation can be examined and thus helps to address a critique advanced against AFNs. This refers in particular to the current debate around the true alternativeness of AFNs, and their role in the transformation of the current food system (Watts et al, 2005; Treagar, 2011) and the depoliticisation tendencies of AFNs (Swyngedouw, 2009). We argue that it is difficult to grasp their transformative potential and innovations without a deeper understanding of their governance.

Political potential of an experimentalist approach

Our findings show that a locally-adapted experimentalist approach to governance makes space for the political to the extent that it allows people to explore and experiment with novel ways of creating consent, managing power relationships, defining internal rules, building communities, managing conflicts, and, consequently, to express divergent opinions. Campi Aperti demonstrates that such governance can generate transformative practices by making power visible and contestable. By politicising governance processes, Campi Aperti fosters more equitable and inclusive participation.

Furthermore, its governance model reflects ethical and ideological commitments (such as ecological sustainability, social justice, and food sovereignty) that frequently oppose dominant food system values. These commitments are enacted through governance innovations that challenge conventional hierarchies and reconfigure relationships between producers, consumers, and institutions. Trust, mutual support, and political values (DuPuis & Goodman, 2005) become organising principles here. Swyngedouw (2009: 603) asserts, 'political struggles are central in shaping alternative or different trajectories of socio-metabolic change.' In turn, as we have shown, Campi Aperti effectively generates political struggles that translate into tangible actions, such as the creation of novel farmers' market regulations.

Through these governance innovations, Campi Aperti addresses internal disparities and actively participates in broader political struggles, advocating for systemic change and redefining the principles and practices of food governance. This internal politicisation is essential for the emergence of transformative practices that can inspire and inform larger shifts within the global food system, by continually negotiating and reshaping their governance structures (central to the iterative phase of experimentalist governance). Our analysis shows how Campi Aperti's political nature is facilitated by adopting practices aligned with experimentalist governance. Table 1 highlights the theoretical alignment between local experimentalist governance and the political. It summarises how the core features of experimentalist governance, such as recursive learning, distributed authority, and penalty defaults, are operationalised within Campi Aperti and intersect with political values such as contestation, inclusivity, and autonomy. This alignment illustrates that when grounded locally, experimentalist governance can serve not just as a mode of coordination but as a space of political agency and transformation.

Table 1: Elements of local experimentalist governance linked to the political. Source: authors' elaboration

Elements of Local Experimentalist Governance	Associated political dynamics
Plurality of local actors, each holding partial and overlapping authority.	Contestation over legitimacy and influence; negotiation between institutional and informal forms of authority.
Uncertainty due to institutional inertia, power asymmetries, and resource constraints, not just the complexity of the issue itself	Struggles over knowledge and agenda-setting; uncertainty creates room for experimentation and conflict.
Framing problems like "broken food systems" or "food justice" in locally resonant ways.	Conflict over problem framing and metrics; different actors embed global issues into divergent local narratives.
Informal actors (e.g., cooperatives, food activists) take initiative without formal delegation.	Emergence of grassroots agency; challenges to institutional monopoly over solutions and scaling.
Knowledge-sharing through networks, assemblies, and informal dialogue—not formal audit systems.	Power in visibility; information disclosure becomes a terrain for recognition and legitimation.
Continuous renegotiation of strategies, roles, and goals based on feedback and trust.	Political learning and identity shifts; iterative reconfiguration of actor roles and power relations.
Risk of reputational loss or exclusion from trust-based network functions as informal enforcement.	Soft power enforcement; reputational mechanisms discipline behaviour through relational accountability.

As our findings show, the political engagement of Campi Aperti extends beyond mere policy advocacy: it involves a fundamental rethinking of how food systems should be governed. For example, Campi Aperti seeks to democratise food governance by adopting a sociocratic decision-making model and refusing the creation of vertical power relationships as much as possible. This democratisation effort is political to the extent that it challenges traditional power dynamics and advocates for a redistribution of power within the food system and a rediscovery of the role of the farmer.

However, our analysis also shows that Campi Aperti is against the conventional food system. As our findings revealed, the set of novel practices, informed by innovations in governance, frequently conflict with the dominant systems currently in place, creating friction between Campi Aperti and traditional institutional frameworks. This prevents the widespread adoption of innovative practices carried out by Campi Aperti. In particular, the goals of Campi Aperti did not align with the goals and topics of the Municipality and the Emilia Romagna region (see Figure 3). In this way, we found the framework helpful in uncovering mismatches in values and priorities and understanding where bottlenecks originate.

Moreover, what emerged from our analysis is the absence of the iterative cycle envisioned by experimentalist governance. Despite expressing interest in food system transformation, the Municipality of Bologna continues to rely on top-down governance, struggling to connect with horizontal organisations like Campi Aperti.

While municipalities and regional governments recognise the value of AFNs in promoting community resilience and sustainability(Sonnino & Marsden, 2006), they often fail to integrate them into policy frameworks still shaped by industrial food logics that have historically favoured conventional agribusiness models. Yet, when it comes to implementation, conflict arises. Campi Aperti's practices are perceived as too radical or disruptive, requiring changes not only in production models but also in decision-making cultures, consensus-building, and long-term political vision. According to Feindt (2020, pp. 511–512), policy development involves sunk investments. In turn, 'reducing or terminating the policy is more difficult than expanding it'. This resonates with the apparent inertia of the Municipality, which is still promoting the creation of new superstores. Structural policy change might require action at the regional level. However, when heard, the Region demonstrated its lack of perception of AFNs, as it remains inaccessible to bottom-up initiatives like Campi Aperti. For example, to participate in regional discussions, it is necessary to be an association or a trade union with at least 2,500 members, which is quite unrealistic for bottom-up initiatives.

From our analysis, two primary barriers emerge. The first is the absence of awareness from institutional actors about AFNs. In particular, the Municipality of Bologna still perceives Campi Aperti as a cultural initiative, not a political actor, and demonstrates timidity about its initiatives. The Emilia Romagna region does not perceive Campi Aperti; moreover, it focuses more on macro topics such as Nutri-Score and artificial proteins. The second is the absence of polyarchic distribution of power: Campi Aperti may practise horizontal governance, but the broader system it engages with remains hierarchical.

Given this, our analysis reveals that governance innovations flourish within Campi Aperti but lack external uptake and recognition. AFNs often encounter tensions with local municipalities as they navigate the complex interplay between grassroots initiatives and more formalised governance structures. In the case of this study, the clash between the flexibility inherent in Campi Aperti and the rigidity of municipal regulations hinders innovation and limits the growth of this network. Our framework helps to identify precisely where these tensions lie—highlighting how grassroots governance may enable internal transformation while still being constrained by institutional path-dependencies. As a final point, we want to be explicit that just because an organisation, or a network, adopts an experimentalist approach, it does not mean it will engage with the political. Instead, we argue that adopting an experimentalist approach creates space for political practice.

Conclusion

In this paper, we have analysed the political dimension of AFNs through the lens of experimentalist governance by studying a farmers' market association in the city of Bologna to better understand the network's internal governance and its transformative potential. Our findings suggest that without politicised governance, the stances and set of innovations carried out by AFNs would hold less transformative potential.

We have demonstrated how an experimentalist governance setting can benefit institutional actors because, as Bos & Brown (2012) envisioned, experimentation is a crucial instrument to support the transition to sustainability and the development of new knowledge. We conclude that by using an experimentalist governance approach, it is possible to advance the understanding of the governance of AFNs and their political dimension while capturing tensions and alignment with other actors. We encourage the further development and application of the locally-adapted framework for experimentalist governance in at least two ways. First, in the analysis of the internal governance of different AFNs initiatives. This can contribute to debates around alterity and the socio-political dimension of AFNs and the understanding of their transformative potential, allowing for the theorisation of different categories of AFNs based on their 'degree' of transformative potential instead of their organisational structure. Second, is to comparative analysis among AFNs in other contexts, allowing for a better understanding of the drivers and the local conditions that push towards the emergence of these initiatives and how they embed political values and actions.

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Combining political ecology and pragmatist sociology to repoliticise agri-food systems' transformations at the territorial scale

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Abstract

Recent crises (especially Covid-19 and the Russia-Ukraine war) have led to an increased framing of agrifood systems transformations through the lens of food supply at different scales (global, national, territorial), sometimes justifying a neo-productivist perspective, often at the expense of environmental issues and social justice. In turn, this has produced a broader depoliticisation of food systems transformations despite an institutional politicisation, i.e., an increased integration in policy narratives, often with limited real effects. We suggest that pragmatist sociology and political ecology might offer fruitful insights for addressing food systems transformations in a repoliticised way. These two literatures demonstrate how people identify problems affecting agri-food systems and collectively work to find solutions, while also recognising the plurality of understandings of transition pathways and highlighting the mechanisms through which some actors and worldviews are neglected when defining possible paths of transformation. Inspired by these literatures, we have established three key guiding questions dealing with the processes of defining food systems' transformations as a shared and collective problem, the analysis of the reconfigurations of power relations, and the recognition of the diversity of visions of the food system. These guiding questions emerged and were tested through our involvement in three territorial case studies in France and Brazil. They appear useful not only for the analysis of de/repoliticisation processes, primarily because they reveal the contrasted effects of the increasing institutionalisation and legitimisation of agrifood transitions, but also for developing a transformative approach aimed at repoliticising this issue.

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Introduction

Urgent transformations in agrifood systems are unanimously called for: even if some actors consider that some aspects of the global food system are positive (for example, because they allow affordable food prices and favour customer convenience), few would consider it virtuous in either ecological or social terms. However, this apparent consensus in policy and academic worlds tends to hide the multiple conceptions, imaginaries, and values linked to these transformations. Indeed, we can observe a growing struggle over the last two decades for the development and imposition of a "right" approach, one that would allow tackling in an all-encompassing way the complexity of these food systems to make them more sustainable, resilient, and inclusive (Ericksen, 2008; Béné et al., 2019; Juri, 2024).

Many of these approaches focus on questions of food supply and favour quantitative aspects (fluxes, inputs, outputs, impacts, etc.) as well as prospective and modelling approaches, as a result of the enduring framing of food issues by food security at the international scale (Fouilleux et al., 2017; Jarosz, 2011), as well as the effects of recent crises that affect these food systems just as they affect our societies as a whole (e.g., Covid-19, the Russia-Ukraine war, climate change, biodiversity erosion). This often comes at the expense of social and ecological dimensions, as well as more qualitative perspectives, which would allow for an understanding of the mechanisms that prevent or favour the much-needed transformations, especially the power relations that impact the definition of the trajectories of change. Furthermore, this often runs the risk of depoliticising the issue. For example, the field of sustainability transition studies, an epistemic community that primarily addresses mechanisms of change in production-consumption systems and influences academic and policy debates at least in Europe (Hinrichs, 2014), has often been criticised for neglecting a micro-sociological understanding of interactions and processes and for overlooking power relations, thus depoliticising the issue of sustainability transitions (Shove and Walker, 2007). This has given way to rich and lasting debates in this community and beyond (Avelino and Wittmayer, 2016; Bui et al., 2016; Haxeltine et al., 2017; Rossi et al., 2019), and led many authors today to reject the notion of transition as being intrinsically teleological and stuck within the framework of established structures, favouring instead the notion of transformation as more adequate to repoliticise sustainability in general and more specifically agrifood issues (Anderson et al., 2019; Pelenc et al., 2019; Stirling, 2011).

The academic interest in these processes of de/repoliticisation of food systems transformations is far from new and was amply discussed in the early 2000s along with the debates over food localism, with the argument that with local food networks, politicising food might lead to depoliticising the local and overlooking the social inequalities that can occur locally (DuPuis and Goodman, 2005; Feagan, 2007; Allen and Wilson, 2008). However, alternative food networks were also pioneers in exploring how people could participate in defining and conceptualising their local food system and in concretely experimenting with the notion of food democracy, thus strongly repoliticising food issues at their scale (Hassanein, 2003). In this perspective, beyond the participation of citizens in the governance of the food system, food democracy deals with the ways producers and consumers may be involved in the decisions regarding the transformation of the food system and puts at the forefront the fundamental rights to food, land, and water.

In the recent period, an increasing literature has analysed depoliticisation processes generated by multi-stakeholderism in food governance (Duncan and Claeys, 2018; McKeon, 2017; Moragues-Faus and Battersby, 2021; Swyngedouw, 2021). Indeed, multi-stakeholder processes, set up to bring diverse perspectives together to inform and improve policies, often lead to a reinforcement of incumbent actors rather than empower more alternative and marginal ones, through a "canalisation" of social critics (Fouilleux and Jobert, 2017). Moreover, the "responsibility turn" in agrifood governance, which leads to the current blooming of accountability mechanisms (Arnold et al., 2022; Brunori et al., 2019), supports, sometimes, value-oriented evaluation criteria more focused on products than on processes and power relations, which also tends to reinforce depoliticisation processes. Lastly, echoing the classical distinction between politics and policies, depoliticisation processes can

be addressed through the analysis of debates and controversies over competing agrifood narratives and models and contested transitions (Marsden, 2013; Rivera-Ferre, 2018) of agenda setting, policy making, and regulation processes (Fouilleux and Michel, 2020; Pahun and Fouilleux, 2022) and of the instrumentation of public action (Lascoumes and Le Galès, 2004; Halpern, Lascoumes and Le Galès, 2014).
In continuity with these debates that mainly took place in geographical and political sciences, and relying on pragmatist sociology and political ecology insights, we propose to address the processes of de/repoliticisation of agrifood transitions through three key questions: how food systems' transformations are defined as a shared and collective problem; how reconfigurations of power relations are tackled; and how the diversity of visions of the food system are taken into account.

In the following section, we will develop this analytical grid. We will then apply it to three territorial case studies in France and Brazil, where we have studied the trajectories of territorial agrifood systems' transformations and selected projects aimed at supporting these transformations. Finally, we will discuss how applying these guiding questions offers fruitful insights for understanding depoliticisation processes and supporting a repoliticisation of food systems' transformations, both in analytical and transdisciplinary transformative perspectives.

An analytical grid inspired by pragmatist sociology and political ecology

Within pragmatist sociology, inspired by the work of J. Dewey and his notion of "collective inquiry" (Dewey, 1927) and the constructivist approach to public problems (Gusfield, 1997) several authors have addressed politicisation processes through the analysis of the processes of construction of public problems. In this perspective, mobilisation processes lead to the construction of a "public" around a shared issue as a collective problem and to the elaboration of a shared vision that supports the elaboration of solutions to this problem (Cefaï et al., 2019) Based on a set of critical operations designed to define the causes of the experienced problem through collective production of knowledge, stakeholders join forces and cooperate to propose alternative paths of action. Along its "political career," a collective problem progressively becomes a public problem, which can later be tackled by State action (law, public policies, public action) — or not. This pragmatist approach has been deployed around social, health, or environmental problems, where people directly affected recognise themselves as the public bearer of a common problem (Cefaï et al., 2019). It remains rarely applied to agri-food issues (Tuscano, 2022) Yet, compared to other environmental subjects, agricultural and food issues have the particularity of being both "everyone's business" (a non-specialised and everyday subject, to which everyone's knowledge can contribute) and therefore inclusive, while also being the core activity of some people. In other words, the "public" likely to be formed, depending on the perception of what is problematic (Dewey, 1927) can just as easily be restricted to professionals involved in the various components of the agri-food system, or as a public deliberately defined as much wider, reaching "across" public policies, education, etc., and "down" to eaters. This focus on collective problems also supposes a strong attention to actors' visions and meanings, through the analysis of controversies and alliances, and the inclusion of "sensible" dimensions, in the double meanings of what is perceived by the senses and what "makes sense" and is valued (Jules et al., 2023)

This pragmatist approach thus suggests three key elements to take into account when analysing the processes of politicisation of agrifood transitions, which we have explored separately in previous publications:

- The critical resources that are mobilised by the "affected" actors in these processes and the transformative perspectives that they adopt through the design and experimentation of solutions (Lamine et al., 2024)
- The diversity of visions, imaginaries, and values present around the shared problem being defined and their divergences, as well as the potential effects of exclusion and the effects of power relations on the definition of "the visions that count(Penvern et al., 2023)

- The role of "sensible" dimensions (understood as both multisensorial and what "makes sense") as a counterpoint to technicist and normative approaches of the ecological transitions but also to perspectives focused on cognitive and deliberative aspects (Granchamp et al., 2023)

As for political ecology, it is a transdisciplinary theoretical framework that also derives from many intellectual inspirations but, more specifically, seeks to address the political dimensions of nature-society relations, including environmental damage and protection, taking explicit account of conflicts and power relations (Bryant, 2015). Due to this focus, power relations are prominent in this literature, which has classically adopted a structural lens, highlighting, for example, "ecological-distributive conflicts" where "poor" populations suffer disproportionately from environmental problems (Martinez Alier, 2003) However, in the past decades, new currents of political ecology have reconceptualised questions of power in different ways. Namely, so-called Latin American political ecology (Jenatton et al., 2022) has adopted more constructivist perspectives based on notions of counter-powers, counter-histories, and practices of autonomous liberation (Blaser, 2013; Escobar, 1995; Leff, 2015a) often establishing interfaces with post-colonial and decolonial approaches. However, like pragmatist sociology, the incorporation of the lenses of political ecology into studies related to agri-food systems has occurred in a rather fragmented way, advancing mainly on a few specific themes (pesticides, the expansion of large agricultural monocultures, threats to agricultural and food biodiversity, extractivism, environmental conflicts, among others) (Jenatton et al., 2025) Some notable exceptions are Moragues-Faus and Marsden (2017) and Giraldo (2019), who have analysed politicisation at an epistemological level, delineating how the interests of "agro-capitalism" are built on dualist thinking that forms the foundation of "modern" epistemologies and a hierarchisation of ways of relating to other beings. Furthermore, an increasing literature coined feminist political ecology or ecofeminism describes the politicisation processes in everyday practices linked to care activities, including food (Pruvost, 2021; Trevilla Espinal et al., 2021) Here, then, we can identify several key 'touchstones' with pragmatist perspectives.

Considering the diversity of visions, imaginaries, and values is a key principle in many works of political ecology. Escobar (2020) for example, draws from decolonial approaches and the larger "ontological turn" in anthropology to advocate for a recognition of other ways of imagining life and inhabiting the Earth. He has also explored the potential of the notion of *sentipensar* (feel-thinking), in which reason is intermeshed with affect, producing more empathetic knowledge forms (Escobar, 2014) These diverse ontologies make up a decolonial "pluriverse" opposed to a uniformising Eurocentric ontology of capitalist "modernity." According to Leff (2015b) epistemological conflicts are at the heart of creating fairer and more sustainable futures and are not to be smoothed over or eliminated in the quest for an all-encompassing harmony free of difference. Speaking more directly of agriculture, Giraldo (2019) affirms that conflicting visions can be seen as starting points that make political action possible, representing a sphere of possibilities where symbolic dissensions can be dealt with and where power relations can be reconfigured.

Like the pragmatist approaches mentioned above, political ecology focuses on the role of collective knowledge production and seeks to highlight how politicisation processes emerge in the fertile encounter between different types of knowledge (Meek and Simonian, 2017) sometimes described by the notion of *diálogo de saberes* (dialogue of knowledge), inspired by the work of Paulo Freire (1969). Freire's critical pedagogy suggests that it is through this dialogue of knowledge that individuals build an awareness of their "oppressions" and subsequent capacity of changing the world in which they live, thus directly linking knowledge and power. Leff (2004) further conceptualises this notion in relation to environmental change, where education and learning processes are at the heart of an emancipatory project towards the construction of other environmental knowledge and other possible futures. This dialogue of knowledge supposes the rejection of the superiority of one type of knowledge over another and the recognition of the potential of creativity, exchange, and mutual aid in producing concrete solutions adapted to local visions and contexts (de Sousa Santos, 2007), here also echoing pragmatist approaches.

Inspired by these meeting points between political ecology and pragmatist sociology, we suggest three key conceptual guiding questions which contend with the processes of definition of the food systems' transformations as a shared and collective problem, the analysis of the reconfigurations of power relations, and the recognition of the diversity of visions of the food system.

These guiding questions were defined during a long process of interaction across situated case studies and between researchers both on our case studies and on our respective theoretical frameworks and readings. They are based on our reflexive analysis of our own analytical approaches, enriched by the diversity of our theoretical anchorages and assemblages within the fields of sociology and geography, of pragmatist sociology and political ecology as well as across the "Northern" and "Southern" intellectual legacies, and on our experimentation of applying them as principles in action research projects. They can be applied either to carry out an analysis of the territorial agrifood system transformations; to analyse multi-actor transition projects/approaches set up by various actors to support such transformations; or to design a transformative research approach.

1. An analysis of how agrifood systems' transformations are (or not) taken as a shared and collective problem: through this guiding question, primarily inspired by pragmatist sociology, we suggest being attentive to the processes of debate over past, present, and future food systems' transformations, to the constitution and composition of the public involved, to potential effects of inclusion or exclusion, and to how local intellectual/critical and emancipatory resources are taken into consideration or not.
2. An analysis of the reconfigurations of power relations in food systems: through this guiding question, which is inspired by debates over sustainability transitions and by Latin American political ecology, we propose to assess the reconfigurations of power relations within the agri-food system: how do established power relations persist or become challenged over time? How does collective knowledge building impact these power relations (Rossi et al., 2019) and support the construction of counter-powers and the reconfiguration of power relations?
3. An analysis of the diversity of visions of the food system: taking into account the diversity of visions is a classical mantra of participation studies. However, the process of identification and characterisation of this diversity is often overlooked (as if the diversity would spontaneously be present and visible) (Penvern et al., 2023). At the crossroads of pragmatist and political ecology inspirations, we address here the notion of visions as imaginaries of the future (in our case, of the food systems' future — desirable or undesirable — transformations); and in their multi-faceted nature, i.e., considering that they encompass a mix of rational, axiological, sensible, and emotional dimensions.

Case Studies and Methods

We have chosen three case studies, all of which are rural regions with strong urban and touristic land pressure. In these regions, agriculture still has an important place but is confronted with competing dynamics and visions, although this translates into very different pathways, as we will later see. In these three case studies, we have studied agrifood systems trajectories over three to four decades, based on key common analytical building blocks (trajectories of public policies, initiatives, networks, analysis of key transition mechanisms and phases). The shared objective is to understand the interactions and relative roles of the State and public policies on the one hand, and initiatives launched by diverse organisations and networks involved in agricultural and rural development on the other hand, in transforming the agrifood system over these decades. In order to avoid a normative stance, rather than focusing only on (agro)ecological transitions, we studied agrifood systems transformations "at large" and looked at the place of agroecology in these trajectories over time. We thus analyse the relative processes of intensification (understood as increased dependency upon external inputs and agro-industrial food chains) vs ecologisation of these territorial agrifood systems over the last decades. The empirical material relies on documentary analysis, qualitative methods, and longitudinal ethnography and has been analysed for each case study in previous studies (Palm et al., 2021; Lamine et al., 2022; Tuscano, 2022).

The collective work for this paper took place in iterative steps and relied on diverse means of interaction: shared readings of key articles, research stays allowing to share interactions and discussions with local actors, co-supervision schemes, and webinars.

Beyond this analysis of agrifood systems trajectories, in the French cases, we also studied "institutionalised" agrifood transition projects that were carried out in the more recent period (2016–2022), in a context of a larger institutionalisation of agrifood issues at the territorial scale (Fouilleux and Michel, 2020; Tuscano, 2022; Lamine et al., 2023) In these cases, we thus studied both agri-food systems trajectories and transition projects. Moreover, in one of these case studies (Ardèche), authors were involved in such a transition project, thus combining analytical and transformative stances. In this case study, our three questions have thus been experimented as guiding principles within an action research scheme where we defined, with other local actors, facilitation methods to support ecological and just transformations.

The Case Studies

For each case study, we first present the context and dynamics of transformation that we have identified in the territorial food system and then analyse it in accordance with each of our three guiding questions.

Provence Verte: The Normativisation of Alternative Narratives

Provence Verte is an urban administrative unit (agglomeration) that also includes rural areas, comprising 28 municipalities and situated in the south-east of France, in the Mediterranean region. The area covers nearly 1,000 km² and around 100,000 inhabitants, resulting in a population density of around 100/km2 (close to the national average). The area has undergone a rapid transformation in recent years due to the attractiveness of the area (located close to major economic poles and the coast) and linked to the installation of small and medium-sized businesses. The massive artificialisation of the coastline accompanied by progressive urban pressure towards the hinterland has affected this territory and its agrifood industry since the 1960s. Like trends observed elsewhere in France, this region suffered a significant decline in agricultural exploitation, and the cultivated area was more than halved between 1980 and 2010.

The study carried out in Provence Verte combined a socio-historical and ethnographic analysis to analyse local agri-food policies, local initiatives, and collective mobilisations held by diverse actors and aimed at transforming the local food system. By drawing on the conceptual frameworks of pragmatist sociology, the author identified groups of actors (the "publics") locally mobilised for sustainable agriculture and food over time (Tuscano, 2022). This aimed at identifying what kind of actors (institutionalised, activist, or community-based organisations) promoted a transformation of the local food system (and how). The study covered the period from 1990 to 2020 and allowed for a periodisation of the local transformations.

The first dynamic (1990–2000) was framed by the then-dominating paradigm of sustainable development, translated locally into an enhancement of local rural identity, including local products and agricultural specificity linked to terroir. The second dynamic, which developed in parallel from the 1990s onwards, is the development of organic farming, driven locally by groups of farmers pioneering this kind of agriculture. This department has a very high rate of organic production, with a total of 42% of its agricultural land in 2022 (mainly in viticulture), and with some villages reaching 100% (e.g., the village of Correns). The third dynamic, more focused on reconnecting food production and consumption, developed slightly later (from the 2010s onwards) and sought to structure short food supply chains, particularly by establishing links with public procurement. These dynamics and repertoires are interwoven and result from both external changes (e.g., the greening of public policies and the influence of transnational social movements) and local transformations driven by local organisations and groups involved in food production and consumption.

How are agrifood transformations defined as a collective problem in Provence Verte? (guiding question 1). Since the late 1990s, a significant number of initiatives have been deployed in this territory; various actors

have been mobilising for the protection of agricultural land, the diversification and valorisation of production activities and, more recently, for the structuring of local food supply chains. These initiatives, launched either by local authorities, civil society, and/or economic actors (farmers, retailers, etc.) contributed to the definition of agrifood issues as collective problems and gradually encouraged new stakeholders to invest in these subjects. Despite the large number of initiatives in this territory aimed at greening agriculture and food, until recently there was no strategy for articulating them. Over the last years though, two leading public programs have played a central role in the structuration of local dynamics. The first one is the European LEADER program (2014 to 2020), whose financial support has undoubtedly made it possible to implement a range of actions aimed at reconnecting production and consumption. The second one is a Territorial Food Project, funded by a recent national policy. Led by the agglomeration since 2018 and aimed at relocalising food production and consumption, these programs concretely offered the opportunity to establish an agri-food governance that included alternative actors of the region. However, the main limit is that these programs impose a normative framing regarding participation processes and objectives to be reached. In other words, the "normativisation" of alternative narratives has both participated in legitimating these visions but also limited the capacity of these actors to take ownership of territorial agrifood system issues and to self-determine future orientations.

How are power relations reconfigured over time? (guiding question 2).

In this case study, this reconfiguration of power relations is somewhat dichotomous, with a progressive integration of alternative actors into local political spaces on the one hand, and this "normativisation" of some alternative dynamics on the other. Conventional as well as alternative farmers are very committed in local political circles, and projects are often guided by the concerns and interests of these different actors. Alliances between local elected representatives and farmers are often long-standing and provide fertile ground for the emergence of projects aimed at protecting farmland, assisting new farmers in setting up, or creating agricultural infrastructures. These alliances created the conditions for counter-powers in local policy advisory boards. The implementations of the above -mentioned public programs (LEADER and Territorial Food Project) — jointly to community-based initiatives — allowed alternative narratives to gain visibility, particularly around organic food production and short food chains. This gain in visibility, jointly with the inclusion of alternative farmers in local political arenas, allowed a reconfiguration of power relations. For example, the local organic farming association Agri-bio Var has been involved for several years with local authorities in the creation of a local organic poultry industry — from chicken feed to slaughtering — in response to the massive importation of poultry for human consumption. However, these processes are gradual, and the implementation of new actions often depends on civil society organisations with weak leadership and funding. Indeed, the projects carried out by these alternative actors often depend on public policy programs which reduce their alternative scope due to the funding granted or pre-established guidelines.

How is the diversity of visions taken into account? (guiding question 3).

Food system transitions have been fostered locally following three main arguments: i) local economic development, ii) local agri-food production as a fundamental dimension of collective identity, and iii) local agri-food production as a condition for maintaining a "quality" environment. These visions are often interrelated, but sometimes reflect different commitments on the part of social groups who promote one aspect more than another. Our analytical work showed two dynamics of competition at the local level. The first is within alternative networks: networks for the promotion of peasant agriculture on the one hand, and sustainable food and environmental associations on the other, often do not have the same ambitions and visions. Indeed, some groups — notably those linked to pioneering organic farming networks — focus on issues of social justice and the impact on inequalities for both consumers and producers, while younger associations more committed to the environmental cause attach greater importance to ecological issues, sometimes neglecting the political and social implications of their initiatives. The second dynamic of competition is linked to the institutionalisation processes mentioned above: if the succession of different projects and public programs at the territorial level has enabled certain initially marginalised visions to gain visibility, the rising of local food system issues at the national and local level has a twisted effect. While these programs create the conditions

to encourage the participation of new audiences in the shared definition of "problems," the modalities often remain predefined and limit spontaneous initiatives. In the case of the Territorial Food Project, for example, a disagreement arose between the person in charge of coordinating the program and the institutional stakeholders, due to her non-compliance with conventional methods of participation. In order to include the plurality of visions, she adopted experimental, sensible, and bottom-up approaches (i.e., through the organisation of a festival), which created conflicts with the more institutional actors and led to a change in coordination and to a reframing of the project, translating into more top-down involvement methods where those to include in the process are chosen beforehand.

Southern Ardèche: A Lasting Politicisation Confronting a Recent Institutionalisation

Southern Ardèche is a rural territory in southern France comprising 177 municipalities, covering 2500 km² and around 140,000 inhabitants (population density of around 45/km2; lower than average). It has been for a few decades an attractive region (both to newcomers and tourists), with a population that increased in the last 20 years after more than a century of rural depopulation. The local agriculture is quite diversified, although wine and chestnut dominate in some areas. A diversity of initiatives, both from civil society and farmers' networks around short food circuits, seed exchange, processing units, mutual help, etc., some having emerged already in the 1980s, makes it a region where the agrifood system remains relatively ecological (as an indicator, organic farming covers around 25% of the agricultural area). It is also a region where local, quality food is very present in the local "foodscape" and thus easily accessible, although this of course applies to those who can afford it. It is indeed a relatively poor region in terms of average income, and despite rural poverty being often less visible, food poverty is increasing as it is in more urban regions.

In this case, an analytical and a transformative stance have been combined within a recent action research project set up in 2018, which led to the creation in 2023 of a local food council. In a first step, the research team carried out an analysis of the trajectory of the territorial agrifood system, relying on a longitudinal approach (as diverse studies had been led by the team since 2008), on complementary documentary analysis, and on the involvement of key actors of this history, within a process of collective construction of the interpretations (Lamine et al., 2022). This collective process allowed the identification of four major periods since the middle of the 19th century, along with key tipping points.

Until the 1950s/60s, the agri-food system was diversified, mainly oriented towards local markets and "by nature" relatively ecological. Agricultural systems combined crops and livestock, while self-consumption and local exchanges remained high. From the 1960s to the beginning of the 1990s, and following the "modernisation turn" of the 1960s, there was a strong process of specialisation/intensification, which is referred to in this region as the "golden age" of fruit production. The agri-food system got increasingly "pulled" by mass distribution. However, the arrival of new rural populations in the 1970s and 1980s and the emergence of many initiatives focused on local products valorisation somewhat mitigated the effects of agricultural modernisation, compared to other territories. From 1995 to the early 2010s, there was a proliferation of initiatives around quality and local food, strongly supported by public policies, along with the affirmation of the issue of multi-functionality. Finally, since around 2015, the rise of the environmental, climate, health, and social inclusion issues has led to intense debates around the necessary reconfiguration of the agrifood system. Indeed, the effects of climate change threaten many agricultural productions, while many newcomers have difficulties in finding land to develop small farms, and food poverty is expanding.

How are agrifood transformations defined as a collective problem in Southern Ardèche? (guiding question 1). In this region, there have long been strong efforts to locally build the issue of agrifood transitions as a collective problem. In the 1970s and 1980s, pioneer farmers and citizens' networks set up various initiatives linked to food production, processing, and distribution that allowed a concrete politicisation of agrifood issues and also became "de facto" local arenas of debate, although mainly circumscribed to their users. In the 1990s, these efforts started to get more articulated and also more institutionalised. Two main institutions have been

key in bringing a large range of local actors together to discuss these issues, quite early on: first, from 1997 on and like in Provence Verte, the process set up around the Leader program, with its local action group and diverse ways to mobilise local actors; second, from 2006 on, the Pays (local authority) through its technical team and through its local development council — a multi-actor instance planned in the law defining this territorial institution. Both instances brought together local farmers, citizens, economic entrepreneurs, civil society organisations, and both have been key arenas of debates in the 2000s and 2010s, until diverse reforms led to their weakening.

From 2016 on, in the context of the institutionalisation of "Territorial Food Projects," the organisations applying for support for the elaboration of such projects (mostly local authorities such as inter-municipalities) were invited to set up participatory approaches. Our analysis of several of such Territorial Food Projects set up between 2016 and 2022, mainly through participatory observation (being involved in their instances as local researchers), allowed us to observe the efforts made by their facilitators to identify and mobilise a diversity of local actors and bring them together in prospective exercises aimed at collectively defining the future trajectory of their local food system. On the other hand, our analysis also revealed the normative framing of participation with its classical exclusion processes (for example, of "simple" citizens and minorities) as well as the reframing processes at the decision stage, i.e., when elaborating a concrete action plan.

In parallel to this institutional dynamic, our action research project set up in 2019 a multi-actors group that aimed at building transitions as a shared problem, first based on a shared understanding of the past trajectory, as described above, and in a second step, on a shared writing of a collective manifesto for a just and ecological transition. In its different forms (plenary, thematic groups, annual public event, etc.), the process strove to favour the participation and expression of all participants, in forms of collective inquiry and experimentation (e.g., collective work on forms of land provision for the support to new farmers, identification of key initiatives in school catering). This succeeded to some extent, as far as the participants' feedback allows to assess. However, some key actors remain left out of the arenas of debates. Some, such as large retailers for example, refuse to be enrolled despite having a prominent role in the territorial agrifood system transformations, but for others, the lack of time and resources did not allow to really enroll them, as is the case for most disfavoured social categories.

How are power relations reconfigured over time? (guiding question 2).
The interpretation of the above trajectory relied on a systemic perspective aimed at identifying the changes in power configurations in the territorial agrifood system. This systemic perspective led to characterise each period through the interactions that characterise the power configurations in this given period in contrast to other periods. In the "modernisation" period, for example, retailers and intermediaries exerted an increasing domination on farmers. Over the three periods since the 1960s, farmers' networks and the State have exerted a strong reciprocal power over one another, with farmers trying through their unions to influence policies and reciprocally, policies trying to orientate farmers' practices. Finally, the last 20 years have seen the reinforcement of alliances of two components, e.g., farmers and civil society, trying to influence both policies and markets. These reconfigurations have also reinforced the competition — which sometimes takes the form of a combination or coexistence — of two different dynamics, one driven by the valorisation of quality products and the other one by the issue of social inclusion of more disadvantaged farmers and consumers.

How is the diversity of visions taken into account? (guiding question 3).
The analytical work first aimed at identifying competing visions and alliances and their effects on the transformations of the territorial agrifood system, as mentioned above. Of course, the two competing dynamics mask a much larger diversity of visions. Then, in a transformative perspective, the composition of the local multi-actors group and the facilitation methods were designed so as to favour the expression of (and debates across) diverse visions, including their sensible nature (with devoted tools/ methods). The composition of the "plenary" group of 25 people (35 in the following local food council) was indeed thought

out so as to include a diversity of actors (research, farmers, civil society, agricultural networks) and to associate representative actors ("stakeholders" representing their organisation) as well as concerned ones — affected by the issue, although not representing any organisation (Lamine, 2018). The facilitation methods were conceived in order to be inclusive and respectful of the diversity of visions, which was made possible by the complementarity of the five co-facilitators (one researcher, two persons working for local public institutions who were used to dealing with the "powerful" actors, and two involved in civil society organisations who were experts in popular education approaches). The goal was to gather people with different (and sometimes even contradictory) points of view. The regular meetings allowed maintaining an attention to this diversity of visions and to collectively write a manifesto that recognises it. An annual forum has also been organised since 2021, which allows for an expansion of the public involved and also of the diversity of visions that can be expressed in different ways, including sensible and practical ones — for example, a cooking class open to any citizen is held in parallel to this forum and then shared by all forum's participants at the end of the day.

Serra Fluminense: Politicising Change Based on Practical Solutions

Serra Fluminense is a mountainous region close to Rio de Janeiro, with a tropical climate of high altitude and significant presence of family farming. The municipalities of Petrópolis, Teresópolis, and Nova Friburgo were selected for our study, among other reasons, for their relevance in the emergence of alternative paths for the development of agriculture and food supply. The three municipalities cover 2,700 km² and count around 690,000 inhabitants. Many farmers do not have land or have restricted access to plots suitable for cultivation, working as sharecroppers (meeiros). The dynamics of the rural space are not driven only by agriculture but are also influenced by tourism, by real estate speculation, by the advance of urban peripheries over land for agricultural use (like in the two French case studies), by the presence of rural-based industries linked to the textile sector, and by the implementation of several environmental conservation units.

In this case study, we have carried out an analysis of the socio-ecological transformations affecting the territorial agrifood system from the 1960s on. Special attention was devoted to the emergence and intertwining of a heterogeneous set of initiatives of environmentalisation of agriculture and food supply. This historical reconstruction reveals the restrictions faced in the structuring and consolidation of alternative paths of change informed by a critical perspective in relation to the dominant sociotechnical regime shaping agriculture and food supply in the region. It shows, at the same time, the capacity for agency, both individual and collective, which enabled the unfolding over time of a shared field of relationships, experiences, interpretative references, and controversies related to the socio-ecological transformation of the agrifood system interconnecting the different initiatives implemented in the territory. This shared and decentralised space of interactions and production of practices and knowledge can be referred to as an ecology of projects (Palm, 2021).

From the middle of the 20th century onwards, we can observe a process of intensification of agricultural production in the Serra Fluminense region, especially vegetables in a conventional system, reflecting, to a large extent, the ways in which this territory was inserted in a broader fabric of economic, social, ecological, and cultural relations, closely related to the intense process of industrialisation and urbanisation that affected the state of Rio de Janeiro and, particularly, the Metropolitan Region (Palm, 2021). In this process, three large streams of political and institutional transformation can be identified. From the 1960s on, the region was impacted by policies aiming to promote the technological modernisation of agriculture, especially the horticultural production. From the 1980s on, the private sector expanded its influence in the production, distribution, and consumption networks of vegetable crops operating in the region, affecting the composition of demand and imposing quality conventions. This period was also characterised by the densification across the region of a capillary network of private agents involved in the commercialisation of pesticides, chemical fertilizers, among other inputs. From the middle of the 1990s and to the present, we observed the construction of federal public policies for the strengthening of family farming, which reinforced the modernisation of agriculture in Serra Fluminense, mainly due to credit programs specific for family farmers. At the same time, the room for maneuver for actors engaged in processes of environmentalisation of agriculture was expanded

as organic production and agroecology began to be recognised, at least at some level, by social organisations and public institutions, as a potential way to enable the social and economic reproduction of family farms. We thus observed the development in the Serra Fluminense region of a plurality of local arrangements, in the form of collective projects that operate as focal points from which the different actors involved in agroecological transitions manage to trigger and coordinate interventions articulating different actors, domains, and scales within the agri-food system (Palm et al., 2021). For example, Coonatura developed from the late 1970s until the late 2000s, connections and arenas of debate between urban consumers interested in alternative agriculture and food, urban people who migrated to rural areas to become farmers, and local producers (particularly women) in search of markets for their products (up to 30 farming families and 2,100 urban consumers). ABIO (created in 1985) is another organisation originally created by a group of people with an urban background, initially aimed at creating market channels enabling the social reproduction of family farmers. In the 1990s, the certification of organic products became its main focus. ABIO got involved in the construction of the national legislation regulating organic agriculture and in the early 2000s and in 2010, started to operate as a participatory certifying body. ABIO was also a protagonist in the creation, in 2010, of the *Circuito Carioca de Feiras Orgânicas,* constituting an important market place for the production of organic farmers in the city of Rio de Janeiro.

How are agrifood transformations defined as a collective problem in Serra Fluminense? (guiding question 1).
In contrast to the French case studies, in the Serra Fluminense Region, there was no effective construction of a public problem on a broader territorial scale, nor formal arenas to discuss it, but several initiatives connecting different types of producers that allowed building networks and alliances. This may be mainly linked to the absence of a devoted territorial policy (comparable to the Territorial Food Projects one in France), considering that this small region does not correspond to any administrative perimeter, but also to the lack of coordination of the diverse initiatives and networks and the lasting power of the actors involved in "conventional" vegetable production. In this context, we have described the development of the initiatives studied, over time, through the notion of an ecology of projects. These projects generally end up achieving fragmented results, being driven by groups of specific actors, who seek to transform the contexts in which they are inserted, working with the resources they have at hand. Food systems transformations are thus taken as collective problems by different groups and alliances that are loosely linked rather than as a shared public problem at the territorial scale. Among these networks and alliances, the participatory certification system for organic products structured by ABIO deserves to be highlighted, due to its ability to articulate groups of producers operating in different parts of the territory in a plurality of commercial circuits.

How power relations are reconfigured over time? (guiding question 2).
In their agroecological trajectories, farmers are challenged to deal with territorial, political, symbolic, and institutional "contentions" that stand as obstacles to a deeper transformation of agrifood systems at the territorial level and to a reconfiguration of power relations. In this sense, it is worth highlighting: the concentration of conventional production in the areas most suitable for agricultural cultivation; the unfeasibility of transition processes to agroecology and organic agriculture due to the drift of pesticides; the constraints in access to water; the high value of land; the difficulties faced in structuring local market circuits capable of boosting a more significant and financially compensating regional demand for organic products; the complexities involved in the connections with organic markets in the Metropolitan Region; and the fragility and discontinuity over time of support policies for family farming, organic production, and agroecology, at federal, state, and municipal levels. We therefore observe that the actors involved in these processes, mainly farmers, face a set of constraints in relation to the transition processes. Faced with these "contentions," two types of strategies have emerged: locating agroecological production experiences in areas far from spaces dedicated to intensive vegetable production and promoting network organisation, especially through the participatory guarantee system, whose institutionalisation at the national scale involved the agroecological and organic producer organisations of Serra Fluminense. Some agroecological farmers, however, end up choosing to move forward with sales to supermarkets and thus to adapt to their quality standards.

How is the diversity of visions taken into account? (guiding question 3).
From the end of the 1970s onwards, various transition experiences have developed in the Serra Fluminense Region, most of them based on marketing arrangements linking producers and consumers. These experiences facilitated the emergence of visions (and actions) around "alternative" or "natural" agriculture, prioritising the non-use of chemical-synthetic inputs and contrasting the conventional agricultural model. From the 1990s onwards, with the process of institutionalisation of organic agriculture in Brazil, two distinct perspectives started to emerge, that encompass different modalities of criticism of conventional agriculture: (i) a vision focused on improving organic quality and making these products available through large retail chains and specialised stores, (ii) a transformation path focused on participatory certification and the construction of alliances between producers and consumers through direct marketing circuits.

Discussion

Reading our three case studies through the lenses of the three guiding questions reveals some common points and differences and illuminates how processes of both depoliticisation and repoliticisation take place differently in specific contexts.

Cross Reading of the Case Studies

The way agrifood transitions are built as a collective problem (our first guiding question) differs across the three cases. In the two French cases of Provence Verte and Ardèche, in contrast to the Brazilian case of Serra Fluminense, there are institutional projects that aim at fostering the agrifood transition by "articulating" and coordinating the different actors of the food system in an encompassing way. This recent institutionalisation of agri-food issues reveals new agenda settings that are in turn accompanied by the adoption of participation and concertation methods in the steering committees and/or multi-actors groups created within the Territorial Food Projects' governance schemes. However, these governance schemes and related facilitation approaches tend to involve the same "usual suspects" and methods and to exclude less visible actors and social groups, as well as methods that would allow for taking into account less visible issues, echoing a more normative than substantive politicisation process. These cases thus show the unexpected effects of institutionalising these issues and question the top-down nature of the processes that have been put in place. Of course, some actors and networks criticise these processes and try to repoliticise the issues they are more concerned with, as is the case of the action research project and local food council in Ardèche. Our first guiding question thus sheds light on possible processes of depoliticisation linked to the increasing institutionalisation of the issue of food systems' transformations, mostly through the governance and participation schemes that prevail in institutional transition projects. It also allows studying (or even experimenting) how careful facilitation approaches may allow, favour, or even generate processes of (re)politicisation.

Applying our second guiding question (analysis of the reconfigurations in power relations) allows for an understanding of how established power relations would persist or be challenged over time. In all three cases, a reconfiguration of power relations happened under the pressure of alternative farming and food networks that urged for agrifood systems transformations, thus repoliticising the issues, as had long been described by the alternative food network literature (Goodman et al., 2012). In the French cases, the progressive construction of local food governance — mainly driven by public policies in the framework of the Territorial Food Projects — offered some spaces for the expression of heretofore marginalised actors and networks. However, the participation spaces built around these policies often occupy a marginal position in relation to a whole set of already institutionalised arenas where the most important decisions are made, such as around land access. Such changes in local governance thus tend to maintain the status quo in terms of power balance at the stage of decision-making and to depoliticise the debates. In this context, the articulation of territorial actors with national networks of civil society organizations appears, in some cases, as an important strategy for politicising some issues in some key arenas, as with the debates over participatory certification

in Brazil. Our second guiding question allows for addressing depoliticisation processes through the analysis of lasting effects of domination (of certain actors/groups over others), and repoliticisation processes through the attention to resistances and alternatives.

Finally, the application of our third guiding question (analysis of the diversity of visions) shows that in all three cases, there are competing visions of transition constructed throughout the interactions between the different actors and endorsed by different alliances. In ProvenceVerte, these visions relate to an economic local development perspective, an ecological perspective, and a more collective and social perspective. In Ardèche, there are two competing dynamics, driven by the valorisation of quality products and the social inclusion of more disadvantaged farmers and consumers. In Serra Fluminense, networks of ecological agriculture are divided between a perspective focused on third-party certification and marketing mainly via supermarkets and one favouring a more systemic agroecological perspective based on participatory certification and direct marketing mainly in regional farmers' markets. Although these contrasted and partly competing visions take different expressions in the three contexts, they can be characterised by the degree to which they include equity, justice, and ecologisation. Putting equity, justice, and ecologisation on the forefront indeed expresses an attempt to repoliticise agrifood issues. However, this also requires efforts to take into account the diversity and multi-faceted nature of people's visions, including those often excluded from governance and participation arenas. This may be favoured by a diversification of the forms of debates and shared activities as in the annual forums organised in Ardèche (Granchamp et al., 2023).

Common and Contrasted Processes of Depoliticisation and Repoliticisation

The French cases of ProvenceVerte and Ardèche show how the institutionalisation of agrifood issues (through the Territorial Food Projects set up in these regions) leads, despite an apparent legitimisation and politicisation of these issues through these institutional projects, to processes of depoliticisation, because institutional procedures of so-called "participation" generate a canalisation of social critics (Fouilleux and Jobert, 2017) rather than a larger inclusion of a diversity of visions. In this critical perspective, depoliticisation is partly strategic: it is intended by some actors to impose their visions of transitions (i.e., neoproductivist, technology-based visions) and to maintain established configurations of power. Indeed, sustainability issues, regarding food systems as in other fields, are often reduced to technical questions through the imposition of a techno-scientific and economic rationality, as have amply shown recent works in political ecology (Pelenc et al., 2019). However, our case studies reveal that depoliticisation is also partly systemic: it is the result of a convergence of mechanisms, of which the institutionalisation of Territorial Food Projects is part, in the sense that it tends to reinforce in most cases a "normativisation" of alternative narratives, a normative participation based on a narrow view of the actors to be included, as the studies on multi-stakeholderism have also shown (McKeon, 2017) and finally, a homogeneisation of facilitation, participation, and planning processes (Granchamp et al., 2023). This shows the need to carefully study participation, i.e., not only through the lens of the "who" (takes part or not in the process) but also the what (is discussed or not) and the how (is the process defined).

This institutionalisation of agrifood transitions through public policies in the two French case studies reveals this paradox: while these issues are being institutionalised and gaining visibility in public policies, many alternative actors, who have been for decades at the forefront of the claims and experiences for more sustainable forms of food production and consumption, are losing ground on these subjects. In the case of Serra Fluminense, despite a strong politicisation of organic agriculture and agroecology at the scale of local farmers and citizens' networks that succeed in establishing alliances with distant urban networks of consumers, as was exemplified by the two cases of Coonatura and Abio, the absence of an encompassing dynamic as is the case with Territorial Food Projects in France and the prevailing and lasting power relations in the agricultural industry constraints and limits these politicisation processes, exempting local governments and other relevant actors from contributing more actively to the transformation of the agrifood system at a territorial level. However, these networks have made a permanent effort to politicise specific conflicts related, for example, to the establishment and maintenance of public spaces for the operation of farmers' markets. Moreover, these local

networks got strongly involved in the discussions about the regulation of organic farming at the state and national scale, thus contributing to politicisation processes at other, larger scales.

In the larger depoliticising context linked to the institutionalisation of Territorial Food Projects, some actors try to repoliticise agrifood issues. In the case of Ardèche, the action-research project and the local food council created as an outcome of this project appear as such attempts to repoliticise these issues by putting equity, justice, and ecologisation on the forefront and enlarging the public involved in the discussions, through the organisation of annual forums open to all actors and inhabitants since 2021, an open call for participation for the local food council, the collective writing of a manifesto (2021) and then of a statement about the effects of these institutional Territorial Food Projects (2023–2024). With this last initiative, in a context where these projects have enhanced normative participation in "classical" multistakeholder arenas controlled by the local authorities, the strategy is to create an original arena of debate that can also become a place of discussion and a source of constructive criticism about this depoliticising policy framing. However, this experience as a whole cannot be read as a success story, because this very process is subject to larger power relations and influences, which limits their concrete effects on the transition at play. Indeed, a strong re-politicisation process would require de-constructing existing governance structures that reinforce incumbencies and unjust dynamics, while embracing the transformative power of democratically designed structures that might support transformative change (Kok, 2023). Of course, we have tackled here forms of repoliticisation closely linked to the frameworks of food democracy and food justice, but these coexist with other claims for repoliticisation, that in many contexts may focus on issues such as the relocalisation of food systems based on conservative visions.

Conclusion

In this paper, we have suggested that lines of inquiry inspired by pragmatist sociology and political ecology may offer fruitful insights for addressing food systems' most needed transformations in a repoliticised way, and with greater attention to their becoming (or not) more ecological and more just. Articulating these two literatures can help demonstrate how people identify problems affecting agri-food systems and collectively work to find solutions while, at the same time, recognising the plurality of understandings of transition pathways and highlighting the mechanisms through which some actors and worldviews are neglected. Pragmatist approaches invite us to examine how actors affected by environmental problems experiment with diverse solutions through collective inquiry. However, they tend to undertheorise power, as they have historically focused primarily on the situated modes of action and interpretation of actors, or to read power relations through the tensions and interactions between civil society and the State, rather than through structural asymmetries and enduring inequalities. Political ecology complements these approaches by encouraging a direct focus on power relations and inequalities in relation to environmental issues. However, political ecology analyses are often somewhat disembodied — either conducted at a panoptic level influenced by political economy traditions, or fragmented into surveys of exceptional "conflicts,".

We seek to invest the complementarity of these approaches by translating them into three key guiding questions: defining food systems' transformations as a shared and collective problem, analysing reconfigurations of power relations, and recognising the diversity of visions of the food system. Applied to three case studies in France and Brazil, these guiding questions emerged as relevant for the analysis of processes of depoliticisation and repoliticisation, primarily because they reveal the contrasting effects of the increasing institutionalisation and legitimisation of the issue of food systems' transformations. This application also shows that these processes are both historically contingent and subject to different scalar dynamics and dialectics, which deserves more attention in food systems debates.

Beyond this heuristic potential in analytical perspectives, these guiding questions can also support repoliticisation processes through their use in reflexive processes anchored in transformative perspectives.

In the face of an increasing depoliticisation of not only agrifood issues but also participation, they suggest that, in the dynamic construction of transformation projects, the recognition of different positions and world views needs to go along, step by step, with the analysis of the power mechanisms that frame possible futures and legitimise the "visions that count" and the collective experimentation of ways to confront these mechanisms. This echoes Freire's notion of conscientisation, i.e., the development of a critical consciousness through a process of reflection and action that supports emancipation. This also reflects a limitation of well-intentioned experimentation, as highlighted by Rancière (1995), which is the risk of creating political idylls aimed at achieving the common good through the actions of an enlightened elite—another point that warrants further exploration in the future.

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How to transform food systems? Consensus, crisis, and (de)politicisation in the CAP reform policy process

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Abstract

In 2024, a wave of farmers' protests shook policymaking in the EU. The protests began in reaction to national policy measures and soon coalesced into a unified movement across Europe, directed against the CAP reform (into force since January 2023). The protests took an anti-European tone and were supported by anti-system political forces. In response, European Institutions modified salient environmental aspects of the reform and withdrew, or blocked policy measures proposed within the Farm to Fork strategy. The Head of the EU Commission initiated a "strategic dialogue" with key stakeholders to develop a common vision for the future of the EU agriculture and food sector. This paper examines the relationship between crisis, (de)politicization, and polarization in the CAP reform process, with a focus on how actors mobilize strategies to politicize, depoliticize, or polarize policy debates. Drawing on a conceptual framework that integrates recent literature on (de)politicization and consensus-building, and a thematic analysis of policy discourse from 2021 to 2024, we explore how institutional dynamics and stakeholder interactions shape the prospects for transformative food system change. We argue that consensus or compromise-building is a crucial mechanism for transformational change and the very process of creating it is at the heart of debates on (de)politicization vs (de)polarization. We conclude that deliberative arenas and independent science and media can play a complementary role in this debate, by fostering dialogue, highlighting trade-offs and establishing the basis for finding compromises.

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Introduction

In 2024, a wave of farmers' protests shook policymaking in the EU. Farmers' protests erupted in reaction to national policy measures (e.g., subsidies for fuels in Germany, plans to reduce livestock in the Netherlands, and the removal of income tax exemptions in Italy) (Matthews, 2024). Soon, the protests coalesced into a unified movement across Europe, one directed against the CAP (Common Agricultural Policy) reform, which had entered into force in January 2023 following a five-year decision-making process. The movement took a different configuration from past farmers' protests, which were very vocal but largely confined to sectoral concerns; it took on an anti-European tone, going beyond sporadic episodes, and with the support of anti-system political forces. In view of the European Parliament elections in May 2024, European Institutions (the EU Commission, the Council, and the European Parliament) reacted to the protests by modifying salient environmental aspects of the reform. In addition, many of the policy measures proposed within the Farm to Fork strategy -- one of the flagships of the broader Green Deal strategy -- were withdrawn, voted down, or blocked at some level of the institutional process.

The outcomes of these events are particularly striking, given that the past legislature had begun with an apparently strong agreement on the need for food system transformation. What happened to change the political scenario so dramatically? For sure, the COVID-19 pandemic and the Ukraine crisis have played a decisive role in reshaping the policy landscape. Both crises provided all actors of the EU polity with the opportunity to reposition themselves and to adjust their discourse, and both have been instrumentalised by political forces and lobbies to obtain favourable policy concessions (Matthews et al., 2023). Farmers' protests, however, signalled something different: a link to anti-system movements willing to undermine European Integration.

This paper aims to contribute to a better understanding of the long and complex process that characterises Common Agricultural Policy (CAP) reforms in the European Union. Its relevance lies in the peculiarity and "exceptionality" (Daugbjerg and Feindt, 2017) of agricultural policymaking, due to the very nature of the agricultural sector, and the traditional dependence of the policy process on negotiations among powerful interest groups (Matthews et al., 2024). In this regard, we will analyze the CAP reform process and the events that occurred after the reform through the lens of (de)politicisation, (de)polarisation, and crisis. The analysis will contribute to answering the questions: (i) What conditions enable the success of transformative policies in times of crisis and polarisation? and (ii) how do strategies of (de)politicisation and (de)polarisation influence these outcomes?

In the next section, we start with an overview of how (de)politicisation, depolarisation, and polarisation are conceptualised by different schools of thought, and how these concepts connect with consensus-building (2.1). We then propose a conceptual framework for the assessment of policy change in the CAP by applying these concepts in the agricultural policy context (2.2.) and examining how situations of (de)politicisation and (de) polarisation may arise (2.3). The methodology applied in the study is illustrated in section 2.4. In the results section (3), we extensively describe CAP reform processes that occurred in the last decades, emphasising the role played by actors, interests, and institutional arenas, before moving to the most recent farmers' protests and opportunities for politicisation, depoliticisation, and polarisation strategies by different actors. In section 4, we discuss the factual and conceptual implications of the analysis, proposing an interpretation of the events connected to the last CAP reform, before bringing the paper to a close and outlining directions for future research in section 5.

(De)politicisation, (de)polarisation, and consensus: framing the debate

Defining the concepts and their connections

According to Wiesner (2021), politicisation is "*the process by which issues enter the formal political sphere*." According to the Oxford Dictionary, it is "*the act of making something a political issue*". In the first definition,

politicisation is seen as a process and in the second as an act. While the first definition looks at the dynamics within a polity, the second definition focuses on the actors' role.

(De)politicisation can be defined as the process through which issues are strategically shifted between realms, each characterised by distinct actors, discourses, and modes of communication, in order to influence decision-making (Flinders and Buller, 2006). The outcome of such processes entails a reconfiguration of power relations surrounding the issue, with (de)politicisation serving as a deliberate strategy employed by the actors involved. Studying (de)politicisation as a process allows one to see the effects of the interaction between policy actors in relation to a given issue. For example, when political disagreement on an issue is low, decisions tend to be delegated to technical bodies who decide based on scientific evidence and expert knowledge. When solutions do not provide satisfactory answers to societal problems, or generate new problems, repoliticisation might occur. Along the policy cycle, several stages of (de)politicisation can be observed.

As Buller et al. (2019) have noted, a relevant part of the debate on (de)politicisation has focused on systemic processes triggered by politicisation, to a certain extent independent from actors' will, to explain why, in a given historical phase, the neoliberal mode of production has started to be considered as a natural law, i.e., a self-evident and inevitable order, rather than a consequence of political choice and decision-making. In this perspective, the economy is framed as a 'realm of necessity' governed by natural laws, as this naturalisation, advanced globally through the transfer of knowledge production and decision-making to specialised technical bodies, has separated the 'economic' from the 'political' and from the 'social'. The 'realm of necessity' therefore embodies the highest degree of depoliticisation, since, in liberal economies, it operates under rules set by exclusive groups of high-level experts, bureaucrats, and policymakers. Systemic depoliticisation, according to this approach, has created a condition known as 'post-politics', where alternatives to the existing neo-liberal order are kept out of the political horizon (Wilson and Swyngedouw, 2015). A similar conclusion has been drawn on the approach to climate change of International Organisations (Swyngedouw, 2022). Now that the 'natural law' profile of the neoliberal international order is shaken by Trumpism (see for example the conflict with the Federal Reserve), the systemic mechanisms of depoliticisation of the past era are revealed to a larger public. Differently from the first, processual approach, (de)politicisation as an act stresses the role of agency in systemic contexts (Wamsley, 2024).

In this body of literature, strategies of depoliticisation-repoliticisation are enacted by policy actors to alter the distribution of power in specific policy domains according to the context. According to the second approach, depoliticisation is "*a form of statecraft that seeks to 'place at one remove the political character of decision-making'*" (Wamsley, 2024). Through depoliticisation, in other words, governments and policymakers shift the related responsibilities away from themselves. According to this approach, (de)politicisation can have either positive or negative impacts in relation to policy change. For example, it can help politicians to distance themselves from interest groups' demands, populist pressure (Flinders and Wood, 2015), or to adopt solutions deemed beneficial in the long term but not within the electoral cycle. By putting decision-making out of the spotlight of the political game, depoliticisation strategies can help to activate policy change through compromises and solutions to complex problems (Schimmelfennig, 2021). In the present times, we observe how politicisation and depoliticisation occur in an increasingly turbulent setting, where, on the one hand, a growing number of people become disaffected with politics, while on the other hand an increasing number of issues are becoming heavily politicised. In such a context, politicisation alone is not enough to understand what is happening, and the concept of polarisation can help. According to a general definition, polarisation is a tendency of the polity to divide into opposite factions with little or no overlap across values, beliefs, and interests (Rostböll, 2024). With regard to an issue, politicisation can lead to polarisation when the differences between opposing positions are pronounced, as heightened attention and contestation tend to amplify existing divisions. However, polarisation is rarely observed in relation to a single issue. Polarisation can be ideological -- when groups have radically different visions of the world -- and/or affective – when groups tend to deny legitimacy and respect to their opponents. Moreover, polarisation can be intransigent or flexible, depending on groups' availability to reach compromises (Rostböll, 2024). In a sense, polarisation can be an outcome of unresolved

politicisation, especially when parties are unwilling to compromise. Some types of polarisation -- especially affective polarisation -- represent a denial of politicisation, as it reduces the space of communication between parts, the necessary condition to develop a shared problem framing. In polities where affective polarisation occurs, communication takes place in 'bubbles' wherein each participant has only access to the information consistent with her values (Sunstein, 2017). Polarisation also tends to reduce the diversity of positions within clusters, strengthening binary approaches (friend vs. foe) (Axelrod et al., 2021). While politicisation brings a problem into the policy arena and makes it an object open to deliberation, polarisation creates the conditions for either policy stalemate or authoritarian change.

Like politicisation, polarisation can also be seen as a process or as a strategy. With regard to the first case, Axelrod and others (2021) have built a mathematical model showing that polarisation depends on the interaction between components of a polity, and that the outcome of the interaction (measured in terms of distance between respective positions) depends on the initial distance, the exposure to others' positions, and the level of tolerance to them. When tolerance is low, interaction tends to generate repulsion. The higher the tolerance, the higher the attraction (that is, the reduction of distances). Processes of (de)polarisation, therefore, modify the space of interaction by acting upon distance, tolerance, and exposure. The study of social media has been very effective in showing affective polarisation processes (Tornberg et al., 2021).

When polarisation is studied as a strategy, research analyses how political actors take systematically, and deliberately, opposite positions on a wide range of issues in the name of group identity, playing with narratives and communication strategies that tend to decrease the tolerance to others' positions (such as, for example, hate speech or denialism). Independent knowledge-producing institutions -- media, academic institutions, technical bodies -- are seen as obstacles to polarisation because, to the extent that they are perceived as reliable sources of information and wisdom within a community, exposure to them reduces the distance between opposing positions. Strategies of polarisation tend thus to delegitimise these sources, reducing the space for 'independent' politicisation of issues.

(De)politicisation in agriculture: the state of the art

Agricultural policies are an important field for the study of (de)politicisation (Sheingate and Greer, 2021). An important contribution to this debate comes from the special issue of Journal of Comparative Policy Analysis: Research and Practice of 2021. Feindt et al. (2021) develop a conceptual framework in which (de)politicisation is analysed in its dynamic dimension: analysing (de)politicisation as a strategy implies adopting an actor-oriented approach; considering (de)politicisation as a process can highlight the interaction between different actors and its evolution; (de)politicisation as an outcome focuses on the state of a given issue in relation to the (de)politicisation process and develops indicators for assessment. The relevance of these distinctions is related to the extent and the conditions under which (de)politicisation can generate policy change. In the same special issue, Skogstad (2021) examines Canadian agricultural marketing institutions and shows how political parties strategically play between politicisation and depoliticisation in relation to electoral goals. Vogeler (2021) illustrates how bottom-up ethical and societal pressures reintroduce normative contestation on animal welfare into a depoliticised agricultural policy, especially through the introduction of new actors in the policy arena. Zollmer (2025) claims that the threat of ballot initiatives in the animal welfare domain is a driver of policy change. Sharma and Daugbjerg (2021) analyse "coalition magnet" ideas such as food sovereignty in Nepal and Ecuador, showing how such appeals politicise agricultural debates by forming broad reform coalitions.

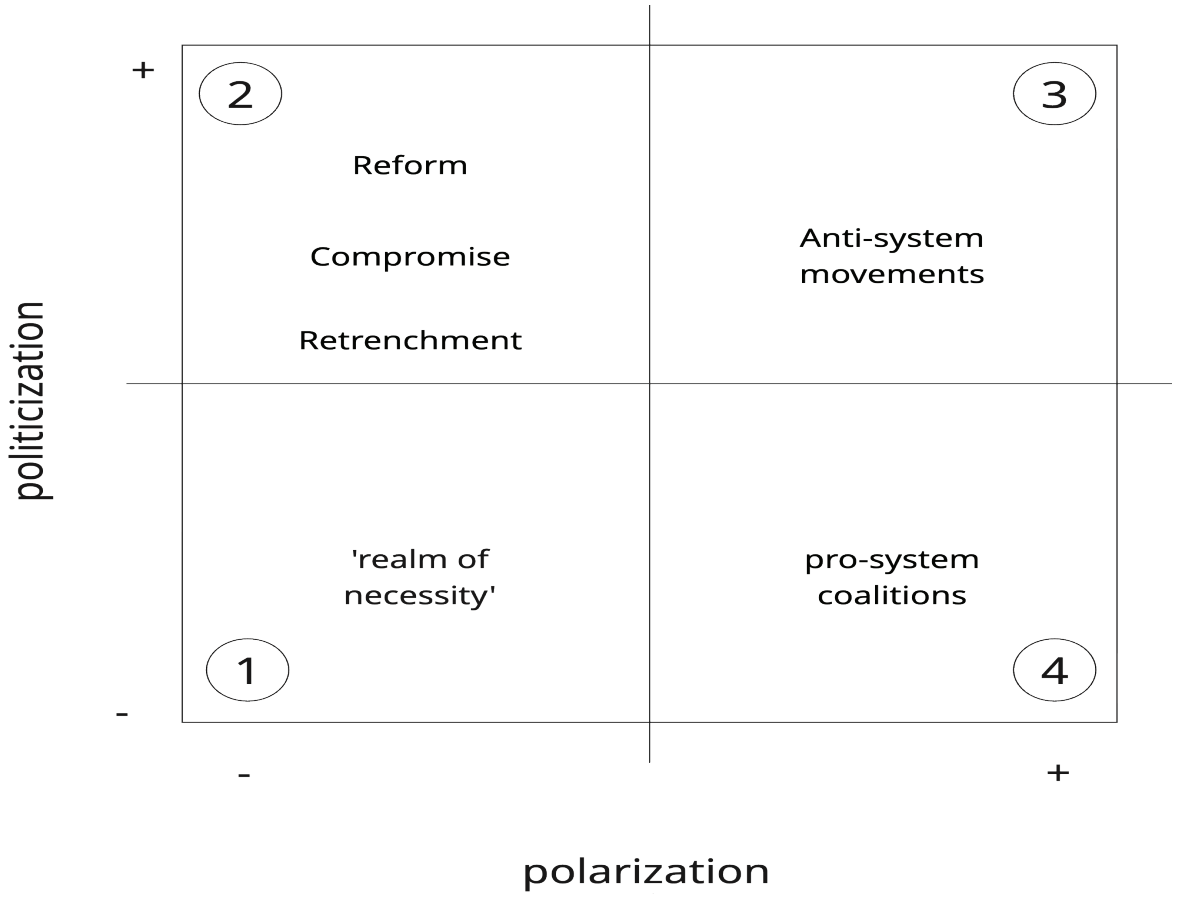
As highlighted (Feindt et al., 2021; Hay, 2007), (de)politicisation entails two interrelated domain shifts: one from the political to the technical sphere, and another from one level of governance to another that is more distant from voters, such as from the national to the European level. These shifts are mutually reinforcing, as the transfer to technical bodies often coincides with the relocation of decision-making to arenas less directly accountable to the electorate. The first kind of (de)politicisation is highly relevant to the agricultural domain,

given its ecological, health, and social dimensions. Schwindenhammer and Gonglach (2023) analyse this in the field of nutrient policy, showing how policy has shifted towards a technocratic approach. Schwindenhammer (2020) shows the risks of (de)politicisation in the field of GM insect production, given the quasi-monopoly of private companies in the sector. Sheingate and Greer (2021) have studied (de)politicisation as a shift between levels of governance. They analyse the role of right-wing parties in the policy process in the US and in the UK, showing how strategies of politicisation of agriculture have created a stalemate in US agricultural policies, while opening opportunities for policy change in the UK, allowing the participation of new actors in the policy arena.

From (de) politicisation to (de) polarisation

From a process-oriented perspective, politicisation and depoliticisation alternate each other within policy cycles: different actors play in the policy arena to politicise and depoliticise issues. The politicisation of an issue follows its 'problematisation', consisting in the introduction into the public sphere of issues which were not considered as problems before (Maye et al., 2019). This might occur because new evidence, new ethical sensibility, new actors, or new relations of power emerge in society. Once in the public sphere, politicisation fosters alternative interpretations and solutions to a problem. When an issue has been prioritised in the policy agenda, consensus has been reached, and the time comes for policy design and implementation, the amount of expertise needed to implement the policy can lead to depoliticisation. The outcomes of depoliticisation in a policy process depend on the degree of consensus or compromise that supports it. When consensus is not sought, and depoliticisation is adopted to reduce the level of opposition to an issue, it can lead to polarisation, deepening the gap between parties. Depoliticisation of issues can generate affective or ideological polarisation. Polarisation can lead to radical opposition to higher-level decision-making and to constitutional rules, delegitimisation of independent media and technical bodies, up to denial of evidence or use of fake news in the policy debate.

Figure 1 – A (de)politicisation – (de)polarisation framework.



Source: authors' own elaboration.

When crises occur, decision-makers face the dilemma of urgency vs. consensus-building: crises confront people and decision-makers with dilemmas and trade-offs. Depoliticisation during crises, in this regard, can be effective in the short run, especially if communication is managed properly, but in the longer run it can backfire (Boin and Rheinard, 2023), generating polarised positions. Strategies of depolarisation are based on actions at least in part independent and different from strategies of depoliticisation. As depoliticisation can increase polarisation, depolarisation strategies can take the shape of 'controlled politicisation', whereby stakeholders are involved in communication frames aimed at conflict transformation. In this regard, strategies of depolarisation can learn from conflict transformation techniques (Newman et al., 2009). Based on the framework just illustrated, we can analyse processes of (de)politicisation and (de)polarisation through the four situations represented in figure 1.

Situation 1 (low politicisation and low polarisation) is the situation where decision-making occurs within the 'realm of necessity': decisions are made by unchallenged political bodies within specialised policy networks. Situation 2 (high politicisation, low polarisation) is the situation where there is a claim for policy change, which might imply either reform, retrenchment, or a compromise. These are cases where politicisation is circumscribed to specific issues. If consensus is created over an issue, policy change can occur, and a phase of depoliticisation can start to stabilise the reform. If consensus building is not successful or not attempted, polarisation emerges (situation 3, high politicisation and high polarisation). In this situation, anti-system movements grow, and the prospects for policy change are reduced, depending on the relative strength of the anti-system and pro-system fields. Pro-system coalitions can lead to situation 4 (low politicisation and high polarisation) through a strong depoliticisation process. Prevalence of anti-systemic forces can bring the situation back to situation 2 (retrenchment). Likewise, a successful depolarisation strategy can bring the process to situation 2, where compromises can be made.

Crises are key factors in processes of (de)politicisation and (de)polarisation. Crises can alter the distance, the tolerance, and the exposure of people to different information sources, ideas, positions, and thus they can either increase or decrease both polarisation and depolarisation.

Methodology

The conceptual framework illustrated above has been applied to the CAP reform process. The methodology adopted is based on a systematic collection of daily news between 2021 and 2024 from Politico Pro and Euractiv, aimed at analyzing the development of the debate on the CAP reform. The news have been selected according to relevance, and a database has been created. Text units in the news dataset have been coded for the concepts delineated in the conceptual framework. A thematic analysis (Nowell et al., 2017) has then been conducted to identify key findings of the dataset, to summarise key features of the CAP reform process, and highlight the differences between the various approaches.

Results: politicisation, depoliticisation and polarisation in European agriculture

Politicisation and depoliticisation in the European Integration process

The politicisation and depoliticisation of the Common Agricultural Policy (CAP) reflect broader dynamics of European integration. The founding phase of the European Economic Community was characterised by low politicisation. Initially, the 'founding fathers' of the European Economic Community sought to operate out of the spotlight: high levels of politicisation could have undermined this delicate construction, as their goal was to shift powers from Member States to the new institutions. However, depoliticisation was accompanied by a 'permissive consensus' (Garcia-Guitian, 2021) of European citizens. The situation started to change in the '80s, when the creation of the common market, the new powers given to the European Parliament, as well as the approval of the Maastricht Treaty were subject to increasing politicisation (Garcia-Guitian, 2021). As van Middelaar (2019) points out, the dynamics of this process are influenced by three main actors: the EU

Parliament, the Council, and the Commission. The evolution of the European institutions reflects different visions of the relations of power between these three institutions.

Decision-making within the Council of the European Union, a body constituted of "*a representative of each Member State at ministerial level, who may commit the government of the Member State in question and cast its vote*" (art. 16 TEU), was initially based on the rule of unanimity, which implied giving a veto power to each Member State, but also provided a method of government based on consensus. Once the rules are set, the Commission oversees implementation, and the Court of Justice and the Court of Auditors control their application. Van Middelaar (2019) identifies this pattern as a form of 'depoliticisation through law'. When new issues arise - especially when a crisis demands exceptional measures - the Commission and the Council do not have the authority to change the rules. In such situations, the Heads of Governments must intervene with political decisions, beyond the reach of the Commission and of the Council. Consequently, throughout the evolution of European integration, politicisation has tended to coincide with moments of crisis, as exemplified by the 2012 financial crisis and, more recently, the COVID-19 pandemic (Van Middelaar, 2019).

Before 1974, the Heads of Governments had met sporadically. That year, the European Council (not to be confused with the Council of the European Union) was formally established, composed of the Heads of the Member States and chaired on a six-month rotation basis by the head of the government of the presiding Member State. The establishment of the European Council meant having a body that would set a political direction for European policies.

Decisions at the level of the European Council reduce the degree of freedom of Member States: in this sense, the European Council can be seen as a depoliticisation body if seen from the Member States, but a politicisation body if seen from the Commission. Thus, an increasing politicisation at the European level corresponds to a depoliticisation at the level of Member States.

Before 1979, the members of the European Parliament were designated by national parliaments: people hardly knew who the national components of the EU parliament were and what their role was. Progressively, with the Nice, Maastricht and Lisbon treaties respectively, the European Parliament has expanded its powers and, starting from 1979, its members have been directly elected by EU citizens. Since 2014 (based on the Lisbon Treaty) the 'co-decision' process was also introduced: new laws, drafted by the EU Commission, are decided in a complex interaction between the Commission, the Council and the Parliament. When the Parliament and the Council take different positions on a legislative proposal, a co-decision process is activated. This process, having a strong technical component, is normally kept out of the spotlight, and ends up in compromises, which sometimes water down the innovativeness of the initial proposal by the Commission (Lovec and Erjavec, 2015).

(De)politicisation and European agricultural policies

The history of the CAP is interlinked with the evolution of the governance of the European Union. In fact, it is one of the first policies of the European Economic Community, a post-war political project to create steady conditions for peace in Western Europe after World War II. The main principle of this project was to remove the root causes of inter-state conflicts through economic and political interdependence (Archer, 2008). Established in 1962, the CAP became the testbed for the creation of the Single European Market: a political experiment whose importance went much beyond sectoral relevance. Free circulation of commodities and people, and common political institutions would have followed suit. Being the outcome of negotiations between Member States, who were asked to yield their sovereignty to a higher governance level, its construction was based on a strong level of depoliticisation (van Middelaar, 2019). For example, to guarantee farmers a minimum price for their products, complicated mechanisms of financial support, barriers to trade and physical intervention (i.e., withdrawal of products) were created for each commodity. This, in turn, generated a complex monitoring system, a tight policy network hardly permeable

to actors outside the sector, and a vocabulary understandable only to experts in the field. Given the electoral weight of farmers, especially on conservative parties, farmers' lobbies had a privileged access to policymaking, and most negotiations occurred behind closed doors. However, when necessary, politicisation occurred, for instance in 1971, when farmers interrupted a meeting of the Member States by entering with their cows into the building, claiming higher minimum prices for their products (Sotte and Brunori, 2025).

As the CAP -- and the related consensus of Member States -- was based on a conspicuous public expenditure (the amount of which depended on the level of minimum support prices established by the Council), it was soon clear to political élites that a reform was necessary. But given the strong political pressure that the farmers' lobbies could exert on national governments, attempts at CAP reform by the European Commission were halted.

The first reform that changed the mechanism of minimum product prices occurred in 1992. On that occasion, the reform was approved under the pressure of the General Agreement on Tariffs and Trade (GATT) negotiations, which ended in November 1992 with the Blair House agreement (Sotte and Brunori, 2025). In this case, the shift of decision-making to a higher institutional level -- the GATT – had partially depoliticised the issue at the European level and it was presented to stakeholders as the outcome of rules that were decided elsewhere. With the reform, farmers' unions and Member States accepted the introduction of the 'decoupling' of payments: once tied to the volumes produced, the CAP subsidies were from then on (and still are) given 'per hectare', reflecting the historical payments once received by farmers. This compromise consolidated the distribution of resources and power among farms. Still today, 80% of funds goes to 20% of farms, and attempts to change this distribution have so far failed.

Politicisation and depoliticisation in the CAP reforms

Almost all new Commissioners for Agriculture have proposed reforms to the CAP. After 1992, Commissioner MacSharry introduced a set of 'structural' instruments co-funded with Member States; the 'second pillar' of the CAP was introduced in 2003 by Commissioner Fischler (the first was based on per-hectare payments), opening the season of Rural Development policies. An attempt to strengthen the 'green' objectives and to redistribute the subsidies from large to small farms, and from product-based subsidies to green payments, was made by Commissioner Cioloș (in the 2014-2020 term), although the resulting compromise, after more than 50 rounds of trilogue meetings, was much less ambitious (Lovec and Erjavec, 2015). According to Lovec and Erjavec (2015), the co-decision represents a 'trap' for reformers, given the strong sectoral components of the negotiations: in fact, the AGRI committee and the Agricultural Ministers of the Member States are heavily influenced by the pressure of farmers' interests and sectoral policy networks. By keeping the grip on the area of competences defined by sectoral boundaries, the AGRI Committee and the Agricultural Ministries have always been able to attenuate the reform proposals through which the Commission aimed to open agricultural policies to environmental, health, landscape and societal challenges.

The latest attempt to reform the CAP was initiated during the 2014-2019 legislature, under Commissioner Hogan. Hogan had no intention to reopen the CAP reform agenda, as the last reform had just been implemented. However, under the push of the 2015 CoP21 agreements and of Agenda 2030, the European Commission was encouraged to revise some of its tools. Under Hogan's mandate, a proposal for CAP reform was developed by the Commission and published in 2018. The main changes were not related to the specific measures, but to the management philosophy, which would shift from a 'compliance-based' to a 'performance-based' approach. In theory, a performance-based approach would imply a contract with farmers who pledge to achieve specific results and a payment in relation to the results achieved. In practice, this approach has been adapted at the Member State level, which implied giving Member States the freedom to define the strategies (based on a National Strategic Plan) meant to achieve a set of commonly agreed targets. Regarding the policy instruments of the CAP, the most important novelty were the 'eco-schemes', a set of voluntary schemes for payment of green practices that Member States must introduce into their Strategic Plans.

For some, this was the beginning of a renationalisation of the CAP: that is, of a re-politicisation at national level. It is important to recall that, at that time, an anti-European sentiment was rising, and one of the main targets of this sentiment was the top-down, red tape approaches that the CAP was accused of embodying. A performance-based approach would give, in the intentions of the Commission, much more voice to national actors.

With the end of the legislature in 2019, the reform proposal represented a legacy for the new Commission, chaired by Ursula Von Der Leyen. However, as mentioned previously, Von Der Leyen had launched a very ambitious program of transformation of the economy, i.e., the Green Deal. The Farm to Fork, a key component of the Green Deal, had set very ambitious targets: 50% reduction of use and risk of chemical pesticides and antimicrobials, reduction of nutrient losses in the soil by 50%, achievement of 25% land under organic farming. Moreover, the Farm to Fork proposed a system approach to policies, aiming to break sectoral barriers by addressing all actors and activities related to food. This also opened a new policy area: food policy. It soon became clear that the 2018 reform, which was taken as the basis for the co-decision process, was not coherent with the ambitions of the Green Deal.

At the start of the new legislature, the first decision to be taken was the allocation of the budget to all EU policies. Once the Council defined the Multiannual Financial Framework (MFF) (under unanimity rule) and the Parliament approved, the CAP reform process could start. In the negotiation over the MFF in July 2020, Charles Michel, the chair of the Council, stated that "*as a general principle, all EU expenditure should be consistent with Paris Agreement objectives and the 'do no harm' principle of the Green Deal*". This would imply that an important share of CAP budget should have been allocated to environmental objectives. Moreover, considering that the policy areas of the EU were growing, the agreement on the MFF implied a cut of 46 billion over the preceding framework.

Once the CAP budget was agreed by the financial ministers, Agrifish -- the body of the Council gathering agricultural ministers -- could discuss the draft reform. According to the Treaty, the co-decision procedure starts when the Commission submits a proposal to the European Parliament, which in turn formulates its position and transmits it to the Council. In turn, the Council formulates its own position. If the positions of the Council and of the Parliament do not match, then the negotiation procedure starts.

In the initial roundtable, many ministries expressed their concern over the goals of the Farm to Fork, clarifying that it was not legally binding. Meanwhile, the first signals of farmers' protests appeared. The *Land schafft Verbindung* (Land Creates Connection or LsV) movement announced a common front against the European Green Deal with farmers' groups in nine other European countries. Despite COVID-19 restrictions, a first demonstration by tractors took place in August 2020.

The discussion in the European Parliament saw initial disagreements between the European People's Party (EPP) and the Green party, with the Socialists & Democrats (S&D) and RENEW Europe parties holding intermediate positions. An agreement between these parties allowed a compromise which obtained the majority in the Parliament, while Greens and 16 S&D members of the Parliament voted against. The position included a 30 percent ring-fence for the new CAP's eco-schemes, 35 percent of 'green spending' in the second pillar, a 5 percent target for non-productive land use under the CAP's conditionality, and 'capping' of subsidies above 100k euros.

As for the Council, the areas of disagreement with the Commission's initial proposal were clear: a) the 'green architecture', with the proposal to 'earmark' a minimum share of the budget for the 'eco-schemes'; b) the 'conditionality', that made crop rotations compulsory and a share of uncultivated farmland; c) the 'new delivery model', that implied the setting of performance indicators and procedures. The official position of the Council was set on 20% ring-fencing, exemptions of farms below 10 ha in the adoption of crop rotations,

'capping' on a voluntary basis (i.e., decided by the Member States), and a substantial limitation in the number of performance indicators to be monitored.

Table 1 - Positions of the Commission, the European Parliament and the Council at the beginning of the trilogue, and the final compromise.

	European Commission	**European Parliament**	**Council**	**Final agreement**
Ring fencing[1]	30 (art. 86)	30	20	30
Crop rotations	Crop rotation	Crop rotation or alternative practices	Crop rotation or alternative practices	Crop rotation or diversification, exemption <10ha
Capping[2]	60k (art. 15)	100k	60k voluntary	100k 100%, 60k voluntary
Monitoring	32 benchmarks Gap >25% à action plan with remedial actions	32 benchmarks	22 benchmarks No action plan	22 benchmarks No action plan

Source: authors' own elaboration.

Despite these differences, both positions of the Parliament and of the Council had consistently watered down the initial proposal by the Commission, which was already quite far from being consistent with the Farm to Fork strategy, while the expected results of the trilogue were even worse. Being in charge of the Farm to Fork dossier, vice-president Timmermans threatened in an interview to withdraw the Commission's proposal if other EU institutions intended to water down its environmental ambition too much.[3] This statement made the confrontation between the three institutions evident. In reply to Timmermans, the German chair of the EU Agrifish Council (and German Minister of Agriculture), Julia Klöckner, accused him of disrespecting democracy.[4] Ursula von der Leyen subsequently intervened, stating that while the Commission has the right to withdraw a proposal in the case of serious divergences from the Green Deal, this was not the current situation, and she pledged to resolve the mismatch during the legislative process.[5]

As the trilogue continued behind closed doors, with minimal information leaking about the ongoing negotiations, another aspect of the interinstitutional conflict emerged. The Chairman of the European Parliament's Environment Committee stated that if the final negotiations moved too close to the Council's position, a majority in Parliament for final approval might not be attainable.[6]

In June 2021, after several technical and political meetings, a compromise was achieved. Ring-fencing was established at 30%, and a 'social conditionality' mechanism was introduced to acknowledge the requests of the S&D party. Both Frans Timmermans and the Chair of the European Parliament's environment committee expressed their satisfaction with the outcome. Only the Greens, along with many civil society organisations and scientists, were critical. They criticised the compromise on the conditionality rules, which were made

[1] Ring-fencing in the CAP means setting aside a mandatory share of agricultural funds for specific objectives — particularly environmental and climate actions — to ensure that these priorities receive guaranteed and protected funding.
[2] Capping in the CAP means limiting the total amount of direct payments a single large beneficiary can receive, in order to make EU agricultural support more balanced.
[3] PoliticoPro Morning agriculture and food, 13 Nov 2020
[4] PoliticoPro Morning agriculture and food, 17 nov 2020
[5] PoliticoPro Morning agriculture and food, 18 nov 2020
[6] PoliticoPro Morning agriculture and food, 18 dec 2020

less stringent in the final version of the reform—specifically, the possibility for Member States to replace crop rotation with crop diversification and the exemption for farms below 10 hectares.

From politicisation to polarisation: the impact of farmers' protests

The CAP reform fell far short of the expectations raised by the Green Deal; nevertheless, it established the rules under which the Commission could exert its power to align the implementation processes of the Member States. Officially approved in June 2021, the new CAP was set to apply from January 2023, following the Commission's approval of the National Strategic Plans. A new cycle of depoliticisation had begun. In fact, with the 'new delivery model', Member States gained greater flexibility in defining strategic objectives, but they were required to demonstrate the coherence of their plans with their committed objectives, and the Commission retained the power to review the National Strategic Plans. Moreover, the Commission enforces controls to ensure that farmers respect the conditionality rules.

The war in Ukraine began before the new rules were implemented. The sanctions on Russia and the interruption of imports from Ukraine exposed Europe's vulnerability due to its dependency on energy and energy-based products, such as fertilizers. Furthermore, the European Union was a major importer of animal feed from Ukraine. Agricultural prices rose, and farmers' lobbies raised concerns about food security. Timmermans responded that "those who did not like Farm to Fork to start with, used the war as a pretext to return to their old positions and try to stop Farm to Fork from happening."[7] As a matter of fact, food security has always been an argument used to support a productivist approach and to postpone or hold back agri-environmental policy goals (Maye and Kirwan, 2013). Despite evidence indicating no risk to food security (European Commission, 2022), the Commission, in agreement with the Council, passed a derogation in July 2022 to a conditionality clause already in force under the previous CAP, notably the obligation to set aside 5% of land to restore biodiversity. Even before it entered into force, the green architecture of the CAP was undermined, albeit temporarily. Societal polarisation encouraged political polarisation, giving voice to the Eurosceptic components of the European Parliament. Factions within the Popular Party, afraid of losing farmers' support to anti-system parties, began to question the principles of the Green Deal which they had previously endorsed. In the end, the Popular Party backed proposals from farmers' representatives, which aimed to make the derogations permanent. In May 2024, the regulation amending the conditionality measures, proposed by the Commission in March, was approved by the Parliament and the Council.

The crisis, however, not only drove the re-politicisation of agricultural issues but also acted as a driver of political polarisation. In the Netherlands, as early as 2019, national environmental policies had generated violent farmers' protests, with an increasingly anti-state and anti-European tone (Van der Ploeg, 2020). In the same country, the Farmer–Citizen Movement (BBB) won the provincial elections in 2023, undermining the stability of the government. In Germany, farmers' protests were strongly backed by the Alternative for Deutschland.[8] In this polarised environment, the CAP was not the only object of contestation. The Nature Restoration Law, another pillar of the Green Deal proposed by the Commission, came under attack both within the Parliament and the Council, backed by Popular and Conservative parties. The Nature Restoration Law establishes targets for the re-naturalisation of land and sea and imposes on Member States the duty to submit a National Restoration Plan. The proposal, initially submitted in June 2022 and reformulated after discussion in the ENVI committee, was approved in the Parliament's plenary session in February 2024. Popular Parties broke the consensus on the Green Deal by voting against it, but the law passed thanks to some EPP members of Parliament who voted against their official party position.

This vote made the division over environmental policies even more acute. The Council, which included many Member States opposed to the law, took three months before approving it[9] with a qualified majority. The

[7] PoliticoPro Morning agriculture and food, 29 Apr 2022

[8] https://www.bbc.com/news/world-europe-67976889?utm_source=chatgpt.com

[9] https://www.consilium.europa.eu/en/meetings/env/2024/06/17/

conservative Austrian government was decisive in this outcome, as it surprisingly voted in favour of the law.[10] Hungary, Poland, the Netherlands, Finland, Sweden, and Italy voted against, and Belgium abstained.

Aware that the increasing polarisation had environmental policies as its main focus, Ursula von der Leyen announced in her State of the Union address in September 2023 the launch of a "strategic dialogue on the future of agriculture,"[11] bringing together 29 key stakeholders—representing a wide range of interests and values in the field of food and agriculture—to develop a common vision for the future of the EU's agriculture and food sector.[12] As she declared in her address, "[W]e need more dialogue and less polarisation," adding that, "[T]he time is ripe to forge a new consensus on food and farming among farmers, rural communities and all other actors on the EU agri-food chain. Farmers are confronted with a wide range of challenges, ranging from climate change, to inflation, to volatile market impacts. With this Strategic Dialogue, we are creating a forum to deliver a clear vision for the future, to the benefit of all."[13]

The strategic dialogue process was led by Peter Strohschneider, an academic who had carried out a similar exercise in Germany, and was organised around a series of plenary meetings and a set of 'exchanges with science', to which experts were asked to contribute on four guiding questions: 1. How can our farmers, and the rural communities they live in, be given a better perspective, including a fair standard of living? 2. How can agriculture be supported within the boundaries of our planet and its ecosystem? 3. How can better use be made of the immense opportunities offered by knowledge and technological innovation? 4. How can a bright and thriving future for Europe's food system be promoted in a competitive world?

After six months of meetings, in September 2024, the group unanimously approved a document of principles and recommendations.[14] The document proposes a vision for the future of agriculture, claiming that "[T]he time for change is now" and that "[C]ooperation and dialogue across the food value chain are critical". It assigns a key role to agriculture in the sustainability transition and stresses the need for considerable resources to support the transition, primarily to compensate farmers for their losses. One of the key recommendations concerns a governance change, based on "a new culture of cooperation", to "ensure practicability and consistency between the different policy areas and overcome silo-thinking". This consensus constituted the basis for the "Vision for Agriculture and Food", which the new Commissioner, Hansen, presented to the newly elected parliament in February 2025. The document, laying out the principles for a new CAP, attempts to retain some of the principles that characterised the previous legislature but shifts the emphasis to keywords such as competitiveness and security, and stresses the need to reward farmers for environmentally friendly practices rather than imposing targets and sanctions. In a situation of ongoing polarisation, the search for a compromise is based on much less ambitious goals than in the preceding legislature. Critics emphasise the lack of a genuine food systems approach, warning that this limits progress toward an integrated and sustainable transition (van Zanten et al., 2025).

This shift raises a key question in relation to politicisation and polarisation over environmental issues: are planetary boundaries, and the risks implied by transgressing them, real? If they are, which policy objectives belong to the 'realm of necessity' and which ones can be adjusted in relation to societal values and interests? Were the Green Deal targets justified in relation to planetary boundaries? Could top-down measures have been replaced with incentives, as the Strategic Dialogue suggests? A democratisation of the 'realm of necessity', with a fruitful interplay between facts, values, and interests, is needed to address these questions.

[10] https://www.eunews.it/en/2024/06/17/nature-restoration-eu-approves-law-italy-votes-against-chaos-in-austria/
[11] https://neighbourhood-enlargement.ec.europa.eu/news/2023-state-union-address-president-von-der-leyen-2023-09-13_en
[12] https://www.euractiv.com/section/agriculture-food/news/food-stakeholders-get-back-to-work-on-much-awaited-dialogue-on-agriculture/?utm_source=Euractiv&utm_campaign=ce538ea1ed-EMAIL_CAMPAIGN_2023_10_06_03_39_COPY_01&utm_medium=email&utm_term=0_-672dc7a2b9-%5BLIST_EMAIL_ID%5D
[13] https://ec.europa.eu/commission/presscorner/detail/en/IP_24_417
[14] https://agriculture.ec.europa.eu/document/download/171329ff-0f50-4fa5-946f-aea11032172e_en?filename=strategic-dialogue-report-2024_en.pdf

This reflection brings the concept of the 'realm of necessity' back to the core of the analysis, showing that even domains traditionally treated as technocratic inevitabilities—such as food security or planetary boundaries—can and should be reopened to democratic deliberation.

Discussion

The series of events described shows that politicisation and polarisation are key components of contemporary politics. The development of the CAP reform demonstrates that (de)politicisation not only shifts a policy issue from the political to the technical sphere, but also between various other domains: from the political to the stakeholders' sphere, from the sectoral to the multisectoral, from the European institutional level to the Member State level, from Parliament committees to the plenary, from the Parliament to the Council (and to the trilogue), and from one Commission Directorate-General to another.

As each of these arenas features a distinct distribution of power, actors often leverage their influence in one arena to shape decisions in others. However, when polarisation emerges, decision-making becomes paralyzed, and the scope for policy change can narrow considerably, as it depends on unstable majorities. As illustrated by the CAP case, polarisation does not necessarily halt decision-making; rather, it often results in reactive or short-term measures aligned with dominant or conservative pressures. These decisions may resolve immediate tensions but tend to undermine the continuity of transformative agendas. Several 'green' measures were repealed following the protests, as the conservative stance ultimately prevailed within the coalition that had supported Ursula von der Leyen.

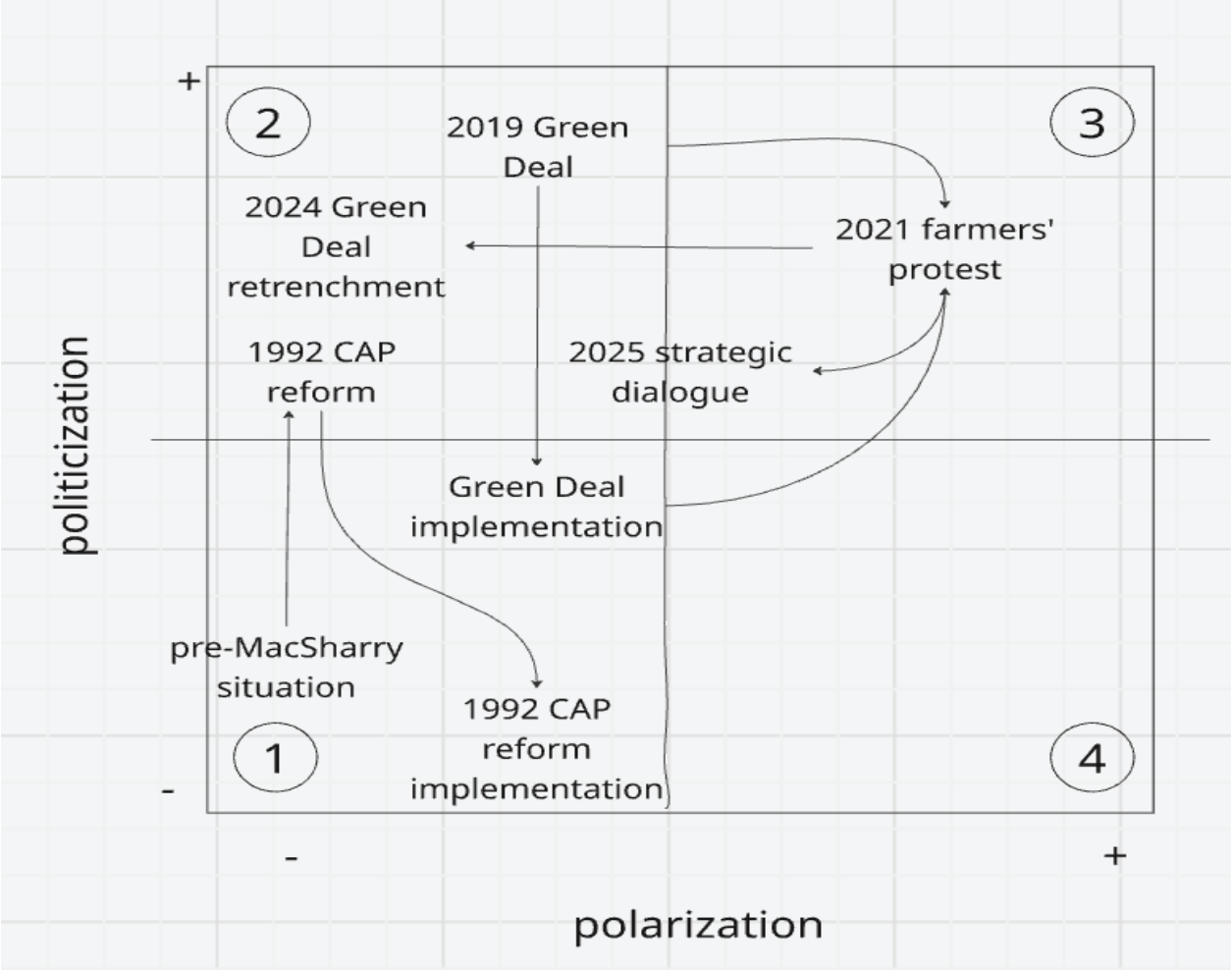
Until the MacSharry reform, the CAP existed in a state of low politicisation and low polarisation (Situation 1, Figure 2). The MacSharry reform itself was a mix of politicisation and depoliticisation. On the one hand, the reform was driven by international agreements (the GATT in 1992), which were beyond the direct reach of individual Member States and even of the EU itself. On the other hand, the MacSharry reform opened spaces for re-politicisation, primarily by linking agriculture to environmental concerns and inviting a broader set of stakeholders to engage with the topic (Situation 2, Figure 2). The Green Deal has followed a similar pattern: the CoP21 agreement and Agenda 2030 played a depoliticising role by providing an external, global rationale, while the introduction of a systemic approach, linking agriculture to the environment and nutrition, represented a repoliticising force (Situation 2, Figure 2). After the trilogue, which resulted in a compromise between conservatives and reformers, the implementation of the CAP reform initiated a temporary process of depoliticisation (Situation 1, Figure 2).

The farmers' protests have marked a new phase of heightened politicisation and polarisation (Situation 3, Figure 2). They have not only repoliticised the sustainability debate but have also generated a broader narrative—amplified by the media—framing the conflict as "farmers versus European bureaucrats and ideological environmentalists." This framing exemplifies affective polarisation, strategically mobilised by Eurosceptic groups to reinforce political divisions. Polarisation has hidden the different nuances of the protests and emphasised only certain aspects, like the anti-European tone, at the expense of politicising other relevant issues such as power distribution in the supply chain, low prices for farmers, and labour exploitation. The CAP case therefore shows that politicisation and polarisation are analytically distinct: while politicisation expands the space for deliberation and contestation, polarisation constrains it by reducing communicative exchange and mutual recognition among actors.

On the other hand, the Strategic Dialogue initiative is an example of a depolarisation strategy, aiming to reduce the level of polarisation while maintaining a high level of politicisation. It has had, so far, the merit of trying to create a space for deliberation to address agricultural issues in their complexity by unpacking the multiplicity of values and interests at stake, with a specific brokering role assigned to science. At a moment of heightened salience and heated debate on the issue, central matters that had remained unspoken between

the polarised poles—for example, ensuring adequate living conditions for farmers in the face of necessary transition costs while remaining within planetary boundaries—have been addressed through the Strategic

Figure 2 – Analysis of CAP reforms under the (de) politicisation – (de) polarisation framework.



Source: authors' own elaboration.

Dialogue. It goes without saying that what is referred to as a "new culture of engagement" (Strategic Dialogue, 2024) will need to be embraced by European institutions and the involved stakeholders to function as a space for depolarisation and to foster the necessary change.

As Bobbio (2017) explains, many scholars (Urbinati, 2014; Mouffe, 2005) tend to see deliberation as opposed to politics, with deliberation tending to depoliticise conflicts. Bobbio (2017), on the contrary, claims that deliberative arenas provide new tools for politicisation: they "have a hybrid nature that can counteract the continuous fluctuations between (hyper)politicisation and (hyper)depoliticisation". They "form a third way between politics and expertise, consensus and truth, politicisation and depoliticisation" (p. 631). If complemented by representative institutions, deliberative arenas can play a transformative role through the achievement of a localised consensus. They encourage stakeholders to focus the discussion on specific issues rather than on identity, and in this way, to gain autonomy from the runaway forces of partisan politics.

Consensus or compromise building, in this regard, is a practice that can help to break down silos and local (sectoral) power concentrations, and it activates platforms for choice, social interaction, and deliberation. The consensus-building process should be, in our view, at the core of the (de)politicisation-(de)polarisation debate, as it is an essential component of transformative change in democratic contexts. Studying the characteristics of deliberative arenas—their participants and procedural mechanisms—becomes of central importance. Who

is involved and who is left outside of deliberation arenas? Should consensus building hide internal differences of visions and interests, or, on the contrary, should it make these differences visible?

Conclusions

In this paper, we have analysed the process of CAP reforms through the lens of (de)politicisation and (de) polarisation, focusing in particular on the last reform, which occurred between 2018 and 2022. We have shown the complexity of this process and identified some of the critical points that could be addressed to promote transformative policies. The ecological transition, and the related food system transformation, extends beyond political cycles. It is linked to significant power imbalances and global injustice, and it is evident that the potential for transformation depends on a wide consensus regarding its objectives. We argue that depoliticisation can be seen as a stabilisation strategy, the purpose of which can be either to consolidate policy change or, vice versa, to avoid it. When depoliticisation is used to avoid change, it can lead to polarisation. The polarisation that characterises our polities, within a context of crisis, has the power to block any attempts to promote transformation, even when it is widely accepted that such transformation is needed and urgent. In this regard, polarisation is not akin to politicisation: on the contrary, it can undermine the transformative role of politics, and as we have seen in recent circumstances around the world, it can lead to reactionary situations. The multiplication of arenas for deliberation, in this context, can be part of depolarisation strategies, as issues are problematised and politicised, and the facts, interests, and values at stake are represented fairly, made evident, and clearly distinguished from one another.

Throughout the paper, we have mentioned the role of scientists, experts, and independent media in politicisation/depoliticisation and polarisation/depolarisation processes. They can play a key role in both and determine the transformative power of the policy process: indeed, by providing evidence and supporting the development of shared values, they can increase tolerance and reduce the distance between positions through dialogue. Given that consensus building needs to consider the facts, interests, and values of the involved actors (Deconinck, 2023), scientists and independent media can, depending on the situation, provide accurate facts, analyse and map the interests at stake, and detect the values embodied in narratives and claims. When important matters are not debated at the political level, independent science and media can provide evidence to problematise and politicise issues. In the presence of highly polarised debates, they can use their capacity to navigate different values and interests to highlight the trade-offs, establish the basis for win-win solutions or, more likely, compromises (Brunori et al., 2024), and in doing so, clearly assess the distribution of costs and benefits of the proposed solutions. However, in a polarised society, the role of science and independent media is under attack. Denial of the value of scientific evidence and the delegitimisation of independent media converge in reducing trust in these institutions, which may ultimately fuel polarisation. In a polarised world, building trust in science and in free, independent information is a key priority.

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A Case for Clarity: Defining Food System Drivers, Outcomes, and Feedbacks

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Abstract

Food systems frameworks are useful analytical tools for understanding the functioning of a complex set of activities, stakeholders, and system outcomes, and for developing interventions for more desirable futures. Despite the rapid proliferation of food systems framings in recent decades, the field remains under-theorised with inconsistent and ambiguous terminology for core concepts like 'drivers', 'outcomes', and 'feedbacks'. This lack of clarity hinders effective communication, research, and intervention design. This paper argues that clarifying these terms is essential for advancing food systems understanding and informing transformative action. We begin by critically examining how these terms are currently used in the food systems literature, highlighting inconsistencies and potential implications. Drawing upon geography literature, which usefully examines spatial dynamics, scale, and human-environment interactions, we then explore how analogous concepts are employed, seeking potential cross-disciplinary learning and enrichment. Geographical perspectives, with their emphasis on spatial dynamics, scale, and human-environment interactions, offer valuable insights for refining our understanding of food system processes. Drawing on this interdisciplinary exploration, we propose that researchers more clearly indicate how the key concepts of 'drivers', 'outcomes', and 'feedbacks' within food systems analyses are being used and offer a distillation of their relationships with each other as key system elements. This will promote more rigorous and consistent approaches to studying food system dynamics, facilitating more effective research, policy development, and practical interventions. Ultimately, this paper underscores the importance of terminological clarity and interdisciplinary collaboration for addressing the complex challenges facing food systems and achieving a more just and sustainable food future.

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Introduction

The global food system faces unprecedented challenges and requires paradigm-shifting transformations toward improved outcomes across all dimensions of the system. These transformations necessitate a comprehensive understanding of the complexity, functioning, and requirements for driving change among a vast range of actors (Godfray et al., 2010; HLPE, 2017). Food systems frameworks offer a valuable lens for analysing these complexities and provide a structured approach for identifying key actors, processes, and interactions within the system. However, the rapid growth in the number and diversity of frameworks has highlighted the need for a stronger theoretical foundation to underpin their application.

The entry point of this work arises from an observation that key concepts in food system dynamics, such as 'drivers', 'outcomes', and 'feedbacks', have been variously depicted and discussed in the food systems literature. Given the increasing calls for quantification and monitoring of the status of food systems, moving away from abstract approaches, such conceptual and definitional confusion becomes more relevant (Béné et al., 2019). These terms were selected due to their foundational role in understanding the dynamics of these systems and their frequent yet inconsistent application across diverse food systems frameworks. They represent core elements necessary for understanding the complex interactions within food systems. Further, due to their definitional confusion, when applying analysis of drivers, outcomes, and feedbacks to food systems research, it is often unclear when these concepts are distinct from each other. For example, when does a factor act as a driver, and when does that factor become a feedback instead of a driver? This paper addresses these concerns by first presenting an overview of the food systems literature through a critical exploration of these terms. We then discuss how these terms relate to one another and how they influence food system transformation debates.

We begin from the position that food systems frameworks aimed at transformational processes, and their visual representations, are not neutral representations of reality. They are inherently political objects, shaped by the worldviews, perspectives, and biases of their creators. The boundary decisions made on what elements and relationships to include and focus on reflect specific priorities and can obscure alternative viewpoints, whether disciplinary, political, or social. This inherent subjectivity introduces potential biases that influence the creation of knowledge about food systems and leads to certain interventions being prioritised over others. This subjectivity also results in certain narratives gaining dominance, even in contexts where they might not be appropriate. On this basis, 'drivers', 'outcomes', and 'feedbacks' were chosen for their direct relevance to policy and intervention design, as these elements are often the targets or consequences of food system transformation interventions. Recognizing this political dimension is essential for critically evaluating these frameworks and understanding their role in shaping research, policy, and practice.

Finally, food systems frameworks are subject to limitations as they are relatively simplistic representations of complex situations and interactions. Despite best intentions, they abstract away from the nuances and complexities of real-world systems. This simplification can lead to particular drivers and outcomes being potentially overemphasised, while overlooking critical feedbacks and emergent properties. Additionally, data availability and constraints on available and acceptable metrics can limit the scope and accuracy of these frames, particularly in contexts of limited resources and where data collection is challenging. Therefore, interpretations resulting from food systems frameworks must be accompanied by caution regarding their limitations and potential for bias, and they should also be supplemented with multiple and diverse forms of knowledge and perspectives.

This paper is structured as follows: we begin with a section on food systems framings, which functions as the literature review, including a detailed examination of 'drivers', 'outcomes', and 'feedbacks'. This is followed by a table that summarises these concepts as defined by key authors in the field. Finally, we present a discussion that integrates these findings and offers insights for future research, policy development, and

practical interventions.

Food Systems and Food Systems Framings

Food systems models and frameworks are myriad, and while efforts underpinning the Food Systems Dashboard, Food Systems Countdown Initiative, the High Level Panel of Experts' (HLPE) framing, the Food and Agriculture Organization's (FAO) sustainable food systems map, The Food Systems Economic Commission, and City University's Food Systems framing have been informing research, policy, and programming over recent years, they are all substantially different from each other (Fanzo et al., 2020, 2021; HLPE, 2017; Hanh Nguyen, 2018; Parsons et al., 2019). These differences are not just in terms of representations, but also the selection and combination of elements, relationships between them and interacting systems, and how the context of the food system is handled.

Food systems frameworks acknowledge the intricate relationships between the various activities that take place in the food system. This includes food production, food distribution throughout supply chain processes which include processing and manufacturing, distribution, and storage, environments where food is obtained, individual choices and diets, the drivers affecting these processes, and the resulting nutritional, environmental, and livelihood outcomes that ultimately feedback and influence the overall system.

Food systems frameworks can be categorised according to their primary focus, such as social-ecological frameworks emphasizing the interconnectedness of social and ecological systems (Ericksen, 2008) or political economy frameworks highlighting power dynamics and inequalities within the system (McMichael, 2021). The strength of these frameworks lies in their ability to move beyond linear models and focus on relationships, feedbacks, and complexity. They allow researchers to analyse how different components of the system interact in both intentional and unintentional ways, and how they influence each other (Guptill and Peine, 2021).

However, limitations do exist because systems maps are mental constructs (García, 1984). Existing frameworks have tended to lack a strong theoretical foundation, leading to inconsistencies in how drivers and embedded systems are conceptualised and analysed (Béné et al., 2019). Further, system maps (used here to mean 'visualisations of conceptual frameworks') are created by researchers and hence subject to the position, biases, and inherent subjectivities and values of their makers; they should not be portrayed to demonstrate a realist ontology. Definitions of system boundaries for these frameworks can sometimes neglect the dynamic interplay of forces across scales and levels. Finally, feedbacks within the system are often oversimplified, failing to capture the complex and often non-linear nature of change (Gliessman, 2016). Capturing these dynamics over various scales (particularly over various temporal scales) has also proved a challenge for analysing food system dynamics and is rarely addressed in food systems frameworks, such as Stave and Kopainsky (2015). The act of drawing systems maps is inherently political, reflecting the worldview and priorities of the cartographer. The very selection of elements and relationships to represent constitutes a subjective, value-laden decision. The pursuit of an 'objective' system map can inadvertently depoliticise the analysis, masking underlying power dynamics and ideological commitments. This implicit claim to objectivity risks obscuring the fact that systems maps are not neutral representations but rather tools that shape and are shaped by political (or at the very least, subjective) agendas. By acknowledging the inherent subjectivity in systems mapping, we can foster a more transparent and critical dialogue about the choices that shape our understanding of food systems and, consequently, the interventions we prioritise. This reflexive approach is essential for navigating the complex interplay of power, knowledge, and action within food system transformation.

These conceptual differences become particularly concerning given the multiple scales and levels within such frameworks. When analysing relationships in a system, such differences stand out more, particularly given recent efforts to ensure that drivers are quantifiable and can be used in models. Drivers in these global food systems models are again variously shown using a disciplinary lens (e.g., economics and demographics),

subsystems or embedded systems (e.g., human system), or both. A framework visualisation may depict drivers interacting with the system of interest while also depicting that system of interest embedded in other systems. This can be noted, for example, in the Foresight4Food Initiative's visualisation of global food systems (Woodhill, 2019). Outcomes are similarly captured under broad dimensions like food and nutrition security, socio-economic wellbeing, environmental sustainability and will refer to specific elements within them across various levels of food system activity.

The sources of commonalities and differences in these concepts emerge from a range of factors. The disciplinary lenses through which the framework has been constructed is a key influence on the focus. Socio-ecological frameworks emphasise the relationships between environmental pressures and resource dependency on society and economy. A framework designed for addressing nutritional deficiencies highlights the drivers and outcomes ostensibly aimed at drivers that influence diet and consumption habits. These differences are essentially a boundary decision on what factors are brought to the forefront of analysis or problem setting. Furthermore, the scale and level of analysis—local, regional, or global—shapes the selection of relevant drivers and the complexity of feedbacks considered. Contextual factors, such as cultural norms, political structures, and technological advancements, introduce further variation. Finally, the inherent subjectivity of researchers, their values, and their chosen epistemological approaches contribute to the diverse conceptualisations of food systems, resulting in varying interpretations of drivers, outcomes, and the nature of their interconnectedness.

Feedbacks and relationships between the subsystems, drivers, activities, and outcomes are predominantly represented with arrows or connecting lines that do not always consistently identify the nature of the connection or flow: is this an influencing relationship based on human decision-making, or is it a flow of resources as in the systems engineering tradition? Some feedbacks implicitly indicate 'influence' that can cover a myriad of relationships and material flows across multiple scales. For example, arrows between the food system activities of 'production' and 'distribution' presumably include decision-making relationships between actor groups such as farmers and suppliers, while also indicating the transport of physical commodities, and the exchange of money and assets. Frameworks that also incorporate food environments use similar relationships to indicate food behaviour at a household level, with the difference of scale and level represented as either subsystems or as a nested system within a larger system. Of course, these are not intended or claimed to be comprehensive depictions of reality, but questions of such relations and subsystems require greater intellectual investment, particularly when stakeholders are asked to make changes in their mindsets and activities. Therefore, achieving conceptual and definitional clarity is not merely an academic exercise, but a political imperative.

Table 1 presents a selection of influential, peer-reviewed food systems frameworks that have shaped policy and research aimed at transforming the food system. While a complete review of all existing food system maps is beyond the scope of this paper, the table highlights key policy-relevant examples developed by leading researchers. These frameworks were chosen based on their impact on policy, their comprehensive inclusion of various drivers, interconnected systems, and feedback loops, their interdisciplinary development, their alignment with global goals (like the Sustainable Development Goals), and their applicability to regional and global analyses. It is important to note that this list is not exhaustive and primarily focuses on broad-scale, high-level food system analysis, making it less suitable for examining localised food systems. The table makes a distinction between how the terms are used in the narrative of the document, as compared to the conceptual

framework visualisation, if present.

Table 1. Selected food systems frameworks and how they represent drivers, systems, and feedbacks

Author(s) and Title	'Drivers' Representation (Narrative)	'Drivers' Representation (Conceptual framework visualisation)	'Outcomes' Representation (Narrative)	'Outcomes' Representation (Conceptual framework visualisation)	'Feedbacks' Representation (Narrative)	'Feedbacks' Outcomes Representation (Conceptual framework visualisation)
Acharya et al., 2014. Centre for Integrated Modeling of Sustainable Agriculture and Nutrition Security (CIMSANS) project	Access, behaviour, business opportunity, nutrition opportunity, fisheries and nutrition policies.	Visualisation of conceptual framework does not label drivers, but shows an enabling environment which leads to system shape and dynamics.	Social outcomes, nutrition and sustainability outcomes, and food system resilience. The overarching 'goal' is to achieve sustainable nutrition security.	Visualisation of conceptual framework does not label outcomes. The system's goal is achieving sustainable nutrition security.	System elements are interconnected through linkages.	Visualisation of conceptual framework does not label feedbacks, but shows how system elements are directly interconnected through linkages. Arrows between consumers/consumption and food chain actors, and food chain actors and producers. Arrow towards system goal of sustainable nutrition security.
Béné et al., 2019. Food systems framework in *Understanding food systems drivers: A critical review of the literature*	Driver categories of production / supply, distribution / trade, and consumption / demand.	Shown as boxes that interact with each other (production / supply drivers, distribution / supply drivers, consumption / demand drivers). These drivers interact and have a 'durable effect' on food system actors and activities.	Nutrition, food security and health; environment; social; and economic outcomes, and that these different outcomes are characterized by synergies and trade-offs.	Outcomes are shown to arise from food system actors, food environments, and consumers. Outcomes interact with each other through trade-offs and synergies, and additionally, they connect to feedbacks.	Feedbacks are often nonlinear and connect outcomes and drivers.	Feedbacks labelled, showing connections between outcomes and drivers. Different arrows indicating feedback, durable effects, interactions, impacts and influence and trade-offs and synergies.
Brunori et al., 2015. Assessment of the impact of drivers of change on Europe's food and nutrition security (TRANSMANGO)	Biophysical, socio-cultural, economic, political, technological (depicted outside the overarching system of food regime).	Drivers come from outside the food system regime and are connected to the food system regime through impacting it, and from feedbacks back to the drivers from the regime. Drivers are independent or overlapping, falling under categories of bio-physical, socio-cultural, economic, political, and technological.	Food security, environmental security and other social interests Outcomes are discussed, particularly with reference to food system vulnerability. Similarly to Ericksen, 2008, outcomes arise from food system activities (their contributions to food security, environmental security, and socio-economic welfare).	Arise as a direct result of food system actors and activities. They fall under categories of food and nutrition security, socio-economic welfare, and environmental security.	Feedbacks and impacts have a delay between drivers and food system regime, arrows indicating coordination, interaction and interconnectedness, flow resources and services, and food system outcomes.	Feedbacks arise from the food system regime and with a one-way arrow, feedback to drivers (with or without delay). Feedbacks also arise from food system outcomes (within the food system regime) and with a one-way arrow, feedback to institutions, assets, and actors/activities (with or without a delay).

Author(s) and Title	'Drivers' Representation (Narrative)	'Drivers' Representation (Conceptual framework visualisation)	'Outcomes' Representation (Narrative)	'Outcomes' Representation (Conceptual framework visualisation)	'Feedbacks' Representation (Narrative)	'Feedbacks' Outcomes Representation (Conceptual framework visualisation)
Ericksen, 2008. Global Environment Change and Food Systems (GECAFS) Programme	Global environmental change, socio-economic drivers, 'natural' drivers, and driver interactions.	Drivers arise through feedbacks and fall under categories 'global environmental change' drivers and socioeconomic drivers. These interact and influence food system activities and food system outcomes directly. This visual depiction does not show the food system as nested within natural or social systems, so it is unclear whether drivers are endogenous or exogenous to the system, or both.	The three categories of outcomes considered in this framework—food security, environmental security, and social welfare often trade-off with one another across level. Outcomes are also drivers of global environmental change and create feedback loops.	Outcomes contribute to social welfare, food security, and environmental security/ natural capital. These outcomes interact with each other with bi-directional arrows and also feedback from outcomes to drivers.	Feedbacks are non-linear and connect outcomes to drivers.	Feedbacks are socio-economic or environmental, arising from food system activities or outcomes and resulting in drivers on the system; feedbacks connect from outcomes to drivers. There are arrows between drivers, activities and outcomes.
Fanzo et al, 2021. Food Systems for 2030 framework	Biophysical, climate, and environment, income growth and distribution, politics and leadership, sociocultural dynamics, population growth, migration, and conflict, globalization and trade, land use and urbanization. Drivers are processes, and the components have feedback loops with each other and with the drivers and outcomes. Drivers can influence the directionality and dynamism of interactions between actors and components, which can help or hinder transformation.	Drivers influence components of the food system, policies, SDGs, and sustainability and resilience. There is no connection in the conceptual framework visualisation between drivers and outcomes.	Outcomes are not explicitly defined but they are grouped into three thematic areas (1) Diets, nutrition, and health; (2) Environment and climate; and (3) Livelihoods, poverty, and equity. Cross-cutting areas focus on (4) Governance and (5) Resilience and sustainability.	Outcomes are depicted to arise from the components of the food system (supply chains, food environments, etc.) and policies, SDGs, and sustainability and resilience. There is no connection in the conceptual framework visualisation between drivers and outcomes.	Components of the food system have feedback loops with each other and with the drivers and outcomes.	Feedbacks are not labelled or the focus of the conceptual framework visualisation, however each element of the system has an outward arrow from it into the rest of the system.
Global Panel on Agriculture and Food Systems for Nutrition (GLOPAN), 2016. Food systems framework	Drivers of food system exist outside of the food system and broadly exert influence on it.	It is unclear in the visual representation if the drivers are completely external to the system. The food supply system appears embedded within the drivers of the food system.	Diet quality as a focal outcome.	The middle (potentially the target) of the system and sub-systems.	Not explicitly discussed.	Double-headed arrows between the four subsystems.

Author(s) and Title	'Drivers' Representation (Narrative)	'Drivers' Representation (Conceptual framework visualisation)	'Outcomes' Representation (Narrative)	'Outcomes' Representation (Conceptual framework visualisation)	'Feedbacks' Representation (Narrative)	'Feedbacks' Outcomes Representation (Conceptual framework visualisation)
HLPE, 2017. Nutrition and food systems. A report by the High-Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security. HLPE Report 12.	Biophysical and environmental, innovation, technology and infrastructure, political and economic, socio-cultural, and demographic	Drivers arise from outcomes via feedbacks. Drivers fall within five categories that act on food supply chains: food environments, and consumer behaviour; Biophysical and environmental drivers; Innovation, technology and infrastructure drivers; Political and economic drivers; Socio-cultural drivers; Demographic drivers.	Outcome areas are: nutrition and health outcomes, environmental outcomes, economic outcomes, and social equity outcomes.	Focus on Nutrition and health outcomes. Other dimensions are captured as impacts: social, economic, and environmental.	There are feedbacks between political, programme and institutional actions and drivers, nutrition and health outcomes, impacts and drivers, impacts and political, programme and institutional actions, and between drivers and the linked systems.	Feedbacks connect outcomes and impacts in a uni-directional arrow back to drivers. There is also a bi-directional connection from food supply chains, food environments, and consumer behaviour with biophysical and environmental drivers and the SDGs through the medium of 'political, programme and institutional actions'.
Nguyen, 2018. Food and Agriculture Organization (FAO) food system	Not explicitly named as drivers. Natural elements (air soils ecosystems and genetics, water, climate) and societal elements (organizations, policies, laws and regulations, infrastructures, socio-cultural norms) as the outer most rings of a nested system.	There are no drivers explicitly named in the conceptual visualisation, however, the core system interacts with natural elements and societal elements through bi-directional arrows.	The food system wheel has goals and 'performance' instead of outcomes. These goals are poverty reduction, food security and nutrition; the performance of the system refers to three dimensions of sustainability: economic, social, and environmental.	Central to the core system are highlighted elements: sustainability performance, and poverty reduction,	Feedbacks connect societal and natural elements between each other and the core food system.	Feedbacks are not explicitly labelled in the visualisation, however, there are bi-directional arrows between natural elements and societal elements with the core system.
Parsons et al., 2019. City, University of London's Centre for Food Policy's food system map	'Dimensions' of economics, politics, the environment, health, and society functioning as drivers and outcomes. Drivers are the factors that 'push or pull' the food supply chain of food system activities.	Drivers and outcomes are the dimensions that shape and are shaped by the food supply chain: health, politics, environment, society, and economy.	Drivers and outcomes are the dimensions that shape the food supply chain: health, politics, environment, society, and economy. While drivers and outcomes are typically portrayed as separate, this approach posits that drivers can also be outcomes, and outcomes, drivers.	Drivers and outcomes are the dimensions that shape and are shaped by the food supply chain: health, politics, environment, society, and economy.	Each dimension feeds into the food chain dimension, which connects back.	As drivers and outcomes are represented by the same part of the figure, there are numerous bi-directional arrows between the driver/outcome combined dimensions and the food chain.

Author(s) and Title	'Drivers' Representation (Narrative)	'Drivers' Representation (Conceptual framework visualisation)	'Outcomes' Representation (Narrative)	'Outcomes' Representation (Conceptual framework visualisation)	'Feedbacks' Representation (Narrative)	'Feedbacks' Outcomes Representation (Conceptual framework visualisation)
Stefanovic et al., 2020. Food System Outcomes: An Overview and the Contribution to Food Systems Transformation	Drivers are comprised of interactions within and between Bio-geophysical and human environments as well as interactions and feedbacks between them.	No conceptual framework visualisation.	Outcomes arise from food system activities. They note that although the classification of outcomes vary from author to author, regardless of the differences the outcome categories can generally be assigned to four broad groups: food and nutrition security (or health pillar) and the three pillars of sustainability, namely environmental, social and economic.	No conceptual framework visualisation.	Feedbacks are the interactions between all elements of the food system	No conceptual framework visualisation.
Webb et al. 2023. Measurement of diets that are healthy, environmentally sustainable, affordable, and equitable: A scoping review of metrics, findings, and research gaps	Drivers are not the focal area of this paper.	No conceptual framework visualisation.	Categorised as the dimensions of sustainable healthy diets: planetary health, human health, economic, and social outcomes.	No conceptual framework visualisation of the food system, but a chord diagram demonstrating how outcomes are interconnected.	Feedbacks are not the focal point of this paper however they are mentioned as the mediator linking climate and ecology, human health and nutrition, food prices, and social justice.	No conceptual framework visualisation.
Westhoek et al. 2016. United Nations Environment Programme (UNEP) International Resources Panel	Biophysical and socio-economic drivers.	Socio-economic drivers arise from social food system outcomes and in turn impact food system activities ; these interact with natural resources to influence food system activities.	Outcomes related to social factors feedback to social-economic drivers while the outcomes related to environmental factors feedback to natural resources.	Food system outcomes contribute to environmental factors, food security, and societal factors. These feedback with unidirectional arrow to natural resources and socio-economic drivers.	Feedbacks connect drivers, activities, environment, and natural resources.	Depicted as one way arrows between outcomes and natural resources and socio-economic drivers. There are also bi-directional arrows between natural resources and food system activities, food system activities and outcomes, and food system activities and socio-economic drivers.
Woodhill, 2019. Foresight4Food	Demographics and development, consumption, technology, markets, climate and environment, policy and geopolitics.	Drivers are exogenous, acting on the whole natural system and nested human and food systems. Outcomes give rise to drivers through feedbacks.	Economic and social well-being, food and nutrition security, and environmental sustainability.	Economic and social well-being, food and nutrition security, and environmental sustainability. Outcomes arise externally to the natural system and nested human and food systems. Outcomes are in three dimensions: economic and social well-being, food and nutrition security, and environmental sustainability.	Feedbacks (feedback loops) connect the wider interactions between human and natural systems.	Between Food, Human, and Natural Systems, and from Outcomes to Drivers.

Author(s) and Title	'Drivers' Representation (Narrative)	'Drivers' Representation (Conceptual framework visualisation)	'Outcomes' Representation (Narrative)	'Outcomes' Representation (Conceptual framework visualisation)	'Feedbacks' Representation (Narrative)	'Feedbacks' Outcomes Representation (Conceptual framework visualisation)
Zurek et al., 2018. Metrics, Models and Foresight for European SUStainable Food and Nutrition, (SUSFANS)	Indirect and direct drivers and EU policy goals. Drivers influence the different food system actors and their activities.	Drivers are explicitly labelled as direct and indirect. Direct drivers are detailed by supply chain actors, and indirect actors are in the broad categories of economic development, population dynamics, etc.	Nutrition and diet, environmental and economic outcomes together with social equity dimensions. Outcomes arise from actors and activities, with a subsequent arrow to the 'status' of the system.	Captured as a goal, which is to influence the performance of the EU food system.	Feedbacks not explicitly defined or discussed in detail, but are mentioned as interactions and feedback loops between the food system components.	Arrows between indirect drivers (context), policy goals, status of the EU food system, and the EU food system.

Food System Drivers

Drivers represent forces that exert influence on the sustained structure, function, and trajectory of a food system. These forces can be internal (e.g., technological innovations) or external (e.g., climate change) and can operate across various scales and levels. Understanding drivers is crucial for anticipating food system dynamics and identifying potential leverage points for interventions aimed at achieving specific goals (Linnér and Wibeck, 2021). Current scholarship often treats drivers as discrete and independent entities, which overlooks the interconnectedness and potential for synergistic or antagonistic interactions between drivers (Ingram, 2011). The focus on so-called dominant drivers (e.g., globalisation) can overshadow the importance of context-specific and less readily quantifiable drivers (e.g., cultural values).

Drivers operate across different scales and levels, including temporal, spatial, jurisdictional, institutional, and network scales. For instance, global trade policies can influence local food production practices. Similarly, the impacts of a driver can unfold over time, with some effects manifesting immediately and others emerging over millennia. Food systems frameworks also have implicit or explicit boundaries (e.g., national borders, regional watersheds) that can shape the influence or perceived influence of drivers. Understanding these boundaries is critical for effectively analysing how drivers impact different actors and processes within the system (Eakin et al., 2017)

In their review of the literature on food system drivers, Béné et al. observe that, with rare exceptions (Ericksen, 2008; HLPE, 2017; Zurek et al., 2018), drivers are "often simply processes and events that are known (or theoretically expected) to have an impact on food systems" (Béné et al., 2019, p. 150). These drivers can exert influence at various points within the food system, directly affecting production practices, distribution networks, or consumer behaviours. For instance, policy changes, a key driver, can alter agricultural subsidies, thereby reshaping production landscapes and market access. They argue that only processes that infer durable and consistent influences on the system can be considered drivers. This would differentiate a driver from a shock, which would be a more temporally bound process. For the same reason, elements like climate change and price volatility by themselves would not be drivers unless their frequency or recurrence period lasts long enough for adaptations to durably change the system.

The endogeneity, exogeneity, controllability, and accidental nature of drivers is a further area of conceptual concern that stems from boundary definition. Drivers influencing activities outside the determined system boundaries are considered exogenous to the system, and everything within is endogenous. In this narrative, the changes made by consumers are endogenous to a food system, while the increase in frequency and severity of climate change-related extreme weather events are exogenous. This distinction between endogenous and exogenous can be problematic because if food systems are considered to be part of the natural environment,

then changes in climate conditions (which are often considered exogenous) could also be seen as endogenous to the food system. This creates a conceptual challenge in determining the boundaries of the system and identifying which factors should be considered internal or external to it. It is also a cognitive leap to imagine food production as largely embedded in the natural environment in terms of the use of soil, water, and ecosystem services or resources, while keeping the changes in climatic conditions as a result of climate change outside the boundary of interest. Considering the multi-scale and multi-level variations of drivers on activities and actors further complicates the analysis, with the impacts of those drivers being modified by the context of the location and region of interest (Cash et al., 2006).

Food System Outcomes

The term 'outcomes' within food systems literature is rarely explicitly defined, and often used interchangeably with related terms. Generally, the literature suggests that outcomes are the 'impacts' of food system activities or the performance characteristics of the system itself, spanning scales and levels from the individual to the global. Ingram (2011) succinctly frames them as 'what we get' from 'what we do,' a seemingly straightforward definition that belies the complexity of its application. Webb et al. (2023) in their scoping review, opt for 'endpoints,' measurable variables that document the outcomes across health, environment, social, and economic pillars. Yet, even this seemingly precise definition struggles to capture the full breadth of what has constituted an outcome, as evidenced by the frequent use of proxy terms.

This lack of clarity manifests in the frequent conflation of 'outcomes' and 'impacts' or 'performance' over time. Ambikapathi et al. (2022) exemplify this, using the terms almost synonymously in their analysis of food system transitions, blurring the lines between immediate results and longer-term consequences. The Integrated Food Security Phase Classification attempts to introduce a hierarchy, distinguishing between first-level outcomes—such as changes in food consumption and livelihoods—and second-level outcomes—like nutritional status and mortality (Integrated Food Security Phase Classification Technical Manual Version 3.1. Evidence and Standards for Better Food Security and Nutrition Decisions, 2021). This structured approach, while useful, highlights the inherent challenge of delineating clear boundaries between different types and levels of outcomes within complex systems, and returns us to our early difficulty with boundaries and focus areas of food systems frameworks. Wood et al., (2025) utilizing causal loop diagrams, refer to 'elements' in a system, which include actor capacities (in this case, referring to the capacity of organisations to generate profits) and outcomes, illustrating the dynamic and interconnected nature of these concepts. For instance, in their representation of the global ultra-processed food (UPF) system, actor capacities like 'industry influence' are linked to outcomes like 'increased UPF consumption,' demonstrating the feedbacks inherent in food system analysis. Similarly, Vallejo-Rojas et al. (2016) position outcomes at the centre of 'focal action situations' within agri-food systems, using Ostrom's framework without explicitly defining what constitutes an outcome.

Even when employing methodologies like Life Cycle Assessment (LCA), intended to quantify outcomes, inconsistencies persist. Boundary setting remains a challenge, particularly in capturing non-quantifiable elements that are either referred to generally as a context or the underlying systems of the food system (Webb et al., 2023). This variability points to a fundamental limitation in relying solely on measurable endpoints to capture the multifaceted nature of food system outcomes. Notably, the social dimension remains persistently underrepresented. (Blackstone et al., 2024; Ericksen, 2008; Webb et al., 2023), highlight the tendency to focus on consumer preferences, reflecting a broader conceptual gap and data limitations, especially since this term can be variably discussed as a driver or an outcome, depending on the focus of the analysis. (Blackstone et al., 2024) offer a valuable contribution by delineating social outcomes, distinguishing between measurable aspects like 'social capital' and unmeasurable aspects like 'sense of belonging'. However, the inconsistent use of 'dimensions' when also analysing outcomes further muddies the waters.

This discursive ambiguity has significant implications for emerging concepts like resilience and sustainability

assessment. While resilience is often viewed as an intrinsic characteristic of a food system (Tendall et al., 2015), it is also incorporated as a principle of transformation (Stefanovic et al., 2020). Given that resilience is connected to food and nutrition security and environmental sustainability, the lack of clarity regarding outcomes directly impacts the development of relevant metrics and the understanding of driver-feedback relationships. As Stefanovic et al. (2020) emphasise, the emerging discourse on resilience necessitates further attention, particularly in relation to how we define and measure outcomes. Ultimately, a more rigorous and consistent conceptualisation of outcomes, encompassing both quantifiable and qualitative dimensions, is essential for advancing our understanding of food systems and guiding effective interventions.

Food System Feedbacks

Feedbacks are extremely important in the food systems literature, particularly for analysing the dynamics of these systems. Ericksen's (2008) seminal work on food systems defines feedbacks as "when a process interacts with a system component and the response then produces another reaction," further stating that "feedbacks can reinforce or counterbalance the original process" (Ericksen, 2008). Ericksen encourages that food systems "analysis must trace cross-scale interactions, especially the feedbacks," and notes that a holistic approach to understanding food systems interactions requires feedbacks and interactions to be analysed along with drivers and outcomes (Ericksen, 2008). Investigating the dynamics of feedbacks is central to food systems analysis and toward transforming these systems.

While the food systems literature has broadly demonstrated the importance of feedbacks (e.g., Serraj and Pingali, 2018), beyond Ericksen (2008), feedbacks have seldom been the subject of theoretical inquiry. Most often, feedbacks are described alongside linkages between focal elements of the food system, such as outcomes and drivers, or as the result of system interactions (Brouwer et al., 2020; Hahn Nguyen, 2018; Ruben et al., 2021). Occasionally, some food system conceptualisations omit the use of feedbacks altogether in their narrative (HLPE, 2017). Also, when feedbacks are used in conceptual narratives, they frequently remain unlabelled in food system conceptual maps such as in Ruben et al. (2021) and FAO Sustainable Food Systems Concept and Framework(2018).

The interactions between system elements (inclusive of feedbacks), rather than assessment of system elements as distinct pieces, are crucial for taking a food systems approach (Béné et al., 2019; Chase and Grubinger, 2014; Grant, 2015; Pinstrup-Andersen and Watson II, 2011). While feedbacks link outcomes to drivers and can reinforce or counterbalance the original process, outcome, or driver, feedbacks warrant analysis as processes *sui generis*. They can be negative or positive and need to be contextualised in system scales (Béné et al., 2019; Dalin and Rodríguez-Iturbe, 2016; Zimmerer, 2013). For instance, considering feedbacks across the analytical scale of time during reinforcement and counterbalancing processes: they can occur instantaneously or slowly, which have significant impacts on the dynamics of the whole system. Thus, to achieve a shift toward a sustainable food systems approach, feedback analysis can act as a vital entry point for change (Béné et al., 2019).

While it is important to explicitly define and analyse what constitutes a feedback, this clarity is also essential for distinguishing what is important about feedbacks for food systems transformation. Feedbacks are vital for assessing the performance of systems and the nature of outcomes and drivers, particularly as systems change and evolve over time (Hanh Nguyen, 2018). Further, assessing the food systems' complex and systemic nature, which feedbacks aim to address, enables improved analysis aimed at transformation (Bustamante et al., 2024). Feedbacks are important to analyse because, by their nature, they determine the dynamics of a system or how systems may change. Hence, where there are objectives to shift systems or improve their function (or undergo food systems transformation), feedbacks are an important focal area to address and analyse.

Insights from Geography

Geographical perspectives, particularly within food and commodity geographies, offer valuable insights by emphasizing spatial dynamics, scale, and human-environment interactions. While the specific term 'outcome' is less prevalent, the broader concept of 'impacts' is central, encompassing environmental, social, and economic dimensions. This aligns with the food systems focus on multifaceted outcomes and trade-offs between outcome areas. Geographical analyses illuminate how socio-spatial drivers shape food systems. These drivers extend beyond traditional geographical concepts to include the crucial dynamics of territorial development as follows. These include globalisation and trade, where commodity geographies underscore the influence of global trade networks and power dynamics on food production and distribution (Morris and Kirwan, 2011). Urbanisation, as explored in urban geography, alters food demand, land use, and access. Environmental geography highlights climate change as a critical driver, impacting agricultural productivity and food security (Morales-Muñoz et al., 2020). Furthermore, political geography examines how policies, land tenure, and regulations shape food systems, while the uneven distribution of technological advancements also plays a key role (Robinson, 2018). This broader lens, which encompasses territorial development, is crucial for understanding the link between food and the social and economic vitality of a region. The concept of territorial food systems views food production and consumption as deeply embedded within specific places, focusing on the interactions between diverse actors, activities, and governance mechanisms within a defined territory. This perspective moves beyond a purely spatial analysis to consider how actors like farmers, institutions, and consumers, through their activities and strategies, influence regional development and contribute to outcomes like food and nutrition security (Lamine et al., 2012; Galli et al., 2020).

Geographical perspectives have also tended to emphasise localisation and regionalisation, highlighting the importance of understanding food systems not just on a global scale, but also through the lens of specific places and regions (Hinrichs, 2003). This focus on local, regional, and place-based food systems analyses how proximity, cultural ties, and community networks shape food production, distribution, and consumption, offering alternatives to globalised models. This body of work examines the practice and politics of creating more localised and place-based food systems and also questions whether localisation alone is sufficient to address systemic issues (Clancy and Ruhf, 2010).

Geographical analyses often focus on the spatially-related distribution of impacts, revealing disparities and inequalities. Food and commodity geographies document the environmental consequences of food production, such as deforestation and pollution, often mapped spatially. Food environment studies explore the spatial distribution of food access and its relationship to health outcomes. Geographical perspectives also highlight the uneven distribution of economic benefits and social costs associated with food systems, and the specific impacts on specific places. Also, geographical approaches illuminate the complex feedbacks that shape food systems. Land use change, for example, can alter local climate patterns, affecting agricultural productivity. Urban food environments demonstrate how the concentration of unhealthy food options can lead to increased diet-related diseases. Similarly, climate change and agriculture interact through feedbacks, with rising temperatures reducing crop yields and increasing pressure for land expansion. Global commodity markets generate price signals that influence production decisions, and can result in feedbacks that either stabilise or destabilise food systems.

Research on food environments within geography (discussed below) provides valuable insights into the spatially-related dimensions of food access and health. This research emphasises the importance of considering multiple scales and levels, from the individual to the regional level, when analysing food access and health outcomes. These studies utilise spatial analysis techniques, such as GIS, to map food access and identify food deserts, providing valuable tools for understanding the spatial distribution of food system outcomes. They also examine the accessibility and affordability of healthy food options, shedding light on the social and economic factors that shape food choices. They can inform food systems thinking by providing empirical evidence on

the spatial distribution of food system outcomes, highlighting the importance of place-based interventions, and offering methodological tools for spatial analysis.

Geographical approaches enhance food systems analysis by providing a spatial lens for understanding the distribution of drivers, outcomes, and feedbacks, highlighting the importance of scale and place, and offering tools for mapping and analysing food system processes. This is relevant across levels for several spatially-related analytical scales, including spatial, management, network, and institutional scales (Cash et al., 2006). By using the concept of spatial justice, understood here as the "fair and equitable distribution in space of socially valued resources and opportunities to use them" (Soja, 2009, p. 2), we can better analyse the uneven distribution of food system burdens and benefits. Integrating geographical perspectives enables a more nuanced and comprehensive understanding of food systems, leading to more effective interventions for achieving a just and sustainable food future. Clarifying and consistently applying the concepts of 'drivers,' 'outcomes,' and 'feedbacks' within this interdisciplinary framework is crucial for advancing food systems research and action.

Food Environments and Food Systems Framing

Food environments, which synthesise food systems and geographical approaches, serve as the interface between consumers and the broader food system, encompassing the multifaceted physical, economic, political, social, and cultural settings that shape food-related practices, from food purchase planning to disposal. This includes a range of settings ranging from hospitality services and household kitchens to digital platforms like social media. Dimensions of a food environment span individual factors such as accessibility, affordability, convenience, and desirability, to external factors like availability, prices, product placement, neighbourhood characteristics, food composition, marketing, labelling, information, and the social environment. These dimensions have been highlighted in the health and nutrition perspectives as well in efforts of understanding drivers of health outcomes such as obesity and other non-communicable diseases. Nutrition and health is crucial for understanding how food environments influence diet quality and public health. This emphasis is supported by a significant body of research which demonstrate a link between the characteristics of a local food environment and dietary outcomes (Caspi et al. 2012). Studies demonstrate that factors like the proximity and density of supermarkets versus fast-food outlets, as well as the variety and price of healthy foods available, can significantly shape an individual's food choices and overall diet (Holsten 2009). These dimensions are, in turn, influenced by policy instruments and biophysical factors. Contemporary definitions and descriptions, as articulated by Downs et al. (2020), further integrate sustainability and nutritional security, conceptualizing food environments as the consumer interface with the food system that encompasses the availability, affordability, convenience, promotion and quality, and sustainability of foods and beverages in wild, cultivated, and built spaces that are influenced by the socio-cultural and political environment and ecosystems within which they are embedded.

The food environment literature, rich in its exploration of consumer-food system interactions, provides insights into the micro-level spaces where food consumption decisions are made. However, the inherent complexity of food environments, which encompass a wide array of external drivers and active consumer agency, can create conceptual challenges when contextualised within broader food systems frameworks. Recent models, like that of Downs et al. (2020), attempt to clarify this by positioning food environments within a nested structure, with outer layers representing sectors of influence (agriculture, media, labour, etc.), socio-cultural and political environments, and ecosystems, and inner layers representing individual factors and diets. This hierarchical approach underscores the interconnectedness of various scales and influences, a concept that resonates with geographical perspectives on embeddedness.

Indeed, the conceptualisation of food environments as embedded systems within larger food systems aligns closely with geographical approaches to embeddedness (Hinrichs 2000, Sonnino 2007, Brinkley 2017).

Geographical literature emphasises the interconnectedness of social, economic, and ecological systems at different scales and levels, highlighting the importance of considering both local and global factors. Just as geographical analysis examines the spatial distribution of food system impacts, food environment research investigates the spatial dimensions of food access and consumption. For instance, studies on food deserts, a prominent area within food environment research, demonstrate the spatial inequalities in access to healthy food, reflecting broader systemic drivers. This spatial lens, informed by geographical methodologies, provides a crucial understanding of how factors like location, accessibility, and cultural influences shape food system outcomes.

Furthermore, the food environment framework reveals crucial feedbacks within food systems. While the assumption that healthy food environments promote healthier consumer choices is prevalent, research indicates that this link is not deterministic (Turner et al., 2018). Consumers are not passive recipients of their food environments but actively shape them through their choices and demands. This active role of consumers highlights the feedback mechanisms where consumer behaviour influences food availability and quality, which in turn influences future behaviours. For example, consumer demand, as demonstrated by Fuentes and Fuentes (2022), can significantly impact food availability, illustrating direct feedback. This aligns with the broader food systems concept of feedbacks, where changes in one component can trigger cascading effects throughout the system.

The typology of food environments, such as the natural and built food environments proposed by Downs (2020), also shares similarities with food system typologies, highlighting the interplay between the 'form' of environment and consumer access. However, the primary distinction lies in scale and level, with food environments focusing on sites of direct consumer access, while food systems encompass the broader interconnected network of activities and actors. This emphasis on scale and level, a core concern in geographical analysis, allows for a more nuanced understanding of how micro-level consumer decisions are shaped by and contribute to macro-level food system dynamics. By integrating geographical perspectives and food environments approaches, and by clarifying the concepts of drivers, outcomes, and feedbacks within food environment research, we can enhance our understanding of the complex interactions that shape food consumption and health outcomes, ultimately contributing to more effective interventions for a just and sustainable food future. With this conceptual clarity, the food environment lens helps bridge macro-level food system processes with broader interventions aimed at transforming food systems.

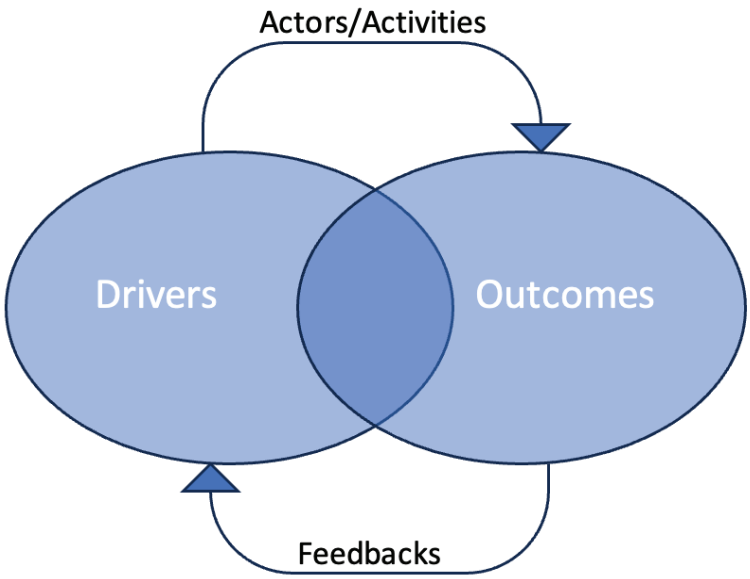
Discussion

This paper has demonstrated the persistent ambiguity surrounding the core concepts of 'drivers,' 'outcomes,' and 'feedbacks' within food systems literature. Through a critical examination of existing frameworks and an interdisciplinary lens incorporating geographical insights and food environment studies, we have highlighted the inconsistencies that hinder effective communication, research, and intervention design. Table 2 resulting from our analysis, illustrates the intricate overlaps and divergences between these terms. For instance, a policy decision might act as a driver, leading to an outcome of altered market prices, which then feeds back into further policy adjustments. This demonstrates that the categorisation of these elements is often context-dependent and scale and level-sensitive. Determining when a driver is strictly a driver; when an outcome is an outcome, and when feedback is feedback requires a clear articulation of the system boundaries and scales under consideration.

Table 2. Designation and clarification of key food systems concepts and their relationship to each other.

Food System Element	Element in Context of System (in relation to other key elements)
Drivers	**Drivers** give rise to **outcomes** mediated by **actors/activities** within the system, across scales and levels. **Drivers** can be endogenous or exogenous to the food system.
Outcomes	**Outcomes** become **drivers** when they are mediated by **feedbacks**, which are subject to dynamics of the system across scales and levels. **Outcomes** can be endogenous or exogenous to the food system.
Feedbacks	**Feedbacks** are the mediator between **outcomes** and drivers. Feedbacks capture the dynamics of the system across scales and levels. **Feedbacks** can link endogenous or exogenous drivers and outcomes.
Actors/Activities	**Actors** (that undertake **activities**) are the mediators between **drivers** and **outcomes. Actors** can be human, non-human, or institutional and the **activities** they undertake are subject to **drivers. Actors** exist across levels and undertake **activities** across scales. These activities result in **outcomes** across scales. Food system **actors** are by definition endogenous to the system.

Figure 1. Simplified illustration of key food system terms and their relationships with each other.



The clarification of terminology is crucial for robustly analysing food system dynamics. While we acknowledge and value the diversity of descriptions and definitions, we propose that researchers explicitly define their use of these terms within each study. This ensures transparency and facilitates comparative analysis across different contexts and scales. By providing a theoretical basis for understanding food system dynamics and drawing upon relevant geographical literatures which have more robustly addressed challenges such as scope and scale, we can better contextualise the interactions between drivers, outcomes, and feedbacks, leading to more effective and targeted interventions. However, this call for clarity is not merely a technical exercise; it is also a political one.

The choices made in defining these terms and delineating system boundaries inevitably reflect particular worldviews and priorities, shaping the very understanding of food system problems and solutions. Recognizing this, we must approach the task of conceptual clarification with a critical awareness of the power dynamics inherent in knowledge production.

The synergy between food systems frameworks and geographical perspectives offers a powerful tool for understanding the dimensions of food system challenges relating to spatial, scale, and human-environment interactions. Geographical analysis, particularly through food environment studies, reveals how socio-spatial and spatially-relevant drivers and feedbacks shape food access, health outcomes, and environmental impacts, as well as the dynamics of the food system. By incorporating these factors and integrating the dynamics of systems, researchers and practitioners can better assess food system transformation interventions. The concept of embeddedness, central to geographical literature, aligns with the nested structure of food environments within broader food systems, emphasizing the importance of considering multi-scale and multi-level interactions. This integration allows for a more nuanced understanding of how local food consumption patterns are influenced by global drivers and how micro-level decisions contribute to macro-level outcomes.

Ultimately, developing a theoretical basis for sustainability transformations in food systems requires a rigorous and consistent application of these core concepts. This clarity enhances our ability to identify leverage points for change and design interventions that address the complex and interconnected challenges facing food systems. By explicitly defining drivers, outcomes, and feedbacks in relation to one another, and by integrating interdisciplinary insights, we can move towards more effective and equitable food system transformations. The 'so what' of this theoretical grounding lies in its potential to inform improved food system transformation processes, ensuring that interventions are grounded in a comprehensive understanding of the system's dynamics. Therefore, the pursuit of conceptual clarity must be accompanied by a critical reflection on the political implications of our analytical choices, ensuring that food system interventions are not only technically sound but also ethically informed and socially just.

Conclusion

Defining drivers, outcomes, and feedbacks with precision is essential for establishing robust metrics and monitoring progress towards food system transformation. The findings of this paper underscore the need for a more consistent and rigorous approach to these concepts, summarizing the inconsistencies and ambiguities present in current literature, and further supporting this by drawing on geography literatures. Returning to the key thesis of this study, which addresses the challenges posed by the special issue brief, we have demonstrated that conceptual clarity is paramount for effective food systems analysis.

However, this study has limitations. Our literature review, while comprehensive, may not have captured every nuanced definition or application of these terms. Furthermore, the complexity of food systems necessitates interdisciplinary and transdisciplinary approaches that extend beyond the scope of this paper. Future research should focus on developing standardised methodologies for defining and measuring drivers, outcomes, and feedbacks across diverse food system contexts.

The need for interdisciplinary collaboration is evident. Integrating geographical perspectives, food environment studies, and other relevant disciplines can provide a more holistic understanding of food system dynamics. Transdisciplinary approaches, involving stakeholders from various sectors, are also crucial for ensuring that research findings are translated into practical and effective interventions.

This paper serves as a call to action for food system scientists, policymakers, and practitioners to adopt a more rigorous and consistent approach to defining and analysing drivers, outcomes, and feedbacks. By doing so, we can enhance our understanding of food system dynamics and facilitate more effective interventions for achieving a just and sustainable food future. Ultimately, the clarity and consistency we advocate for will contribute to more impactful research, policy development, and practical actions that address the complex challenges facing global food systems.

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Nitrogen policy in Flanders: Who unchains a locked-up debate?

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Abstract

This study analyses the political dynamics of nitrogen governance in Flanders, a contentious issue shaped by the EU Birds and Habitats Directives. Combining the Policy Arrangement Approach with theories of (de)politicisation, we trace the policy's evolution from Natura 2000 implementation to the 2024 decree. We identify a recurring cycle: judicial interventions, particularly concerning Article 6 of the Habitats Directive, temporarily disrupt a closed political process by imposing new evidential standards. However, these openings are quickly reabsorbed. Administrative mechanisms—technical thresholds, model-based attribution, and neo-corporatist bargaining—systematically re-channel conflict into narrow, technical procedures. While consultation appears to expand, the influence of alternative claims and knowledge remains minimal, constrained by calculative tools and cabinet politics. Consequently, potential synergies between agriculture and nature, such as agroecology, are depoliticised; their discourses gain visibility but leave budgets and core instruments unchanged. The current shift towards emission-based instruments risks repeating this cycle if treated as a mere technical fix. For nitrogen governance to be both effective and democratically robust, it requires deliberative spaces for co-designing policy, transparent evidence practices open to counter-expertise, and financing that enables systemic transition rather than incremental pollution abatement.

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Introduction

Across Europe, relations between agriculture and nature have been governed through separations in policy, space, and roles. This is exemplified by spatial planning and environmental policies that carved up land for either agricultural or nature purposes, the contrasting expectations this imposes on land users, and the segregated landscapes resulting from these artificial boundaries. These divisions have fuelled conflicts between coalitions defending 'nature' and 'agriculture,' positioned on either side of a socially constructed and politically loaded fence (Greider and Garkovich, 1994). In densely populated areas, most ecosystems have, through millennia of human presence, acquired a semi-natural quality (Deliège, 2009). However, much of the biodiversity that persists there is under increasing pressure due to the abandonment of low-input and extensive farming practices in favour of agricultural intensification and other land uses detrimental to conservation goals (ECA, 2020; EEA, 2020; Halada et al., 2011).

Nitrogen governance heightens the complexity of the agriculture–nature relationship. Under the EU Birds and Habitats Directives, Member States must set site-specific conservation objectives for Natura 2000 sites and subject any plan or project likely to affect these sites to an appropriate assessment (Art. 6(3), EC, 2000). In livestock-dense settings, airborne nitrogen deposition—ammonia (NH_3) from livestock farming and nitrogen oxides (NO_x) from combustion—can exceed critical loads. This has placed environmental licensing and land-use choices under considerable legal scrutiny (Woldendorp & Schoukens, 2015), revealing how the governance of land surrounding Natura 2000 sites becomes embedded in broader societal and political choices. Decisions taken outside Natura 2000 areas must therefore be reflected upon in relation to their ecological interdependencies. This entanglement brought into public attention a political choice between efficiency-led mitigation and agroecological transformation as ways to address the 'nitrogen issue'. In Flanders, however, these EU obligations evolved from a technocratic issue into a politically consequential one, exposing the limits of a policy arrangement built on venue control and calculative devices, and unsettling political parties, agriculture, and industry. At that point, forms of dissensus, diverging interests, and political expressions became particularly visible.

The preservation and restoration of semi-natural areas invite approaches that link farming and nature conservation in practice. Agroecology has been advanced precisely for that purpose—foregrounding ecological processes, regional circularity, and socio-political participation—yet Flemish policy remains dominated by frames of sustainable intensification and bio-economy that prioritise technical efficiency over agroecological transformation (IPES-Food, 2016; Stassart et al., 2018). Resistance to more synergistic approaches between nature and agriculture in contemporary European societies cannot be grasped in isolation from the various policy arrangements that steer farmers, nature conservationists, and other relevant stakeholders in certain directions. Institutionally, these policy frameworks simultaneously enable and constrain the agents involved at the agriculture-nature nexus. Moreover, they shape agenda-setting and debate boundaries, influencing resource flows that either advance or impede this relationship. Given the limited political inclusion of agriculture-nature synergies, we believe the literature on the post-political can offer valuable insights, particularly as a means to understand how processes of politicisation and depoliticisation occur and where potential forms of re-politicisation can emerge.

Our main research question is as follows: how did EU legal obligations interact with the existing Flemish policy arrangements to shape cycles of politicisation, depoliticisation, and attempted re-politicisation in nitrogen governance (1992–2024), and with what implications for building democratically legitimate, agroecologically oriented pathways? In terms of approach, we combine a Policy Arrangement Approach (PAA) with an analysis that locates the instances and mechanisms of politicisation and depoliticisation. Empirically, we reconstruct key episodes in Flemish nitrogen policy and trace how EU-level triggers opened political space that was subsequently narrowed through modelling choices, cabinet bargaining, and neo-corporatist routines. Analytically, we seek to determine whether a view that posits the post-political as a structural

condition—a consensual, technocratic narrowing of contestation—or one that posits depoliticisation as a governing strategy is more salient (Buller et al, 2018). Substantively and strategically, we ask whether and how democratic re-politicisation could create institutional room for agroecological solutions (HLPE, 2019). We substantiate these claims through document analysis, non-intervening observation of five farmer focus groups organised by the regional rural development agency (VLM), and an interview with two experts.

In terms of contributions, the paper (i) specifies when and how procedures related to the Habitats Directive, in particular Article 6, repoliticised an executive-centric arrangement; (ii) shows how technocratic instruments and strategic political choices re-closed debate while sidelining agroecological options; and (iii) identifies potential strategies—political spaces and practices—that could reconnect agriculture and nature in more democratically legitimate, agroecology-compatible ways.

The article proceeds as follows. Section 2 clarifies politicisation and depoliticisation within contemporary post-political policy arrangements, highlighting implications for civic agency and public critique. Section 3 sets out the data collection methods, our use of the PAA as an evidence-organising lens, and the analytical approach to identifying instances and mechanisms of (de-)politicisation. Section 4 traces the evolution of Flemish nitrogen governance—baseline dynamics since the early 1990s, the 2014 start of formal nitrogen policy, and the 2021–2024 rupture—identifying when and how contestation opened and re-closed. The conclusion synthesises the mechanisms shaping (de)politicisation, assesses their fit with a post-political condition, and outlines practical avenues for democratic re-politicisation, including the potential role of social scientists as mediators.

Post-political governance and (de)politicization in agri-food systems

Scholarship on post-politics argues that, since the 1990s, governance in Western societies has tended to narrow the scope of legitimate disagreement by privileging consensual and technocratic framings (Swyngedouw, 2010; Blühdorn & Deflorian, 2021). Following this literature, the post-political can be treated as a general societal condition of constrained contestation. At the same time, work on (de)politicisation emphasises the strategies by which authorities and organised interests strategically manage conflict through concrete interventions, such as delegation to experts, the creation of procedural rules, and the use of insulated venues, thereby shaping if and how disagreement becomes actionable (Buller et al., 2019). This conceptual distinction between condition and strategy matters for understanding how agri-food issues move in and out of public contention and policy change. Drawing on comparative policy research, we use politicisation to mean the rising public visibility and contestability of issues, while depoliticisation refers to the displacement, containment, or pacification of such contestation (Zürn, 2020; Feindt et al., 2021).

The literature identifies recurrent patterns in how depoliticisation unfolds. Strategies include delegating decisions to expert bodies and models, embedding political choices in rule-based procedures, and shifting decisions into political venues that restrict participation (e.g., expert committees, legal courts, interministerial taskforces, formal advisory councils) (Buller et al., 2019; Feindt et al., 2021). From a democratic perspective, what matters is not simply whether an issue becomes visible, but which discourses are represented and with what influence in decision-making processes and outcomes (Dryzek & Niemeyer, 2008; Crivits et al., 2018). Put differently, politicisation without meaningful discursive representation can leave substantive alternatives off the table, even as attention and controversy increase. The post-political condition can thus coexist with episodic politicisation, while at the same time specific governing strategies modulate which interpretations and solutions gain traction.

Agri-food policy has long been organised via mechanisms often described as agricultural exceptionalism, in which producer groups enjoy privileged access and insulation from broader societal contestation (Skogstad, 1998). More recently, analyses of post-exceptionalism argue that, although additional actors and ideas have entered the arena, institutional routines still channel conflict in archaic ways (Daugbjerg & Feindt, 2017; Candel

& Daugbjerg, 2025). Within the EU's Common Agricultural Policy (CAP), agri-environmental debates welcome competing discourses—ranging from productivist and efficiency-oriented approaches to multifunctionality and agroecology—yet the integration of the latter remains partial and very uneven (Rac, Erjavec & Erjavec, 2023). From the vantage point of the post-politics debate, the coexistence of diverse discourses does not automatically broaden the range of ends under consideration or put into practice; expert-centred solutionism and procedural containment may continue to narrow what counts as credible action (Blühdorn & Deflorian, 2021). These field-level features help explain why agri-food controversies—over land use, biodiversity, or emissions—often oscillate between moments of heightened visibility and rapid re-closure.

If depoliticisation has been extensively diagnosed, the literature is more ambivalent about the paths and criteria of democratic re-politicisation. Kenis and Lievens (2014) note that it is easier to identify depoliticising tendencies than to specify how they might be overcome. Recent scholarship notes that narratives of pressing crisis can compress deliberation into expert-led fast tracks (e.g., emergency declarations leading to taskforces, offset and carbon-market bureaucratic procedures), while spectacular protest repertoires will often foreground visibility over potential forms of coalition-building (e.g., disruptive blockades, name-and-shame disclosure strategies). Both can appear re-politicising yet risk leaving ends and venues largely unchanged—thereby reproducing post-political logics. A democratic benchmark foregrounds publics and new political space: re-politicisation requires not only visibility but also institutional pathways through which alternative perspectives can be articulated and justified in the public sphere and connected to empowered decision-making sites (Dryzek & Niemeyer, 2008; Fraser, 1990).

Recent studies of contentious engagement around agri-food point to both possibilities and limits for democratic renewal. Farmer protests and civic initiatives have articulated food sovereignty and broader claims about the purposes of agriculture, indicating renewed civic agency (Bilewicz, 2020; Oprea et al., 2024). Research on first-time political participants in mass mobilisations, such as the Yellow Vests, shows how public engagement can lead to subjective and objective political competence—an expanded sense of entitlement to speak in the public sphere as well as a growing knowledge of institutional politics—while also revealing tensions with established arenas (Reungoat et al., 2022). For agri-environmental governance and the exploration of nature–agriculture synergies, these insights underscore that re-politicisation is not merely a matter of raising attention: it involves designing political spaces and transmission mechanisms through which countervailing discourses—such as agroecology—can shape agendas and collective decision-making without being re-absorbed into technocratic routines.

In light of these debates, our analysis tracks how agri-food governance structures channel or reopen contestation by attending to actors, rules, resources, and discourses, and to the strategies through which issues are delegated, proceduralised, or shifted across venues (Buller et al., 2019; Feindt et al., 2021). We also remain attentive to how socio-material entanglements—technologies, infrastructures, ecological conditions—co-produce the political subjects and arenas in which claims are made and heard (Marres, 2023). The next section sets out how we operationalise these concerns in our analytical framework and methods.

Analytical framework and methods

Our research methodology is grounded in an extensive analysis of documents, primarily from the grey literature. This includes published and unpublished scientific studies, academic analyses, transcripts of parliamentary debates, social media and press releases, and institutional documents and reports. This approach was complemented by non-participant observation—documenting findings without active intervention—of five focus groups with farmers from each of the five Flemish provinces. These sessions were organised and facilitated by the Flemish Land Agency (VLM) in the spring of 2022 to gather farmers' ideas, opinions, and frustrations regarding the manure and nitrogen issues in Flanders as part of the nitrogen policy formation process. Finally, one interview was conducted with two experts who are also participants in relevant Flemish

policy processes; the interview was transcribed, coded, and analysed.

To build and organise this evidence base, we used the Policy Arrangement Approach (PAA) (Arts et al., 2006) as a guiding framework to reconstruct the policy process comprehensively. The strength of the PAA lies in its ability to link structural, social and political changes in society to changes in the day-to-day practice of policy processes. As we seek to understand political expressions as embedded within broader, pre-existing, and evolving national and EU policy arrangements, the temporal and jurisdictional scope of our analysis (1992–2024, Flanders-EU) extends considerably beyond the actions taken by regional political actors between 2021 and 2024 to design and implement the current Nitrogen Policy. Engaging with the framework of multi-level (de)politicisation, we highlight how issues surrounding environmental governance and agriculture are not only contested at the national level but are increasingly shaped by dynamics at the European level (Zürn, 2020). By situating the Belgian/Flemish case within this broader European context, we aim to better understand both the specificities of local politicisation and the more general patterns of how multi-level governance reshapes environmental conflicts across Europe. This nested PAA helps us grasp the broader dynamics, possibilities, and limitations of social action in relation to a political issue.

We analysed the policy process as a sequence of events by identifying key milestones throughout the period under consideration. For each milestone (see Table 1), we identified the relevant actors, rules, resources, and discourses (see Box 1). By examining a specific policy process or programme through these four dimensions, the PAA helps to explain how policies either stabilise or change and identifies the mechanisms that influence the restructuring of societal fields and actor relationships.

Box 1. The four dimensions of the Policy Arrangement Approach

Actors: This dimension encompasses the various stakeholders involved in the policy arrangement, including government bodies, experts, businesses, NGOs, and citizens. It also highlights the coalitions formed among actors around specific issues or policy positions.

Resources: This refers to the means and power that actors utilise within the policy arrangement, including money, knowledge, technology, personnel, and authority. The distribution of these resources among actors significantly influences policy outcomes.

Rules of the Game: These are the formal and informal norms that structure the policy arrangement, including the political model, style, and culture. This encompasses the type of democracy, the inclusion of stakeholders, the roles of activists, and communication styles.

Discourses: This dimension comprises the interconnected ideas, concepts, and values that shape perceptions of social and physical phenomena. Discourses can legitimise policy arguments and decisions, and their influence often extends beyond the immediate political process into the broader societal context.

Source: Based on Arts et al., (2006)

Based on this organisation of the evidence, our analysis addressed the following questions:

1. **Politicisation.** Which issues were brought to political agendas, in which venues, and through which frames and coalitions? What triggers (e.g., court rulings, media events, mobilisations) enabled this process of making issues public?
2. **Depoliticisation.** Through what techniques—such as procedural norms, expert delegation, or technocratic decision-making—were areas of disagreement or public concern displaced, deferred, or narrowed? How did control of resources (e.g., expert knowledge, modelling tools, administrative authority) function to stabilise dominant arrangements and reduce contestation?

3. **Re-politicisation.** Under what conditions, and in which venues, did previously sidelined issues regain salience and influence? Did actors, venues, or discourses translate into tangible decision change, or was their impact merely symbolic?
4. **Resource reconfiguration.** How did shifts in the policy arrangement (in actors, rules, and discourses) influence the processes of politicisation and re-politicisation?
5. **Substantive steering for agri-nature relations.** Did decisions reinforce efficiency-centric management within existing production models, or did they enable systemic alternatives (e.g., land-use change, livestock reduction, agroecological pathways)?

Our analysis is interpretive and situated. We study Flemish nitrogen governance as policy researchers with considerable exposure to agri-food debates in Flanders, which may predispose us to notice certain framings. Coding and document discovery proceeded abductively to structure episodes, iteratively identifying mechanisms at work across this time period from our corpus of documents, and weighing causal hypotheses by triangulating the evidence. We purposively sampled documents as the analysis proceeded, and our growing understanding of the post-political and depoliticisation literature, as well as the sequence of events, evolved throughout the data collection and analysis process. We acknowledge that the procedure followed is partial and not fully systematic. Our claims concern patterns observable across episodes rather than exhaustiveness; where inference rests on interpretation, we state this and cite the underlying sources.

Analysis of the Nitrogen Policy Arrangement

In this section, we present the Flemish nitrogen policy process as a historical narrative organised around key milestones. Each subsection illustrates how actors, resources, rules of the game, and discourses—the four dimensions of the Policy Arrangement Approach (PAA)—interacted to produce brief episodes of politicisation, which were subsequently followed by technocratic re-closure. Table 1, which accompanies the text, provides a one-page synthesis of these milestones. Its final row interprets the outcomes through the dual lenses of agroecology and post-political governance.

Before 1991: neo-corporatism, productivism and the environmental prelude (1970s–1990)

Belgian politics is widely characterised as a partitocracy: political parties dominate political life, including the staffing of administrations, ministerial cabinets, parliamentary work, and public media (De Winter & Dumont, 2013). In practice, this yields an executive-centred style in which core-cabinet negotiations set the policy line, and parliamentary votes largely follow party discipline rather than open deliberation (De Winter & Dumont, 2013; Baudewyns et al., 2022). Multi-level federalism adds further intergovernmental bargaining, but the decisive arenas typically remain closed and partisan. Interwoven with this is a consociational (power-sharing) tradition that historically managed deep cleavages based on religion, language, and class through elite accommodation (Lijphart, 2018). Policy domains became mediated through pillarised interest intermediation and formal advisory circuits, where a limited set of peak organisations enjoys routinised access. This approach has been classified as a government style in which conflict can be contained through elite deliberation, thereby providing stability. It also aligns well with executive bargaining among political parties, making it easier to channel conflict into technical procedures rather than public contestation. In agriculture and environment, this takes the form of neo-corporatist consultation: structured, often pre-parliamentary exchanges between ministers, cabinets, administrations, and a small circle of recognised interest organisations. These arrangements stabilise expectations and reduce open conflict, but they also filter which claims and knowledge count in agenda-setting and policy drafting. In such a setting, political spaces where public dissent can shape outcomes are relatively scarce and selective; typically, it is only during crises that these routines are disrupted and that public discourse from outside recognised circuits gains traction (De Winter & Dumont, 2013; Lijphart, 2018; Crivits, 2016).

Within this institutional landscape, the agricultural domain in Flanders has long been structured around a close alliance between the largest farmers' union, Boerenbond, the executive, and the Christian Democratic party (currently CD&V). This neo-corporatist arrangement combines insider access—such as regular cabinet-level consultation and agenda-setting privileges—with organisational depth, including a policy and research apparatus capable of rapidly producing position papers, legal notes, and technical analyses. In exchange for privileged access, Boerenbond has been expected to help discipline and coordinate its constituency, keeping overt public conflict manageable within recognised channels (Frouws, 1994; Crivits, 2016). A distinctive feature of this configuration is Boerenbond's dual interest structure: alongside its representative role, it anchors a diversified agribusiness ecosystem organised around the MRBB holding (approximately €5 billion in equity), with stakes in inputs, logistics, finance, and advisory services. This integration of representation, knowledge, and capital concentrates resources that matter in policymaking—expertise, data, legal capacity, and media reach—allowing Boerenbond to shape problem framings (e.g., efficiency, competitiveness, technological innovation) and to gatekeep which options appear feasible. Boerenbond also wields considerable socio-cultural influence through its affiliated network of non-professional 'Rural Guilds' in the countryside (Bisschop, 2011).

Counterweights to the Boerenbond have emerged from within the farming sector but are comparatively weaker. The Algemeen Boerensyndicaat (ABS), founded by farmers critical of Boerenbond's top-down style and dual interests, gained a seat at the table from the late 1990s but operates with leaner staff, budget, and party linkages. BioForum, representing the organic farming sector, also entered consultative circuits around the same time, yet its material and political resources remain modest relative to Boerenbond, limiting its capacity to advance alternative production models into mainstream agricultural policy (Crivits, 2016). These asymmetries mean that discourses backed by stronger organisational apparatuses travel further through advisory circuits and cabinet processes, tending to privilege ecological-modernisation logics (technology, scale, export) over agroecological frames (Hajer, 1995; Grin, 2012). Consequently, while dissenting voices are admitted to recognised policy circuits, their influence remains relatively marginal.

In line with broader European developments (Candel & Daugbjerg, 2025), agriculture in Flanders has functioned as a relatively autonomous, productivist policy domain, largely insulated from environmental concerns (Frouws, 1994). Policy objectives and instruments centred on output growth through intensification and scaling, competitiveness, and export—supported by price supports, investment aid, and technology development—while environmental considerations were treated as external to agricultural policy (Frouws, 1994; Grin, 2012). Within administrative and consultation circuits, problems were framed in terms of farm economics, technology, and scale; biodiversity and landscape were largely positioned outside productive land rather than as values to be co-produced within it. This neo-corporatist consensus around productivism, which lasted well into the beginning of the 21st century, was increasingly destabilised by the growing salience of environmental and nature-related interests—often driven by European-level pressures—which provoked several waves of politicisation.

Prior to the late 1980s, public and political reflection on the relationship between agriculture and nature was virtually absent, both in policy discourse and in the minds and practices of key actors, such as farmers. This began to change at the end of the 1980s and into the early 1990s, when environmental issues—particularly biodiversity loss, water pollution, and habitat degradation—began to encroach upon the agricultural policy agenda. The nature movement originated as a loose group of individuals and organisations adopting several perspectives, ranging from nature conservation and landscape aesthetics to societal critique (van der Windt & Bogaert, 2007). A more radical and activist style was introduced with the emergence of the Bond Beter Leefmilieu (BBL) in 1971, linking nature conservation to environmental politics. Agalev/Groen entered party competition at the end of the decade, and the first Nature Conservation Act (1973) codified basic principles, albeit with limited effect in the field at the time (van der Windt & Bogaert, 2007). The second state reform (1980) brought a dedicated Flemish minister for Environment and Nature, signalling that "nature" was becoming a distinct policy domain rather than a moral claim advanced from the outside (van der Windt & Bogaert,

2007). During the 1980s, a science–policy interface was built to make nature legible to government through ecological inventories and mapping, standardised habitat typologies and monitoring, and the establishment of the Research Institute for Nature and Forest (INBO, 1985) (van der Windt & Bogaert, 2007, 2009).

By 1991, a Nature and Environment Council formalised advisory channels and seat allocation, integrating nature organisations into recognised consultation circuits (van der Windt & Bogaert, 2009; Hooghe, 2001). Institutionalisation thus equipped conservationists with venues, expertise, and administrative routines—resources capable of placing biodiversity loss, habitat restoration, and land-use tensions on political agendas. At the same time, embedding "nature" in expert procedures and advisory gatekeeping also created pathways through which conflicts could later be translated into technical assessments and consultations rather than open contestation (Hajer, 1995).

VEN & early pushback (1991–2003)

A significant politicisation of the intersection of agriculture and nature took place under the impetus of the first Flemish Nature Policy Plan (1990), established by the minister of environment with support from the nature movement and inspired by Dutch environmental policy, which placed a bold Green Main Structure (GMS) on the agenda (Schauvliege, 2020). Working from INBO maps and scientific delineations, the administration circulated design maps that sketched an interconnected network of nature areas: roughly 151,000 ha of core nature, 211,000 ha for nature development, and 170,000 ha for connections—together about 39% of Flanders (Decleer, 2003; Schauvliege, 2020). These maps represented a first attempt to recognise the value of the semi-natural landscape present throughout the region, but as static pictures, they also reinforced an Arcadian[1] vision that nature conservationists began to adopt to manage agriculture–nature relations (Deliège, 2009). The agricultural sector—long insulated from such spatial claims—was neither intensively consulted nor prepared for the parcel-level implications of the GMS program (Decleer, 2003). Almost simultaneously, the 1991 EU Nitrates Directive set a manure-planning trajectory—led in Flanders by the environment ministry—that constrained on-farm practices (van der Windt & Bogaert, 2007). These twin shocks thrust the agriculture–nature relationship into the centre of public debate. Mobilisation escalated quickly, culminating in the "hot autumn" of 1993, when farmer protests—joined by hunters and landowners—targeted the minister and nature organisations, with incidents of intimidation and violence (Clauwaert, 1994). In the aftermath, the GMS stalled and was withdrawn from the political agenda. Whereas retrospective assessments (Decleer, 2003) highlighted design and process weaknesses, this sequence represents an unmistakable politicisation of the agri-food nexus, expanding the actors, venues, and conflict lines. Yet it also generated strong incentives to seek more stabilising arrangements. At this stage, however, proposals that would later be called 'agroecological' scarcely entered the debate. The settlement translated the land-use conflict into a process of drawing maps and allocating compensation, instead of examining how alternative farming models might generate synergy between nature development and agricultural practice.

After the GMS backlash, conflict was re-channelled into a more manageable, legally anchored compromise. The Flemish Ecological Network (VEN) scaled back the earlier ambitions and, together with the Nature Decree (1997) and the Flemish Spatial Structure Plan (1997), translated the agri–nature clash into mapped categories, procedures, and compensation rules (Schauvliege, 2020; Decleer, 2003). Decisions moved from open confrontation to administrative implementation: delineations, acquisition and management plans, site-by-site negotiations, and advisory opinions. What had been a public battle over land and futures became a territorial bargaining exercise among recognised insiders, with cabinets, administrations, and agricultural and nature organisations setting the pace (van der Windt & Bogaert, 2009). This settlement coincided with the consolidation of the nature movement's capacity. Through the merger of various organisations in

[1] An Arcadian nature vision emphasizes the romantic and aesthetic value of nature, focusing on preserving semi-natural landscapes and biodiversity. Significantly, these valuable landscapes, biotopes and biodiversity are the result of traditional farming practices and consists of high-diversity landscape elements such as pounds, hedgerows, hollow roads and herb-rich grassland (Deliège,2009). In that sense, the Arcadian perspective clearly connects to the agroecological perspective.

2001, Natuurpunt was formed, thereby becoming the largest nature organisation in Flanders. The merger accelerated growth, strengthened legitimacy, and introduced a new organisational model built on four equal pillars: nature development, research, education, and policy (Schauvliege, 2020). Despite this broader focus, the core of Natuurpunt's work remained the acquisition and management of natural areas (spanning over 25,000 hectares by 2022). Additionally, the staffing of ministerial cabinets with conservation-affiliated experts expanded access to venues, data, and funding, accelerating the realisation of areas designated under the Nature Decree—especially under the first Green environment minister (1999–2004) (van der Windt & Bogaert, 2009; Schauvliege, 2020).

However, this period came to an abrupt end in 2003, following a large-scale anti-VEN protest led by farmers, hunters, and landowners. The protest, marked by aggressive undertones, directly targeted the Green Minister and ultimately led to her resignation. At the heart of the conflict was the Nature Decree's poor alignment with spatial planning terminology, which created legal uncertainty. The farming movement effectively mobilised other land users to form a united front in opposition. The neo-corporatist alignment was reinstated, in which the Christian Democratic Party supplied not only the agricultural minister (from 2004 onward) but also the minister of Environment (2004-2019).

By the mid-2000s, the Flemish agri-environmental policy arrangement combined several features: an executive-centered partitocracy, neo-corporatist consultation with formalized interest-group access, marked resource asymmetries across different production models, a territorial-bargaining framework (VEN) that translated public problems into mapped categories and compensation schemes, and increasingly formal expert structures. In essence, these expert structures were not depoliticizing by default; in principle, they were meant to be knowledge-driven and to implement EU political choices. In practice, the combined features created a strongly depoliticized starting point, channeling the public issue of farming's environmental impact into administrative procedures and containing disagreement or dissent within expert routines. Altogether, the arrangement fostered a tendency toward the depoliticized treatment of deliberation and collective decisions on farming models and land use—even as disruptive events occasionally reopened agendas and allowed alternative coalitions and discourses to gain leverage. This is the context in which nitrogen governance later rose to prominence.

EU build-up & early judicialization (2000–2010)

The emergence of the 'nitrogen issue' is closely tied to European Union policies. The politicisation of nitrogen deposition—a chemical phenomenon not directly perceptible to the senses—would likely not have occurred without the adoption of the European Habitats Directive in 1992. This directive entailed the creation of the Natura 2000 network and also set site-specific conservation objectives for these areas, placing environmental licensing and land-use choices under considerable legal scrutiny (Woldendorp & Schoukens, 2015).

An early signal of the extent of EU environmental obligations came in 2001, when the Council of State suspended a building permit for the Deurganckdok, a major container dock at the Port of Antwerp. The suspension followed legal action by a coalition of local nature groups, a village-based citizens' action group, and the then-active farmer organisation Vlaams Agrarisch Centrum. The construction halt and associated damage claims brought substantial financial stakes into view, prompting the Flemish Parliament to retroactively validate the Minister of Public Works' permits—a move that ignored standard references to the regional zoning plan and sidestepped further appeals to the Council of State. This case not only signalled to industry stakeholders the far-reaching power of EU environmental legislation but also exposed internal tensions within the nature movement. Local nature groups had advocated collaboration with farmers to maintain an Arcadian landscape close to the harbor, reflecting traditional land use and cultural heritage. Other actors within the nature movement emphasized functional habitat protection or creation as part of legally required ecological

compensation within the port area. The latter strategy was politically executed, leading to the expropriation of several local farms and leaving a historical mark on the Flemish agriculture–nature relationship (De Stoop, 2015). Additionally, the Boerenbond ultimately endorsed the compensation measures, a position that generated considerable opposition among local farmers and community action groups (Vilt, 2013; De Stoop, 2015). The legal turn had clearly opened doors for conservation claims, but not yet for forms of agroecological redesign.

Natura 2000 designation & site-specific objectives (2010–2014)

Up until this point, however, the association of the Habitats Directive with nitrogen deposition had not yet come into view. It took considerable time before stakeholders became aware of nitrogen deposition as a distinct ecological problem—as opposed to nitrate pollution in water, which was the central issue in the 1990s. The far-reaching implications that the law would have because of this phenomenon, not only for nature conservationists and agricultural land users but for the Flemish political economy more broadly, were not immediately apparent. This is partly because the scientific recognition of nitrogen deposition as a critical ecological problem was itself a relatively recent development (see Box 2).

Box 2. The scientific discovery and recognition of the nitrogen issue

Nitrogen deposition includes both nitrogen oxides (NO_x) and ammonia (NH_3), which enter ecosystems through rain, airborne particles (aerosols), and gases (De Pue & Buysse, 2020). When deposition surpasses the threshold a habitat can tolerate without damage—known as its critical load—it can lead to a decline in biodiversity and negatively affect habitat conservation. Globally, ecologists first recognised nitrogen deposition as damaging through long-term watershed studies at Hubbard Brook in the 1960s–70s (e.g., acidification and nutrient losses implicating nitrogen; Likens et al., 1996) and experimental work formalising the concept of nitrogen saturation in the late 1980s (Aber et al., 1989). In Europe, Dutch field and experimental ecology in the 1980s–90s (Roelofs, 1986) and a synthesis by Bobbink, Hornung & Roelofs (1998) established its biodiversity impacts, while the Swedish-led critical loads framework (Nilsson & Grennfelt, 1988) translated these effects into policy thresholds. A UK national transect later quantified species-richness losses associated with rising nitrogen (Stevens et al., 2004). In Flanders, empirical work from the late 1990s–2000s detected elevated deposition—especially at forest edges—and linked cumulative nitrogen inputs to understorey eutrophication and species change (De Schrijver et al., 2007; Wuyts et al., 2008; De Schrijver et al., 2011; Verheyen et al., 2012). Building directly on that evidence, the Flemish research institute INBO produced a region-wide analysis that tied nitrogen deposition and critical-load (*Kritische Depositie Waarde*, KDW) exceedances to the site-specific conservation objectives of Natura 2000 sites (Cools et al., 2015).

The designation of Natura 2000 sites and their conservation objectives broadened both the discursive and material dimensions of nature–agriculture relations. Discursively, an Arcadian perspective is reflected in both the Habitats Directive and the rationale for designation. Article 2(3) emphasises cultural, social, and regional characteristics, framing nature as a product of long-term human interaction (Sumares & Fidélis, 2011). A significant share of listed species and habitat types are tied to cultural landscapes whose conservation depends on the continuation of extensive, locally adapted farming systems (EC, 2018). Materially, the directive introduced a powerful regulatory framework that extends beyond the designated sites themselves. Member States must define site-specific conservation objectives, specifying the ecological conditions needed to maintain or restore the features that justified each site's designation. Under Article 6(3), any plan or project—whether inside or outside Natura 2000 boundaries—that is likely to have a significant effect on a site's conservation objectives must undergo an appropriate assessment. This shift extended the policy's reach from mapped protected zones to adjacent land uses and licensing practices, strengthening judicial review and moving decision-making from discretionary negotiation towards legally reviewable 'tests of non-deterioration'.

In policy terms, these changes unfolded through a process designed to avoid a repeat of the political deadlock that had characterised the delineation of the Flemish Ecological Network (VEN). For Natura 2000, the

Flemish authorities deliberately adopted an "expert-based, stakeholder-driven" approach (Schauvliege, 2020, personal communication). In line with guidance documents provided by the European Commission, the nature administration (INBO, with ANB) initiated broad consultations. A wide range of stakeholders was invited, including the main agricultural organisations (Boerenbond and ABS), industry groups (VOKA and UNIZO, which had become more engaged following the Deurganckdok case), and representatives of hunters and forest owners (Landelijk Vlaanderen). Notably, the organic farming organisation BioForum was excluded on the grounds that it was too small to be considered representative—despite its ecological orientation and relevance to conservation objectives (Schauvliege, 2020). That omission mattered: it kept nature goals and farm practice largely on parallel tracks.

The technical reasoning behind the natura 2000 process remained grounded in ecological science (see Box 2). Experts worked from inventories of protected species and habitat types and used critical-load thinking to translate them into measurable targets: how many individuals were required to sustain viable populations, what ecological conditions and surface areas were necessary, and where conservation measures would be most effective. By the late 2000s, it had become clear that Article 6(3) would have major implications for the livestock sector in Flanders because of volatile nitrogen emissions and associated deposition (De Pue & Buysse, 2020). In Flanders, agricultural ammonia emissions account for a large part of nitrogen deposition, which has stabilised around 40 kton N/year since 2007, while combustion sources—particularly transport and industry—contribute substantially to nitrogen oxides (NO_x); total NO_x emissions fell from 77 kton N in 2000 to 33 kton N in 2021 (VMM, 2023).

Politically, the approval of regional and then site-specific conservation objectives between 2010 and 2014 was relatively successful; implementation proved much more difficult. Translating these objectives into operational land-management measures through site-level management plans remained incomplete, leaving a gap between goal-setting and delivery (Schauvliege, 2020; personal communication). Although it was well established that ammonia (NH_3) and nitrogen oxides (NO_x) contribute to the formation of secondary particulate matter ($PM_{2.5}$)—a considerable public health issue (WHO, 2021; EEA, 2023)—the nitrogen debate in Flanders largely unfolded through the lens of nature conservation and licensing rather than health policy or as a prompt to rethink production systems. Agricultural organisations were consulted primarily on strategic issues and flanking measures—such as compensation schemes for farmers facing expansion restrictions—but were not co-designers of spatial delineations or local conditions for integrating conservation measures or nature-inclusive agricultural practices. As a result, the process combined broad consultation with notable technocratic closure.

Provisional PAS regime (2014–2021)

To anticipate licensing standstills and reconcile 'economic' and 'ecological' interests, the Flemish government introduced a provisional Programmatic Nitrogen Approach (PAS) in 2014, inspired by the Dutch model (Flemish Government, 2014). The PAS sought to structure assessment and mitigation at a programme level, establish targets, and offer greater predictability for permit procedures. Operationally, a calculative device determined an 'impact score' by estimating total nitrogen deposition near sensitive habitats and comparing it with the habitat's critical deposition value (*Kritische Depositiewaarde*, KDW). The approach relied on two models: VLOPS (which estimates background nitrogen concentrations and deposition across Flanders using 1 km² resolution) and IFDM (which refines this with high resolution to estimate deposition around specific sources) (VILT, 2024). The screening logic was translated into a colour-coded classification for farms: 'green' (<5% contribution), 'orange' (5–50%), and 'red' (>50%). Farms labelled 'red' were denied permits to continue their activities, while 'orange' farms were required to accept government paid advice on emission reduction strategies. State support did increasingly flow towards developing and installing technical fixes, but pathways like downsizing, diversification, or nature-inclusive rotations found little programmatic footing. The policy focused on approximately 135 farms, and the practice of sending red and orange letters personalised the nitrogen dossier and attracted significant media attention. Although the agricultural cabinet co-developed

the policy via neo-corporatist consultation, the categorisation came as a shock to many farmers and local communities. Even as this provisional PAS gave authorities a framework to handle licensing pressures, experts questioned whether its architecture could deliver ecological recovery. De Pue & Buysse (2020) noted the policy programme failed to meet the long-term aim of preventing critical nitrogen deposition in all Flemish Natura 2000 areas. The spatially targeted policy focused on farms near protected zones, but deposition from other sources was left unchanged and remained too high, undermining broader conservation goals. The policy seemed more focused on identifying nitrogen overload than addressing it. For example, farms contributing 5–50% ('orange farms') only had to show they had sought advice, with no obligation to implement the recommendations. Despite expert and farmer criticism, the Flemish government did not adopt a more thorough approach to the nitrogen issue.

Between 2001 and 2014, the nitrogen dossier evolved from a relatively contained field of bargaining between nature and agriculture interests into a technocratic environmental licensing regime structured by EU law, also encompassing the industrial and transport sectors. Consultation widened compared to earlier exercises, yet remained expert-led in its problem framing and spatial delineations. The 2014 provisional PAS translated the recognition of nitrogen as a licensing bottleneck into a programmatic instrument that balanced predictability with targeted control. Its partial effectiveness, however, left the underlying compliance problem intact—foreshadowing the judicial rupture of 2021 and the subsequent move of nitrogen policy from administrative management to the forefront of party politics.

Judicial rupture (25 February 2021)

Until 2021, nitrogen policy advanced rather quietly—except in specialist press and farmer communities—through an administrative approach. This equilibrium was disrupted by a court decision on 25 February 2021, which abolished the provisional nitrogen policy. Invoking Article 6 of the Habitats Directive, the court rejected the 5% impact threshold for screening and faulted the framework for failing to prevent cumulative negative effects from multiple activities, each below the threshold. The ruling followed a legal challenge by Natuurpunt and local environmental groups against a permit for a poultry farm in Limburg, after the 2018 Flemish-level consultation failed to produce meaningful political progress towards a final nitrogen assessment framework (Natuurpunt, 2021). The nature movement's legal turn—following stalled negotiation—re-politicised the dossier, shifting the venue from administrative management to core executive politics and rendering licensing vulnerable to case-by-case judicial review.

The party-political context mattered. From 2019 to 2020, CD&V retained the Agriculture portfolio in line with the neo-corporatist routines, while the liberal-conservative N-VA (New Flemish Alliance) took charge of Nature, Environment, and Spatial Planning; Open VLD (liberals) completed the coalition. N-VA has a strained relationship with the traditional power-sharing among Christian Democrats, Socialists, and Liberals, yet it also exhibits neo-corporatist tendencies, notably close ties to the employers' federation VOKA, and parts of its membership maintain links with Natuurpunt (Lievens, 2020). Importantly, N-VA does not treat farmers as a core constituency. This portfolio split and venue shift changed whose voices were amplified and how the problem was framed. Growth and eco-efficiency actors (N-VA, Boerenbond (BB), and industry allies) stressed the need to protect the economy and the sector's "licence to operate," arguing against "reducing the number of livestock" (BB) and pointing to innovation—low-emission livestock housing, alternative feed, air scrubbers—as the credible route to address nitrogen (De Becker, 2019; Noyen et al., 2022). In parallel, agroecology and circularity advocates—Bioforum, Boerenforum, Bond Beter Leefmilieu (BBL), and Voedsel Anders—sought to align livestock numbers with regional nutrient cycles, link production with a protein transition and consumption-side measures, and establish a transition fund for downscaled, nature-inclusive farming (VILT, 2021; Voedsel Anders, 2022). At the margins, sceptical voices—including the United Livestock Holders and the far-right—questioned both the nitrogen problem framing and the legitimacy of Natura 2000 delineations, deriding protected areas as "small woods suddenly labelled as nature reserves" (Vlaams Parlement, 2022a; 2022b).

The Crocus Agreement: A Nitrogen plan (2022-2023)

Following weeks of intense negotiations within the core cabinet, led by the N-VA Minister of Environment and accompanied by widespread media speculation, the "Crocus Agreement" was established in February 2022 as a new nitrogen policy. The agreement set ambitious targets: a 50% reduction in nitrogen exceedance over critical loads in protected habitats by 2030 and a full phase-out by 2045. For new industrial development permits, nitrogen emissions had to remain below 1% of the critical deposition threshold, while livestock farms initiating or expanding operations faced a remarkably stricter 0.025% limit. Existing farms and industries with permanent permits were temporarily exempt, and the thresholds were, in principle, revisable if sectoral reductions appeared to meet the targets. A "red category" was retained for farms that caused significant nitrogen pollution: sources contributing more than 50% of the critical nitrogen load over at least 401 m^2 of protected habitat were placed on a "red list" and faced possible closure. A budgetary package of €3.6 billion combined restoration funding for affected Natura 2000 areas with buy-out schemes—initially focused on pig farms—and increased innovation funding for technical abatement (Vlaanderen Departement Omgeving, 2022).

Politicisation was immediate. Farmer protests surged, and a public consultation yielded approximately 19,000 responses (VILT, 2022b). Growth and eco-efficiency actors endorsed the agreement's thresholds and its technology-first orientation as a way to maintain economic development while meeting conservation obligations. However, BB and ABS criticised the reliance on model-based calculations rather than direct measurements, a concern later echoed in administrative and legal opinions that condemned "the unjustified use of model-based calculations for a company's effect on nearby sensitive natural areas" (Noyen et al., 2022; VILT, 2023). In the parliamentary arena, coalition parties emphasised innovation, while the Greens advocated for agroecology and circularity (Vlaams Parlement, 2021), and the Socialists called for a clear vision of sustainable, liveable agriculture within Flanders' environmental capacity (Vlaams Parlement, 2022b). The opposition argued that the technology-first focus promoted scale enlargement and questioned its effectiveness (Vlaams Parlement, 2022b; 2022c). Agroecology and circularity proponents read the funding mix as incoherent, noting that, aside from buy-outs for targeted farms, resources overwhelmingly favoured technical end-of-pipe measures rather than diversification or downscaling. Although the minister publicly claimed that farmers could reduce ammonia emissions by keeping fewer animals and diversifying their business models (Liekens, 2022), additional innovation funding primarily subsidised low-ammonia stables and air scrubbers (Vlaanderen Departement Omgeving, 2022). In practice, support for business-model innovation—such as short supply chains and nature-inclusive practices—remained virtually non-existent, reinforcing the post-political pattern of re-channeling conflict into expert screening and technological fixes rather than opening deliberation on farming models and land use.

Throughout 2022 and early 2023, the agreement's translation into a decree became the central site of contestation. Negotiations revolved around exemptions, the transferability of emission rights, and asymmetries between agriculture and industry. Growth and eco-efficiency voices urged speed to avoid a de facto licensing freeze, while agroecology and circularity coalitions pressed for structural measures linking production and consumption and for a transition fund commensurate with the required change (VILT, 2021; Voedsel Anders, 2022). Political tensions crystallised in March 2023, when a deal including CD&V-backed concessions (e.g., reviewing transferability and potential exemptions) was announced, only to run aground as parties diverged on how far flexibility should extend. On 14 July 2023, CD&V refused to sign the decree at the Council of Ministers, blocking implementation of the political agreement.

INEOS annulment & Council of State opinions leading to the Nitrogen Decree (2023–2024)

A new legal setback for the Flemish government soon disrupted the executive's policy-making process. On 20 July 2023, the Council for Permit Disputes annulled the environmental permit for INEOS to construct an ethane cracker in the Port of Antwerp. The ruling, triggered in part by objections from two Dutch provinces

concerned about cross-border nitrogen impacts on Natura 2000 sites, deemed the environmental assessment inadequate and criticised the Flemish government's handling as "careless" (VRT, 2023). Politically, growth and eco-efficiency actors invoked jobs and legal certainty, warning of investment risk and competitiveness loss, while environmental organisations and agroecology advocates argued the decision demonstrated that threshold-and-model solutions remained judicially fragile and that appropriate assessment must be strengthened. Attempts by Open VLD and N-VA to accelerate the process by submitting a decree proposal directly to Parliament—bypassing a reluctant coalition partner—functioned as a depoliticising move (through venue control and speed), yet in practice further re-politicised the dispute as opposition parties mobilised around procedural integrity and EU compliance.

Following legislative procedures, the Council of State was consulted on the legal robustness of the proposed law. On 2 October 2023, it issued a sharply critical opinion: the draft was incompatible with the Habitats Directive, the nitrogen impact calculation tool lacked scientific transparency, and discrepancies in permit rules between agriculture and industry remained unjustified. The Council also questioned the use of theoretical thresholds to exempt companies from appropriate assessment, emphasising that any increase in nitrogen deposition on sensitive habitats must be examined. After a revised political agreement on 14 November, the government resubmitted the decree on 20 December 2023; a second opinion on 22 January 2024 largely reiterated the earlier concerns. Two days later, on 24 January 2024, the majority approved the decree in Parliament, despite dissent from individual MPs within CD&V and Open VLD. In public communication, N-VA's urgency frame—avoiding a licensing standstill and restoring predictability—prevailed over critiques centred on the rule of law, tool transparency, and sectoral equity (Vlaams Parlement, 2022b; 2022c; VILT, 2023). Some farming constituencies welcomed the apparent clarity, while others remained sceptical of model-driven screening and uneven burdens; environmental groups warned that litigation risk persisted. Whatever administrative certainty the decree may have restored, it was clear that agroecological options remained largely absent from the final text.

The period 2021–2024 thus reveals a recurrent sequence. A judicial opening punctured the administrative settlement and briefly widened democratic contestation (questioning who decides, on what evidence, and by what standards). The subsequent response re-channelled conflict into technocratic instruments—thresholds, models, and core-cabinet bargaining—which re-closed the file administratively while leaving residual contestation in the courts, parliament, and the streets. Throughout, discursive coalitions shaped each turn. Growth and eco-efficiency actors leveraged thresholds and innovation to preserve a 'licence-to-operate' logic and minimise volume cuts; agroecology and circularity actors insisted on linking nitrogen to wider food system change (regional nutrient cycles, consumption, transition funding); and sceptical voices questioned the problem framing and the instruments themselves. This alternation between politicisation (via judicialisation and public mobilisation) and depoliticisation (via expert screening, fast-track venues, and limited co-design) explains both the speed with which the Crocus Agreement emerged and the fragility that led to repeated legal challenges.

Synthesis

Seen from a distance, the sequence of events related to Flemish nitrogen policy can be understood as a pendulum. Moments of opening—usually forced by hard law and courts—are followed by closure that neutralises conflict through the use of calculative devices such as comparative thresholds, models, and executive procedure. Table 1 attempts to lay bare this sequence based on the analytical dimensions adopted in the paper.

Box 3. Flemish nitrogen governance (1991–2024)

What we see is that in the 1990s, nature–agriculture tensions were channelled into spatial visions and compensation. Through the 2000s, appropriate assessment gained traction, with the Deurganckdok dossier demonstrating the power of judicial leverage—even if subsequent fixes restored administrative control—while Natura 2000 designation and site-specific objectives made nitrogen deposition formally consequential for environmental licensing. Between 2010 and 2014, consultation widened while the policy design remained expert-led and implementation hesitant. The PAS years (Programmatic Approach to Nitrogen) routinised management through modelling, screening, and classifying practices, delivering predictability without ecological recovery. In February 2021, the 'spell was broken': the court dismissed the 5% screening threshold and the issue of cumulative effects, turning a quiet administrative matter into loud politics. The Crocus Agreement (2022) recentred control around targets, thresholds, and innovation budgets; consultation and protests surfaced disputes over fairness and evidence. The INEOS case and Council of State opinions (2023–2024) again 'reminded everyone' how fragile the legal footing remained, before the final decree closed the file—administratively, if not socially.

We have observed that across the dimensions of the Policy Arrangement Approach, some elements shift while others persist. The actor constellation has expanded over time. Initially, environmental administrations and nature NGOs were dominant. These were later joined by farmers' unions and industry actors, and more recently by organised agroecology networks and sceptical voices. We see that courts tend to intervene at moments of crisis, while parliaments become more active during phases of political consolidation. We also find that resources shift as venues change. In earlier stages, resources took the form of mapping budgets and scientific teams. These later gave way to the legal leverage of EU directives and the growing use of litigation. In more recent phases, we observe a reliance on modelling expertise and the mobilisation of substantial public funds for technical abatement. Mobilisation from below matters too—such as farmer convoys or the submission of over 19,000 consultation responses—but we find that access to legal, technical, and financial tools continues to determine whose voices are heard.

Table 1 Milestones in the Flemish nitrogen governance (1991–2024) by PAA dimensions—actors, resources, rules of the game, and discourses—with associated mechanisms of politicisation and depoliticisation and outcomes from a post-political and agroecological lens

Analytical Dimension	Flemish Ecological Network (VEN) & early push-back (1991–2003)	EU build-up & early judicialization (2000–2010)	Natura 2000 designation & site-specific conservation objectives adopted (2010–2014)	Provisional PAS roll-out (2014–2021)	Provisional PAS annulled (25 February 2021)	Crocus Agreement & consultation (2022–2023)	INEOS annulment, Council of State opinions - Decree adopted (2023–2024)
Actors & coalitions	Environment ministry; nature NGOs; farmers/land-user groups mobilize.	INBO/ANB/ administration; Natuurpunt & local groups. Natuurpunt National; BB/ ABS; VOKA/ UNIZO; judiciary.	INBO/ANB; Boerenbond (BB)/ABS; VOKA/UNIZO; Landelijk Vlaanderen; BioForum excluded.	Environment administration; ANB/INBO; permitting authorities; BB/ ABS in concertation; NGOs peripheral.	Court; Natuurpunt and local environmental groups; administrations rewrite; parties recalibrate.	NVA/CD&V/ Open VLD core cabinet; BB/ABS; VOKA; Bioforum/ Boerenforum/ BBL/Voedsel Anders; opposition parties.	Council for Permit Disputes (INEOS); Council of State; majority parties; opposition; NGOs; farmer organizations split.

Resources (capacities & means)	Mapping budgets; policy staff; NGO volunteer networks; civic protest; farmer mobilisation.	EU legal leverage (Habitats Directive Article 6); growing legal expertise in NGOs; business lobbying capacity; administrative data work.	Scientific teams and datasets; stakeholder convening capacity; Commission guidance; limited implementation funding.	Modelling teams and IT capacity; permitoffice staffing; association mobilization; limited monitoring funds.	Litigation funds and legal expertise; caselaw on cumulative effects; media reach.	€3.6 billion fiscal room; administrative drafting teams; consultation platform; protest organization capacity.	Legislative drafting capacity; majority discipline; NGO legal strategy; corporate PR; crossborder actors.
Rules of the game (venue & style)	Executive-led planning; neo-corporatist style; limited direct participation.	Appropriate assessment gets a grip; judicial power becomes enacted (e.g., Deurganckdok 2001).	'Expert based, stakeholderdriven' consultation; appropriate assessment becomes binding.	Administrative screening; corporatist routines; case-by-case handling.	Venue shift to judicial review; executive discretion curtailed.	Core cabinet bargaining with formal public consultation; legacy permits temporarily exempt.	Judicial scrutiny followed by parliamentary fast-track adoption despite critical opinions.
Discourses	Conservation/ Arcadian nature vs. individual land-use/ property rights.	Precautionary principle vs. functional nature vs. Arcadian nature	Cultural landscapes and extensive farming; conservation as legally codified objective.	Ecoefficiency and 'license to operate'; legitimacy of model attribution questioned at margins.	Precautionary principle/ Rule of law vs. 'workability' claims.	Growth/eco-efficiency vs agroecology/ circularity vs. sceptic framing.	Urgency/legal certainty and jobs vs rule of law/transparency/equity.
Politicization (what is contested)	Rights conflicts over zoning.	Legality of permits and who bears delays/ compensation.	Boundary/ delineation fairness and the implementation gap.	'Red letters' highlight conflict in terms of fairness of legal procedures.	Legality of approriate assessment, cumulative effects, and transparency of evidence.	Legality of the decree; asymmetry agriculture vs industry; model vs. measurement legitimacy.	Thresholds/exemptions and tool transparency contested in parliament, media and courts.
Depoliticisation (how conflict is contained)	Programmatic spatial visions and compensation to contain conflict within spatial planning venues.	*Ad hoc* legislative fixes and commitments to 'better procedures' rather than explicit political choices.	Technical framing of objectives; corporatist handling of flanking measures; site level plans deferred.	Thresholding and expert devices individualize responsibility; 'orange' obligations remain procedural.	Promise of rapid replacement framework; policy re-design kept within core cabinet circles.	Innovation funding emphasizes technical fixes; thresholds restrict debate; drafting pace controls agenda.	Venue shift to majority vote administratively closes the file while litigation risk is left unadressed.
Outcome (PP lense)	Agriculture-nature conflict contained via spatial vision and compensation; closing off public space for democratic contestation.	Judicial intervention signals constraints, yet fixes restabilize administrative control.	Expert-led technical closure; codesign is limited.	Thresholding individualizes responsibility, depoliticizes structural choices.	Politicization spike via courts; venue opens beyond administration.	Executive thresholds and procedural consultation recentralize control.	Reclosure via fast track legislation; residual contestation persists.
Outcome (agroecological I lens)	No systemic redesign; conservation framed within planning, farming model unchanged.	AE: Legal leverage opens opportunities but not food system debate.	AE: Recognizes extensive farming but marginalizes agroecological actors; implementation gap.	AE: Techcentric management; little support for diversification/downsizing	AE: Window to reframe toward systemic change.	AE: Resources skew to technical abatement; weak transition funding and consumption link.	AE: Legal robustness contested; decree prioritizes legal certainty over transformative pathways.

The rules of the game remain largely executive-led and neo-corporatist in style. However, we note that this is increasingly framed in terms of "expert-based, stakeholder-driven" consultation. When legal pressures mount, venues shift towards the judiciary. When decisions are finalised, they tend to be closed procedurally, through instruments such as thresholds, sequencing, or accelerated timelines, which narrow the space for further

contestation. We observe that discourses move with these institutional dynamics. Arcadian conservation has been formalised in policy. An eco-efficiency discourse has gained traction, offering legitimacy to innovation without requiring livestock reduction. We also see that discourses of legalism and transparency tend to surface during moments of political opening. Meanwhile, agroecology and circularity discourses—those that seek to reconnect production with regional nutrient flows and consumption practices—have gained visibility but still struggle to influence instrument design or resource allocation.

A cross-cutting feature in all this is the standard of evidence. We have seen that the strong reliance on model-based attribution and screening thresholds both sparks contestation—especially regarding transparency and asymmetrical access—and contains it, by setting boundaries around what is counted as a legitimate or compliant response. Looking specifically at agroecology, we see a steady but limited trajectory. It was largely absent from early spatial planning efforts, later gained recognition in coalitions and consultations, but continues to leave only a light footprint on policy instruments and funding streams when compared to technical abatement. Courts sometimes force political openings, but closure often follows swiftly as expert tools and procedural thresholds define what 'counts' as a viable solution.

Discussion

Our case analysis demonstrates how the nitrogen issue in Flanders evolved into a highly politicised matter, leading to a period of intensified political contestation. EU Birds and Habitats obligations, implemented through Natura 2000, provided a legal architecture that contributed to opening up the political process and raising the stakes. It entailed the creation of the Natura 2000 network and set site-specific conservation objectives that placed environmental licensing and land-use choices under considerable legal scrutiny (Woldendorp & Schoukens, 2015). Due to the concentration of nitrogen-emitting activities in the region, the law had a significant impact on the Flemish political economy as a whole. It took, however, considerable time before stakeholders became aware of the systemic significance of this law, in part because the effects of nitrogen deposition on habitats worth preserving were underestimated by most stakeholders. As such, agriculture–nature conflicts were primarily territorial in the 1990s—i.e., where to realise nature and where to allow agriculture—involving frictions among specific land users. In the 2000s, nitrogen deposition became part of the Flemish implementation of the Habitats Directive, while strategic litigation and judicial readings of Article 6 in the Deurganckdok case had put politicians on notice. Court rulings (2021, 2023) elevated the nitrogen dossier from concrete permit procedures and cumulative-effects reasoning to cabinet-level urgency. It disrupted sole reliance on neo-corporatist rules of the game and made the underlying configuration of the Flemish policy arrangement unusually visible.

Taking seriously the literature on the post-political condition (Swyngedouw, 2010; Blühdorn & Deflorian, 2021) alongside work on (de)politicisation as strategy (Buller et al., 2019; Feindt et al., 2021), our case suggests these are not competing narratives but two lenses on the same sequence. Beneath the oscillation between politicisation and depoliticisation lies a post-political condition that structures both the discourse and procedures of governance. In Flanders, partitocracy and neo-corporatist routines channel conflict into cabinet bargaining and expert circles. On the EU side, the Habitats Directive risks embodying what Bonefeld (2017) terms an authoritarian-liberal form: Article 6 transforms conservation into rule-based, judicially assessable obligations, such as 'appropriate assessment', 'cumulative effects', and 'non-deterioration', operationalised through technical expertise. This multi-level convergence produces and sustains a technocratic interface, where models, thresholds, and files become the *lingua franca*. The central question shifts from "what agri–nature relation do we want?" to "does this pass the assessment?"—with IROPI and compensation mechanisms offering calibrated, rule-based flexibility rather than open political negotiation.

While the Directive does not enact a technocratic agenda per se, its procedural form allows member states to significantly narrow the space for contestation and privileges actors equipped with legal, modelling, and

consultancy expertise. In doing so, it disrupts established neo-corporatist settlements that had underestimated nitrogen's systemic effects. This set the stage for crisis governance, as a rule-bound environmental regime confronted a productivist and insider-driven policy configuration. The result was a moment of institutional rupture, followed by technocratic consolidation under legal constraint.

Notably, only the far right explicitly contested this framework, framing it as "Brussels overreach" disrupting a previously stable rural order. Yet the emergence of the nature movement in the late 20th century demonstrates that agri–nature conflicts predated the EU legal framework, as is the case in many EU countries (Paloniemi et al., 2015). These conflicts also helped generate democratic legitimacy for the Habitats Directive in Belgium—a legitimacy repeatedly reaffirmed in the European Parliament (EP, 2016, 2017). Crucially, while the Directive provided the nature movement with new legal instruments, it also displaced the political consideration of the relationship between agricultural practice and nature development into narrow arenas, hence removing them from public deliberation and participative and member-based democratic processes. Given the strength of the neo-corporatist arrangement the question rises whether and from where the demand for democratic engagement could have emerged, if not enforced or at least strongly pushed by EU institutions.

Within this institutional framework, dominant political actors engaged the system strategically and opportunistically. The Flemish government and its neo-corporatist partners not only operated within the broader contours of the post-political condition—they actively mobilised its logics as governance strategies to reinforce and protect the dominant discourse. This became particularly evident in the well-funded nitrogen package announced in 2022. While alternatives grounded in agroecology—such as systemic thinking, scaling down, regional value chains, and small-scale husbandry—were acknowledged discursively, they were effectively sidelined in policy design and budget allocation. The dominant farmers' union, Boerenbond, similarly worked to delimit the space of legitimate farmer civic opposition. It positioned itself as the voice of reason, cautioned against "polarisation," and redirected farmer discontent into formalised channels. Meanwhile, more autonomous protest movements were publicly problematised and delegitimised. These interventions individualised responsibility, recentralised technocratic solutions, and worked to contain emerging politicisation. Judicial rulings further responsibilised the executive to meet EU obligations, leading to a political compromise that restored a measure of licensing predictability. Yet the government stepped away from questioning the dominant vision of the relationship between economy, agriculture, and nature. In concert with its neo-corporatist allies, it sustained ecological modernization as the sole operative frame. Agroecological pathways, by contrast, were sidelined or only superficially supported. In Dryzek and Niemeyer's (2008) terms, this reflects a deficit of discursive representation: while alternative voices were present in the public sphere, they remained structurally underrepresented in collective decision-making.

While our analysis highlights the nature movement's role in initiating politicisation through strategic litigation, its contribution to the post-political condition is ambivalent. Nature organisations largely locked the debate about what constitutes "valuable nature" within the limits of the Natura 2000 framework. During the process of nitrogen policy formation, they rarely explicitly articulated the essence of the law and the Arcadian vision it represents, even as its far-reaching implications for economic development and farming practice became clear. Because nature outside Natura 2000 has limited enforceable weight against competing land uses, organizations were largely pushed to work within the limits of the Natura 2000 framework. During nitrogen policy formation, engagement often gravitated toward technocratic implementation. Given the strength of the neo-corporatist arrangement the question rises whether and from where the demand for democratic engagement could have emerged, if not enforced or at least strongly pushed by EU institutions or other powerful political actors. Nonetheless, however, many organizations became aware that through agroecological innovation more conciliatory models in farmland are possible. The discourses of Arcadian nature and agroecology emerged in different contexts, creating a mismatch in space and time . Many Flemish Natura 2000 sites contain farming-shaped habitats that could have and can encourage farmers to adopt nature-inclusive practices in syntergy with protected areas, consistent with agroecological principles, but this was not clearly stated in

public communication. Developed in the 1990s, the Habitats Directive recognizes that many listed semi-natural habitats rely on ongoing and suitable land management; however, it does not reference subsequent agroecological frameworks. Although farming and nature conservation are spatially linked, Natura 2000 has typically not been implemented using an explicitly agroecological approach. Additionally, model-based nitrogen regulation has affected how farming practices align with conservation objectives. Although most Natura 2000 designations in Flanders occurred before the agroecological shift in the 2000s (Stassart et al. ,2018), recent groups like Voedsel Anders and BBL have supported land-sharing approaches that may help align farm sustainability with nature goals. The Nature Decree also explicitly allows for civic participation in natura 2000 site management via consultative platforms, but implementation in Flanders is currently on hold.

What stands out is the assertiveness with which the executive sought to break the impasse and regain control. In our interpretation, two moments made this clear. First, the INEOS permit annulment exposed weaknesses in assessment; the immediate political response showed a preference for pushing ahead and fixing problems after the fact rather than re-examining the evidence itself. Second, the Council of State issued sharply critical opinions on the draft nitrogen decree; parliament nonetheless adopted the decree largely unchanged. Taken together, these moves prioritised speed and administrative certainty over addressing substantive legal criticisms and tilted the balance among branches of government by treating judicial review as an obstacle to be navigated. The effect was a re-closure that recentred executive control, suspended meaningful consultation with nature organisations, and a reinforcement of partitocratic dynamics—without the democratising gains one might expect from a politicised episode.

Seen together, the literatures on the post-political and on depoliticisation offer complementary sociological explanations for the observed pendulum swings. A structural reading of the post-political highlights how a rule-constitutional environmental regime—albeit democratically and repeatedly endorsed by the European Parliament—collided with regional productivist and neo-corporatist policy arrangements. This tension created openings via the judiciary while simultaneously equipping regional actors with the tools and venues to depoliticise contestation. The post-political thus offers a diagnosis of democratic dysfunction. By contrast, treating depoliticization as a governance strategy foregrounds agency and responsibility: if (re)politicization is not only a structural condition but also a strategic choice, then actors can learn, foster deliberation and be held accountable. We take this diagnostic-strategic view with a normative orientation toward fostering a democratic transition to agroecology, i.e., opening inclusive venues and aligning instruments so that future farm viability and nature objectives are co-designed and jointly delivered (HLPE, 2019).

Through the agroecological lens introduced in our analysis, we have shown that in early phases, proposals we would now call agroecological scarcely entered empowered spaces. Over time, agroecology gained legitimacy—coalitions consolidated, consultation inputs multiplied, and strategic documents named 'circularity' and 'regional nutrient cycles'—yet the instrument imprint remained thin. Budgets prioritised end-of-pipe innovation and site-level management plans lagged. Pathways involving livestock reduction, diversification, and nature-inclusive measures did not affect the rules of the game, even where local experiments showed feasibility. This divergence between discursive ascent and material allocation recurs across the assessed milestones and helps to explain why brief moments of politicisation rarely produced structural change. For agroecology movements, the work ahead lies not in identifying the single best policy instrument, but in reshaping political spaces and evidence so that agroecological pathways can actually travel into the instruments that decide who is able to do what, where, and with which resources. To keep the pendulum from swinging and reverse the tendency towards technocratic and authoritarian governance sidelining agroecological options, governments need to be called on to reopen the evidence standard to public scrutiny rather than relying on it as a shield. Neo-corporatist actors need to be encouraged to adopt a long-term and holistic vision of the agricultural sector. And nature organisations need to be further encouraged to foreground the Arcadian–agroecology bridge explicit in the policies they advance, not only negatively through court filings. Whereas nature organisations initially embraced a technocratic and litigious approach to the dossier, the openness to more

participatory approaches to rural development and environmental issues is encouraging (Liefferink et al., 2023). For instance, governmental agencies and municipalities have worked directly with local environmental groups and farmers to comply with the Water Framework and Nitrate Directives, achieving certain local successes in improving surface water quality. If national neo-corporatist and partitocratic structures were to allow and encourage this, it could represent a more democratic alternative governance model.

As the latter is clearly not the case in the current political landscape, other political actors will need to step forward to stimulate progress towards more democratic arrangements. Both the CAP and the Nature Restoration Law (NRL) contain procedural spaces that could be oriented towards increased public participation. Yet practice shows limited political willingness to strengthen these channels. For instance, an amendment (Article 16a) proposed during the NRL negotiations—which would have required the engagement of local and regional authorities, landowners, land users, farmers, and the general public in all phases of the preparation, review, and implementation of national restoration plans—was not accepted by the ENVI Committee (EP, 2023). Likewise, under the CAP, participatory engagement in the co-design of policy has not been taken up in most Member States (Liefferink et al., 2023). This raises the question to what extent more bottom-up civic resistance and engagement may be needed to foster dialogue and push entrenched policy arrangements to become more democratic. Farmer protests—if oriented towards building new alliances beyond existing interest-group structures—could constitute one such strategy.

Perhaps there is here also a role for the research community in facilitating and giving voice to the public sphere, potentially generating a democratic perspective that is currently underutilised. In this way, a space can be created for open yet politically relevant dialogue on the relationship between agriculture and nature development. However, for this to succeed, the research community must re-establish itself as an active participant in the public sphere, using its knowledge production to foster a more democratic public discourse, a mission statement once upheld by rural sociologist Philip Lowe (Lowe, 2010).

Conclusion

This paper set out to explain how EU Habitats obligations interacted with Flemish policy arrangements to shape cycles of politicisation, depoliticisation, and attempted re-politicisation in the nitrogen dossier. Tracing the episodes since the early 2000s with the Policy Arrangement Approach, we find a recurrent sequence. Judicial interventions linked to Article 6—whether through appropriate assessment demands or landmark rulings—punctuate the policy field and briefly reopen otherwise closed political spaces. These interventions raise evidentiary stakes, shift attention beyond behind-doors bargaining, and momentarily broaden who can contest the terms of the 'licence-to-operate'. Yet these openings are rapidly translated back into administrative practice. Screening thresholds and model-based attribution, together with executive-centric decision styles and neo-corporatist routines, re-channel conflict into expert procedure and partitocratic negotiation. Consultation expands in headcount but remains selective in effect: which claims and knowledges shape instruments is filtered by the design of calculative devices, advisory circuits, and core-cabinet bargaining. The result, across episodes from the programmatic approach to the Crocus Agreement and subsequent decree, is a pendulum in which judicialisation triggers an opening, and technocratic techniques and insider venues restore the closure.

This pattern helps clarify why discourses of agroecology and circularity gain public presence but remain unrepresented in instruments and budgets. Where political spaces for co-designing ends and means remain scarce, and where evidence is stabilised within modelling choices and rule-based screens, re-politicisation remains fragile and short-lived. The current drift towards emission-based instruments risks repeating the cycle if adopted as a technical fix rather than as part of a more explicitly deliberative settlement on what type of agriculture and nature the public intends to realise in Flanders, and through what means. If nitrogen governance is to be both effective and democratically robust, three conditions follow: institutional spaces

where alternative agri-nature futures can be formulated and negotiated; transparent evidence practices open to scrutiny and counter-expertise; and financing that supports systemic transition rather than only incremental abatement. In the absence of such changes, the interplay of judicial openings and administrative re-closure documented here is likely to persist.

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