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► To cite this version:

Adelaide Nascimento, Marianne Cerf, Vincent Boccara, Chloé Le Bail, Raphaële Le Bouter, et al.. Ecologization and transformation of work at the meso and micro levels of transition: findings from two territorial food projects in France. *Agroecology and Sustainable Food Systems*, 2025, <10.1080/21683565.2025.2578252>. <hal-05331924>

HAL Id: hal-05331924

<https://hal.science/hal-05331924v1>

Submitted on 25 Nov 2025

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Nascimento, A., Cerf, M., Boccara, V., Le Bail, C., Le Bouter, R., Gaillard, I., ... Boudra, L. (2025). Ecologization and transformation of work at the meso and micro levels of transition: findings from two territorial food projects in France. *Agroecology and Sustainable Food Systems*, 1–30. <https://doi.org/10.1080/21683565.2025.2578252>

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Ecologization and transformation of work at the meso and micro levels of transition: findings from two territorial food projects in France

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Abstract (200 words)

This article analyses the links between the ecologization of food systems and transformations of work in two Territorial Food Projects in France. Three case studies are explored, based on a reflective analysis conducted by the researchers: the governance of a Territorial Food Project; the management of a sustainable food offer in mass catering; and the project to replace plastic containers in a central kitchen. For each case, an ergonomics-based iterative methodology was used, drawing on observations, semi-structured interviews, working groups, and reflective workshops. The results reveal how workers act as essential mediators between the macro level (the Territorial Food Project and related laws), the meso level (collective action in local projects) and the micro level (the activity of actors in the food system).

Keywords: ecologization, participatory ergonomics, Territorial Food Projects, work, ecological transition

Sustainable development goals: SDG02: Zero hunger; SDG08: Decent work and economic growth; SDG11: Sustainable cities and communities; SDG12: responsible consumption and production.

1. Introduction

The emphasis on human and social values is reflected in the ten principles of agroecology proposed by the FAO, the United Nations Food and Agriculture Organization. These principles stress that practices aiming at greater sustainability must be adapted to environmental, social, economic, cultural and political contexts, with a view to enhancing actors' agentivity and enabling them to become agents of change themselves (Barrios et al., 2020). Yet recent research has highlighted a major shortcoming in work on transitions towards food sustainability: the organization of work and the role of workers, central elements of capitalist societies, remain largely underestimated (Moilanen & Alasoini, 2023). These studies highlight long-standing observations that nevertheless remain relevant: scientific, technical and practical efforts focus mainly on the environmental and economic dimensions, whereas the social dimension, while it is discussed, is often sidelined (Bazillier, 2011; Lélé, 1991). Looking at French public policy, Charrieras et al. (2024), for example, analyse how the social dimension of agroecology, which was explicitly present in 2014 in the law on the 'future for agriculture, food and forestry', has gradually disappeared with changes in government and a shift of emphasis to economic

performance. They argue that this is the result of a desire to federate the agricultural world and satisfy its major players.

As Prinz and Pingel (2018) have pointed out, ‘while power and politics have recently been addressed by scholars of sustainability transition, the role of labour¹ as a central political actor is still underexplored’. In the humanities and social sciences, labour and work² have been studied since the late 19th century and have been established as a complex, polysemic and constantly evolving concept (Vatin, 2014). This complexity has led researchers from a variety of disciplines – sociology, management, economics, ergonomics – to investigate it in various fields, including agriculture. In France, research on agricultural work emerged in the 1970s (e.g. Tavernier, Gervais & Servolin, 1972). This interest remains active today, as demonstrated by the bibliometric review by Malanski et al. (2022), which traces the dynamics of research on agricultural work over the last few decades, both in France and internationally. A body of research has developed specifically to explore work in forms of agroecological farming (Barrès et al., 1985; van Calker et al., 2007; Dumont & Baret, 2017; Maas, Malvestiti & Amaral Gontijo, 2020; Duval, Blanchonnet & Hostiou, 2021). These studies, which directly or indirectly address issues of transition to more sustainable agricultural production, also look at the transformations of work that these changes entail.

To date, no equivalent to this interest in work in the agricultural sector has developed in the broader field of food systems (Böhm, 2020). Although an abundant literature deals with various dimensions – nutritional (Duchin, 2005; Tilman & Clark, 2014), environmental (Garnett, 2011; Rockström et al., 2020) and socio-economic (Moragues-Faus & Marsden, 2017) –, the focus on work remains marginal (Timmermann & Félix, 2015). Some researchers, interested in integrating these different dimensions into their analyses, provide a framework to ‘better fit the complexity of ecological, health, and social processes at play with systems food transitions’ (Lamine, Magda & Amiot, 2019, p.14). Such research is however still rare, despite the extensive transformation this field is undergoing, particularly as regards economic and ecological issues. Yet neglecting the transformations of work can compromise the sustainability, and particularly the economic and social aspects, of transitions.

¹ *Labour* refers to the economic and contractual dimension of employment, understood as the socially recognized exchange of effort for remuneration (cf. Marx, 1867/1976).

² « Any activity performed by persons of any sex and age to produce goods or to provide services for use by others or for own use » (ILO, 2019). As we will see, ergonomics highlights the distinction between prescribed work (« work as imagined ») and activity (« work as done ») ((Daniellou & Rabardel, 2005; Hollnagel, 2012).

As food has become a key political issue (Fouilleux & Michel, 2020), public policies are increasingly integrating the ecological dimension, in addition to the traditional focus on nutrition (Romeyer, 2015). We use the concept of ecologization to refer to the processes through which environmental considerations are gradually integrated into various social spheres, such as public policies, organizational strategies, professional practices, and even individual behavior (Mormont, 2013). In France, the Territorial Food Projects (TFP) initiative has become an important example of the ecologization of the public policy. These schemes, introduced as part of the above-mentioned 2014 law, aim to relocalize agriculture and food while meeting sustainability goals. They share similarities with initiatives abroad, such as the Food Policy Councils in the USA and Canada, and the Sustainable Food Places network in the UK, which focus on participatory governance and local food systems (Blay-Palmer et al., 2016). These public policies, in France and elsewhere, make the territory one of the main scales of action for meeting contemporary challenges linked to demographic, social and ecological transitions.

As the ways in which work is considered, taken into account and transformed in these territorial projects is however poorly documented, there is a major scientific and social gap in this respect. While several studies have analysed TFPs from the angle of territorial consultation, governance, participatory democracy, and actor networks (Deverre & Lamine, 2010; Brand et al., 2020; Santini & Fournier, 2024), changes in work have rarely been addressed or, in many cases, are considered secondary. Some studies do mention, for example, the emergence of new positions such as that of TFP coordinator (Le Prince, 2022) or the redefinition of agricultural occupations (Cerf, Le Bail, Boccara & Loyce, 2024), yet the place of work transformation in food system transitions requires further analysis in this field of research, as it is a determining factor in the feasibility and success of those transitions.

In this article we explore the ways in which work is transformed in the context of the ecologization of food systems, based on the articulation between public policy (the TFP mechanism and related laws: macro level), collective action in local projects (meso level) and the work of actors of the food system (micro level). We analyse how public policies and local initiatives influence and transform work, and how the management of TFPs takes into account (or ignores) the consequences of these transformations at the micro level. Drawing on the preceding discussion and empirical case analysis, our article addresses the following research questions :

- How is the ecologization of food systems transforming work at meso and micro levels in Territorial Food Projects?

- How do the actors involved in Territorial Food Projects integrate the transformations of work into the implementation of projects that the ecologization entails?

Following a reflective analysis by the researchers, three case studies are explored: the governance of a Territorial Food Project; the management of a sustainable food offer in mass catering; and the project to replace plastic containers in a central kitchen. By investigating the work from a multi-level perspective, and by considering workers as a group of key actors in organizations seeking to promote sustainability (Süßbauer et al., 2019), we hope to contribute to a better understanding of the social dimension of sustainable transitions. Based on this analysis, we propose ways to equip the governance of food systems so that the activity of work could be fully integrated into public action.

2. Theoretical Framework

The concept of ‘ecologization’ has been developed and enriched by French researchers since the 1990s, particularly in the fields of environmental sociology and public policy. Lamine’s work (2015) explores a systemic and socio-historical approach of ecologization attentive to the social and normative dimensions as well as to the concrete practices aimed at ecologizing agriculture and, more broadly, food systems. Her work also highlights the need to develop an analytical framework to examine power relations and controversies surrounding ecologization, by studying the arenas of debate in which they are expressed.

In broad terms, two main approaches to the ecologisation of food systems can be identified (Duru, Therond, & Fares, 2015). The first is an optimization-oriented model, which seeks to enhance the efficiency of conventional production systems in order to mitigate their negative environmental impacts. The second is a redesign-oriented model, which applies ecological principles to agroecosystems with the aim of harnessing and reinforcing natural processes (Gliessman, Engles, & Krieger, 1998). This latter perspective entails a more profound transformation of both farming and agri-food systems, where the environment is not merely

regarded as a backdrop or a resource for production, but as a central component in its own right³.

Ecologization refers to a multidimensional process involving cognitive, normative, and institutional shifts. It assumes three levels of analysis and the interdependencies between them. In this article, the macro level is characterized by public policies and various recommendations concerning food systems in transition ; the meso level refers to TFP and the micro level focuses on the work of actors engaged in TFP. This approach seeks to sustain the global/local dialectic while adopting an empirical standpoint that questions the singularity of local situations.

At the meso level, ecologization process implies a reconfiguration of modes of production, processing, distribution and consumption of food, with an emphasis on systemic approaches integrating various stakeholders and taking specific territorial characteristics into account (Moragues-Faus & Marsden, 2017; López-García et al., 2025). At the micro level, Ginelli (2017, p. 23) defines ecologization of practices as any "undertaking of cognitive and normative reframing — a change in the way of thinking about and judging a social conduct — aimed at producing a more or less significant ecological shift in the norms (legal or implicit) and social practices in force in the domain concerned (agriculture, the management of nature-related sports and leisure, forestry, etc.)."

The concept of 'ecologization of practices' relates specifically to the transformations taking place within professional processes, production methods, and day-to-day behaviour, to meet the challenges of sustainability (Lamine, 2015). It requires a reconfiguration of relationships between stakeholders, a redistribution of responsibilities and, often even a redefinition of the goals of professional processes or projects.

To examine the process of ecologization at the meso and micro level, we draw on the theoretical and analytical framework of ergonomics by analysing work transformations, that include both work as imagined and work as done. While *work as imagined* points to the prescribed tasks and organizational structures that define what is expected of workers in a given role (Wisner, 1995), *work as done* (also known as "activity"⁴) denotes the concrete actions, strategies, and adjustments actually deployed by workers in actual situations in order to cope

³ So, the concept of ecologization cannot be reduced to what is commonly referred to in English as 'greening' - a term that often suggests technical or superficial environmental adjustments and may even carry pejorative undertones, particularly in the context of 'greenwashing.'

⁴ Activity is a foundational concept in ergonomics as developed in Europe. For the sake of clarity for an international audience, we will use the term *work as done* interchangeably with *activity*. Both concern the work actually carried out.

with constraints and achieve effective outcomes (Falzon, 2014; Galey et al., 2024). This differentiation is crucial in ergonomics because it emphasises workers' agency, creativity, and the often invisible dimensions of human contribution to reaching targeted efficacy in production systems.

Work as done is always oriented towards a goal to be achieved that guides the worker's actions. This goal is based on norms, values, contextual and organizational objectives. Therefore, to capture the ecologization of practices, it becomes necessary to examine how the goal of work as done incorporates the ecological challenge of aiming for sustainability along with other challenges such as producing efficiently, reducing costs or protecting health. The notion of work as done (or activity) highlights the interactions between individual and collective actions, organizational structures, and broader socio-technical systems (Barcellini, Cerf & Lacomblez, 2024). We argue that, by integrating this knowledge focused on work as imagined and work as done, and which is virtually absent today, Territorial Food Projects could strengthen their contributions to the ecologization of food systems. In this way, we are interested, in this article, by the transformations of work as a whole in relation to the ecologization of food systems to highlight the role of workers as mediators between different levels (micro and meso) in Territorial Food Projects.

3. Material and methods

3.1 Territorial Food Projects : a public policy and a labelling process

Several laws outline pathways for the ecological transition of food systems, varying in regulatory scope and in how they define ecologization. The TFP serves as a deliberative arena where actors negotiate both their visions for transforming food systems and the integration of policy-driven ecological dimensions. It thus constitutes a strategic site for observing work transformations.

Territorial Food Projects must be drawn up 'in consultation with all the actors in a given territory' (Article L111-2-2 in French Rural and Maritime Fishing Code), without defining their scope or modalities. This is partly intended to adapt to specific local circumstances the objectives set out in the public policy drawn up at national level. This system requires the implementation of collective and territorial project dynamics, leaving open the possibility of a diversity of forms of governance (Marechal, Noël, & Wallet, 2018). It embodies public policy

to ecologize food systems at a local level and constitutes a brand, as a labelling process is compulsory to gain access to public funds intended for these projects (Lamine, Guénnoc, & Maréchal, 2022). France has more than 450 TFPs accredited by the Ministry of Agriculture and Food Sovereignty⁵: 290 Level-1 accredited (3-year duration, emerging projects) and 161 Level-2 accredited (5-year duration, stabilized projects).

Despite their potential to contribute to the development of sustainable food systems in their territory, TFPs face numerous challenges. First, as a voluntary approach, their implementation depends heavily on local dynamics and the financial and human resources mobilized (Banzo et al., 2024). Second, they come up against organizational and logistical hurdles, such as the coordination between stakeholders, the complexity of supply chains, and the lack of appropriate training to support transitions towards more sustainable practices (Magrini et al., 2021). These challenges are compounded by the need to articulate territorial scales (local, regional, national) and to reconcile the sometimes divergent interests of the stakeholders involved (Arnold et al., 2022).

Mass catering is a lever structuring TFPs linking production to consumption. Although it received little attention in the 2014 law instituting the TFPs, it was strongly targeted in 2018 under the EGalim law⁶, at the crossroads of multiple sustainable development issues extending beyond the strict framework of food (such as waste production, for example). The measures⁷ imposed by the EGalim law have had a major impact on the organization of local food supply chains. The anti-waste law for a circular economy, known as the AGECL Law of 10 February 2020, reinforced these provisions by targeting the end of single-use plastic packaging in mass catering by 2040. Lastly, the Climate and Resilience Law enacted in 2021 encourages the inclusion of vegetarian menus in mass catering. Putting food on the political agenda in this way has not been without consequences for workers in the sector, since it implies far-reaching changes to production and logistic processes.

3.2 Methods employed on case studies research

The data analysed in this article is drawn from studies carried out under two TFPs in France: one in Île-de-France and the other in Nouvelle-Aquitaine. They will be described below. We

⁵ <https://france-pat.fr/>

⁶ The French ‘law for balanced trade relations in the agricultural and food sector and healthy, sustainable food accessible to all’, passed in 2018, stemmed from the États généraux de l'alimentation launched in 2017.

⁷ Such as the obligation to include at least 50% of products with quality and origin labels (including 20% organic products) in supplies, and the elimination of plastic containers in school catering by 2025 –

selected three case studies that shed light on the articulation between the ecologization of food systems in mass catering, and the transformation of work at the meso and micro levels of the TFPs. Two cases were conducted within the ICAD⁸ project, and the third one within the RESCOSAFE⁹ one. ICAD and RESCOSAFE are both interdisciplinary research projects concerning transitions in food systems.

These cases studies were conducted between 2022 and 2024. The methodological approach used in each case was based on participatory ergonomics (Haines et al., 2002), it means the involvement of workers to constitute or improve their work environments, facilitated by methods and tools from ergonomics work analysis and design. It combined semi-structured interviews, *in situ* observations of work as done and workshops to analyse and design work systems (Saint-Vincent, 2014). A descriptive overview of the two TFPs and the three case studies (Table 1) provides the necessary context for the analysis developed in this article. For more details on the methods, see the appendices. An informative and consent form is filled with the volunteer participants and data collect were presented to them, once anonymised, before being used which other actors.

3.2.1 *The 'De la Plaine aux Plateaux' Territorial Food Project (PAP TFP)*

The PAP TFP is a multi-partner project initiated in 2017, that includes three non-profit associations in agri-urban territories, technical agricultural institutions, scientific research institutions, local authorities, and devolved State administrations. It covers an agri-urban area of 79 municipalities and 870,000 inhabitants. Since its inception, the TFP has expanded and was awarded TFP Level 1 status in 2021, and Level 2 in 2024. Its objective, 'Acting together to strengthen local food resilience', was broken down into six areas and 28 sub-objectives (three to five per area), with 32 monitored projects subsidized over the period 2021- 2024. Some of the authors of this article, who are scientific partners via the ICAD project, have been involved in this TFP process since January 2022 (Case 1 and Case 1bis). They are involved in the governance of the TFP, particularly in facilitating action on 'sustainable food at work' through an ad hoc working group (Case 1). They are also studying an non-profit organization in charge

⁸ The ANR ICAD research project on 'Coupled Innovations and Sustainable Food' aims to re-articulate the visions and projects defined at regional level for the development of more sustainable food supply systems.

⁹ The aim of the RESCOSAFE project on 'Catering, Health and Sustainable Food' is to create a research centre to study the health and environmental risks associated with packaging used in mass catering.

of a canteen that provides around 500 meals a day to staff at a university located within the TFP perimeter (Case 1bis).

3.2.2 The Bordeaux Métropole Territorial Food Project (BM TFP)

The BM TFP is a multi-partner project initiated in 2017 and supported by the Bordeaux Métropole, an inter-commune cooperation organization (*Établissement Public de Coopération Intercommunale* - EPCI) bringing together 28 communes, including the city centre of Bordeaux, and involving 814,049 inhabitants. The BM TFP obtained Level-2 recognition in 2023. Its main objective, to work ‘towards a sustainable, inclusive and resilient metropolitan food system’, was broken down into 12 strategic sub-objectives, with 45 actions organized into five operational areas and one cross-cutting area. Some of the authors of this article, who are scientific partners in the BM TFP via the RESCOSAFE project, have been involved in this process since July 2023 (Case 2). They are involved with the partner Cuisine Interco, the main public central kitchen in the region. Cuisine Interco is an EPCI involving two of the region's communes. It produces and delivers around 24,000 meals a day to 180 restaurants, mainly school canteens.

Table 1 shows the research objectives for each case study.

Case study	Case 1 PAP TFP (meso level)	Case 1 bis PAP TFP (micro level)	Case 2 BM TFP (meso and micro level)
Case context	Facilitating the governance of the TFP for sustainable food at work	Management activity for a sustainable food offer in a restaurant for adults at work	The challenge of phasing out plastic in central kitchens
Objective 1	Understand how the actors in charge of TFP governance design and implement the project	Understanding management's role in developing a sustainable food offer in catering for adults at work	Analysing transformations in the way work is carried out in a central kitchen as part of the move away from plastic containers
Objective 2	Make the issue of sustainable food in the workplace a debatable one in the TFP, and include it in the discussions on the territory's food resilience.	-	Contribute to a better integration of work transformations in the project to ban plastics in central kitchens

Table 1. Objectives by case study

3.3 Method employed for the collective reflexive analysis of the cases studies

A group of ergonomics, management, and political science researchers, from five teams involved in these projects, carried out a collective and reflexive analysis of the three case studies during seven three-hour meetings organized between January 2024 and January 2025. The aim was to explore how transformations in work and activities are taken into account regarding the ecologization of food systems. Following the research project analysis method proposed by Penvern et al. (2023), we adopted a three-step iterative approach:

- the cases studied were described in the form of narratives that were shared within the research collective and then discussed in depth to answer the research questions formulated previously (five meetings)
- the researchers involved in a given case provided the first author with written reports detailing their cases (around 30 pages in total). Data were processed and analysed independently by the first and last authors, in an inductive way, focusing on three main categories: TFP project management, the ecologization of practices within the TFP mass catering, and multi-level interactions (meso and micro); The interpretation of data was guided by a theoretical framework linking ecologization and ergonomics. From the former, we drew on the concept of ecologization of practices and the multi-level interactions (macro–meso–micro); from the latter, we employed the notions of work as imagined and work as done to characterize the transformations induced by ecologization.
- two additional two-hour meetings were held to discuss the data processing. This reflective activity, combined with successive cross-readings of the manuscript, enabled the team to structure, synthesize and stabilize the analysis, resulting in the final version of the article.

4 Results

The results reveal the importance of considering from two angles the changes made in work to effectively support transitions towards sustainable food systems:

- The ecologization of food systems generates significant transformations at the meso level (work as imagined in the Governance of TFPs) and micro level (work as done of

food system actors), which must be recognized and integrated into the TFP to ensure the viability of the actions undertaken.

- By incorporating these transformations, TFPs may not only strengthen their impact, but also develop a more systemic view by better integrating the activities of local actors in the ecologization of practices.

4.1. *Recognizing that the ecologization transforms work at the meso and micro levels of TFPs is necessary for the actions to be viable*

Analysis of the data shows that public policy geared towards sustainable food (at macro level) leads to transformations in work at both meso level (TFP governance) and micro level (collective restaurants, central kitchens, logistics, etc.) within the territory. However, these transformations are not always taken into account by TFP actors, due to a lack of available skills or resources (human, technical, financial). Generally, the issue of work and its transformations to integrated some environmental challenges has not always received equal recognition and attention from one case study to the next.

In **Case 1** (PAP TFP), the work as a whole was taken into account by the researchers when they facilitated a working group to develop the use of more pulses and cereals in mass catering for adults at work. Sustainable food in the workplace was not one of the requirements stipulated in the governance of the TFP. Even though the issue was identified in the territorial food audit carried out before the project was launched, the people involved in the governance of the TFP did not include it in the Level-1 certification process. As a result, there was a lack of funding to devote to this objective, in addition to others, and it could not be pursued.

This failure to address a problem identified in the territory led the researchers to propose setting up and facilitating an *ad hoc* working group to develop a sustainable food offer in mass catering for adults at work. The group had ten members: stakeholders in the TFP and representatives of private catering companies. During the four meetings that were held, each member of the group expressed their vision of sustainable food in the workplace, the actions implemented or planned in relation to this vision, and the difficulties encountered in identifying the means and/or redefining the objectives. These individual data were listed on a map focusing on the problem and were discussed collectively to delineate the fields of investigation. Two sub-sets were identified by the members of the group: a) the need to train the actors concerned in order to achieve the ecologization of practices, primarily by means of more plant-based and

locally produced food; and b) the logistics required to supply the catering industry with this local offer. In the discussions, questions were of course raised not only about the layout of kitchens and the training of cooks, but also, as in Case 2, about the training of people in charge of procurement or of menu definition, or raising awareness among customers and building their loyalty to a new, more plant-based offer. Other issues related to the tasks that could be attached to the intermediate functions between raw products from the field and a range of products needed and used in catering, and which therefore had to be provided to derive the best value out of local products (work as imagined). This raised questions about work as done transformations: for example, the activity involved in referencing products according to the requirements of mass catering, whether these requirements were imposed by the companies themselves because of the way they were organized (volume, degree of product preparation, appropriate packaging, etc.) or imposed by regulations (health quality, quality marks). The group also raised questions about the activity involved in grouping together products to meet both the volume requirements and the wish to optimize transport and dispatching to canteens (i.e. by offering a diversified range of products within the same transport channels). Without having dealt with the issues raised, the group discussed the division of work and the viability of local solutions. Two of the questions they explored were: Who should be responsible for referencing local products and how does the creation of a price list envisaged within the TFP integrate the referencing criteria expected by catering companies? What was the best way to design and ensure the long-term viability of solutions aimed at transforming local produce such as cereals and pulses? The last meetings scheduled would therefore focus on the issue of developing the use of pulses and cereals in menus for company canteens, using these supply chains. This choice was linked both to the agricultural production present within the physical perimeter of the TFP and to the need for caterers to provide a diversified protein offer, as set out in the national food and health plan.

In **Case 1 bis** (PAP TFP), the issue of work as imagined and work as done transformations was considered at the micro level of mass catering for working adults. Through a design activity that the researchers described as a ‘step by step process to construct a sustainable food offer’, the manager of the restaurant located in the geographical area of the TFP carried out ecologization over the long term (2012-2023, the period studied by the researchers), even before the Egalim law. This consisted of, inter alia: contracts for local, organic or High Environmental Value products, from 2012; reporting on labels and origins in 2015, with partial then exhaustive traceability in subsequent years (respectively 2017 and 2020); and the introduction of

vegetarian dishes on menus (in 2022). As part of the ecologization of practices, the chefs modified menus and envisaged other preparation techniques in the kitchen (e.g., cutting up whole chickens), transforming the day-to-day activities of kitchen workers. The introduction of vegetarian dishes on the menus drove work transformations (new commercial relationships, planning of recipe tests, and training of the chefs) that appear to have been anticipated by the restaurant manager. Indeed, before implementing this new offer, he carried out tests in the kitchen to assess the implications, particularly in terms of workload. Based on the recommendations of the dieticians whom the restaurant consulted, the chefs were trained to produce home-made vegetarian food, while the manager and the buyer sought new suppliers. Time was set aside for discussion and consultation between the manager, the buyer and the chefs. These discussions afforded an opportunity to discuss new recipes, available products, and the attractiveness of the dishes. The restaurant then experimented with a vegetarian offer twice a week, which meant preparing an extra daily dish on those days and modifying the menus. The activity (work as done) of all the workers at micro-level was clearly transformed by this ecologisation aiming to deliver a more sustainable food offer. In 2023, , the management team went a step further and offered one vegetarian meal a day, while maintaining the two daily animal protein dishes on the menu. This meant that the cooks had to prepare three dishes every day. These experiments were monitored by indicators such as the daily cost price and the production/consumption ratio to guide the trade offs between economic and environmental issues.

In **Case 2** (BM TFP), the identification of the issue of occupational health and the prevention of occupational risks emerged from a meeting between researchers and the governing body of the public catering organization. The phasing out of plastic was an organizational challenge for central kitchens, which had always depended on these containers to provide the link between the kitchen and the restaurants. The principle of reuse meant that the packaging of dishes, the preparation of orders, the deliveries, and the management of containers in the catering office had to be reviewed, and new activities had to be integrated, including the recovery of containers from restaurants, their washing, and their storage (work as imagined). At the start of the action-research project, the steering committee, made up of local councillors administering Cuisine Interco, had just taken two major decisions: 1) to purchase stainless steel containers with lids, to replace the single-use containers, and 2) in the absence of an alternative solution to plastic cooking bags, to stop using vacuum cooking, which allowed

food to be produced up to 20 days before the consumption date and therefore provided flexibility.

The diagnosis of the project carried out as part of the research showed that these choices had been made without complete identification of the full range of solutions to be implemented to meet the following challenges at work: management of packaging; order preparation; delivery; washing; and the logistics of reusing containers, as well as their use in catering outlets. The researchers sought to support the transformation of work by focusing on the activity of apportionment during packaging, which corresponded to order preparation (work as done). The activity of order preparation consisted in setting out the products to be allocated for the day of consumption, organizing them by reference, and then preparing the orders for each restaurant, which were loaded into lorries by delivery drivers. The products to be allocated were either: 1) 'bulk' type products (e.g. fruit, yoghurt), or 2) dishes prepared on site which, once packaged, were placed in crates stacked on wheeled trolleys. At the end of order preparation, new stacks of crates on wheeled racks were made for each restaurant.

An analysis of the current work as done revealed heavy demands in terms of posture, handling, and cognitive skills, in a difficult environment (temperature of 3 degrees centigrade, artificial lighting). The switch to stainless steel compounded these difficulties by increasing the weight of the crates (+30%) and eliminating the visibility offered by the transparent plastic film. Another major change for order-pickers concerned the digitization of traceability. This project responded to the need to track reusable containers while aiming for total digitization of food traceability. Preparers needed to be equipped to read orders and scan QR codes on containers, which created new tasks and constraints (wearing equipment, repeated scans). The researchers analysed that this project could provide resources for the activity, with an opportunity to improve the presentation of the large amount of information processed by the agents. But it also presented risks. At the order preparation stage, there was a high degree of variability both in the volumes and numbers of references to be allocated according to the menus, and in the hazards inherent in the operation of a central kitchen (e.g. last-minute menu changes caused by a machine breakdown in production, or raw material not delivered). As these contingencies gave rise to collective regulations, the researchers identified a risk of the processes becoming more rigid, which would then turn into a source of additional constraints and handling.

These results reveal a high diversity in the ways in which work as done was transformed at micro level, is taken into account by the TFP actors. Work as done at the micro level is often

taken into account to a limited extent only at meso level, as shown in the analyses carried out in Case 1 bis (PAP TFP) and Case 2 (BM TFP). The results presented for these two cases highlight the difficulties of making local issues (challenges encountered at the level of work as done) visible on a wider territorial scale, in organized food systems that remain relatively top-down. This could entail a risk of retarding or hampering the ecologization of practices in day-to-day work, along with the ambitions of institutional ecologization carried out by the TFPs. While the incorporation of environmental challenges regarding food production are in the allocators' activities. On the contrary, this objective reinforces an imbalance between the ecological, economic and social dimensions: the choice of stainless steel containers to replace plastic ones adds complexity to the activity (linked to the opacity of these containers and the increase in cleaning tasks) and makes the work more physically arduous (due to the weight of these containers), not to mention the environmental impact (transport, washing, etc.).

The results also reveal the diversity in the recognition of the issues linked to the transformation of work as whole. Nevertheless, it represents a fundamental step in enabling the circulation of issues between the meso and micro levels, thereby facilitating their systemic management.

4.2 Taking into account transformations of work means that TFPs can be enriched and made more systemic

The results on this point indicated that when the actors in the TFP took into account the work and its transformations, the projects were enhanced and made more systemic. Considering these transformations meant circulating information from a multi-level perspective within the food system. The action-research sought to establish dialogue between the meso and micro levels of the TFPs in order to consider the impact of the ecologization of practices on the activity of workers, and how to take this into account. On the other hand, considering transformations in work necessarily implied reasoning at a system level. The introduction of a new objective, such as 'more pulses and cereals-based menus', led to changes in other elements of the food system (e.g. organized division of work: plant production, delivery; packaging, etc. and tools: changing menus, referencing), which needed not only to be recognized but also to be taken into account in TFP project management. In all three cases, it was possible to identify challenges for the actors in the TFP territory to take these issues into account, given the complexity of the

situation of coordinating actions and the fact that questions of work and activity were not fully integrated into the two TFP projects.

The discussions highlighted that, for **Case 1** (PAP TFP), ecologization by serving locally sourced pulses and cereals-based food would involve many work transformations. The group highlighted the challenges of reorganizing logistics in the territory. This applied both to the ways in which work as done were performed by the logisticians involved in supplying mass catering, and to the ways in which these activities were handled by the various other players, taking into account the changes in skills that might be required for each of them. The participants in the group also pointed out that the ecologization of practices required specific preparatory tasks if those issues were to be integrated into the menus. These menus furthermore had to meet the expectations of diners while retaining their valuable nutritional properties. Yet the offer remained limited and insufficiently diversified. Acknowledging the need for change, the participants pointed to the need to avoid a radical transformation of work in the kitchen, as current conditions of employment and operations in the catering industry would not allow for that without a deterioration in working conditions. These constants, combined with the movement between the meso and micro levels and the systemic approach, raised new questions about the reorganization of work in the supply chains (work as imagined): How could a reorientation of agricultural production (e.g., new varieties of cereals, new pulse crops) and the recognition of new produce under quality labels be supported so that it could be promoted in the catering sector? What technical and financial support could be provided within the TFP to help with this reorientation in a context where production hazards (linked to the climate but also to the presence of pests specific to an urban area) were increasing? The ways in which the TFP's leadership and financial support could underpin these transformations also needed to be examined, with reference here to the meso level of governance on the scale of producers. Tackling the specific issue of sustainable food in the workplace, this working group was mapping out the scope of the problem of introducing more pulse and legume-based food in mass catering for adults in the workplace within the territory. In so doing, it was fostering understanding between the workers concerned and the emergence of joint initiatives or targeted actions. Going further, by taking transformations of work into account (as imagined and as done) when reorganizing sectors, required additional resources and skills for investigation and action at micro level, which were not available at the time.

In **Case 1 bis** (PAP TFP), the transformations of work as done were both recognized and taken into account by the restaurant manager in the ecologization of practices towards a

sustainable food offer, in addition to the daily offer. Managerial activity was also guided by compromises between ecologization, production overload, and customer satisfaction (Figure 2). If we take the example of the vegetarian offer, monitoring of the indicator of the production/consumption ratio revealed the difficulty of meeting the ‘home-made’ challenge. The preparation time in the kitchen was longer, and ‘home-made vegetarian’ also meant that cooking had to be organized differently (work as imagined). Moreover, there seemed to be more wastage with home-made vegetarian dishes than with ready-made products which did not really change the customers’ perception of the dish (for example: vegetarian sausages in a couscous). At the end of the test phase mentioned above, it was nevertheless decided to increase the vegetarian offer while keeping the meat and fish dishes. The number of vegetarian menus would be increased to three per week, but the proportion of home-made products would be reduced to 50% of the vegetarian offer, so that only 50% of the vegetarian recipes were to be ‘home-made’.

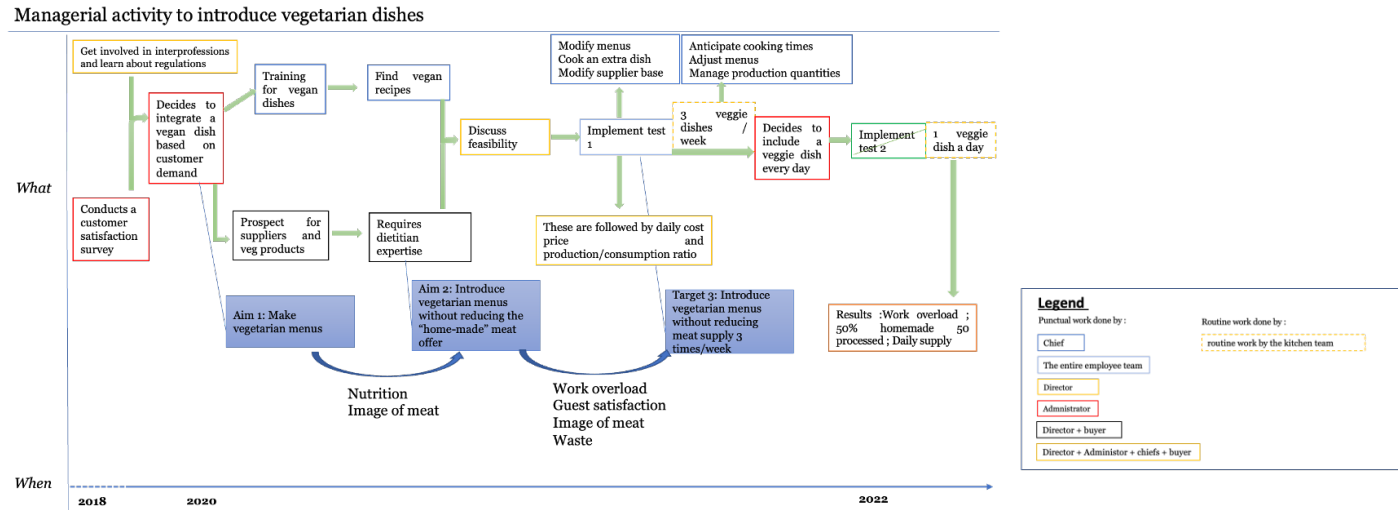


Figure 1. Managerial activity in the introduction of vegetarian dishes

Although these decisions did not fully meet the challenges of environmental sustainability, they did consider the economic and social viability of ecologization by taking into account the activity, that is, the work as done in the kitchen and during service in the dining room. These compromises at the micro level of ecologization revealed the difficulties of *strictly* applying policies aimed at sustainable food, because reality always defies prescriptions. They highlighted the need to take into account broader issues than those linked to the use of vegetarian meals or the preparation of home-made products, and to look more broadly at the conditions under which work was carried out (preparation, packaging, customer service), including factors such as

costs, product availability, customer expectations, kitchen facilities and staffing levels, as well as effects such as workload, food quality and customer satisfaction. Adaptations and regulations such as those made by the manager needed to be considered to ensure that mediation between the macro, meso and micro levels was relevant to the sustainability of the work. This underscored the need to share knowledge and experimentation within the territory. In this case study, what happened at the micro level was passed on to the meso level of the TFP's governance through the researchers, with the participation of the manager of the collective restaurant who shared his vision of sustainable food and his attempts to take charge of it within the area.

In **Case 2** (BM TFP), after several discussions between the researchers and those involved in the governance of Cuisine Interco (meso level) of the transformations in activities to come, the researchers focused on the order preparation activity (micro), while maintaining interaction with the meso level. Two bodies were set up: a working group with order preparation operators, and an ergonomics monitoring committee comprising members of the 'change of containers' project team, staff representatives, management, human resources, and the prevention, quality and methods departments of Cuisine Interco. The diagnosis carried out by the researchers was forwarded to the local councillors administering Cuisine Interco (meso level) along with a warning of the need for vigilance. It appeared that the most significant constraint concerned the height at which the crates were picked up and set down, involving frequent bending over. This diagnosis identified the risks to workers' health associated with the anticipated changes, in a context where there was little room to manoeuvre to reduce handling constraints, due to the unsuitability of the building. It underscored the need for the construction of a new building, even though that would not materialize in the immediate future.

In addition, a working group was set up to devise a new apportionment method that took account of handling constraints, the loss of product visibility associated with the new opaque containers, the digital traceability project, and uncertainties about the packaging method. Several sessions were devoted to simulating order preparation, using a mock-up. These sessions were fruitful in that they enabled suggestions to be made, and questions and blind spots in the project to be identified through the simulation of future activity. These were then passed on to the 'container change' project team. Nevertheless, pending the construction of a new, customized building, there was little room to manoeuvre to reduce handling constraints. Various automation solutions had been studied and invalidated; no satisfactory technical handling aid solution had been identified at this stage, due to space constraints. Several manual

handling scenarios had been developed and were being studied. The group’s proposals were examined by the monitoring committee, which decided on them before giving their feedback to the actors concerned.

The results highlight the central role of researchers in the humanities and social sciences as mediators in the creation of relations between the meso and micro levels of food transitions, as regards work. The researchers involved in the TFPs initiated spaces for dialogue, fostering better integration of the local actors responsible for dealing with issues relating to work as imagined and work as done. It thus helping to support the co-production of knowledge, with the people concerned, about the actual work as done and the work as imagined and their transformations. Moreover, it helps to circulate and discuss this knowledge, not only with micro-level actors (managers, restaurant management, etc.) but also at meso level with a wider range of actors. This circulation is particularly important since the results show that it is the micro-level actors who are directly affected by the transformations in their work and who have to take the complexity of these transformations into account and navigate through them.

4.2.3 Cross-case analysis

The Figure 2 present a cross-case synthesis that highlights what the three cases collectively reveal about the recognition (or neglect) of work transformations in ecologization processes within territorial food projects.

Dimensions informed by the case analysis	Case 1 – Towards more pulses and cereals-based meals in corporate catering	Case 1 bis – Towards vegetarian dishes in corporate catering	Case 2 – Towards eliminating plastics in public catering	Cross-analysis
Transformations of work as imagined	<ul style="list-style-type: none"> - Planning training sessions on pulses-cereals-based meals and locally produced; - Rethinking logistics to supply the catering sector with this new offer; - Determining who should be responsible for referencing local products according to external requirements; - Considering financial aspects and skills for investigation and action at the micro level. 	<ul style="list-style-type: none"> - Establishing contracts for local and organic products; - Implementing reporting on labels and origins to ensure traceability; - Planning preparation of additional daily dish; - Planning training sessions on homemade vegetarian menus and run pilot tests in kitchens. 	<ul style="list-style-type: none"> - Managing packaging; - Preparing orders; - Organizing delivery and washing processes; - Developing logistics for reusing containers in catering outlets; - Digitalizing order-picking. 	<p>Across cases, organizations must coordinate training, logistics, procurement responsibilities, traceability, and packaging management to effectively support ecologization of food system. The transformations concerned a large range of work organization and production items. When neglected, these transformations may compromise sustainability issues.</p>

<p>Transformations of work as done (activity)</p>	<ul style="list-style-type: none"> - Redefining the interplays at meso level to sustain changing practices for more pulses and cereals-based meals; - Redefining the intermediate functions for grouping and referencing products 	<ul style="list-style-type: none"> - Discussing new recipes, product availability, and dish attractiveness; - Preparing various daily dish (including introducing new preparation techniques in the kitchen) - Adjusting menus balancing ecological goals, costs and availability of products, workload, nutritional advice, and consumer expectations). 	<ul style="list-style-type: none"> - Shifting to stainless steel requires lifting 30% more weight and reduces dish visibility; workers must bend over tanks to handle crates at pick-up and drop-off height; - Additionnal new activities, such as reading and processing digital orders (QR codes, scans). 	<p>At the micro-level, new constraints and compromises appeared: work as done undergo significant adjustments (recipe development, workload management, etc., new digital tools and tasks, etc.). Such transformations of work as done are not addressed, discussed, or dealt with at the meso level.</p>
<p>Systemic vision</p>	<p>Sharing a vision of the allocation of functions among the various actors involved in a value chain for developing new ways of coordination (production, logistics, kitchen).</p>	<p>Taking into account activity-related aspects in cooking production beyond ecological goals.</p>	<p>Simulating and anticipating future order-preparation activities.</p>	<p>A systemic perspective is essential: balancing organizational structures, actual work practices, and anticipation of future tasks is key to achieve long lasting and socially sustainable ecologization.</p>

As far as training chefs is concerned, the case studies 1 and 1bis show that the move towards sustainable food, such as serving plant-based meals, requires new skills, particularly in the preparation of local plant-based products. Case 2, which focuses on the elimination of plastic containers in central kitchens, illustrates how logistical changes involve considerable adjustments to operators' work. Without a detailed analysis of the related activities, these transformation are likely to come up against organizational or human difficulties.

In case 1bis, the workload involved in preparing homemade and vegetarian menus prompted the restaurant studied to make certain compromises that took the realities of the work into account. These same issues were also raised by the actors taking part in the ad hoc working group set up by the researchers to discuss the taking up of 'sustainable food at work'. Lastly, the reorganization of production needed to support plant-based menus and other initiatives, such as the elimination of plastic containers, required detailed consideration of meal production activities. In Case 2, the use of tools such as the simulation of order preparation with a model created by the researchers for these sessions informed discussions both with the workers and with the managers and public decision-makers. The different micro and meso levels actors were thus involved in discussions on a concrete representation of the consequences of the changes envisaged.

The results show, furthermore, that the transformations of work were not strictly limited to the objectives set at the macro level and embedded in regulatory transformations concerning

food and food systems. Other transformations also took place in the ways of work will be done; for example, the usual traceability tools were replaced by new technological tools, which modified the referencing, as presented in Case 2 (BM TFP). This accumulation of changes was thus made visible by a systemic analysis of the elements influencing the conditions in which this work took place, thus enabling us to grasp the dynamics of interdependence between the components.

5 Discussion

Territorial food projects and challenges for sustainable food systems led to several work transformations at meso and micro level. Our findings reveal that these transformations challenge both the way work is actually performed (work as done) and the way it is prescribed (work as imagined). These transformations require careful consideration, notably for training of cooks; logistics; production reorganization; and occupational health issues (Lever et al., 2022). Appropriate training, combining technical expertise and understanding of ecological issues, is crucial to support the transformations of work in the key profession of chefs during food system transitions. For logistics, sourcing local and sustainable products, as well as packaging and handling, is another major challenge (Chiffolleau & Paturel, 2018).

Although studies do exist on the arduousness of work in the services of local authorities and in the agri-food sector (Meemken et al., 2024), their specific integration into TFPs remains limited. Furthermore, such transformations can adversely affect workers' health and safety (Akamangwa, 2016, etc.), thereby compromising the sustainability of work and, paradoxically, obstructing the ecological transition of practices, despite being aimed precisely at promoting it (e.g., Lassalle, Goutille & Boudra, 2024). However, the fact that these needs are not systematically integrated into the TFP limits the ability of the TFP to sustainably transform practices.

Recently published studies have identified that some factors may facilitate or hinder the ecologization of work such as improving, monitoring, mediating, and mainstreaming, but tensions emerge to manage the transitions towards sustainability (Hourbeckers, Salmenniemi & Rääkkönen, 2025). In fact, such factors concerns change management supported by organizational strategies. As we presented in this article, change management cannot remain confined to the micro level of single organizations. Rather, decision-making processes, interactions, and interdependencies are constituted at the meso level of territories. Indeed,

transformations associated with the ecological transition of food systems are advanced, operationalized, and negotiated within territorial arenas. These insights are consistent with previous research, thereby reinforcing the importance of adopting a territorial lens to understand and manage such systemic change (Béguin & Cerf, 2024).

Other studies emphasize that sustainability transitions may yield ambivalent outcomes when they are conceived independently of actual practices, power relations, and collective dynamic (Herzog & Zimmerman, 2025). One limitation of our study is that we did not examine work through the lens of the relationship between power relations and agency, as our data did not allow for such an analysis. More broadly, ergonomics pays close attention to the capacity of workers to adjust their work as done and influence decision-making processes. Asymmetries exist that constrain or limit agency, and it would be valuable to conduct further analyses that examine more closely how agency and power relations shape decision-making at both meso and micro levels. Scholars have highlighted the problematic lack of attention to the role of power in sustainability transitions (eg., Avelino, 2017), and more specifically, to the significance of power and labor dynamics in these transitions (eg., Prinz & Pingel, 2018). Nevertheless, to our knowledge, the links between power and agency through the lens of work as done in territorial food projects remain rare, opening up original research perspectives. This gap resonates with the field of political agroecology (e.g., de Molina et al., 2002) which emphasize that sustainable transitions in food systems cannot be separated from processes of democratizing decision-making and redistributing power across actors.

This framework emphasizes also on collaborative practices among diverse actors, including farmers, local communities, and policy-makers. These categories encompass both the joint creation of knowledge and shared responsibility in production processes, fostering innovation that aligns ecological, social, and economic objectives. Ecologization proposes examining the interplays of top-down (policy and regulatory) and bottom-up (localized appropriation and practice reconfiguration) processes and how their interaction transforms cooperation and co-production of knowledge. The articulation between these levels is decisive: it conditions whether ecologization is reduced to a technocratic adaptation or matures into an agroecological transition anchored in social, and environmental justice.

Our findings indicate that ecologization cannot be sustained exclusively at the micro level, as this risks deteriorating working conditions and creating barriers to genuine ecological sustainability. Nor can it be achieved in isolation from territorial collective dynamics. The research conducted has contributed to strengthening dialogues among value-chain actors, yet broadening these exchanges to include a wider range of stakeholders remains essential. Such

an extension would enable moving beyond narrow expert-driven arenas and foster the integration of local knowledge holders into the process.

In the specific case of TFPs, this perspective also calls for a better integration of local actors involved in food system work and a rethinking of subsidiarity to more effectively address training, logistics, and production from a work-centered perspective, while also strengthening inter-level relationships through work as done-focused initiatives. In this sense, TFPs could include other actors whose skills in the field of work, production and health could support the viability and sustainability of these projects. In France, various actors such as the Mutualité Sociale Agricole (MSA), which works with farmers in particular, the Agence Nationale pour l'Amélioration des Conditions de Travail (ANACT), which works with public and private companies, or internal prevention specialists in local authorities or company departments, for example, could be involved in these projects. This would help to enhance the diverse skills involved in managing the TFPs' themes and actions.

Acknowledgements

We extend our gratitude to all participants in the two TFPs presented here for their invaluable commitment to advancing socio-ecological sustainability and strengthening their territories.

Disclosure statement

The authors declare no conflict of interest.

Funding

This research was supported by the *Fondation de l'Université de Bordeaux*; the *Agence Nationale de la Recherche* (ANR) under Grant ANR-21-CE03-0015; and the *Agence Nationale de la Recherche*, in association with INRAE, under the 'Chaire de professeur junior' Grant.

6 References

- Avelino, F. (2017). Power in sustainability transitions: Analysing power and (dis) empowerment in transformative change towards sustainability. *Environmental Policy and Governance* 27 (6), 505-520. <https://doi.org/10.1002/eet.1777>
- Arnold, N., Brunori, G., Dessen, J., Galli, F., Ghosh, R., Loconto, A. M., & Maye, D. (2022). Governing food futures: Towards a 'responsibility turn' in food and agriculture. *Journal of Rural Studies*, 89, 82-86. <https://doi.org/10.1016/j.jrurstud.2021.11.017>
- [Akamangwa, N. \(2016\). Working for the environment and against safety: How compliance affects health and safety on board ships. *Safety Science*, 87, 131-143.](#)
- Banzo, M., Beaurain, C., Del'homme, B., & Lemarié-Boutry, M. (2024). *Les projets alimentaires territoriaux. Vers des actions collectives*. Éditions Quæ.

- Barcellini, F., Cerf, M., & Lacomblez, M. (2024). Developmental foundations of Activity-Centered Ergonomics: knowledge encounters to construct both a critical analysis of work and developmental set-ups. *Ergonomics*, 1–19. <https://doi.org/10.1080/00140139.2024.2415965>
- Barcellini, F., Van Belleghem, L., & Daniellou, F. (2014). Design projects as opportunities for the development of activities. In P. Falzon (Ed.), *Constructive Ergonomics* (pp. 220-237). New York, NY: Taylor & Francis.
- Barrès, D., Bonny, S., Le Pape, Y., Rémy, J., (1985). *Une éthique de la pratique agricole. Agriculteurs biologiques du Nord-Drôme*. Paris, Grignon, Grenoble, INRA-ESR.
- Barrios, E., Gemmill-Herren, B., Bicksler, A., Siliprandi, E., Brathwaite, R., Moller, S., ... 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. <https://doi.org/10.1080/26395916.2020.1808705>
- Bazillier, R. (2011). *Le travail, grand oublié du développement durable*. Cavalier Bleu,
- Blay-Palmer, A., Sonnino, R., & Custot, J. (2016). A food politics of the possible? Growing sustainable food systems through networks of knowledge. *Agriculture and Human Values*, 33(1), 27–43.
- Brand, C., Bricas, N., Conaré, D., Daviron, B., Debru, J., Michel, L., & Soulard, C.-T. (2020). *Designing Urban Food Policies: Concepts and Approaches*. Springer Nature.
- Böhm, S., Spierenburg, M., & Lang, T. (2020). Fruits of our labour: Work and organisation in the global food system. *Organization*, 27(2), 195–212. <https://doi.org/10.1177/1350508419888901>
- Bolis I, Morioka SN, Sznclwar LI (2014). When sustainable development risks losing its meaning. Delimiting the concept with a comprehensive literature review and a conceptual model, *Journal of Cleaner Production* (2014), doi: 10.1016/j.jclepro.2014.06.041.
- Cerf, M., Le Bail, C., Boccara, V., Loyce, C. (2024). Understanding and supporting intermediation work to address territorialized public policy issues: The case of a Territorial Food Project in France. *WORK*, 77(1), 343-357. <https://doi.org/10.3233/WOR-220298Zhang>
- Cervai, S., & Polo, F. (2017). The impact of a participatory ergonomics intervention: the value of involvement. *Theoretical Issues in Ergonomics Science*, 19(1), 55–73. <https://doi.org/10.1080/1463922X.2016.1274454>

- Charrieras, Q., Gasselin, P., Ollivier, G., & Plumecocq, G. (2024). Agroecology as a new frame of reference for French agricultural policy? Insights from a lexicometric analysis of policy documents. *Agroecology and Sustainable Food Systems*, 49(3), 386–414. <https://doi.org/10.1080/21683565.2024.2419953>
- Chiffolleau, Y., Paturel, D. (2018). Social innovation through short food supply chains: between networks and individualities. *Innovation and Development in Agricultural and Food Systems*, Editions Quae, Non paginé, 2018, Synthèses (Quae), 978-2-7592-2960-4. (hal-02791545)
- Chizallet, M., Barcellini, F., and Prost, L. (2024). Sustainable system of systems at work: unravelling (some of) the complexity of farmers' transition to sustainability. *Ergonomics*, 67(4), 467-481. <https://doi.org/10.1080/00140139.2022.2163687>
- Daniellou, F., & Rabardel, P. (2005). Activity-oriented approaches to ergonomics: Some traditions and communities. *Theoretical Issues in Ergonomics Science*, 6(5), 353–357.
- de Molina, M. G., Petersen, P. F., Peña, F. G. and Caporal, F. R. (2019). *Political Agroecology: Advancing the Transition to Sustainable Food Systems*. CRC Press, Boca Raton.
- Dedeurwaerdere, T. (2014). *Sustainability Science for Strong Sustainability*. Edward Elgar Publishing.
- Deverre, C., & Lamine, C. (2010). Les systèmes agroalimentaires alternatifs. Une revue de travaux anglophones en sciences sociales. *Economie Rurale*, 3, 317, 57-73.
- Duchin, F. (2005). Sustainable consumption of food: A framework for analyzing scenarios about changes in diets. *Journal of Industrial Ecology*, 9(1-2), 99-114.
- Dumont, A. M., & Baret, P. V. (2017). Why working conditions are a key issue of sustainability in agriculture? A comparison between agroecological and conventional systems. *Journal of Rural Studies*, 56, 53-64.
- Duru, Michel, Olivier Therond et M'hand Fares (2015). « Designing agroecological transitions ; A review ». In : *Agronomy for Sustainable Development* 35.4, p. 1237-1257. doi : 10.1007/s13593-015-0318-x.
- Duval, J. E., Blanchonnet, A., & Hostiou, N. (2021). How agroecological farming practices reshape cattle farmers' working conditions. *Agroecology and Sustainable Food Systems*, 45(10), 1480–1499. <https://doi.org/10.1080/21683565.2021.1957062>
- Falzon, P. (2014). *Constructive Ergonomics*, Boca Raton: CRC Press.
- Fouilleux, E., & Michel, L. (2020). *Quand l'alimentation se fait politique(s)*. Presses universitaires de Rennes, 2020, 349 pages

- Galey, L., Nascimento, A., Cuvelier, L., Mollo, V., Albert, M., Brossard, M., ... Garrigou, A. (2024). Developmental approach of safety in ergonomics/human factors: insights of constructed safety in six work environments. *Ergonomics*, 1–22.
<https://doi.org/10.1080/00140139.2024.2390127>
- Garnett, T. (2011). Where Are the Best Opportunities for Reducing Greenhouse Gas Emissions in the Food System (Including the Food Chain)? *Food Policy*, 36, S23-S32.
<https://doi.org/10.1016/j.foodpol.2010.10.010>
- Gliessman, Stephen R, Eric Engles et Robin Krieger (1998). *Agroecology : ecological processes in sustainable agriculture*. CRC press.
- Goutille, F., Lassale, J., Thiebaud-Rizzoni, T., Guillet, L., Chauvin, C., Garrigou, G., & Boudra, L. (2024). Analisis sistemico de la actividad y las finalidades del trabajo en los sectores pesquero y agricola. *Laboreal*, 20(1). <https://doi.org/10.4000/120d0>
- Haines H, Wilson JR, Vink P, Koningsveld E. (2002). Validating a framework for participatory ergonomics (the PEF). *Ergonomics*, 45(4), 309-27. doi: 10.1080/00140130210123516. PMID: 12028727.
- Herzog, Lisa, et Bénédicte Zimmermann. 2025. «Introduction – Le travail soutenable: exploration des exigences d’une approche sociale-écologique du travail», *Revue internationale du Travail*, 164 (1): 1-6. <https://doi.org/10.16995/ilrf.18833>.
- Houtbeckers, E., Salmenniemi, S., & Rääkkönen, T. (2025). Transformations and tensions in sustainability work. *Environmental Sociology*, 1–12.
<https://doi.org/10.1080/23251042.2025.2487962>.
- International Labour Organization (ILO, 2019). Work and employment are not synonyms. 19th International Conference of Labour Statisticians. <https://ilostat.ilo.org/work-and-employment-are-not-synonyms/>
- Jouen, M. & Lorenzi, F. (2014). La dimension territoriale et politique des circuits courts alimentaires : représentations et enjeux dans le débat européen sur la politique agricole commune. *Sciences Eaux & Territoires*, 13(1), 12-19. <https://doi.org/10.3917/set.013.0012>.
- Lamine, C. (2015). Sustainability and resilience in agrifood systems. *Sociol Ruralis*, 55, 41-61.
<https://doi.org/10.1111/soru.12061>
- Lamine, C., D. Magda, and M.-J. Amiot. (2019). Crossing sociological, ecological, and nutritional perspectives on agrifood systems transitions: Towards a transdisciplinary territorial approach. *Sustainability*, 11(5):Artigo 5. <https://doi.org/10.3390/su11051284>.

- Lamine, C., Guennoc, D., & Maréchal, G. (2023). *Territorial Food Projects in France* [Policy brief]. Agroecological Transitions for Territorial Food Systems.
- Lassalle, J., Goutille, F., Boudra, L. (2024) Techno-solutionism and sustainable development: the activity analysis as a way of reintroducing the primacy of the “Living” over technology. Proceedings of the 22nd triennial congress of the international ergonomics association. *22nd triennial congress of the international ergonomics association (IEA)*, Aug 2024, Jeju Island (South Korea), 39, Springer Nature Singapore, pp.324-329, 2024, Springer Series in Design and Innovation, doi: [10.1007/978-981-95-0211-0_50](https://doi.org/10.1007/978-981-95-0211-0_50)
- Le Prince, S. (2022). A pragmatic living lab to taste a desirable territorial agrifood system, 9th Living Knowledge Conference 2022, Groningen, Netherlands.
- Leggett, K., McCann, R., Brunson, M., Miller, B. A., & MacAdam, J. (2021). “From a chef’s perspective or what I can sell on the menu?” Exploring culinary professionals’ attitudes toward specialty beef production and barriers to adoption. *Agroecology and Sustainable Food Systems*, 45(8), 1246–1266. <https://doi.org/10.1080/21683565.2021.1888185>
- Lélé, S.M. (1991). Sustainable development: a critical review. *World Development*, 19(6), 607-621.
- Leplat, J. & Cuny, X. (1977). 2ème édition revue et augmentée de 1984) *Introduction à la psychologie du travail*. Paris, PUF.
- Lever, J. Blake, M., Newton, D., Downing, G. (2022). Working across boundaries in regional place-based food systems: Triggering transformation in a time of crisis, *Cities*, 130, 103842, <https://doi.org/10.1016/j.cities.2022.103842>.
- López-García, D., García-García, J., García-García, V., Rada-Sereno, O., & Vázquez-Macías, G. (2025). What is transformative in participatory approaches to territorial agroecological transitions? A systematization of five case studies in Spain. *Agroecology and Sustainable Food Systems*, 1–39. <https://doi.org/10.1080/21683565.2025.2456946>
- Maas, L., Malvestiti, R., Amaral Gontijo, L. (2020). Work in organic farming: an overview. *Cienc. Rural*, 50(4). <https://doi.org/10.1590/0103-8478cr20190458>
- Magrini M.-B., Fernandez-Inigo H., Doré A., Pauly O. (2021). How institutional food services can contribute to sustainable agrifood systems? Investigating legume-serving, legume-cooking and legume-sourcing through France in 2019. *Review of Agricultural, Food and Environmental Studies*, 297-318.

- Malanski PD, Schiavi S, Dedieu B, Damansceno JC, (2022). International research on labor in agri-food value chains: A bibliometric review from web of science. *Frontiers in Sustainable Food Systems*, 2022, 6, 852178 [10.3389/fsufs.2022.852178](https://doi.org/10.3389/fsufs.2022.852178)
- Maréchal, G., Noël, J., & Wallet, F. (2018). Les projets alimentaires territoriaux (PAT) : entre rupture, transition et immobilisme ? *Revue Pour*, 234-235, 261-270.
- Marx, K. (1976 [1867]). *Capital: Volume I*. London: Penguin.
- Meemken, EM., Charlton, D., Christiaensen, L. *et al.* (2024). Better data for decent work in the global food system. *Nat Food*, 5, 454–456 <https://doi.org/10.1038/s43016-024-01002-0>
- Moilanen, F., & Alasoini, T. (2023). Workers as actors at the micro-level of sustainability transitions: A systematic literature review. *Environmental Innovation and Societal Transitions*, 46, 3. <https://doi.org/10.1016/j.eist.2022.100685>
- Moreau, T., Speight, D. (2019). Cooking up Diverse Diets: Advancing Biodiversity in Food and Agriculture through Collaborations with Chefs. *Crop Science*, 59(6), 2289-2885 <https://doi.org/10.2135/cropsci2019.06.0355>
- Moragues-Faus, A., & Marsden, T. (2017). The political ecology of food: Carving ‘spaces of possibility’ in a new research agenda. *Journal of Rural Studies*, 55, 275–288. <https://doi.org/10.1016/j.jrurstud.2017.08.016>
- Mormont, M. (2013). Écologisation : entre sciences, conventions et pratiques. *Natures Sciences Sociétés*, Vol. 21(2), 159-160. <https://doi.org/10.1051/nss/2013102>.
- Penvern, S., Lamine, C., Derbez, F., Ollivier, G., Renier, L., Roche, R., & Tuscano, M. (2023). Addressing the diversity of visions of ecologization in research and in support to agroecological transitions. *Agroecology and Sustainable Food Systems*, 47(9), 1403–1427. <https://doi.org/10.1080/21683565.2023.2246395>
- Prinz, L., & Pingel, D. (2018). Labour as a driver of sustainability transitions. *Environmental Innovation and Societal Transitions*, 26, 94-104.
- Rockström, J., Edenhofer, O., Gaertner, J., & DeClerck, F. (2020). Planet-proofing the global food system. *Nature Food*, 1(1), 3-5. <https://doi.org/10.1038/s43016-019-0010-4>
- Rocha, R., Jackson Filho, J. M., Garrigou, A., & Nascimento, A. (2022), Social construction as a means of ergonomic intervention. *Gestão & Produção*, 29, e5022. <http://doi.org/10.1590/1806-9649-2022v29e5022>

- Romeyer, H. (2015). « Le bien-être en normes : les programmes nationaux nutrition santé », *Questions de communication*, 27 | 2015, 41-61.
- Saint-Vincent, M., Vézina, N., Bellemare, M., Denis, D., Ledoux, É., & Imbeau, D. (2014). *Ergonomic intervention*. Éditions MultiMondes. Montréal, Canada.
- Santini, C., Fournier, S. (2024). De l'émergence des projets alimentaires territoriaux à la transition des systèmes alimentaires. Quels chemins possibles selon les modalités de gouvernance ? *Géographie, économie, société*, 26(1), 99-126. <https://doi.org/10.1684/ges.2024.5>.
- Süßbauer, E., Maas-Deipenbrock, R.M., Friedrich, S., Kreß-Ludwig, M., Langen, N., Muster, V. . (2019). Employee roles in sustainability transformation processes: a move away from expertise and towards experience-driven sustainability management. *GAIA - Ecol. Perspect. Sci. Soc.*, 28 (1), 210-217, [10.14512/gaia.28.S1.7](https://doi.org/10.14512/gaia.28.S1.7)
- Tavernier, Y., Gervais, M., & Servolin, C. (1972). *L'univers politique des paysans dans la France contemporaine*. Presses de Sciences Po.
- Tilman D, Clark, M. (2014). Global diets link environmental sustainability and human health. *Nature*. 2014 Nov 27;515(7528):518-22. doi: 10.1038/nature13959.
- Timmermann, C., Félix, G.F. (2015). Agroecology as a vehicle for contributive justice. *Agric Hum Values* 32, 523–538. <https://doi.org/10.1007/s10460-014-9581-8>
- van Calker, K.J. , Berentsen, P.B.M., de Boer, I.J.M. , Giesen, G.W.J., Huirne, R.B.M. (2007). Modelling worker physical health and societal sustainability at farm level: An application to conventional and organic dairy farming, *Agricultural Systems*, Volume 94, Issue 2, 2007, Pages 205-219, <https://doi.org/10.1016/j.agsy.2006.08.006>.
- Vatin, F. (2014). *Le travail : activité productive et ordre social*. Presses universitaires de Paris Ouest.
- Zaccaria, R. (2000). Principe de subsidiarité et environnement. *Revue Européenne de Droit de l'Environnement*, 4-3, 256-280. <https://doi.org/10.3406/reden.2000.1289>

Appendices

Case study	Case 1 TFP PAP (meso level)	Case 1 bis TFP PAP (micro level)	Case 2 TFP BM (meso and micro level)
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Case context	Facilitating the governance of the TFP for sustainable food at work	Management activity for a sustainable food offer in a restaurant for adults at work	The challenge of phasing out plastic in central kitchens
Methods (for work analysis or intervention)	Objective 1	Understand how the actors in charge of TFP governance design and implement the project	Understanding management's role in developing a sustainable food offer in catering for adults at work
	Method 1	<p>Participation in steering committee meetings (5) and technical committee meetings (6) working group meetings (12) (observation and contribution, note-taking); Co-organization of workshops around sustainable food in collective catering during annual TFP events (3).</p> <p>Semi-structured interviews with those responsible for facilitating the TFP (25 administrative executives and 4 elected officials). Interview outline: career path, missions at the workplace, main allocated tasks, degree of involvement in the FTP governance and activity performed with the FTP framework. All interviews were recorded and transcribed.</p>	<p>Analysing changes in the way work is carried out in a central kitchen as part of the move away from plastic containers</p> <p>- 10 semi-structured interviews conducted between February and December 2023 with actors who have strategic and operational roles: board member (1), director (3), buyer (2), head chefs (2), storekeeper (1), catering agent (1). Interview outline: career path, description of activities (typical day or week, tools, tasks), degree of involvement in organizational changes, particularly those related to sustainable food offerings. All interviews were recorded and transcribed.</p> <p>- 3 days of immersion in allocation (participant observation)</p> <p>- 14 days of observation in the Allocation department</p> <p>- 3 semi-structured interviews</p> <p>- 4 days of observation between October 2022 and April 2023 in different areas of the restaurant (hot food preparation, appetizer preparation, vegetable preparation, storage, dining room, offices). Method: taking notes and photos of the layout of the spaces, the tools used, and the organization of tasks in the different areas.</p> <p>- 11 days of observation in the Shipping, Warehouse, and Packaging departments</p> <p>- 48 documents analyzed: economic reports (cost prices), operational documents (menus, technical data sheets, supplier lists), organizational documents (job descriptions, organizational charts, audits, activity reports, Vademecum), as well as documents specifically related to sustainable food supply (certification reports, food waste assessments from 2007 to 2022).</p>
	Objective 2	Make the issue of sustainable food in the workplace a debatable one in the TFP and include it in the discussions on the territory's food resilience.	Debating how to develop and implement a sustainable food offer in a restaurant for adults at work

Method 2

Initiation and facilitation of a working group on sustainable food at work in conjunction with the association that coordinate the PAT and a representative from an urban community responsible for collective catering issues within the PAT (6 group meetings and a workshop expanded to 30 participants, bringing together stakeholders from farm to fork, and support structures such as local authorities and associations, and consultants working on agricultural issues, supply chain organization, and sustainability in collective catering) to discuss how to operationalize the use of cereals and pulses in corporate collective catering within the PAT territory.

Working group members: A private collective catering company, a start-up developing a range of vegetarian products, consulting firms specializing in logistics and local sourcing, local authorities, local agricultural advisory organizations and the Ile de France cooperative.

Interviews: With each member of the WG on their expectations regarding the outputs of the WG and their concerns about sustainable food procurement at work. 6 interviews were also carried out with logisticians about the functions they perform. Finally, 4 comprehensive interviews were conducted with the manager of a local collective production and processing activity of pulses and cereals about the dynamics of building this activity in relation to various markets.

- A reflective workshop conducted in June 2023 with the management team (director, board members) using a timeline tracing the actions implemented to develop the sustainable food offer since the director's arrival in the organization.
- 9 ICAD project meetings bringing together researchers and civil society partners. One board member and the director participate regularly.

- Interviews: 10 recorded interviews with project team members Interviews with staff and managers
- Facilitation of meetings: 8 working groups (including 3 simulation meetings) 5 monitoring committee meetings for the ergonomic approach 2 meetings for the presentation of the diagnostic results
- Participation in meetings: 12 monthly project team meetings 10 meetings with project managers from the 3 entities involved (central kitchen, catering offices of the two associated towns) 1 steering committee on the plastic phase-out project (local elected officials and project managers)