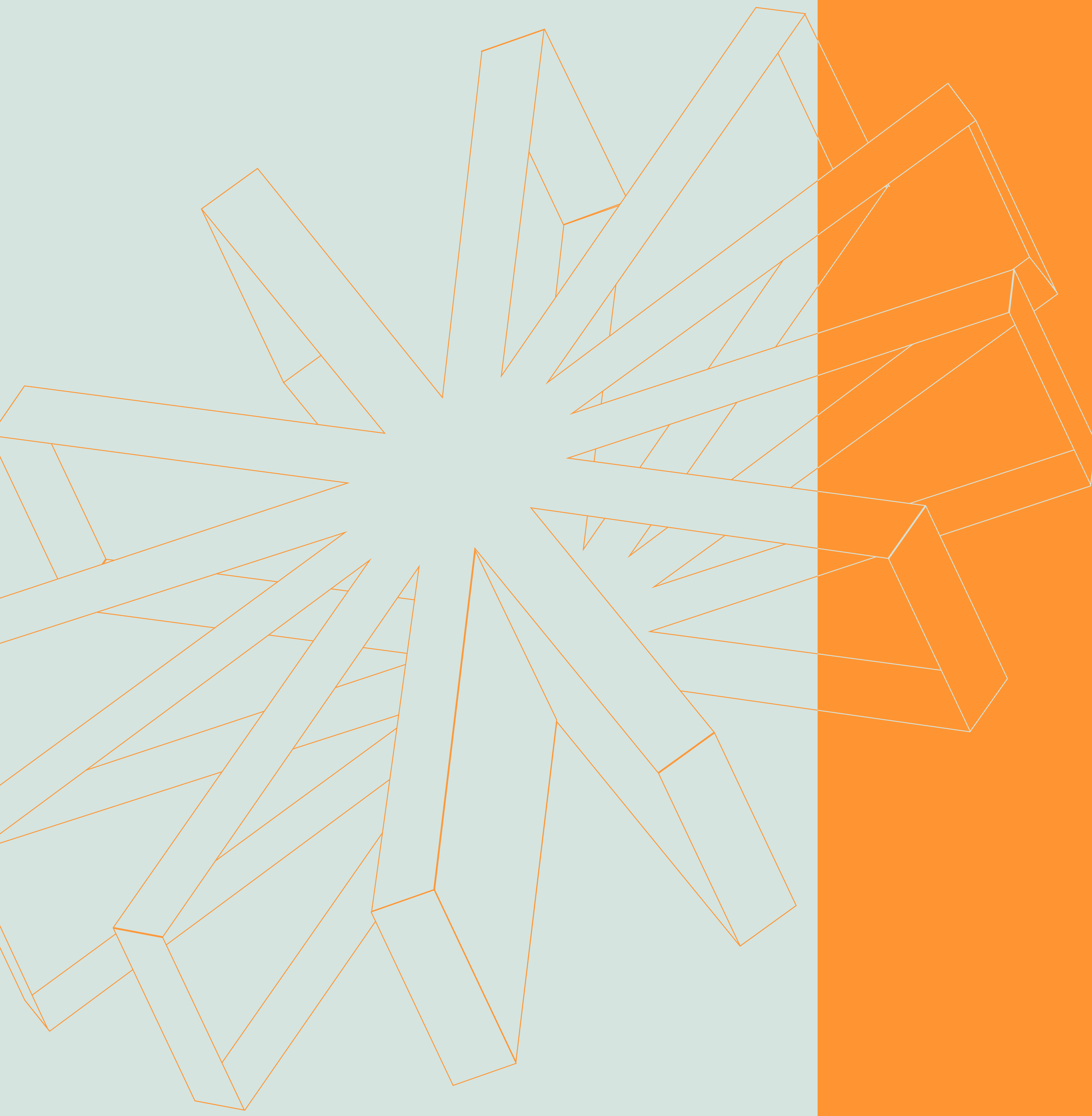
Sector Insights



Food supply chains in Spain in the face of climate change

November 2025

Hosted by

ie UNIVERSITY

With the support of

European Climate Foundation

alinnea

CATALYZING TRANSFORMATIVE IDEAS

This report was prepared for **alinnea** by Daniel González Franco, managing partner of Lógica Urbana.

Review and update of the report: Florent Marcellesi, energy and climate expert.

alinnea is a climate Think & Action Tank based at IE University and supported by the European Climate Foundation (ECF).

alinnea
CATALYZING TRANSFORMATIVE IDEAS

Hosted by

IE UNIVERSITY

With the support of

European Climate Foundation

This report has been prepared with the support of the European Climate Foundation. The authors are responsible for the information and views expressed in this report. The European Climate Foundation is not responsible for any use that may be made of the information contained or expressed in this document.

Cite as: Fundación Instituto de Empresa (2025). Food supply chains in Spain in the face of climate change. Sector Overview Series. Report prepared for alinnea by Daniel González Franco.

Table of contents

1 The contribution of the food supply chain to greenhouse gas emissions

Thanks to collaboration between the European Commission's Joint Research Centre and the FAO, since 2018 we have had access to aggregate data for assessing the food sector's emissions as a whole through the EDGAR-FOOD database. The title of the article published by those responsible speaks volumes about the weight and responsibility of the agri-food system in greenhouse gas emissions[1]: 30% of global emissions[2].

But who is who in this chain in terms of emissions?

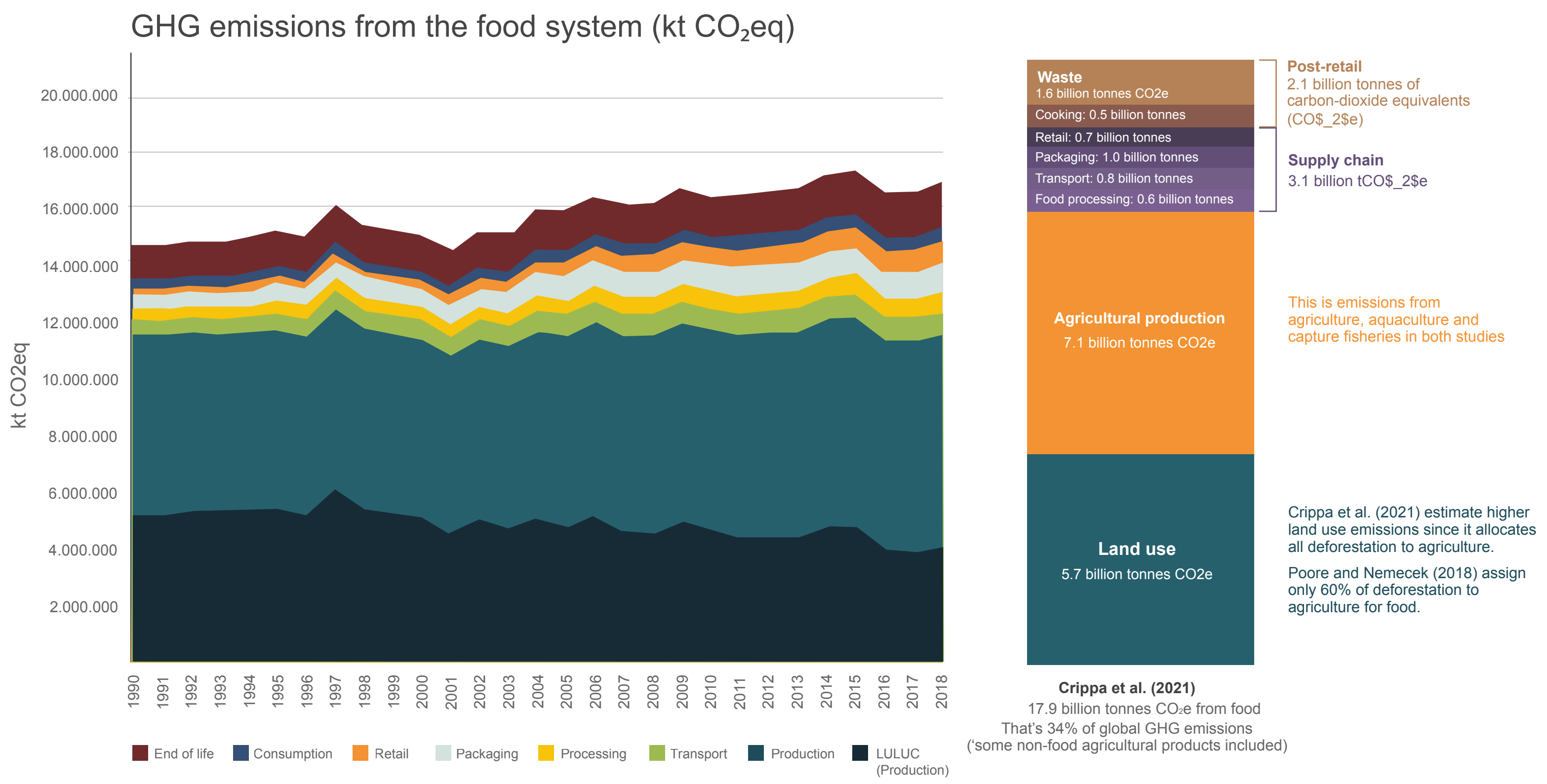
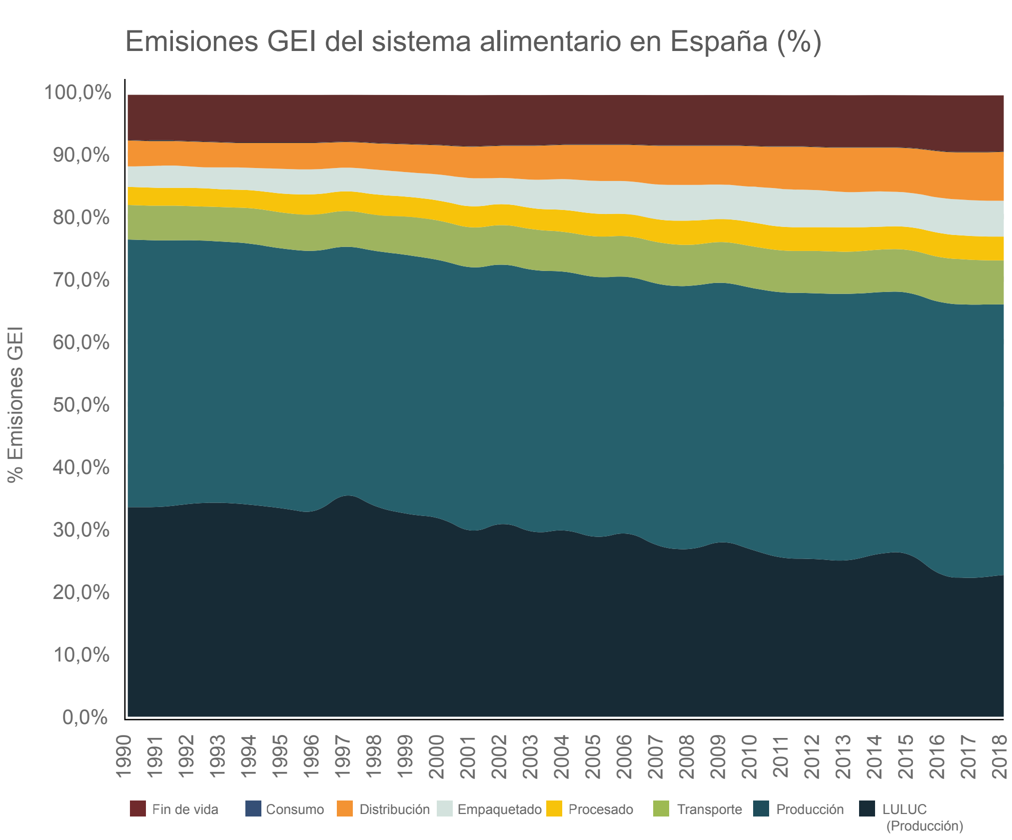


Fig. 1. Source: Left, own elaboration based on data from Crippa, M. et al (2018); right, Our World in Data

The subsequent inclusion of EDGAR-FOOD data in the scientific publication Our World in Data[3] (Fig. 1, right) used an aggregation of agents that allows for a visualisation focused on four categories, based on the agri-food value chain: a first block comprising activities linked to production, to which emissions related to land use change (LULUC) would be added. Next would be activities linked to the food supply chain (transport, processing, packaging and distribution (retail)); finally, emissions from activities related to consumption (preparation, cooking, etc.) together with those generated in the waste management and treatment process.

The global evolution of emissions from the agri-food system over the last three decades (1990-2018) shows an overall increase of 15% and a growing share of emissions linked to the post-production supply chain, which has doubled from approximately 10% to 20% (Fig. 2).



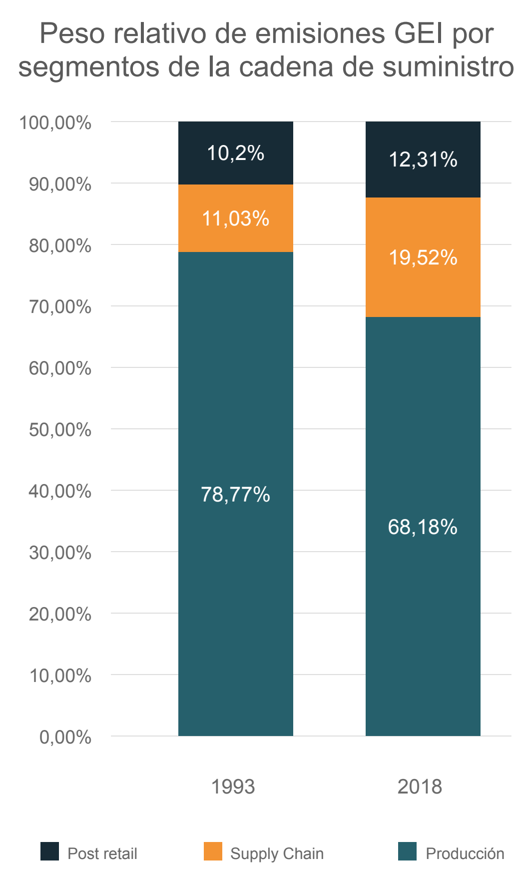


Fig. 2. Source: own elaboration based on data from Crippa, M. et al (2018)

1. Crippa, M, et al (2018) : Food systems are resposible for a third of a global anthropogenic GHG emissions. https://doi.org/10.1038/s43016-021-00225-9
2. Do not confuse emissions from the "agricultural" sector with those from the "agri-food" sector. The former corresponds to "agricultural production" in the image on the right in Figure 1; the latter includes all upstream (LULUC) and downstream (supply chain and post-retail) agents and activities.
3. https://ourworldindata.org/greenhouse-gas-emissions-food

We can compare the data provided by EDGAR-FOOD for Spain (Fig. 3) with that provided by the National Emissions Inventory of the Ministry for Ecological Transition and Demographic Challenge[4] to verify that, indeed, the agri-food system is responsible for around 30% of emissions in our country. However, we will also see that the relative weight of the agri-food system is following an upward trend, especially since the Spanish economy peaked in GHG emissions, rising from 26% to almost 30%. Furthermore, its rate of decarbonisation is significantly slower than that of the Spanish economy as a whole.

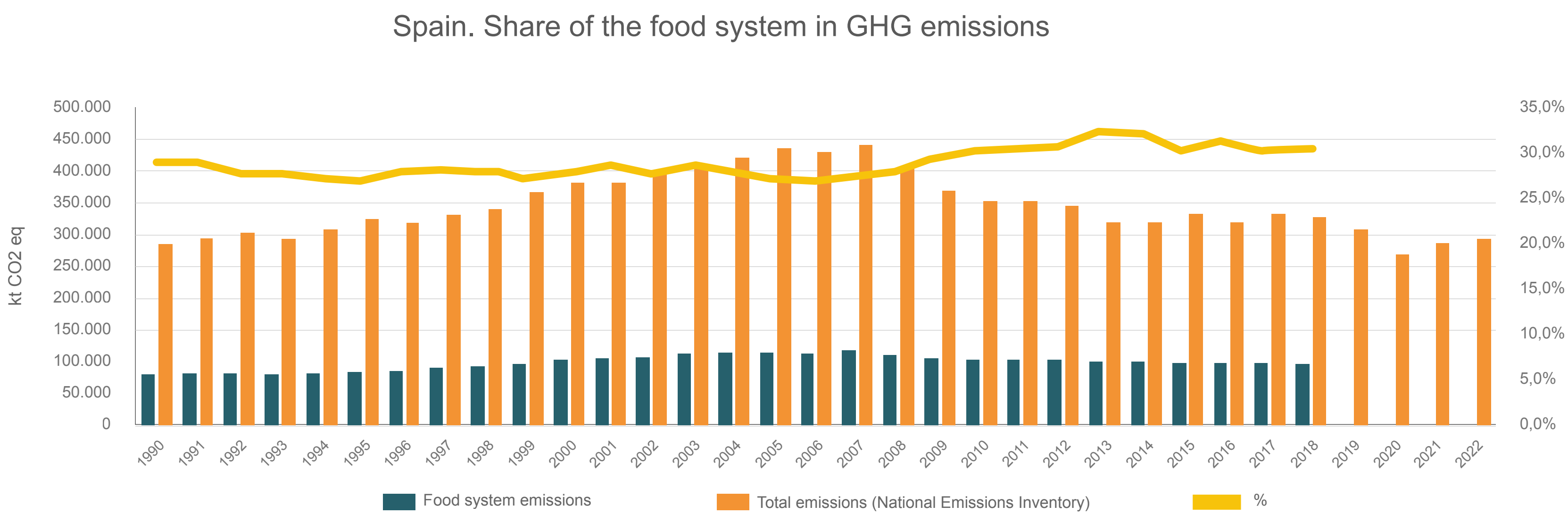


Fig. 3. Source: own elaboration based on data from Crippa, M. et al (2018) and the Ministry for Ecological Transition and Demographic Challenge (MITECO, 2025)

To explain the above, it is necessary to disaggregate emissions from the food supply chain into each of its agents (Fig. 4). We can see a generalised expansion of emissions until the 2008 crisis, although much more intense in processing and distribution than in production. In that year, emissions from the post-production supply chain exceeded 40% of the total for the agri-food system.

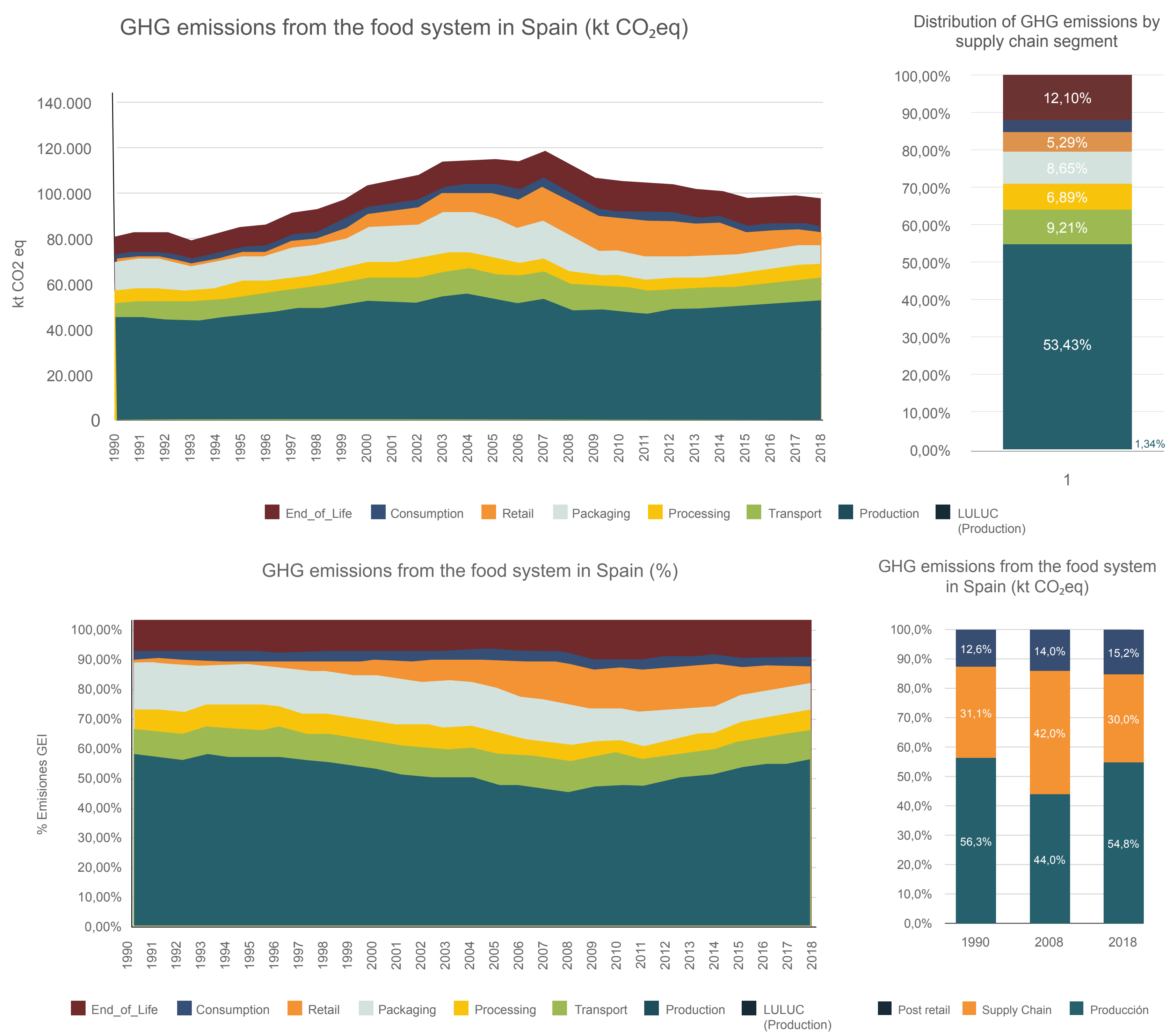


Fig. 4. Source: own elaboration based on data from Crippa, M. et al (2018)

4. MITECO (2025): National greenhouse gas inventory. https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/sistema-espanol-de-inventario-sei-/inventario-gases-efecto-invernadero.html

However, from that point onwards, the distribution chain began a sharp decline in emissions, leading to a relative weight in 2018 that was even lower than in 1990, before the long period of economic growth in Spain at the end of the last century and the beginning of this one. Thus, it can be seen that all agents, with the exception of processing, have experienced declines which, in some cases, such as distribution (retail) or packaging, are very notable, with falls of 66% and 42% respectively (Fig. 5).[5]

There is a significant contrast with activities related to production, which have increased their emissions by 7% and climbed 10 points since 2008 in terms of their relative weight in the agri-food system as a whole. This decoupling in the behaviour of emissions from the food chain in Spain between production and processing/distribution can be interpreted as **reflecting the delay of the agricultural production sector in the transition to sustainability compared to other sectors in the agri-food chain**, and also compared to other sectors such as industry and energy.

Change in GHG emissions. Spain, 2008–2018

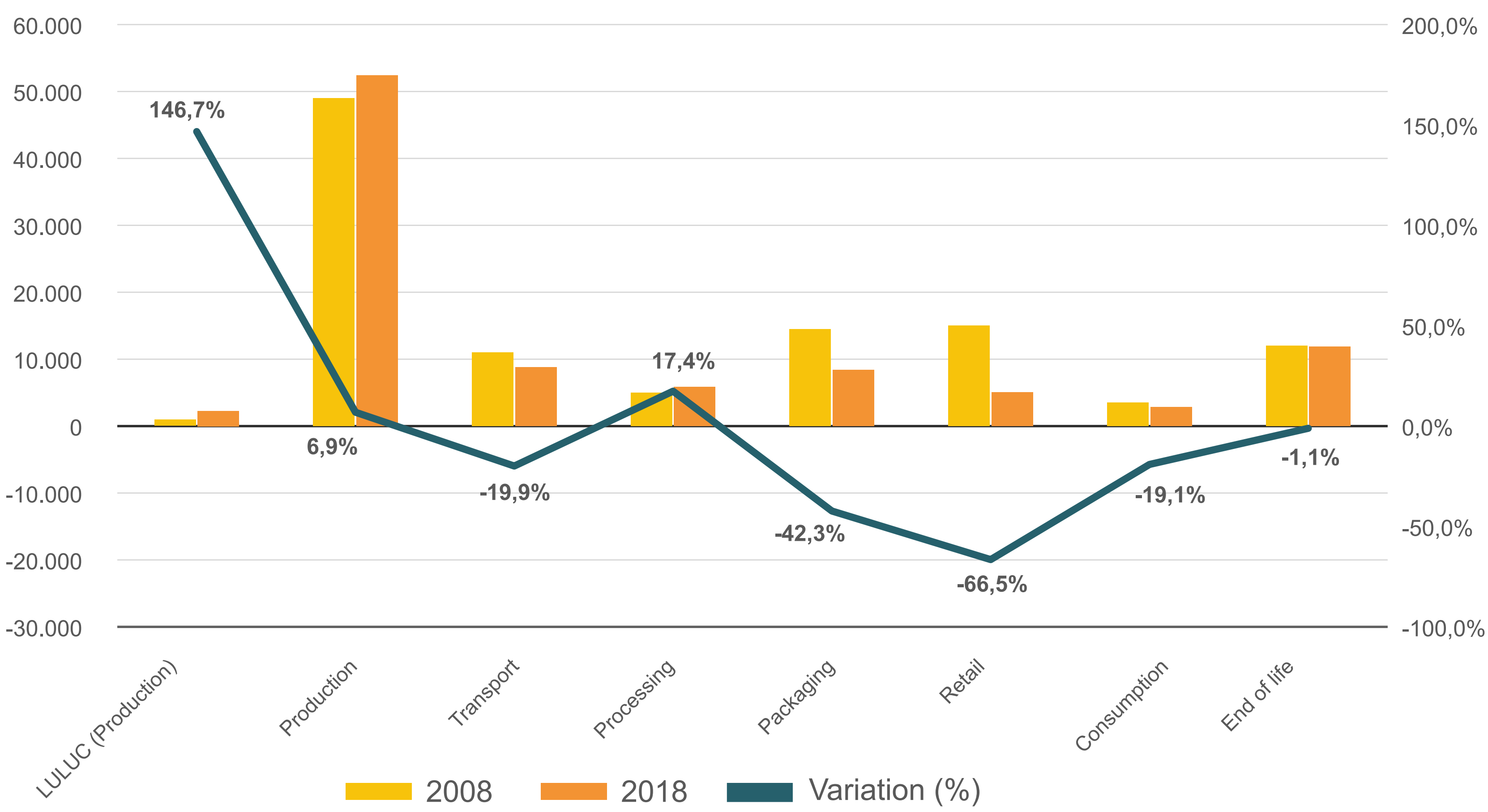


Fig. 5. Source: own elaboration based on data from Crippa, M. et al (2018)

Given this situation, it is worth asking about the distribution of impacts within the food supply chain sector beyond production, in order to shed light on the reality of the contribution to GHG emissions and the degree of adaptation to climate change in food distribution, in the context of heated debates, often more ideological than factual, about the role that large-scale distribution and small businesses play in this: is it possible to attribute better climate performance to small businesses than to large-scale distribution? What is the real scale of local production and marketing channels?

2 Food distribution in Spain. An approach to food supply typologies.

The Spanish government has been consistently collecting consumption data since 1999, when it began to apply a methodology based on continuous monitoring of purchasing behaviour with regard to food consumption throughout the country. This is done through a sociologically representative and statistically viable panel of informants, with more than 12,000 members distributed evenly across all the autonomous communities according to their population.

Based on the above, with the data provided by the Ministry of Agriculture, Fisheries and Food[6], we can get an overview of the relative weight (market share) of the different distribution channels recorded statistically. We can see the overwhelming dominance of large-scale distribution, with a 77% market share, followed at a considerable distance by the traditional channel with only 12% and a significant, albeit narrow, 3% corresponding to markets and travelling fairs. The table is completed by a series of channels, which could be classified as local marketing, such as direct purchases from producers, which occupy marginal positions and are irrelevant in operational terms.

5. In particular, the impact of European regulations on chlorofluorocarbons in the cold chain on distribution emissions is very noticeable. The first EU regulation on fluorinated gases (F-gases) came into force in 2006, focusing on containment and servicing. In 2015, the second version came into force, introducing the gradual reduction of hydrofluorocarbons (HFCs) with high Global Warming Potential (GWP). Finally, in October 2023, the third version was agreed. The latter is an extremely ambitious regulation that provides for the total elimination of F-gases in the long term. https://www.danfoss.com/es-es/about-danfoss/our-businesses/cooling/refrigerants-and-energy-efficiency/hfc-phase-down/danfoss-on-f-gas-regulation/

6. Source: https://www.mapa.gob.es/es/alimentacion/temas/consumo-tendencias/panel-de-consumo-alimentario

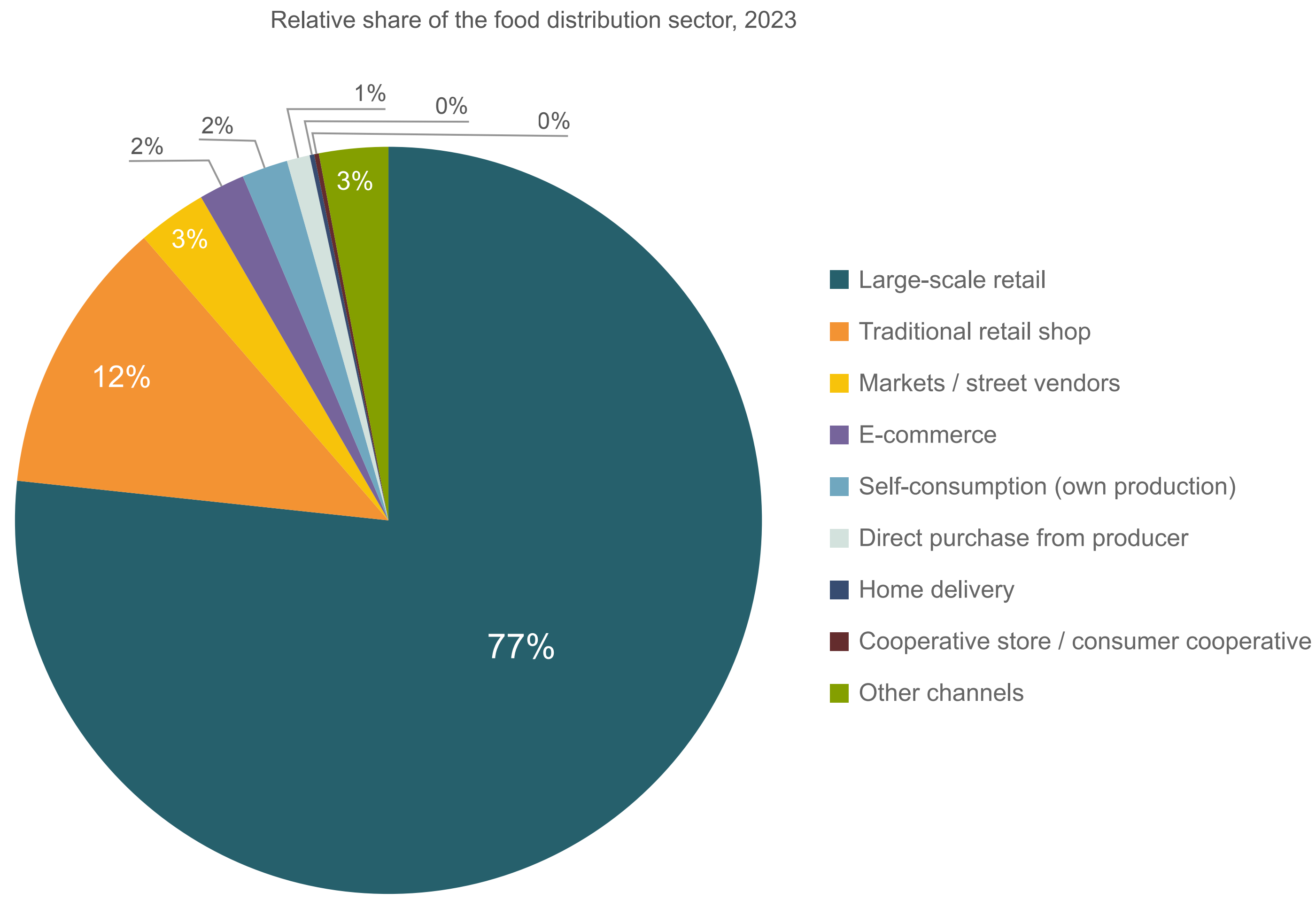
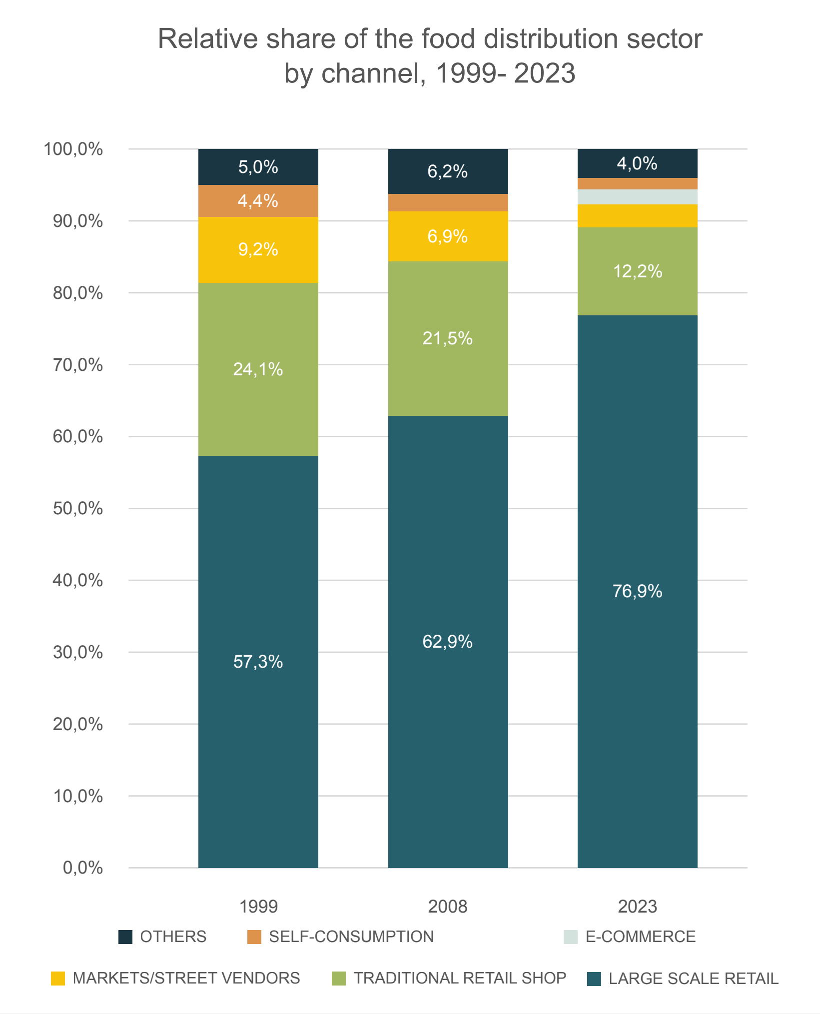


Fig. 6. Source: own elaboration based on data from the Household Food Consumption Panel of the Ministry of Agriculture, Fisheries and Food

However, if we consider the historical data since the series became available, we can see that the current situation is the result of a very dynamic process of consolidation of large-scale distribution and the progressive marginalisation or disappearance of the rest. Thus, what is now a 77% market share was 63% in 2008 and 57% a decade earlier: a 20-point increase in just 24 years. The declines in the other channels range from almost 66% in the case of markets to almost 50% in the case of small traditional shops.



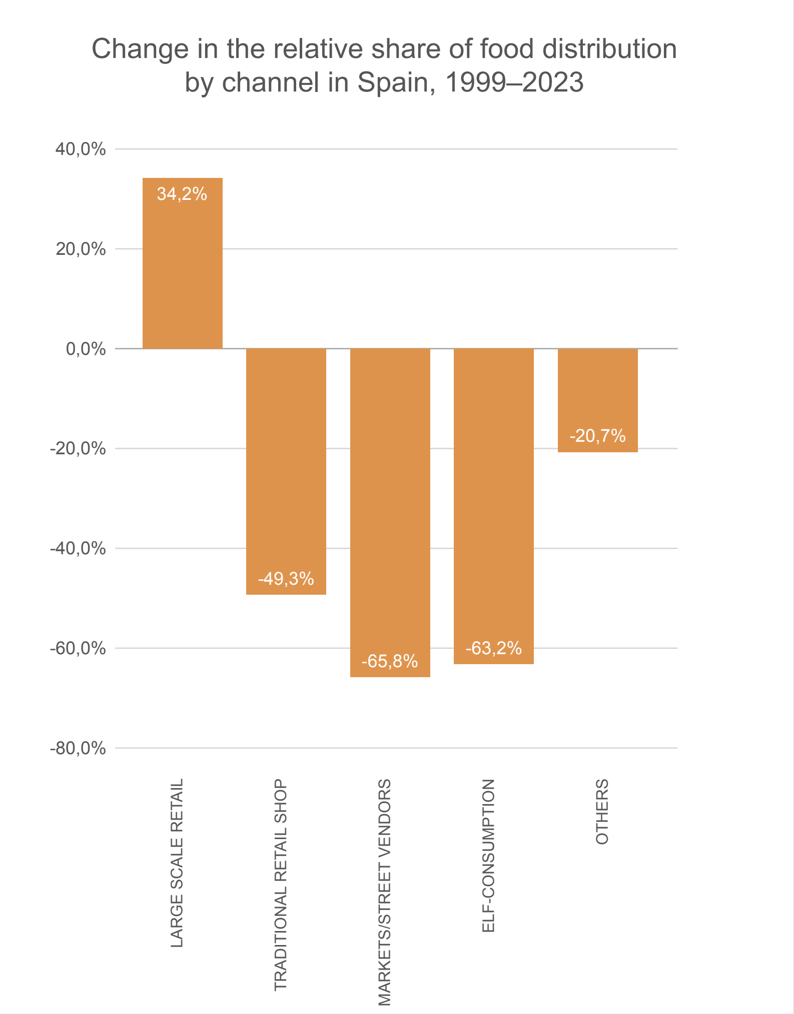


Fig. 7. Source: own elaboration based on data from the Household Food Consumption Panel of the Ministry of Agriculture, Fisheries and Food

If we compare these results with those obtained in the previous section, we arrive at two basic conclusions:

1. **That the reduction in emissions is not related to the nature of the channels or the opposition between large-scale distribution and small businesses:** a 12-point drop in the relative weight of GHG emissions from the post-production food supply chain coincides with a 9-point drop in the relative weight of small businesses in the food distribution market share.
2. **That the other channels, which are those that could potentially have a greater relationship with short supply chains, are marginal** (including street markets, street vending, direct purchases from producers and self-consumption) and **are currently practically irrelevant, as they do not account for more than 5% of the market share as a whole.**

How can these data be explained? By analysing the business models of the different marketing channels, for which it is possible to refer to studies on the value chain and price formation of a series of products in the primary sector developed by the Ministry of Agriculture, Fisheries and Food in the late 2000s and early 2010s.

These studies were developed with the aim of deepening knowledge about the value chains of a selection of fresh products, identifying the different configurations of these chains and studying the price formation process throughout the chain using a methodological approach based on the addition of costs and profits of each agent at each stage of the value chain. The fact that the studies **differentiated between two alternative models of value chain configuration: the traditional (small trade) and the 'modern' or large-scale distribution**, allows us to establish a comparative analysis in this regard.

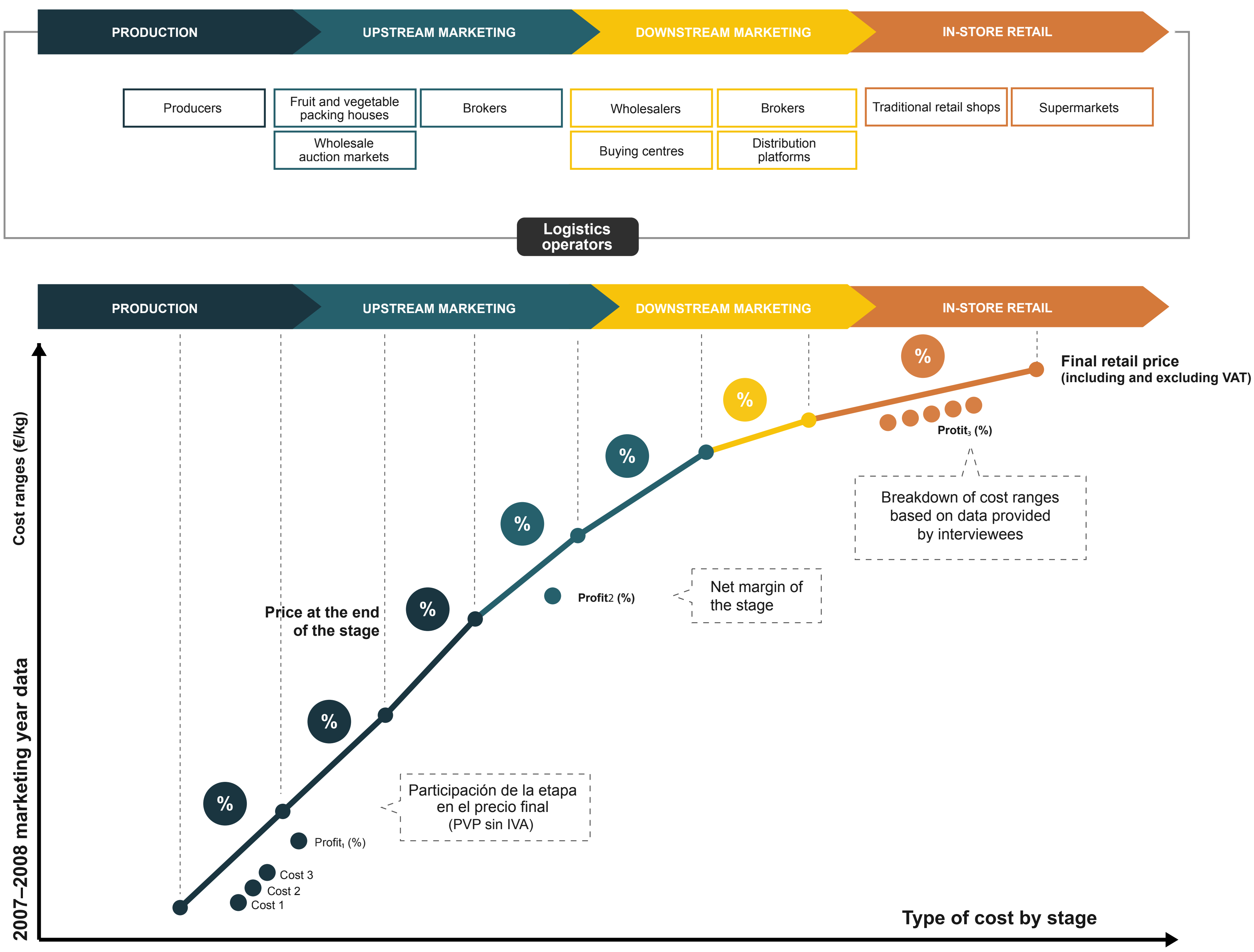


Fig. 8. Source: Studies on fresh produce. Food Chain Observatory. Ministry of Agriculture, Fisheries and Food

Below is a brief description of the processes and agents involved.

Marketing at source consists of the processes of selection, classification, weighing, packaging, palletising, labelling and strapping; transport and refrigerated storage; and, finally, quality control and auction/sale.

The agents involved are basically:
- Brokers/warehouse operators: purchasing on behalf of wholesalers. The broker provides knowledge at source;
- Auction houses: private companies that sell farmers' produce through an auction system;
- Marketing cooperatives: these generally take the form of cooperatives, although they can also be commercial companies. They represent forward vertical integration in the value chain by producers in order to retain the added value incorporated into the product at this stage.

Marketing at destination varies depending on the channel. For small retailers, the processes are limited to reception and placement, while for large distributors they involve storage, order preparation and capillary distribution (transport) to points of sale.

Its agents are:

- Purchasing centres (outsourced procurement by large retailers): they consolidate demand from points of sale, increasing bargaining power;
- Distribution platforms: they supply, receive, prepare and distribute orders to points of sale;
- Wholesalers/brokers: many located in central markets, others acting on behalf of retailers (small businesses).

Final sale:

- Small businesses: small, family-run retail outlets;
- Large retailers: model of concentration of demand at the point of sale to obtain bargaining power with suppliers. Establishment of own quality standards (handling, packaging, weights, sizes, labelling, traceability, etc.).

The results of the studies allow us to draw a number of conclusions:

1. Margins are relatively low in all segments of the chain

2. That they are particularly low in the **production segment**, which is why **the main lever for improving the profitability of agricultural holdings is to increase their economies of scale** through production volumes, either through intensification and mechanisation, through the aggregation of production areas or, in most cases, through both at the same time. This involves a continuous process of replacing labour with the capital necessary to ensure increasingly sophisticated and expensive supplies, which makes production more efficient and increases yields, but puts downward pressure on prices, which in turn initiates a new investment cycle.

This has two consequences:

a. Firstly, the financial burden and risks assumed by farms are increasing unstoppably, raising uncertainty and barriers to entry into the family farming business model to such an extent that it has led to a growing inability to ensure their own generational replacement.
b. Secondly, small farms that focused on the local marketing of their products have disappeared due to a lack of profitability, which explains both the marginal position of local product marketing channels and the reorientation of the small business model towards longer supply chains, once the supply of local products has disappeared.

3. Consequently, **the differences in the business models of large retailers and small businesses do not have so much to do with the length of the supply chains**, as these are similar, **but rather with the efficiencies derived from the economies of scale with which they operate.** On the one hand, they differ in the volume and diversity of products they offer, which translates into a strong differential in terms of bargaining power in the former case and attractiveness in the latter; and on the other hand, in the ability to centralise procurement, order preparation and capillary distribution tasks. Thus, while the centralisation of these functions allows for their progressive automation, increases bargaining power and, ultimately, reduces operating costs for large retailers, in small businesses they must be developed, organised and financed by the staff, often family members, of each establishment, who are forced to make up with labour what large retailers achieve at lower cost through capital.plantilla, a menudo familiar, de cada establecimiento, obligada a suplir con trabajo lo que la gran distribución desarrolla a menor coste mediante capital.

These considerations explain:

a. Firstly, it is not possible to attribute better climate performance to traditional commerce, since the length of supply chains and, often, the origin of production is the same, which requires dispelling the collective belief that local commerce continues to operate with short supply chains.
b. Secondly, the unstoppable decline in market share of traditional channels compared to large retailers, given that the only productive factor available to the former business model is labour, often family-based, involving high effort and low pay, together with very tight margins, which leads to the key problem facing the sector: the lack of generational renewal.

These conclusions offer three key insights:

- There has been a **shift in business models**, both in agricultural production and food distribution, towards those that are better able to capture market efficiencies derived from economies of scale **based on volume and price, requiring highly integrated markets and long supply chains to operate.**
- This shift has led to a **concentration of lack of prospects and problems of uncertainty and generational renewal in business models, often family-owned**, which, having shifted towards capturing these efficiencies, meet their operational needs by increasing the provision of labour, but with little or no access to capital as a productive factor.
- It is possible to hypothesise **that the agents that concentrate economic problems are also those that exhibit the worst climate behaviour,** both in agriculture and in traditional small businesses. This hypothesis can be interpreted as **reflecting the difficulty of family business models to compete with corporate models in capturing economies of scale without sufficient access to the capital resources necessary to do so, which would increase their inability to meet the costs of decarbonisation**[7]**.** This relationship is widely documented in recent literature on just transition and climate transition risks (FAO 2021[8]; OECD 2022 ; EEA 2021[9]; DG AGRI 2020[10]), which identifies the structural constraints—financial, technological and governance—faced by family farms and SMEs in adapting to new environmental requirements. According to these studies, lack of capital, limited capacity to capture economies of scale and restricted access to green financial instruments are critical barriers to the effective decarbonisation of family business models.

This raises some important questions: **Where should we look for the origins of this systemic shift towards economies of scale**, market integration and long supply chains that are leading to the decline of family-based economic structures? **Do we want to preserve family business models** in agricultural production and food distribution? And, if so, **in what direction should they be oriented?**

To find a sufficiently comprehensive answer to the first question, we must turn to the regulatory framework.

7. FAO (2021). Pathways towards lower emissions: family farms and climate change. Rome: Food and Agriculture Organisation of the United Nations.
8. OECD (2022). Financing Climate Action in Agriculture. Paris: Organisation for Economic Co-operation and Development.
9. EEA (2021). Agriculture and climate change — Challenges and opportunities at the farm level. Copenhagen: European Environment Agency (Report No 1/2021).
10. DG AGRI (2020). Farm Economics Brief No. 20 — Economic resilience of EU farms. Brussels: European Commission, Directorate-General for Agriculture and Rural Development.

3 Governance model and regulatory framework of the agri-food system

3.1 The global governance model of the food system in perspective. Where we come from and where we are going

The current governance model of the global food system was based on the historical concatenation of two key events, one technical in nature, the Green Revolution, and the other political in nature, liberal globalisation.

The first has to do with the use of the Haber-Bosch process for N synthesis, considered by some to be the most important invention of the 20th century[11]. This made it possible to free agriculture from biological constraints and apply industrial—rather than biological—principles to production[12], boosting productivity as never before in what came to be known as the **Green Revolution.**

The Haber-Bosch process not only introduced synthetic fertilisation, but also definitively integrated agriculture into the fossil fuel-based energy metabolism of the industrial economy, as it relied on natural gas and high energy consumption for its operation. **This represented a gigantic operation of replacing environmental efficiencies with market efficiencies:** given that traditional agricultural systems are (were) based on obtaining the highest possible production with the available soil and energy resources through biological diversification, from the moment technology freed us from the biological processes of N fixation, it became possible to replace the biological diversity that maximised this process (environmental efficiencies) with standardisation based on industrialised monocultures that increased production at the lowest possible cost (market efficiencies).

If standardisation had been key to the national integration of agricultural markets, substantially improving the food security of their populations by ensuring supply and stabilising prices, the Green Revolution brought to the table the technical conditions necessary to expand this process on a much larger scale than had ever been achieved before, **promising unprecedented food abundance** and fuelling expectations that world hunger could be overcome as never before.

To fulfil that promise, an **institutional architecture capable of turning it into a political reality** was still needed. This architecture **came with liberal globalisation** after the collapse of the Soviet bloc, enabling a global competitive arena and, as a result, greatly boosting efficiency in the allocation of resources through specialisation and initiating a long cycle of falling prices on which today's long food supply chains were built.

It was in this context that **the governance of the global food system was articulated around economic efficiencies, but leaving aside both environmental efficiencies**, because the technological framework of the Green Revolution made them unnecessary in the process of industrialising the countryside, and **social efficiencies**, because the theoretical framework of liberal globalisation, that of neoclassical economics, ensured the convergence of incomes in the scenario of price competitiveness that had been constructed.

3.2 The application of the model in Europe. The Lisbon Strategy and the hygiene package.

Within the European agri-food system, various food crises during the 1980s and 1990s that severely affected consumer confidence in food safety revealed that **the different food risk management regulations acted as an obstacle to the free movement of food in the European single market**, which was a barrier to the development of the European Union's (EU) political objectives.

In this regard, at the Lisbon summit in March 2000, European heads of government agreed on a new strategic goal for the EU: to make its economy the most competitive in the world by 2010. At the height of the Washington Consensus, they understood that this was only possible by fully realising the growth potential offered by the complete integration of member countries' markets. **The Lisbon Strategy therefore involved adopting the principles of the political economy of liberal globalisation: highly integrated markets regulated by few but clear rules, in which agents operate with a view to capturing the efficiencies provided by the market and, in particular, the economies of scale generated in free, open and integrated markets such as that of the European Union.**

A simple way to illustrate this is through a brief analysis of the Bolkestein Directive[13]. Designed to overcome the problem presented by the Commission in its report on the state of the internal market for services, according to which the integration of that market was far from fully enjoying the potential for economic growth[14], the Bolkestein Directive liberalised the movement of services within the European Union and reoriented business models towards the efficiencies derived from economies of scale, becoming the legal basis for the full integration of the European market in the services sector.

In this context, **the Commission sought to develop common food legislation in which food risk management would shift from being a mechanism that blocked the political objectives of the Lisbon Strategy in the agri-food sector to a vector for articulating the new model**. Regulation 178/2002 on general principles and requirements of food law[15] became the cornerstone of that initiative[16], with the stated objectives of establishing both a high level of food safety and a single market for the free movement of food and feed in the Union. To this end, it established a comprehensive traceability system in food businesses and created a European Food Safety Authority with the power to collect and analyse data derived from that system.

Thus, the framework proposed by Regulation (EC) 178/2002 was subsequently developed through a set of regulations known as the **hygiene package: Regulation (EC) 852/2004** on the general rules for the hygiene of foodstuffs[17]; **Regulation (EC) 853/2004** on specific hygiene rules for food of animal origin[18] and, finally, **Regulation 854/2004** on specific rules for the organisation of official controls on products of animal origin intended for human consumption, repealed and replaced by **Regulation (EU) 2017/625**[19].

The first of these establishes the principles of Hazard Analysis and Critical Control Points (HACCP) as the methodological basis on which food safety issues must be addressed by food business operators as a whole, who are made primarily

11. Smil, V. (2018): Energy and Civilization. A History. The MIT Press
12. Pollan, M. (2020): The Omnivore's Dilemma. A Natural History of Four Meals. Penguin Random House

responsible for such matters. To ensure compliance with its provisions, the regulation distinguishes between primary production (Annex I) and the other stages of the food chain; it also lists, for each of them, the corresponding hygiene requirements, on the one hand, and the relevant obligations in terms of recording information in each case, on the other.

For its part, Regulation (EC) 853/2004 establishes specific hygiene requirements for products of animal origin that complement those of Regulation 852 through the objectification, detailing and transformation into specific requirements of the HACCP procedures to be followed for all products of animal origin, suitably categorised. It also establishes the information that must accompany each product at every stage of the food chain, with particular regulatory density in **the case of slaughterhouses, facilities where it is worth focusing regulatory analysis, as they are a good platform from which to observe the interaction between regulatory legislation and the political objectives from which such regulation emanates.**

Indeed, from the perspective of food risk control, slaughterhouses are facilities that concentrate a multitude of critical points, which, in line with HACCP methodology, should lead to a substantial increase in the regulatory density of this link in the food chain compared to others. This led to a profound transformation of this particular industry, which required significant investment and underwent a sharp process of business and geographical consolidation, replacing the old network of municipal slaughterhouses with another that was much less dispersed throughout the territory but considerably more efficient. This was not only in terms of the ability to control critical food risk points, but also in the use of resources, insofar as the concentration of safety measures increases costs to such an extent that only with certain economies of scale is slaughterhouse activity economically profitable.

The resulting consolidation and geographical concentration of this activity, aided in Spain by a state regulatory framework that removed slaughterhouses from the list of services that municipalities with more than 5,000 inhabitants were required to provide, as previously stipulated in the Law Regulating the Bases of Local Government , was fully consistent with the political objectives of the Lisbon Strategy. It was also consistent with the political economy derived from it, in which a regulatory framework aimed at market integration conditions the nature of the private agents operating in them through the economies of scale that establish the profitability thresholds of their business models.

In short, the transformation of such a central link in the food chain as slaughterhouses, the real hinge between the production and marketing of animal products, driven by the regulations of the hygiene package, which in turn **was built on the political objectives of the Lisbon Strategy, has led to subsequent transformations in the agents of production and marketing that are fully consistent with those objectives:**

- **with these objectives:** food safety, free movement of goods in a single market;
- **with their effects:** business consolidation and a shift in business models towards capturing market efficiencies - economies of scale - derived from market integration.

On the one hand, these effects have had **expected positive consequences, such as increased efficiency among production agents, improved food safety conditions and lower consumer prices for food products.** On the other hand, they have had an equally expected downside, albeit with **less desirable consequences, such as the disappearance of family livestock farming business models** in areas that have become sufficiently distant from the hubs where slaughterhouses have been relocated to render their often old business models unprofitable, anchored in a system of rural settlements that has been losing population until becoming part of what has come to be known as "emptied Spain". This is **not to mention the sustainability problems arising from the standardisation, industrialisation and serialisation brought about by the application of economies of scale in the field**[21].

All of this brings to the fore a disturbing reality about the **operational limits of the food system governance model** and a politically charged question: to what extent are the political objectives of the Lisbon Strategy still valid in agri-food systems? What kind of updating is needed?

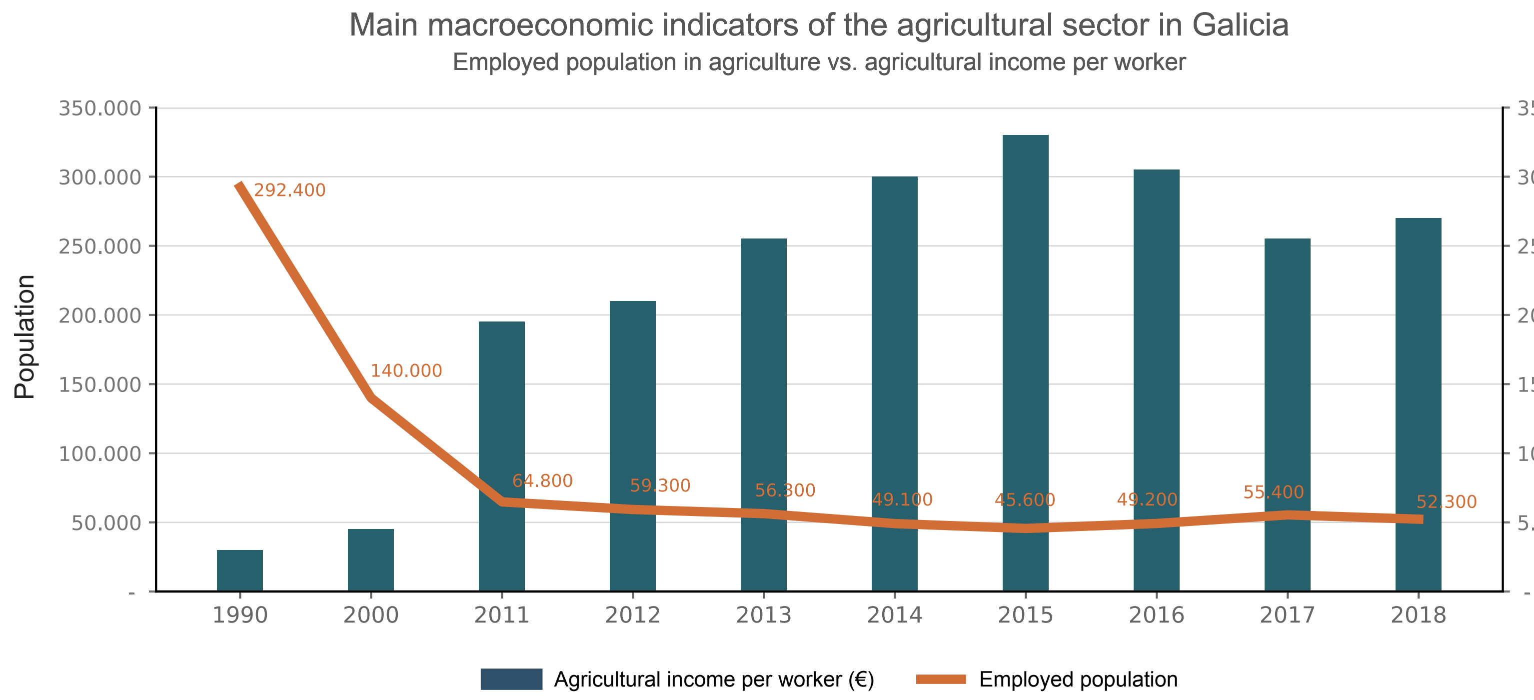
3.3 3.3 Operational limits of the global governance model for the food system in perspective

Reality has ultimately shown, in Europe as well, that it was not possible to give up the environmental efficiencies we have enjoyed since the Green Revolution without triggering the environmental and social sustainability problems that scientific literature and official statistics have described exhaustively.

3.3.1 The social crossroads. The decline of family business models

The old models developed by neoclassical economics, according to which market integration is a prerequisite for income convergence within the market area, may have an imprecise and partial statistical reflection, as reflected in the case of Galicia, where per capita agricultural income converged with the Spanish average by almost 50 percentage points, at the cost of losing more than 80% of agricultural assets.

13. https://es.wikipedia.org/wiki/Directiva_Bolkestein
14. Report from the Commission to the Council and the European Parliament. State of the internal market for services. https://eur-lex.europa.eu/legal-content/ES/TXT/?uri=CELEX%3A52002DC0441
15. https://eur-lex.europa.eu/legal-content/ES/TXT/HTML/?uri=CELEX:32002R0178
16. This is clearly stated in the first five recitals:
(1) The free movement of safe and wholesome food is an essential aspect of the internal market and contributes significantly to the health and well-being of citizens, as well as to their social and economic interests.
(2) A high level of protection of human life and health should be assured in the pursuit of Community policies.
(3) The free movement of food and feed within the Community can only be achieved if food and feed safety requirements do not differ significantly from one Member State to another.
(4) There are significant differences in the concepts, principles and procedures of the food laws of the Member States. When Member States adopt measures relating to food, these differences may impede the free movement of food, create unequal conditions of competition and thus directly affect the functioning of the internal market.
(5) It is therefore necessary to approximate those concepts, principles and procedures so that they form a common basis for measures applicable to food and feed adopted at national and Community level.
17. https://eur-lex.europa.eu/legal-content/ES/TXT/PDF/?uri=CELEX:32004R0852
18. https://eur-lex.europa.eu/legal-content/ES/TXT/HTML/?uri=CELEX:02004R0853-20171121
19. https://eur-lex.europa.eu/legal-content/ES/TXT/HTML/?uri=CELEX:32017R0625#d1e1415-1-1
20. RD Law 7/1996 of 7 June on urgent fiscal measures and economic promotion and liberalisation
https://eldiariorural.es/son-los-mataderos-un-servicio-publico/



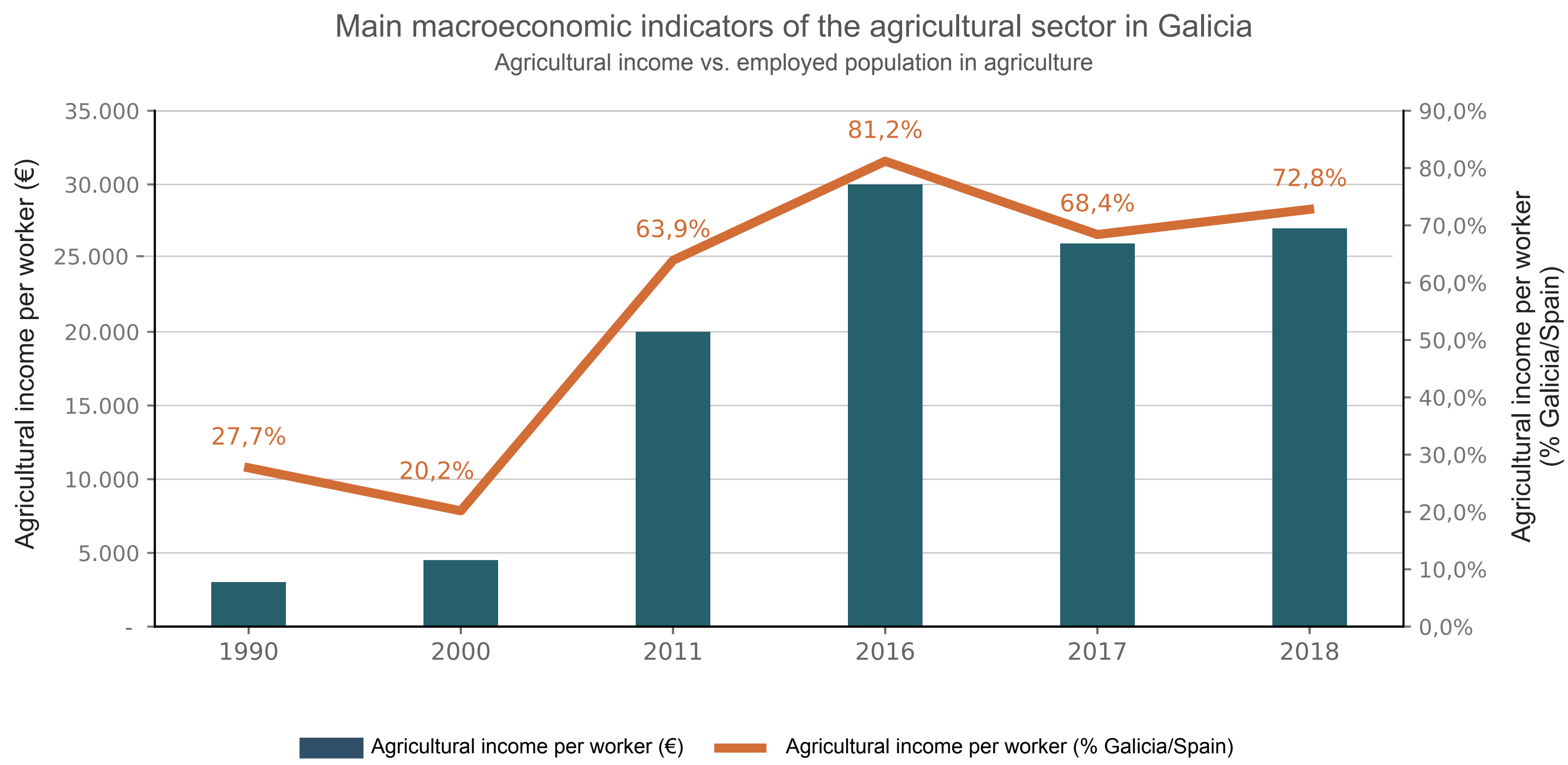


Fig. 9. Source: Own elaboration based on data from 'A Economía Galega. Informe 2020-2021'

However, an analysis focused solely on the income variable is grossly biased with regard to the structural needs for property consolidation that the model requires. And not only in primary production (Fig. 10): one need only glance at some of the reports that highlight the impressive process of consolidation and business concentration in agribusiness as a whole[23]. These aspects have led to the emergence of serious problems of asymmetry and concentration of power in food supply chains, which, in turn, results in an imbalance in price setting

However, an analysis focused solely on the income variable is grossly biased with regard to the structural needs for property consolidation that the model requires. And not only in primary production (Fig. 10): one need only glance at some of the reports that highlight the impressive process of consolidation and business concentration in agribusiness as a whole[23]. These aspects have led to the emergence of serious problems of asymmetry and concentration of power in food supply chains, which, in turn, results in an imbalance

21. Pollan, M. (ibid)
22. https://www.afundacion.org/docs/fundacion_publicaciones/73643/anuario_completo.pdf
23. IPES-Food (2017) : Too big to fail. Exploring the impacts of mega-mergers, consolidation amd concentration of power in the agri-food sector ; Clapp (2018) : Mega-mergers in the menu. Corporate concentration and the politics of sustainability in the global food system. Global Environmental Politics 18:2, MIT.
24. Explanatory memorandum to Law 16/2021 on improving the functioning of the food chain
25. Ibid

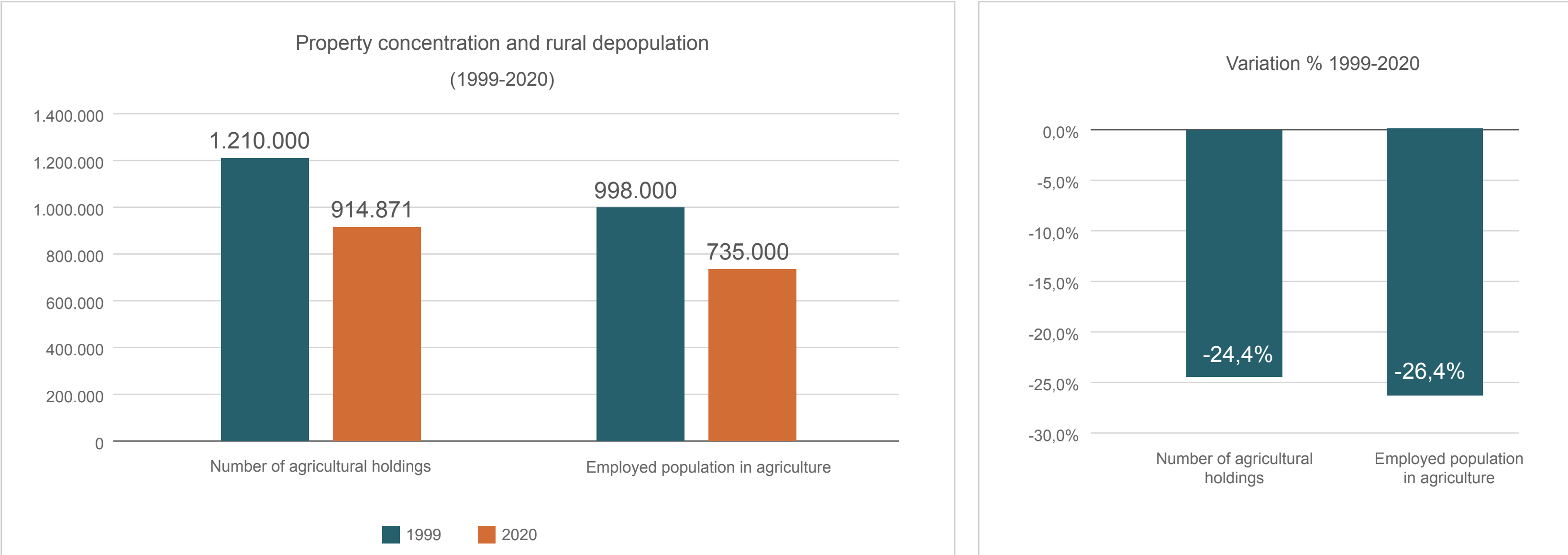


Fig. 10. Source: Own elaboration based on INE data

Although farms exceeding 100 ha in size are common today, farmers remain the weakest links in the chain because they are the agents to whom the corporate structure of the food value chain outsources the most risky stages of production (because they are subject to environmental/atmospheric conditions to which the other links in the chain are not subject). The transformation undergone by the business models that support family farming has been immense, as not only has their size increased by an order of magnitude in the space of a few decades, but in the space of just 20 years, there has been a 25% loss in both the number of farms and the population employed in agriculture. This transformation has in turn led to the transformation of the small distributors who used to supply the local market with the once small-scale production of farmers. But this does not guarantee their future, as the cycle of productivity increases and falling prices will continue as long as the physical factors of production (soil, climate), capital (machinery, technology) and labour allow.

From a social perspective, the problem lies in the fact that since the advent of the Green Revolution, **capital has had the capacity to neutralise the constraints on the productivity of physical factors** (replacement of fertility, intraspecific competitiveness, parasitism, etc.), while **market integration** and the concomitant shift in business models towards capturing the efficiencies derived from economies of scale **allow the labour factor to be replaced to the limits set by available technology.** If family farms covering hundreds of hectares – now commonplace – have pushed farmers' financial capacity to the limit in order to operate the economies of scale that allow them to survive economically, how will the wave of sustainable intensification based on drones, sensors, the Internet of Things, artificial intelligence and the rest of the technological deployment that will potentially be necessary to make this new production model operational be addressed from a family financial perspective?

Without underestimating its relevance or its timeliness and necessity for overcoming the challenges of global food security, the truth is that **a change in the political economy of the agri-food system is needed, that is, a transformation of the political organisation model of agricultural economic activity that allows some of the producing agents to escape the sphere of influence of economies of scale.** Otherwise, it is only a matter of time before the financial needs arising from the operating costs of the physical concentration of production (machinery, inputs) and the volume of risks to be managed become unmanageable for family farming, so that it is **inexorably replaced by corporate agriculture**, which is much better equipped to meet these needs.

Again, without having anything against corporate agriculture and without denying its necessity and relevance, the disappearance of family farming as we understand it today would have an intense territorial impact capable of calling into question the viability of rural populations and, with it, that of the settlement systems that house them, triggering social and environmental problems resulting from the loss of physical and operational occupation of rural areas, and even territorial abandonment in the most extreme cases: those areas whose agricultural production is not profitable enough to converge in the economic space of the common market (something that is already a reality in the least well-endowed territories).

3.3.2 The problem of resources. Planetary metabolic limits

Authors such as Willet et al.[26] and O'Neil et al.[27] have adapted Raworth's assumptions[28] to the agri-food system, transforming the old qualitative view of the three facets of sustainability—economic, social, and environmental—into a quantitative one based on resource consumption ratios capable of maintaining the planet's biogeochemical metabolism in the long term. In doing so, they have provided the scientific basis underlying the discourse of the institutions that lead global governance of agri-food systems, which can be summarised succinctly as the need for a sustainable transition for food systems, capable, among other things, of internalising in agricultural prices the negative externalities that the outdated model of global governance of the agri-food system imposed on the overheated planetary metabolism.

Specialised literature began to suggest the need to place the discourse of sustainability at the centre of the political agenda[29]. For its part, the European Commission designed a green transition based on a top-down approach with highly ambitious quantitative thresholds. However, it did so without the sector's consensus on how these should be achieved, in an open struggle between defenders and detractors of agroecological and sustainable intensification models. This has led to a useless polarisation that has only effectively delayed the implementation of the transition to sustainability, the effects of which can be traced in the evolution of the climate impact of the different agents in the food chain. Furthermore, public perception of this focus has led to a polarisation of the different positions, which has overlapped with the pre-existing one on transitional options and has ultimately provoked a wave of discontent and rejection that will make the transitional roadmap difficult and time-consuming to digest.

This expected slowdown shifts the concern to the threshold at which the use of agricultural land resources can lead to a

26. Willet, et al (2018). Our food in the anthropocene: the eat-lancet commission on healthy diets from sustainable food systems. http://openaccess.city.ac.uk/id/eprint/21633/
27. O'Neil, DW orcid.org/0000-0002-0790-8295, Fanning, AL, Lamb, WF et al. (1 more author) (2018) A good life for all within planetary boundaries. Nature Sustainability, 1 (2). pp. 88-95. ISSN 2398-9629. https://doi.org/10.1038/s41893-018-0021-4
28. Raworth, K. (2017). Doughnut Economics. Penguin Random House
29.

loss of overall system balance, and to how we can manage that threshold to increase the resilience of the system as a whole.

However, not everything has to do with the volume of resources used, as systemic risks are highly sensitive to how those resources are distributed through marketing networks.

3.3.3 Systemic risks. Resilience or the geostrategic dimension of food security

Humanity has transformed nearly 75% of terrestrial habitats into productive ecosystems, 40% of which have been converted into agricultural land. The green revolution has made it possible to increase the intensification and simplification of these systems, making them pivot on the four most efficient species in the provision of food resources (wheat, rice, maize and soya). In turn, trade integration and the intensification of trade flows resulting from liberal globalisation have increased the interconnection of our productive ecosystems, causing the agri-food system to converge towards a highly standardised global diet and converting a large part of the biosphere into a global production ecosystem (GPE)[30] that behaves like a complex socio-ecological system.

Studies on complexity applied to ecology have allowed us to understand that complex systems, such as the GPE, have thresholds beyond which their behaviour changes (tipping points)[31] because the emergent properties that reinforce a situation of stability in the system – the regime in which it operates – are different on either side of that threshold. **It is well known that the resilience of systems increases with diversity and decreases with the interconnection of the agents operating in the system. This is a systemic principle that operates across the board, whether in ecosystems[32] or financial networks** (Taleb, 2007)[33]. If the governance model of our agri-food system is based on the advantages of standardising specialised production – at the expense of reducing its diversity – and commercial integration – reaching unprecedented levels of connectivity – **to what extent is it possible to maintain the current scheme of productive specialisation and long supply chains supported by globally integrated markets without jeopardising the resilience of the system as a whole?**

From a theoretical point of view, Taleb (op. cit) warned, presciently, that when a network is **hyperconnected** (i.e., when too many nodes depend on a few highly connected "supernodes"), it reaches a critical threshold of fragility, beyond which a disturbance in a key node can trigger a cascading collapse, affecting the entire network. This was the systemic risk that caused the global financial system to collapse in 2007. In contrast, when connectivity between nodes does not reach this threshold of **hyperconnectivity**, but is high enough to maintain strong local interactions, the system can be **resilient**, because it is possible to isolate problems and minimise their impact on the rest of the network. This is what we know as the principle of modularity: a network is modular when the strength of local relationships allows fragments of the network to function self-sufficiently, even if part of the network collapses, thus preventing total failure. Consequently, the way to strengthen hyperconnected networks, avoiding their intrinsic fragility, is to increase their modularity, that is, the self-sufficiency of local fragments of the network.

Applying these ideas to the reality of the agri-food system, some authors[34] have analysed the impact that globalisation—i.e., the increase in the connectivity of the system—has had on the resilience of the natural resources on which Nystrom's Global Production Ecosystem is based. The results contrast the hypothesis that the loss of resilience is not necessarily related to increased connectivity, but rather to the weakening of the modularity of the global agri-food network. In other words, translating this into geographical terms, it is related to the **decline in the level of food self-sufficiency of territories.**

Does this mean that we must give up the benefits of international trade and market integration and return to local production in a world with low connectivity in order to ensure the resilience of the system? Not at all. Because **it is possible to maintain the level of connectivity,** i.e. the degree of trade integration – and consequently enjoy its benefits – **as long as we maintain a critical threshold** of modularity in the nodes of the system, i.e. **their self-sufficiency.**

What is that threshold?

To answer this question, we need to apply the above theoretical discussion to a real case that helps us quantify the variables at play, which we can do with the specific case of fresh produce marketing networks in the city of Vitoria-Gasteiz.

30. *Nystrom (2019) : Anatomy and resilience of the global production ecosystem. Nature.*
31. *Scheffer, M. (2009): Critical Transitions in Nature and Society Princeton*
32. *Gunserson, L.H.; Holling, C.S. (2002): Panarchy. Understanding Transformations in Human and Natural Systems. Island Press*
33. *Taleb, N. (2007): The Black Swan. The Impact of the Highly Improbable. Random House*
34. *Tu, C. et al (2019) : Impact of globalization on the resilience and sustainability of natural resources. Nature Sustainability. https://doi.org/10.1038/s41893-019-0260-z*

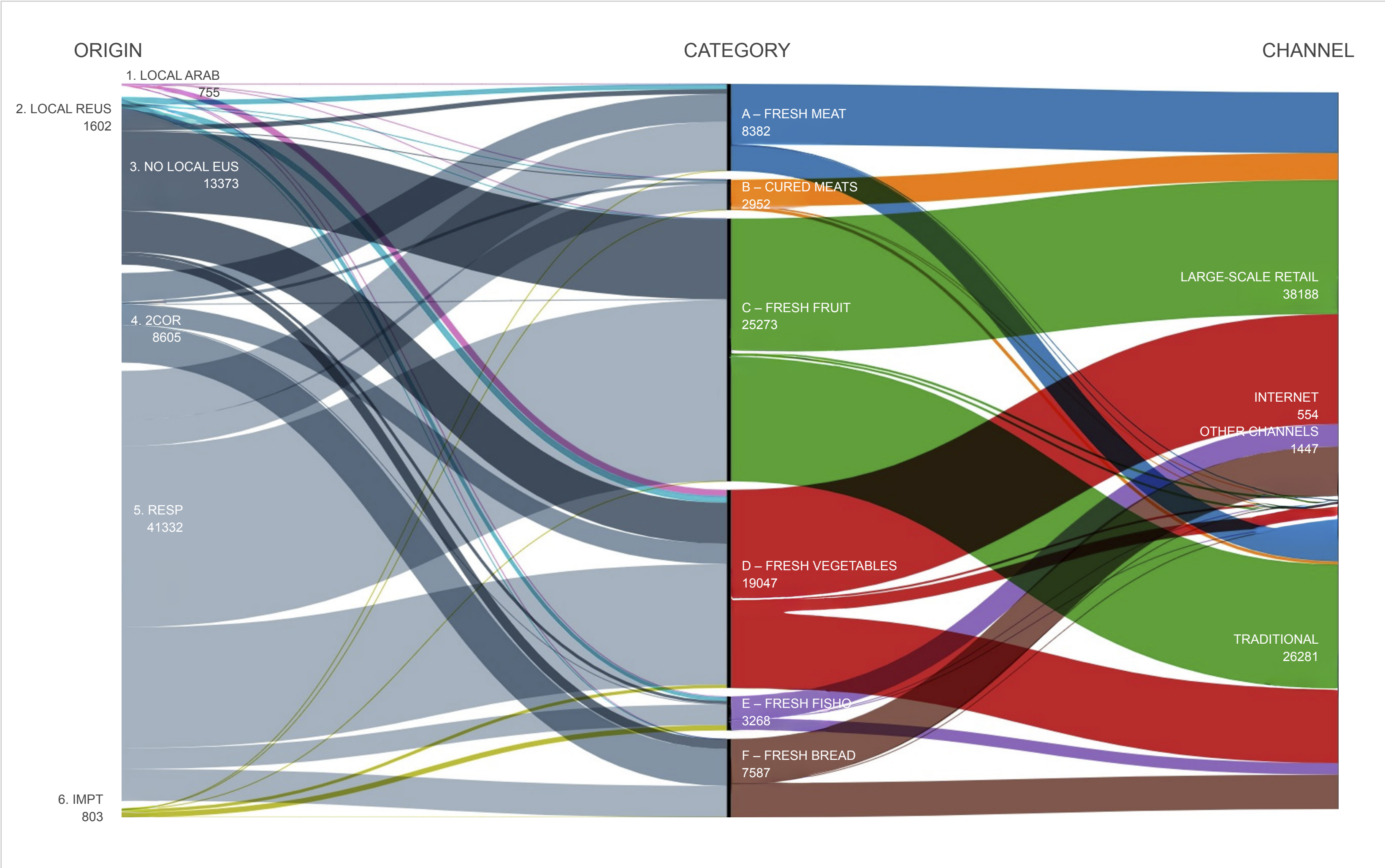


Fig. 11. Source: González, D., Zabaleta, I. (2022): City Food Flows Analysis Vitoria-Gasteiz. CEA (Unpublished)

In a study commissioned by the Centre for Environmental Studies[35] in the Basque capital, we concluded that only 1.14% of fresh produce consumed in Vitoria-Gasteiz in 2019 originated in terms of primary production in the province of Vitoria (fig. 11; magenta flow). The percentage rose to 2.41% when considering production from the entire Autonomous Community of the Basque Country (Fig. 11; magenta and blue flow).

KANTAR CATEGORY	1. LOCAL ARAB	2. LOCAL REUS	3. NO LOCAL EUS	4. 2COR	5. RESP	6. IMPT	Total general
A – FRESH MEAT	0,29%	5,65%	5,68%	31,80%	56,54%	0,04%	8.360.125
B – CURED MEATS	0,22%	2,89%	1,82%	10,14%	84,93%	0,00%	2.952.252
C – FRESH FRUIT	0,02%	0,25%	30,42%	0,32%	68,98%	0,02%	25.271.557
D – FRESH VEGETABLES	3,30%	3,14%	20,78%	10,28%	60,99%	1,51%	19.048.845
E – FRESH FISH	2,52%	10,81%	8,70%	1,33%	61,18%	15,47%	3.268.440
F – FRESH BREAD	0,10%	0,39%	12,10%	47,12%	40,29%	0,00%	7.568.293
Total general	**754.718**	**1.602.287**	**13.374.041**	**8.605.663**	**41.331.898**	**800.905**	**66.469.512**
/	**1,14%**	**2,41%**	**20,12%**	**12,95%**	**62,18%**	**1,20%**	**100,00%**

Fig. 12. Source: González, D.; Zabaleta, I. (2022): City Food Flows Analysis Vitoria-Gasteiz. CEA (Unpublished)

Meanwhile, non-Basque Country production marketed by Basque operators before reaching retail outlets accounted for 20%, while if we extend this product category to the provinces bordering the Basque Country, we have another 13%. The rest of the production comes from the rest of Spain (62%) or abroad (just over 1%) (Fig. 12).

The above data give us a measure of the degree of modularity of the agri-food system in Vitoria, which can serve as a reasonable proxy for its resilience and, consequently, for the high degree of exposure to risk with regard to the difficulty of responding to the changes and disruptions that climate change will presumably bring, without compromising the stability of the food system as a whole.

Consequently, when asked whether the city of Vitoria Gasteiz should minimise the degree of commercial integration of its agri-food system – its connectivity – in order to be more resilient, it is possible to answer no, provided that it is capable of increasing its **self-sufficiency**. However, it is not possible to answer the following logical question from a purely local perspective without a much more aggregate view: **to what extent should it be self-sufficient?** Hence, the agri-food strategy being promoted by the city council seeks to focus public discussion on this issue around a concept, that of **connected self-sufficiency**[36], and a principle, that of geographical subsidiarity, which allow for the articulation and prioritisation of local production and marketing networks with the aim of increasing self-sufficiency, while maintaining the market efficiencies provided by market integration and the economies of scale that these generate.

35. González, D.; Zabaleta, I. (2022): City Food Flows Analysis Vitoria-Gasteiz. CEA (Inédito)

36. The concept of connected self-sufficiency was developed by Juan Requejo Liberal in the context of his work on energy transition. I have had the privilege of applying this concept, together with its author, in the development of the Vitoria-Gasteiz Agri-Food Strategy. For a review of the original concept, see Requejo Liberal, J. (2012). Renewable energy: a new principle of connected self-sufficiency. City and Territory Territorial Studies, 44(171), 113–125. https://recyt.fecyt.es/index.php/CyTET/article/view/76112

As we have been saying, the extent to which it is necessary to increase self-sufficiency and how to scale local networks accordingly are questions that cannot be answered from the perspective of a local project such as that of Vitoria-Gasteiz City Council, but they should undoubtedly have a place on the political agenda derived from the Green Deal.

It is worth asking to what extent this is really the case.

4 The impact of the Green Deal's policy objectives on the governance model of the agri-food system

At the risk of oversimplifying, we can say that economies of scale are very beneficial from an economic point of view, but that, at the same time, their generalisation based on the political agenda of the Lisbon Strategy and their establishment within the framework of the political economy of liberal globalisation have led to undeniable problems of social and environmental sustainability, while substantially increasing the induction of systemic risks due to their negative effects on the resilience of the agri-food system as a whole.

Scientific confirmation of all these effects led to a profound shift in the institutional statements of all the organisations that lead the global governance of agri-food systems. In a short period of time, they have moved from unwavering adherence to a market-based approach under the principles of high-yield production to a systemic approach in which food should be conceived more as a collective good than as a commodity[37]. Institutions that were the global champions of the Green Revolution, such as the CGIAR (Consultative Group on International Agricultural Research), now advocate for the need for sustainability-oriented agriculture, whether through the approach of sustainable intensification[38] or agroecolog[39].

This process of institutional change culminated in the adoption of the Paris Agreement and the establishment of the 2030 Agenda by the United Nations General Assembly, subsequently gaining political formalisation in Europe with the Green Deal, the EU's new growth strategy established in 2019, consisting of a package of policy initiatives that put the Union on the path to **ecological transition**, with the ultimate goal of achieving **climate neutrality by 2050**. In the case of the agri-food system, the Green Deal is embodied in the Farm to Fork Strategy, whose objectives are specific in terms of the transformation required: **reducing the environmental and climate footprint, strengthening resilience, ensuring food security** in the face of climate change and biodiversity loss, and **leading a global transition towards competitive sustainability "from farm to fork"**.[40]

From these objectives, we can deduce that this is not an amendment to the Lisbon Strategy, but rather a correction of the political economy that derives from it. On the one hand, market regulation must reflect the political objectives relating to the decarbonisation of the economy; on the other, agents must no longer operate solely on the basis of capturing economic efficiencies, but must extend their logic to environmental efficiencies. Based on everything we have seen so far, this should mean that **economies of scale must continue to exist, but they should not be able to continue to deny environmental efficiencies that are not compatible with them.**

The incorporation of the Green Deal's policy objectives into the regulatory framework of the agri-food system should enable Member States to develop regulations that are capable of **capturing environmental and economic efficiencies that are incompatible with economies of scale**, but without sacrificing the economic benefits that these provide. In other words, we are talking about **a regulatory framework capable of promoting business models based on capturing environmental efficiencies that are key to improving the resilience of our food systems, but which cannot be generated by business models geared towards efficiencies derived from economies of scale:**

- Those derived from diversity, through the implementation of agricultural and livestock production models capable of minimising the use of agrochemicals and fertilisers;
- Those derived from modularity (or its proxy, self-sufficiency), through the emergence of local production and marketing networks capable of operating with a certain degree of independence from the vicissitudes that may eventually grip local global markets.

In our opinion, for this to be possible, it is not necessary to re-establish the regulatory principles of the single market, nor, of course, any model of market intervention, but rather an **institutional architecture** that allows for the emergence of **locally differentiated markets based on legally regulated concepts,** capable of being subject to public policies that articulate the Commission's sustainable political will, as is already the case, for example, with designations of origin or protected geographical indications, as we will see in the next section. The difference with the latter is that, instead of regulating the geography of supply – the origin of production – **what is required is to regulate the geography of demand**, i.e. the destination of the products to be marketed, by limiting the space in which those products can be marketed. This is precisely how we move away from the political orbit of Lisbon – the orientation towards a global market – and enter that of the Green Deal – the capture of environmental efficiencies. And, in doing so, **it opens up the possibility of articulating public policies based on the principle of geographical subsidiarity, which allow priority to be given to local production and marketing cycles without undermining the principles of the single market, enabling us to move from the political economy of globalisation to the political economy of connected self-sufficiency.** This is a formula for the political organisation of economic activity in the agri-food system which, through the legally regulated definition of the concepts of local production and local sales and the design of specific public policies for their promotion, enables a space for the operation of business models that do not have the capacity to capture the efficiencies derived from economies of scale, but which can capture the environmental efficiencies that are not compatible with economies of scale and are fundamental to increasing the resilience of the system as a whole. Public

37. *European Commission: Directorate-General for Research and Innovation and Group of Chief Scientific Advisors, Towards a sustainable food system – Moving from food as a commodity to food as more of a common good – Independent expert report, Publications Office, 2020, https://data.europa.eu/doi/10.2777/282386*
38. *CGIAR Research Program on Climate Change : Agriculture and Food Security. Full Proposal 2017-2022*
39. *Les dossiers d'agropolis international. Agroecological transformation for sustainable food systems. September 2021*
40. *COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS. Farm to Fork Strategy for a fair, healthy and environmentally friendly food system*

policies, for example, on public procurement, capable of promoting local production and consumption networks without undermining the Bolkestein Directive.

How is this reflected in the regulatory framework governing the European agri-food system? To what extent has the regulatory framework gone beyond institutional declarations?

The first point to be made in this regard is that, insofar as the regulatory framework of the European agri-food system continues to be based on the regulations constituting the hygiene package, it is difficult to imagine that the political objectives of the Green Deal could have qualified or complemented those for which these regulations were drafted and which, as we know, respond to those established by the Lisbon Strategy.

An operational and practical way of analysing the extent to which the political objectives of the Green Deal are reflected in the provisions of the current consolidated legal texts of the hygiene package is to study the flexibility in the application of the provisions that have had a strong impact on the shift in the agri-food system's business models towards capturing efficiencies derived from economies of scale.

4.1 Flexibility architecture of the hygiene package

Regulations 852 and 853 already contained, in their original wording, flexibility clauses aimed primarily at facilitating the application of HACCP principles in small businesses. Specifically, Article 1.2 of Regulation 852/2004 excludes from its scope

> *the **direct supply** by the producer of small quantities of primary products to the final consumer or to **local** retail **establishments** for the supply of the final consumer.*

And it specifies, in the following section, 1.3, that

> ***Member States shall lay down rules in accordance with their national law governing the activities referred to in paragraph 2(c).*** *These national rules shall ensure that the objectives of this Regulation are achieved.*

The same approach is taken in Article 1 of Regulation 853/2004 on the hygiene of food of animal origin.

In other words, the Commission was implicitly applying the principle of subsidiarity in the legal definition of the concept of ***direct supply***, which had to be linked to another concept, that of ***local establishment***.

On the other hand, Article 5 of Regulation 252/2004 establishes the obligation for food business operators to create, implement and maintain procedures based on HACCP principles, but it does so by explicitly specifying ***the nature and size of the business***, the same criterion adopted in Article 13.2, which establishes the possibility of exempting compliance with the hygiene requirements set out in detail in Annexes I and II.

Consequently, the regulation articulates the flexibility regime for the particular application of HACCP principles based on the size of the businesses, **but not on the geographical reality of the market for which the production is intended**. If small businesses have a proportionate regime for the application of HACCP principles, why should an equally proportionate regulatory regime not be considered for markets that operate in geographically restricted areas? If specific documentation has been developed for this case (Commission Communications 2016_c278 and 2022_c355 on FLEXIBILITY in the application of HACCP principles), what prevents similar regulations from being established for application in local markets?

Finally, both regulations re-establish the principle of subsidiarity for adapting detailed hygiene requirements in different countries, but restrict this flexibility to the specific objectives of allowing the continued use of traditional methods at any stage of food production, processing or distribution (Articles 13.4.a.i of Regulation 252/2004 and 10.4.a.i of Regulation 253/2004) or on the basis of special geographical constraints (Articles 13.4.a.ii of Regulation 252/2004 and 10.4.a.ii of Regulation 253/2004) in certain regions, **but not on the basis of the geographically restricted condition of local markets geared towards local production and consumption.**

In reality, it is not possible to establish the flexibility regime based on a concept such as 'local market', which is not even included as a definition (Annex I of Regulation 253/2004) - despite the fact that other concepts such as 'wholesale market' are included. And they cannot be included for the simple reason that the need to promote local markets and consider them from the perspective of public policies aimed at sustainability was not on the political agenda of the Lisbon Strategy and, consequently, could not be included in the articles of the regulations that were developed under its influence ( ).

A separate issue is the extent to which these political objectives have been subsidiarily transmitted to state regulations beyond their corresponding explanatory memoranda without having passed through the key element of the European agri-food regulatory framework.

4.2 The subsidiary regulatory response by the State and the autonomous regions

It was not until 2020 that the state legislator took these circumstances into consideration and began to apply, in the drafting of RD 1086/2020[41], the principle of subsidiarity in the regulation of concepts that, almost a decade earlier, the commission had already identified as vectors of flexibility (direct supply, small quantities, local establishments).

However, it did so with an open declaration of intent, which consisted of assuming that, in some way, parts of the Green Deal's political objectives had already been included in the hygiene package regulations when they were drafted in line with the Lisbon objectives. This seems to be the assumption of the national legislator when it states in the explanatory memorandum to the aforementioned law that

> *the regulations of the hygiene package offer Member States the possibility of establishing certain exceptions, adaptations or relaxations to the requirements contained therein, in relation to the structural requirements of establishments, in order to continue using traditional production methods or to respond to the needs of businesses located in regions with particular geographical constraints, which <u>will facilitate local trade</u> while maintaining the hygiene objectives set out in those regulations.*

In other words, it follows that the specific objectives with which the flexibility regime was outlined in 2004 - the maintenance of traditional production methods or the location of producers in regions with particular geographical constraints - will, in themselves, facilitate local trade, which is an objective derived from the Paris Agreement and the 2030 Agenda and incorporated into the European political agenda by the Green Deal:

> *The measures adopted in this royal decree will contribute to the achievement of several of the objectives set out in the 2030 Agenda for Sustainable Development, adopted by the United Nations General Assembly on 25 September 2015, <u>which determines the priority of promoting the</u>*

41. *Royal Decree 1086/2020, of 9 December, regulating and relaxing certain conditions for the application of European Union provisions on the hygiene of food production and marketing and regulating activities excluded from its scope.*
https://www.boe.es/eli/es/rd/2020/12/09/1086/con

consumption of local food.

In view of this, it is worth asking how local trade will be facilitated for non-traditional production methods and producers located in regions without particular geographical constraints, which are, moreover, the vast majority of methods and producers.

The truth is that the answer to this question is ambiguous, because the very fact of proceeding with subsidiary regulation of concepts such as direct supply or local establishments makes them legally regulated concepts, subject to quantitative delimitation, and therefore subject to public policies aimed at achieving the political objectives deemed appropriate, which is not possible to do on the basis of simple, legally indeterminate statements.

Let us look at some examples. The aforementioned RD 1086/2020 invokes the principle of subsidiarity offered by regulations 252 and 253 of the hygiene package to regulate, in its chapter III, the concept of *direct supply of small quantities of meat*, qualitatively and quantitatively limiting its legal content with regard to:

- the requirements for livestock farms;
- the procedure for authorising the slaughter of animals;
- the slaughter limits (500 birds or 300 rabbits per week; 25,000 birds or 15,600 rabbits per year);
- the qualitative nature of marketing: direct sale or supply from the producer to the retail establishment without intermediaries, or
- the geographical limits of marketing: possible within a radius of 100 km from the point of origin.

Although it is such a narrow concept as the direct supply of small quantities of meat, it is a legally regulated definition and, consequently, useful for the regulatory singularisation of another concept, of greater importance and regulatory traction, such as the local market, which is absent for the reasons we have already mentioned from the regulatory framework of our agri-food system. This is done in Decree 51/2024 of the Autonomous Community of the Basque Country on the *hygiene and health conditions, traceability, labelling and advertising of food products marketed through local sales*[42], which defines the concept of **short-circuit sales** as

> *a form of local sale carried out through a maximum of one intermediary link in the marketing chain, without the need for it to always be the same, which directly supplies food products to the end consumer. These intermediaries may be retail establishments, collective canteens, hospitality establishments or agrotourism establishments and other accommodation establishments*

Even more significant, returning to RD 1086/2020, is the legal definition of the concept ***of small slaughterhouse***, limiting it quantitatively to a maximum of 2,000 LU (livestock units) per year. The law excludes facilities defined in this way from 11 hygiene conditions that apply to common slaughterhouses and form part of the demanding requirements set out in Regulation 253/2004, which, as we saw earlier, redefined the geography and functionality of slaughterhouses, turning these facilities into a vector for the application of economies of scale for operators who, not being located within short distances of one of them, are forced to bear transport costs that are only affordable above certain volume thresholds.

In the case of slaughterhouses, due to their role as a bottleneck in the agri-food value chain, regulatory legislation based on legally regulated concepts has a significant influence on public policies in favour of local markets. To give another example, the combined use of the legally regulated concepts of small slaughterhouses, short supply chains and direct supply should be sufficient for an administration to enact, if deemed appropriate, a public policy for supplying school canteens based on the concept of short-circuit sales, or for any local council to organise a municipal short-circuit sales market without this contravening the Bolkestein Directive on the free movement of goods within the Union.

However, there is still a long way to **go before we have a legal framework capable of specifically regulating local or neighbourhood markets as a legal basis for the implementation of a political economy of connected self-sufficiency.** Nevertheless, **this would allow actors in the agri-food system to operate in conditions where economies of scale are neither a barrier to entry nor an operational handicap for business models aimed at capturing environmental efficiencies, in addition to market efficiencies.**

Thus, in the same way that small slaughterhouses enable a production process or phase in such a way that economies of scale are not a barrier to entry, it is possible to define other legally regulated entities. They would have the capacity to structure markets with specific regulations based on the scale of production and the geography of marketing, and with the power to be subject to public policies aimed at achieving the political objectives set out not only in the European Union's strategy but also in many of the institutional declarations of the organisations that lead international regulation of the agri-food system. This highlights the enormous opportunity cost of not having an effective translation of the political objectives of the Green Deal into the regulations on which the legal and regulatory framework of the European Union's agri-food system is based, thus constituting one of the main blocking mechanisms that limit the actual implementation of these political objectives.

This opportunity cost is even more evident in the case of the most insidious conflict affecting the agri-food system, which is the one that pits the political logic of the Lisbon Strategy, manifested in the cycle of intensifying yields and lowering prices through the replacement of labour with technology, against the necessary regulation to address its social consequences, which are particularly evident in the difficulties experienced by family farming in remaining above the profitability threshold.

This is the reality underlying Law 16_2021 on improving the functioning of the food chain.[43]

4.3 The food chain law: a regulatory dead end or an indicator of the need for more far-reaching transformation?

How can we minimise the social problems arising from the application of the political economy of globalisation to the agri-food system, while maintaining the business models driven by it? The food chain law seems to offer a solution, but squaring the circle does not usually fare well in legal texts.

The law begins by recognising the asymmetry of market relations within the food chain, which is made up of operators of very different sizes, from farmers to multinationals. It attributes an apparently temporary nature to the deterioration in the terms of trade between farmers and suppliers of agricultural inputs, from fertilisers and agrochemicals to machinery and energy, which in reality are derived from the downward pressure that increasing agricultural yields exert on the prices of their products. It also refers to the asymmetry that exists between self-employed farmers and large distribution chains, where, as the preamble to the law warns, abuses of power were possible. The law recognises that this deterioration leads to the abandonment of farms, which makes this problem the main objective of the law, together with the fairest possible distribution of the social, environmental, competitiveness and sustainability costs of the chain[44]. To this end, the law establishes the obligation for each agent to *pay the immediately preceding operator a price equal to or higher than the actual cost of production of the product that said operator has actually incurred or assumed.*

In other words, it prohibits sales at a loss. From a market perspective, this prohibition has a problem: it inhibits the mechanism of competition, insofar as all operators are guaranteed coverage of their own costs regardless of the quality and efficiency of their operation. This is where the key question arises, in this case posed by the Foundation for Applied Economic Studies[45]: ***why only for them? What makes them different in this respect from the owner of the corner bar or any other business?***

FEDEA continues its reasoning: *In a market economy with freedom of contract, such as ours, it is not possible to force food buyers to contract with the least efficient producers by paying above-market prices in order to cover the latter's costs.* The liberal critique is, in this sense, impeccable, because it warns of the impossibility of transferring to the market, and with market mechanisms, an issue that has more to do with the design of public policies aimed at maintaining family farming as the backbone of the settlement system and the occupation and functionality of rural areas as we understand them today, than with market regulation.

In other words, the law seeks to entrust the market with the mechanisms to make family farming business models compatible with the economies of scale of integrated markets, when in reality **the problem lies precisely in defining the role that economies of scale should play in the political economy of the agri-food sector, and whether that political economy should continue to be that of liberal globalisation or whether, on the contrary, it can begin to be that of connected self-sufficiency.**

For its part, the approval of **Law 7/2025 on the prevention of food loss and waste** does not substantially alter this conclusion. Although it broadens the scope of the principle of extended producer responsibility and strengthens the traceability of the stages of the food chain, its focus remains corrective rather than structural. The law seeks to mitigate one of the most visible symptoms of the model—waste—through various mechanisms, but without addressing the causes that generate it: the relative abundance inherent in economies of scale, competitive pressure, and marketing standards derived from market integration.

This confirms the **State's tendency to maintain a corrective regulatory model aimed at repairing imbalances, but not at transforming the institutional architecture that produces them.**

43. https://www.boe.es/buscar/act.php?id=BOE-A-2021-20630
44. Ibid
45. FEDEA (Foundation for Applied Economic Studies). Putting gates on the field: Notes on the reform of the food chain law. https://fedea.net/poniendole-puertas-al-campo-notas-sobre-la-reforma-de-la-ley-de-la-cadena-alimentaria/

alinnea

CATALYZING TRANSFORMATIVE IDEAS

Hosted by

Con sede en

ie UNIVERSITY

With the support of

European Climate Foundation