What is the future of pastoral livestock farming in the context of climate change? An environmental justice analysis of contested discursive justifications of pastoralism in the Pyrenees

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Abstract

Livestock farming is a major contributor to climate change emissions, leading to calls for reduced meat consumption and production. However, existing research often overlooks the specificities of pastoralism, an extensive form of livestock farming practices in mountainous areas. This results in intersecting injustices for pastoralists, which remain under-researched. This article addresses this gap by exploring how these injustices manifest locally, the justice claims articulated by the different actors of these pastoral landscapes, and the impact of climate change on their perceptions of pastoralism. We employ an empirical environmental justice framework to analyze the diverse discourses and justice claims of the inhabitants of a valley in the French Pyrenees, regarding how pastoral livestock farming should evolve (or not) in the context of climate change. Our findings reveal the complexity of issues that impact rural populations and highlight intra-rural inequalities. We show that climate arguments do not necessarily challenge prevailing discourses about pastoralism; instead, they are often integrated in existing dominant discourses on its environmental benefits. However, climate arguments also support minority views on the benefits of spontaneous reforestation resulting from the decline of pastoralism. Additionally, we identify a growing discourse advocating for agricultural diversification in response to climate change, which questions the specialization of mountain regions for pastoralism and highlights related land access injustices. This study underscores the need for centering the voices and knowledge of populations living in pastoral landscapes in order to foster just transformations of these landscapes in the context of climate change.
Keywords: pastoralism, mountain agriculture, climate change, environmental justice

1 Introduction

In the face of escalating climate change threats, scientists urgently call for comprehensive mitigation actions across all sectors (IPCC, 2022). This includes the agricultural sector. Responsible for 19% of greenhouse gas (GHG) emissions in France, agriculture is both a driver of climate change and vulnerable to its effects. Livestock farming in particular is singled out as the leading agricultural contributor to these emissions. One of the possible climate change mitigation actions often put forward is accordingly, the reduction of consumption and production of meat (Duru et al., 2021).

Such actions imply profound transformations of current rural landscapes that have been shaped by agriculture. This could lead to perceptions of injustice among rural stakeholders, resulting in potential resistance to change (Geels, 2014). Environmental justice scholars argue that to achieve just ecological transitions, it is critical to understand and take into account these "justice barriers" (Brown et al., 2024; A. Martin et al., 2020). In this article, we analyze specifically the justice claims regarding pastoral livestock farming in mountainous areas in the face of climate change. This type of livestock farming, which is predominant in French mountain areas, utilizes spontaneous vegetation to feed herds through extensive grazing.

In the face of climate change, Duru et al. (2021) suggest that livestock farming that relies on extensive grazing should be the dominant form of livestock farming, given the different environmental benefits it provides. And yet, Scoones (2022) argues that the knowledge produced about the impacts of livestock farming on climate change - in particular the assessment of methane emissions - does not take into account the specificities of pastoral livestock farming compared to more intensive livestock farming in the lowlands.

García-Dory et al. (2021) frame this as an epistemic injustice, and point to other intersecting forms of injustice faced by pastoralists, notably procedural and distributive injustices. Indeed, they often live in remote rural areas, far from decision-making arenas, and their interests and the constraints they face are not properly taken into account in policies, notably within European Union (EU) policies.

There are differences across EU countries though, and the French case is complex in this regard. Indeed, for the past 30 years, pastoral livestock farming has been framed in France as the environmental "good student" in agricultural policies because it prevents spontaneous reforestation through meadow grazing, preserving the biodiversity and patrimonial value of open landscapes (Barnaud & Couix, 2020; Granjou & Mauz, 2009). The French application of the Common Agricultural Policy (CAP) thus supports pastoralism through subsidies for the patrimonial and environmental services it provides. However, these policies are increasingly in contradiction with other EU policies that promote afforestation for carbon storage in order to mitigate climate change (Burrascano et al., 2016).

To identify the justice barriers to climate transitions in mountain areas, there is thus a need to further understand the place and role of pastoralism, notably its associated representations and discursive justifications. There is however a gap in the literature regarding how the above-mentioned injustices and contradictions play out locally, which justice claims are put forward by the different people living and working in these pastoral landscapes and how climate change is affecting their representations of pastoralism. To understand the complexity of the justice barriers, there is a need to understand not only the discourses and justice claims of the pastoralists themselves, but also those of the other actors living in these rural areas, and how their perspectives intersect with those of the pastoralists.

In this article, we thus ask the following questions: What are the main discourses and justice claims of local stakeholders regarding the evolutions of livestock farming in the context of climate change? How do climate change issues affect the local representations of pastoralism's environmental functions?

To answer these questions, we will draw on a case study focusing on a community located in the Pyrenees, in the Ariège, a pastoral mountainous area in the south of France.

To this end, firstly, we will start by delving into the context of livestock farming in the Pyrenees, with a historical background of the local evolutions of agriculture and landscapes, and a review of the academic work on the associated discourses and representations. Secondly, we will present the environmental justice framework and see how it relates to academic literature on pastoralism in Europe. Thirdly, we will present the methods used for this article - i.e. semi-directed interviews and participatory observations of collective workshops conducted in the context of a European research project. Fourthly, we will outline and discuss the findings of this research, highlighting three different discourses regarding the future of pastoralism in the context of climate change as well as the justice claims put forward in these discourses.

2 Context: evolution of mountainous agriculture and the emergence of the open landscape paradigm

2.1 Historical background: from subsistence polyculture to specialization in pastoral livestock farming

During the first half of the 19th century, the landscapes of the Pyrenees were shaped by an agriculture of subsistence and the development of the metallurgy industry in France. Indeed, the then growing industry of metallurgy required the production of wood coal, which contributed to significant deforestation (Chevalier, 1956). Agriculture at this time relied on a model of polyculture and livestock farming, based on the use of the different levels of the mountains (Eychenne, 2018). The estives (high altitude grazing lands) were used to feed the flocks in the summer. During the winter, the flocks stayed in the farm buildings, at the bottom of the valleys, where they were fed with hay. The intermediary zones were mostly composed of hay meadows, moors, and forests. In these intermediary zones as well as around the villages, terraces were built for human food yielding cultures (vegetables, grain crops...). The role of livestock farming (mostly sheep and some cows) was mainly to provide animal labour (Aubron et al., 2011), manure for vegetable and grain farming as well as milk-based products for human consumption (Eychenne, 2018). This system was very labor-intensive but made possible thanks to the abundant workforce (Izard, 2021).

During this period, to cater to the needs of the industry in the context of an abundant population and increasing pressure on forest resources, the Forest code was amended to forbid grazing and resource collection in the forests. This criminalization of the peasants' means of subsistence led to the War of the Maidens (1829 – 1832), during which farmers, dressed in long white dresses, roamed the forests to scare off the forest rangers and claim their right to these resources (Breteau, 2015).

In the second half of the 19th century, multiple crises (such as the potato disease in 1848, followed by the cholera epidemic in 1856) marked the beginning of a strong population decline in Ariège (Chevalier, 1956). This dynamic was further amplified by both World Wars. The population decline had direct impacts on the landscapes with spontaneous reforestation taking place in abandoned agricultural lands.

After World War II, French policies were designed to increase working productivity through the mechanization of agriculture. Young people were encouraged to leave the mountains to find jobs in the cities, and the number of farms diminished. Those who stayed and could afford it bought lands at the bottom of the valley, where mechanization was possible, while the intermediary zones became largely abandoned and spontaneously reforested (B. Martin et al., 2014). Little by little, the farms came to specialize in cattle rearing for meat, and croplands were increasingly transformed into grasslands (Eychenne, 2018).

At the beginning of the 1970s, this model was struggling because mountain livestock farming was not as competitive as lowland livestock farming (A. Martin et al., 2020), the market price of the meat was too low compared to the cost of production. In 1972, a set of subsidies for mountainous zones was created, including a subsidy colloquially called the "premium for mowing cows". These subsidies started being distributed to mountain farmers to support their role in fighting against reforestation and to support the environmental, social and economic services they rendered. The productive function of pastoralism was thus relegated to the background (Eychenne, 2018). Livestock farming started to be considered as multifunctional (Barnaud & Couix, 2020), "producing not only food, but also sustaining rural landscapes, protecting biodiversity, generating employment and contributing to the viability of rural areas" (Potter & Burney, 2002). This was the beginning of the dynamic of the greening of agriculture, which continued to develop itself in France with the evolution of the CAP.

In the Pyrenees as in other French mountain areas, the subsidies put into place in the 1970s pushed farmers to increase the size of their flocks in order to be economically viable (Aubron et al., 2019). As farms and flocks expanded, many farms struggled to produce enough hay to sustain their growing livestock due to limited land. From the 1980s onward most farms started buying at least part of the hay they needed to feed their flocks instead of producing all of it (Izard, 2021). This lack of hay is one of the reasons why suckling cattle and sheep are now mainly integrated into vertical chains, with young calves and lambs being exported and fattened in specialized intensive workshops, often in Spain or Italy.

This look back at history shows that despite the continued presence of a number of traditional legacies (use of different mountain levels for example), pastoral livestock farming practices in the Pyrenees underwent profound changes from the 1970s onwards. While pastoralism is today the main form of agriculture in the region, some villages also have some farms that produce vegetable, fruit, medicinal and aromatic plants and goats and sheep for the production of milk. As in many other mountain areas, these farms are most often owned by newcomers (Pachoud et al., 2024), who have started migrating to the area in the 1970s and continue to do so to this day. This is often accompanied by a rise in tensions and competition related to land access (Cognard, 2011).

2.2 Social constructions and representations of mountain farming and open landscapes

The representations, discourses, and controversies surrounding the environmental functions of pastoralism and its role in shaping the mountainous landscapes in Europe have evolved over time (Barnaud & Couix, 2020; Barnaud et al., 2021). Pastoral livestock farming has not always been seen as the environmental good student of agriculture. In the 1950s, it was blamed for overexploiting grasslands and causing soil erosion in French mountains, and forests were framed as ecosystems with higher ecological value (Marty & Lepart, 2001; Moreau, 2019).

In the 1970s, in the context of the decline of rural populations and the fear of social death in rural spaces, the term "fermeture des paysages" (in English, roughly: 'closure of the landscapes') became a socially constructed norm for referring to spontaneous reforestation due to the decline of extensive livestock farming

in rural mountainous areas (Floch et al., 2005). This term describes an ecological process, but also a feeling of oppression regarding the proliferation of vegetation, and the symbol of the loss of traditional landscapes and practices due to the decline of rural populations. Later on, this social construction met some emerging environmental concerns such as forest fire hazards and biodiversity loss, which led to a new paradigm in favor of open landscapes, legitimizing public action to maintain or reopen landscapes (Floch et al., 2005).

In local decision-making arenas, a consensus has emerged around the need to support livestock farming to maintain open landscapes, resulting from a coalition of interests between actors that all want to maintain livestock farming, but for different reasons, namely: as a productive and economic activity, as a way to maintain patrimonial landscapes (particularly for tourism), or as a way to preserve the biodiversity of open landscapes (Barnaud & Couix, 2020). However, this apparent consensus is, in fact, fragile, since the legitimacy of the environmental functions of pastoral livestock farming is increasingly contested. Indeed, social scientists have analyzed how this consensus has been influenced by local agricultural lobbies, and how local stakeholders produced and claimed new knowledge on the interactions between pastoral agricultural practices and biodiversity, while knowledge in this field was lacking (Granjou, 2011). Moreover, in local decision-making arenas, this consensus has silenced some alternative voices and generated a taboo around the idea that the decline of livestock farming and the subsequent spontaneous reforestation could be an opportunity for ecosystems and biodiversity (Barnaud & Couix, 2020).

These local issues echo broader academic debates on the environmental benefits of spontaneous reforestation (Barnaud et al., 2021), and therefore the desirable future of mountainous areas in Europe. Indeed, some scholars frame spontaneous reforestation as an important opportunity for endangered species (Cochet & Kremer-cochet, 2020), while others remain critical of what they call "passive rewilding" and instead advocate for the environmental benefits provided by pastoralism (Krauß & Olwig, 2018). Others still argue that these pastoral landscapes should be preserved as eco-cultural objects (Agnoletti, 2014). Additionally, some scholars caution against converting areas where extensive livestock farming is practiced into conservation or climate compensation investments as it could mean favoring intensive livestock farming systems elsewhere (Scoones, 2022). It could also lead to the dispossession of small farmers and the exploitation of rural areas by urban interests (García-Dory et al., 2021; Wallace, 2020).

We might reasonably expect that the efforts to tackle climate change and the associated target of carbon neutrality would affect the discourses and representations related to mountain livestock farming and spontaneous reforestation. There is however a gap in the literature in terms of how climate change is affecting (or not) these representations, and how it is mobilized (or not) in the discourses of local land users and inhabitants of mountainous areas. Understanding these local discourses, the associated justice claims and the power dynamics that underpin them is essential in working towards just rural climate transformations. To analyze these discourses, we will draw an environmental justice conceptual framework, that we present in the following section.

3 Conceptual framework: an environmental justice perspective

Environmental changes and policies have unequal effects on diverse groups of people. Environmental justice scholars call to address not only the unequal distribution of the costs and benefits of environmental changes and policies, but also the underlying drivers and power structures that generate it (A. Martin et al., 2020). Environmental justice scholarship underlines three dimensions of justice (Schlosberg, 2004): distribution, procedure, and recognition. Distributional justice focuses on how environmental harms and benefits are unevenly distributed depending on other social inequalities such as class, race and/or gender. The recognition dimension highlights that relationships and values associated with the environment are culturally defined, and that conservation policies based on hegemonic worldviews can fail to recognize the views and experiences of certain populations or social groups (Coolsaet, 2020). Procedural justice is defined as the possibility to participate in and influence decision-making processes (Suiseeya, 2020). Putting into question power relations is essential to procedural justice since representation and participation do not always lead to justice: a technocratic participation where pre-existing power relations are taken as given can on the contrary exacerbate environmental injustice (Barnaud & Van Paassen, 2013; Suiseeya, 2020).

More recently, the notion of unequal distribution of environmental efforts has been developed in French sociology and used to analyze agro-environmental subsidies (Deldrève & Candau, 2014). Scholars in this

field have shown that although the subsidies may seem to make the unequal distribution of these efforts more just, they, in fact, further socio-economic inequality by mostly benefitting the wealthiest farmers (because these subsidies are linked to the amount of land one possesses) and don't take into account the environmental benefits associated with preserving and multiplying smaller farms. Some economists even go so far as to warn that the exacerbation of inequalities as a result of environmental public policies can be instrumentalized by political opponents of environmental policies (Laurent, 2017).

Finally, many environmental justice scholars have pointed out the need to consider justice claims as plural (Schlosberg, 2004) and called to expand and diversify the meaning of environmental justice (Coolsaet & Deldrève, 2023).

In this article, we draw on the empirical environmental justice framework developed by Sikor et al. (2014), which recognizes that people on the ground hold a plurality of justice claims, within a plurality of definitions of justice. Following this framework, for each justice claim related to mountain farming and climate change, we ask the following questions: (i) who is the community of justice in this justice claim, i.e. justice for whom? (minorities, non-humans, local populations, future generations...); (ii) which dimensions of justice (distribution, recognition, procedure) are advanced? This framework also proposes to analyze the plurality of instruments and principles of justice underlying the observed justice claims, but those dimensions were not deemed relevant in our case because few climate policies have been implemented on the ground so far; we are thus at early stages of the justice claims and issues related to it.

4 Methodology: semi-structured interviews and participant observation

This article offers a case study of a community located in the Natural Park of the Ariège Pyrenees, the Arac Valley, named after the Arac river that runs through it. Pastoral livestock farming is the main agricultural activity (mainly cattle rearing for meat, and a few farms rearing milk cows, as well as sheep or goats for milk). There are also a smaller number of vegetable and fruit farms, mainly owned by newcomers. The landscape is thus composed of hay meadows (mainly on the flat land at the bottom of the valley), forests (especially in the slopy intermediary stages), a few vegetable plots with greenhouses (in the bottom or intermediary stages), and the summer pastures at the top of the hills, grazed by the flocks during the summer. Like many other mountain villages, the six main villages of the Arac valley have seen a decline in their population over the past century (for example in the village of Massat, the population reached over 9000 people in 1830, while today there are 734 inhabitants (Insee, 2025). However, since the 1970s, the Arac Valley is particularly known for hosting multiple waves of newcomers in search of alternative lifestyles, better connection to nature and food sovereignty, which partially compensate for rural exodus.

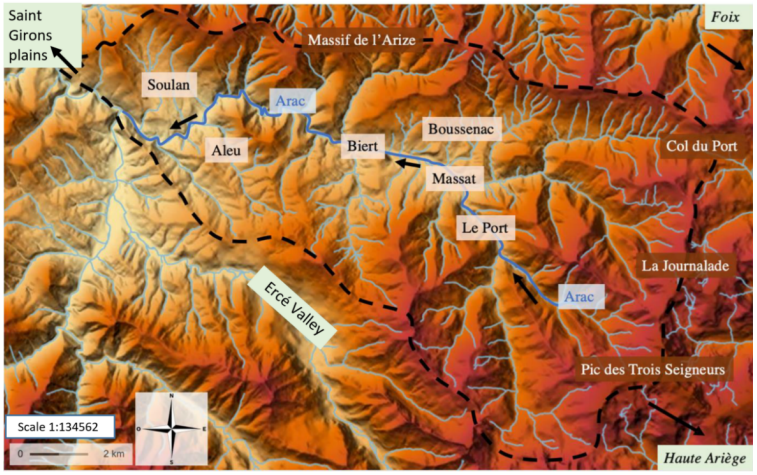

Figure 1: Study Site: the Arac Valley. Adapted from geoportail.fr (Izard, 2021)

This research was conducted in the context of the European research project 'Just Scapes', which aims to explore just transformations of rural landscapes in the context of climate change in Europe, through mixed methodologies, including semi-directed interviews and participatory research-action methodologies. This article relies on two main forms of data collection: semi-directed interviews and participant observation of various meetings and workshops, in particular the participatory workshops conducted by the research project team. From March 2021 to June 2023, the first author of this article conducted or co-conducted with the second author 47 interviews with livestock farmers, vegetable and fruit producers, staff in agricultural and environmental institutions, members of local environmental and agricultural civil society groups, and locally elected representatives (Table 1). The first author also undertook participation observations in the workshops and meetings led by the second author from December 2023 to March 2024. These included: participatory workshops with diverse stakeholders (Table 2), meetings with the project's nonacademic partner, the Regional Natural Park of the Ariège Pyrenees, as well as meetings with key departmental and regional elected representatives to present the results of the project. The first author also participated in and took field notes during other relevant local events, such as workshops organized by the Regional Natural Park with municipal elected officials concerning agricultural land, and social events (such as the transhumance).

Table 1: Detail of the 47 interviews conducted in the project

Main activity	**Number of interviewees**
Livestock farmers	12
Vegetable and fruit farmers	6
Locally elected representatives	8
Regional/Departmental elected representatives	2
Decentralized State Services	3
Agricultural institutions	5
Forest institutions	4
Civil society organizations	7

Table 2: Description of the 37 participants in the Just Scapes workshops (some with multiple 'hats', and some overlap with interviewees)

Livestock farmers and shepherds	12 (including 4 who were not individually interviewed)
Environmental, agricultural and forest institutions	7 (including 5 who were not individually interviewed
Locally elected representatives	5 (all individually interviewed)
Vegetable farmers	4 (including 1 who was not individually interviewed)
Civil society institution	6 (including 4 who were not individually interviewed)
Simple inhabitants	5 (who were not individually interviewed)

The interviews were semi-structured and the interviewees were selected using snowball sampling. The interviews lasted on average one to two hours. They typically started with questions regarding the person's life story: where they grew up, and what they did before their current occupation. We then asked questions regarding their current main activity: description of the farm, or of the main missions in their work. The interview continued with questions regarding the perceived main issues relating to their work and the valley in general, as well as perceived changes, including climate change effects, mitigation or adaptation actions, and the way it impacted their activities and the landscapes. Finally, we asked what would be the ideal scenario, according to them, for the evolution of the valley, especially regarding agricultural practices and landscapes, as well as on the contrary, what they considered to be the worst scenario. Throughout the interview, we asked follow-up questions to uncover justice claims. For instance, we asked who benefited or suffered from the perceived or desired changes and who was—or should have been—involved in the decision-making process. The workshops and the interviews were entirely transcribed and analyzed thematically through Nvivo, a qualitative analysis software. This analysis was partially inductive, identifying emerging

themes, and partially deductive, identifying dimensions and communities of justice where notions of justice or injustice were explicitly, or – most often – implicitly referred to.

These discourses can be considered as ideal types, as defined by the sociologist Weber (1978). Although they do not communicate the full nuances of the discourses observed in the field, these ideal types help us gain an overall view of the key discourses and positions at play. It is also noteworthy that many individuals embrace more than one discourse, depending on the circumstances (e.g., in individual interviews or at collective events), or sometimes alternate between discourses even within the very same interview.

5 Findings: three main justice discourses regarding the desired evolution of pastoralism in the context of climate change

In this section we present the three main types of discourses we observed regarding the evolution of pastoralism in the context of climate change. For each of them, we then highlight and discuss the major related justice claims, distinguishing between the three dimensions of justice (procedural, distributive, and recognition justice), and identifying the community of justice (just for whom?).

5.1 Discourse 1: reaffirming the environmental functions of pastoralism in the context of climate change

For many interviewees, the context of climate change exacerbates the need to defend and put forward the specificities of pastoralism as an environmentally virtuous type of agriculture. When asked whether and how climate mitigation policies and injunctions could impact the future of pastoralism, many of them argue that the environmental functions of livestock farming include climate functions, for both climate mitigation and adaptation. On the mitigation side, several people point to the absorption of carbon in the soil of permanent meadows and grasslands, which are typical of pastoral livestock farming. On the adaptation side, the importance of open landscapes for fire control was mentioned several times.

Indeed, despite the fact that the region remains relatively preserved from the effects of climate change so far, fears of coming to lack water and the observation of the decrease of water in local springs each year were often expressed. In this context, people working in regional and departmental institutions that we interviewed tended to put forward the fact that maintaining open landscapes through livestock farming is important for controlling wildfires, which risks getting more challenging with the increase in dryness caused by climate change. These discourses tend to set aside the productive functions of livestock farming, considering the environmental ones as the most important:

> *For me maintaining open landscapes, in regard to forest fires, is essential. Livestock farming allows to do this without using agricultural chemical inputs. To me this makes sense for the future, livestock farmers as landscape opener civil servants.*
>
> — a forest institution stakeholder

These environmental characteristics were used to distinguish pastoral livestock farming from other, more intensive, forms of livestock farming. The people we interviewed indeed often felt that if one type of livestock farming should be diminished to mitigate climate change, it should be intensive livestock farming rather than pastoralism:

> *We often hear that livestock farming is the first source of pollution, but it's industrial livestock farming that is a catastrophe. Grass-fed livestock farming makes the most of resources that would otherwise be unused.*
>
> — a livestock farmer's partner

This type of discourse was upheld by many regional and departmental institutions and locally elected representatives, by most pastoral livestock farmers, but also by some vegetable farmers.

Among the three dimensions of justice, the **lack of recognition** is the most prominent one in the justice claims supporting this first discourse. Indeed, despite the fact that pastoralism is generally supported by

institutions and policies, many livestock farmers expressed feelings of a lack of recognition, particularly from tourists, secondary residents and newcomers.

> *What people do these days is that they come into our buildings, take pictures, edit them, and they see 'animal abusers', or 'polluters'. (. . .) The role that we have of maintaining open landscapes, people often don't see it.*
>
> — a livestock farmer

For one livestock farmer, this role of maintaining open landscapes was even put forward as the main function of their activity:

> *I am aware that I am working more for the landscape. I'm not trying to fight against the importation of lambs from New Zealand for example. I know what I can do: just maintain the landscape a little open.*
>
> — a livestock farmer

However, despite the institutional support and the agro-environmental policies that allow pastoralism to survive economically, they also experience a lack of institutional recognition, because this economic support fails to take into account some of the key values and practices that are central in pastoralists' identities. We found that issues of climate change bring back, in many discourses, the aspect of the identity of pastoralists as food producers to the fore. Several interviewees thus claim that pastoralism must be defended in the context of climate change for its productive function too, arguing that pastoralism is a less environmentally harmful way of producing meat than intensive livestock farming.

> *I think that pastoralism is the best way of producing meat. (. . .) The animals are outside a least five months in the year. My vision of the region is to inhabit it fully: if you get rid of pastoralism to preserve forests, you are sacralizing one area so that you can have industrial livestock farming elsewhere, which would have disastrous effects on the environment.*
>
> — a livestock farmer

Livestock farmers thus try to reconcile their assigned role as stewards of the environment (by being maintainers of open landscapes and related biodiversity), as well as the more straightforwardly productive aspect of their profession.

These feelings of lack of recognition of the specificities of local values and practices regarding livestock farming shape fears and distrust towards potential future climate policies:

> *If subsidies start being linked to compensation measures, the presence of a large predator and wild spaces that we have will probably be worth more than preserving the pastoral practices we have. We fear becoming a sanctuarized zoo in order to compensate CO2 emissions from other places*
>
> — a livestock farmer's partner

Beside the lack of recognition, there were also some **distributional justice** claims associated with this discourse reaffirming the environmental functions of pastoralism in the context of climate change. Livestock farmers are indeed a heterogeneous group who benefit unequally from institutional support and subsidies. The current subsidy system favors notably the large suckler cattle farms exporting young calves through long distribution channels. Within the pastoralists we interviewed for whom livestock farming is the only source of income, some receive up to four times more subsidies than others. Some of the livestock farmers we interviewed also highlighted unequal access to land. A newcomer in search of land reported struggling:

> *[W]e have tremendous difficulties having access to the land. The problem is that the European subsidies favor farms according to the surface, so there is a struggle between farmers to access as much land as possible. This makes it difficult to find enough lands to start our farm.*
>
> — an aspiring livestock farmer

Because institutions tend to support those who are already in place, it can be difficult for newcomers to have access to land, especially if their project does not fit the model encouraged by the subsidy system. This is particularly difficult for those who wish to set up a small diversified farm and sell their products locally, through short distribution channels, who thus fall foul of the current CAP targets for subsidies.

The distributional justice issues are thus strongly linked to **procedural justice** issues. However, the issues and claims of procedural justice vary greatly depending on the decision-making level that is examined. By encouraging large size flocks, European CAP subsidies indirectly support long distribution channels. We have also seen that the defense of pastoralism as environmentally virtuous is upheld by most regional and departmental institutions, as well as local land and agricultural institutions. However, things can differ at the municipal level. In some of the villages with the highest proportions of newcomers, the elected mayors criticize publicly some aspects of modern pastoralism, such as the integration in long distribution channels or the concentration of land used by a small number of livestock farmers. In these municipalities, some of the organizations that are usually managed by collective groups of pastoral livestock farmers (*groupement pastoraux*), were managed by locally elected representatives instead, notably the ones that organize the collective grazing of the mountain pastures (*the estives*). This led some livestock farmers in these municipalities to feel marginalized and excluded from decision-making arenas, especially regarding the management of land that directly concerned them, such as mountain pastures.

The main **community of justice** we can identify in this first type of discourse is pastoral livestock farmers. However, pastoral livestock farmers are a heterogeneous group. Their practices vary significantly. While many have integrated the long circuit system, raising their calves and selling them alive to be fattened in intensive workshops in Italy or Spain, others chose to sell their meat locally, either by buying grains to fatten them on their farms or by experimenting with different breeds that can be fattened mostly or solely on grass and hay. For many of the people we interviewed, livestock farming was the sole source of income, while others engaged in pluriactivity, having another part-time job to supplement their income. The sizes of the herds also varied importantly, from around 30 to up to 80 cows, and 100 to 250 sheep. All the livestock farmers we interviewed raised livestock for meat, but there were also a small number of milk producers in the valley. In terms of access to land, although many of the livestock farmers we interviewed had inherited their lands from their families, there were a few livestock farmers who were newcomers and had managed to acquire enough land to start their activity, or who were in the process of looking for land. As we have seen in the three dimensions of justice we analyzed, these different types of livestock farmers can have different justice claims – e.g. newcomers versus long-established farmers regarding access to land. However, livestock farmers as a whole can be seen as a community of justice in the discursive claims to recognize and reaffirm the environmental functions of pastoralism in the context of climate change.

5.2 Discourse 2: in the face of climate change, diversifying agriculture and putting into question the specialization of mountainous areas for livestock farming

The second type of discourse we observed in our case study regarding the evolution of pastoralism in the context of climate change is well illustrated by the short dialogue that follows.

A local elected representative: *Today there is a trend to eat less meat. All these hectares, that's a living for only one family of livestock farmers, whereas it could support many more families in vegetable farming. There should be a threshold, no more than a certain number of hectares per family. There's a desire for less meat and more food autonomy. We need a different kind of farming, we need more people to be able to settle down with their farms, we need to intervene on the automatic land capture by the elders.*

Another local elected representative: *When you say this, it seems that pastoralism is over and the future will be vegetable farming. I do not share this vision of our territory. We need livestock farming here, there is a tradition of quality that needs to be promoted.*

This short dialogue took place during an event organized by the regional park to present to locally elected representatives the legal tools available to gain better control of the land, thus highlighting the question of the desired future of agriculture in the valley. We see here the confrontation of different visions, and the place

of pastoralism being questioned. Indeed, while the main questions of this article revolve around climate change, when talking about the desirable future of agriculture many people we interviewed put forward the issue of food autonomy and sovereignty, and the desire to diversify agriculture locally to grow in food sovereignty. Some of the interviewees did not necessarily link this issue explicitly to climate change, and linked it instead to the COVID pandemic, which created feelings of insecurity and of a lack of control over food systems. However, many others did explicitly link food sovereignty to climate change. They argued that the effects of climate change are uncertain, and that a diversification of agriculture could therefore ensure greater resiliency, since it improves the chances of something surviving the changing climate conditions. Shortening the market chains is also put forward as a way to reduce carbon emissions. As a vegetable farmer summarized:

> *With climate change, we have no idea what is going to happen. We have to diversify as much as we can, to see what will hold up. Everything that involves import and export, because of climate change, is something we are going to have to diminish.*
>
> — a vegetable farmer

As we can see in the short dialogue exposed at the beginning of this section, stakeholders in favor of maintaining the specialization of mountainous agriculture into extensive livestock farming invoke tradition as an argument, putting forward pastoralism as a traditional form of agriculture, adapted to mountain conditions. However, those advocating for a diversification of agriculture often also invoke tradition but take a different reference point in time, and refer to pre modernized agriculture, before the 1950s, which was oriented towards subsistence farming with the cultivation of different crops (potatoes, vegetables, fruits, etc.) and smaller herds of livestock:

> *In terms of landscapes, we should allow what happened before, it wasn't only livestock farming, they had one or two cows per family, they worked the soil, they were self-sufficient. It's this rurality that [we] defend, food sovereignty.*
>
> — a locally elected representative

This type of subsistence farming was very labor-intensive, and did not rely on mechanization, making every part of the mountain a potential farming area, as opposed to contemporary forms of mechanized farming where intermediate zones have been largely abandoned to spontaneous reforestation.

In terms of justice dimensions, the main dimension of justice that is put forward in this discourse is **distributional justice**, but as we will see, it is closely linked to the two other dimensions of justice.

People advocating for a local diversification of agriculture put forward the lack of access to land faced by diversification farmers [1] such as market gardeners or fruit growers. Diversification, they argue, would allow a more just distribution of land, allowing for more people to live from agriculture. Indeed, the locally elected representatives we met all told us that they faced many requests for help by newcomers who were looking for land for agricultural projects, but could not find any available land. This was perceived as paradoxical since at the same time the number of farmers, both nationally and locally, has drastically diminished over the past few decades: *"Today, farmers are an endangered species"*, said, half-jokingly, a locally elected representative who often advocates for facilitating the installation of new agricultural producers.

Diversification farmers did not necessarily claim that they should receive an equal distribution of land since pastoral livestock farming requires more land than, for example, vegetable farming. However, they still felt that the current land distribution was unjust and that redistributing some of the land for other types of farming would benefit a greater number of people.

> *On average, a livestock farmer here has 30 hectares. On 30 hectares we could have 10 or 15 vegetable farmers, who are often young, might have children, fill up the local schools...*
>
> — a vegetable farmer

[1] We define "diversification farmers" as all farmers who aspire to a diversification of agriculture, either at the scale of their farm, engaging in different productions, or at the scale of the valley, engaging in a farming activity other than livestock farming.

This concerns mostly the lands at the bottom of the valley. Indeed, the top of the mountain pastures are too high in altitude to be interesting for vegetable and fruit farming, while the intermediary zones are too steep and not always well exposed. Currently, the lands at the bottom of the valley are almost all used as meadows to grow hay for livestock farming.

The distribution of land is closely linked to the distribution of subsidies. An important part of agricultural subsidies are linked to the size of surfaces, driving a tendency for farmers to get bigger in order to be economically viable, increasing competition over land, and diminishing the overall number of farms.

> *If it continues like this, there will only be one or two livestock farmers left who will own all the lands. Just like we did it back in the time, we acquired the lands of around 20 people in order to have the farm we have today. It seems like with the subsidy system we always need more...*
>
> — a livestock farmer

In addition, since the CAP supports livestock farming for its environmental functions (i.e. maintaining open landscapes), vegetable farming benefits from small amounts of subsidies compared to pastoral livestock farming - up to 100 000 Euros per year for a livestock farmer in our case study, against 4000 Euros per year maximum for a vegetable farmer) [2]. *"We'd have to invent carrots with horns to have subsidies"* a vegetable farmer told us jokingly. Within the current system of subsidies, the economic performances of diversification farmers are thus much lower than livestock farmers, which makes it difficult for them to access land not only because they don't have the financial means to buy or rent land, but also because the institutions prefer supporting land access to economically viable farms. This creates a vicious circle involving the three dimensions of justice, as we will see in the next sections.

This lack of distributional justice was often linked to feelings of lack of **procedural justice** in the discourses of the people we interviewed. Indeed, many of the people we interviewed felt that local land and agricultural institutions favored consolidating already in place livestock farmers. While the official guidelines of land institutions are to favor people who want to settle as farmers, agents of these institutions reported that this guideline is rarely respected.

> *We do try to prioritize installation, but it's always easy to choose a farm consolidation over a new farm project, and to say that if it's a new farm project, we're not sure it's going to succeed, so we'd rather consolidate a farm than establish one that we're not sure is going to succeed. That's always the argument as to why we don't respect the regional plan to favor people who want to settle as farmers...*
>
> — an agent working in a land institution

The people we interviewed strongly linked this lack of procedural justice to a lack of **recognition** of newcomers as potential serious and successful farmers. Indeed, in addition to putting forward the technical difficulties of vegetable farming in mountainous areas, the local institutions that we interviewed often talked about a perceived lack of seriousness of people with this type of agricultural project. These people were pejoratively referred to as *"dreamers"*, outsiders who ignore the realities of the difficulties of an agricultural life, and end up abandoning their projects after a year or two, blocking the use of agriculturally interesting lands.

Local agricultural and land institutions also argue that their vocation is to facilitate professional agricultural settlement, whereas many people who are seeking land are in search of augmenting their personal food autonomy by cultivating fruits and vegetables without necessarily having a business plan that includes selling produce to the wider market. They pejoratively call these people *"gardeners"*, opposing them with professional food producers, who deliver produce to market. The people who upheld the diversification discourse felt that while some people indeed ended up abandoning their projects or didn't always have realistic business plans, this lack of recognition of diversification farmers as potential successful farmers led to a lack of institutional support, which could also contribute to the abandonment of the smaller scale agricultural projects aiming at diversification and therefore end up acting as a kind of self-fulfilling prophecy.

Finally, diversification farmers felt that the value of small scale diversified farming was not institutionally recognized. The people we interviewed put forward many perceived benefits of having more numerous and

[2] https://www.telepac.agriculture.gouv.fr/telepac/tbp/feader/afficher.action [Retrieved 12/01/2025]

more diversified types of farms locally: providing local populations with local food, providing more jobs in the area, the environmental benefits of other types of productions compared to meat production (lower carbon footprint), fewer importations, and increased food security.

On the issue of agricultural diversification, the three dimensions of justice are particularly interlinked. Indeed, many of the diversification farmers we interviewed express a feeling of lack of distributional justice regarding the unequal access to land and subsidies, linked to a lack of recognition of the seriousness, the techno-economic viability, and the social and environmental value of small scale subsistence farming, which - in turn - manifests itself in procedural injustices, with local institutions favoring the consolidation of livestock farms at the expense of supporting the efforts at settling diversification farms.

The main **community of justice** that we could identify in this discourse is composed of diversification farmers and newcomers with both professional and nonprofessional agricultural projects. Here too, the term 'diversification farmers' covers a wide variety of profiles and practices. Some of them aspired to diversification at the scale of their farm, combining for example both livestock farming, vegetable farming and/or wood cutting and selling. Others aspired to a diversification of agriculture at the scale of the valley, and therefore engaged in vegetable farming for example to participate in moving away from specialization in livestock farming in the area.

It is noteworthy that most of the newcomers we interviewed had been through at least some higher education and came with some economic capital, either from inheritances or from previous higher-paying jobs in urban settings. This economic capital does not always grant them an easy access to agricultural land, since, as we have seen earlier, established farms are usually favored by institutions when they have to arbitrate on land attribution. But this has allowed many newcomers to buy houses at high prices, making many people locally feel like they are responsible for the rising cost of real estate and land. This illustrates the complex nature of how justice claims and issues play out locally.

5.3 Discourse 3: the decline of mountain agriculture and spontaneous reforestation as beneficial to climate change mitigation

In this discourse, stakeholders tend to put forward environmentally positive aspects of spontaneous reforestation, as well as the negative impacts of extensive livestock farming, in terms of pollution and climate change. In addition to climate mitigation, they also advance the idea that reducing livestock farming will be a necessary evolution of mountain agriculture for climate change adaptation.

This discourse was the only one where stakeholders talked about spontaneous reforestation positively, as opposed to other discourses where it was often described as an invasion of vegetation against which one had to constantly fight. Indeed, some stakeholders described the forest in such terms:

> *The most interesting forests today are the ones that have grown thanks to the decline of agriculture, there is diversity in them, these are natural forests, the only natural forests.*
>
> — locally elected representative

These stakeholders felt that maintaining extensive livestock farming in the proportions it exists in today was not essential and put forward forests as carbon sinks to mitigate climate change:

> *Unless we were not able to produce the meat necessary to our survival, the mountain should regain its essence, its nature as an oxygen reservoir.*
>
> — locally elected representative

Stakeholders in favor of diminishing livestock farming also put forward the idea that they felt the traditional livestock farming people yearn for has already stopped existing, forced to evolve into large and specialized farms by neoliberal policies.

> *Here? It's the industry of meat. The shepherd with his beret and his stick, all that is over. Now shepherds are regrouped into pastoral land associations, they sometimes have six hundred sheep, with dogs, it's not the same logic at all. They fill up trucks with calves that leave in the fall to go be fattened abroad...*
>
> — a locally elected representative

They consider that agricultural land use should be reduced, for example only at the bottom of the valleys around the villages, and that the image of the forest should be reframed as positive.

> *A territory full of forest biodiversity, and agriculture just around the villages. A life in the middle of the forest, that is the ideal. I wonder if at some point there will be a big program to reforest in order to create carbon sinks. Forests are going to become vital. We have to stop being afraid of the forest, it's an ancestral fear, we are going to have to reconnect with something profound.*
>
> — a locally elected representative

Among the people we interviewed, one viewed this evolution of a diminution of livestock farming and the end of the transhumant system as necessary to adapt to climate change. They argued that the changes in the climate were going to make trees die increasingly, and they would need to grow at higher altitudes, including in spaces that are today used as top of the mountain pastures (*estives*). This would mean having agriculture on a smaller scale, only at the bottom of the valley. Another person also told us that livestock farming had to be diminished to adapt to climate change, arguing that the decrease in water precipitation was increasingly causing issues in hay production, and that livestock farmers would therefore have to adapt the sizes of their herds to the evolving climate conditions.

This discourse was upheld by a small minority of the people we interviewed who were not directly involved in livestock rearing. In fact, some of them only expressed such ideas after several hours of interview and discussion, after we had assured them that we would not tell other people in the valley they had personally said this to us. Others, who felt more comfortable expressing this point of view publicly, were often labeled by livestock farmers in our conversations as people who are "anti livestock farming".

In terms of dimensions of justice, some **distributional aspects** were put forward. Issues of lack of **recognition** and **procedural justice** were more implicit: indeed, the fact that the people we interviewed rarely expressed these views publicly, and sometimes asked us not to repeat them, can be seen as a lack of opportunity to freely express this discourse in decision-making arenas because it is not locally recognized as a legitimate discourse.

One person who upheld this discourse put forward a perceived injustice in the amount of subsidies distributed for pastoralism, an activity he considered as partially a source of pollution and benefitting only a small number of people:

> *The livestock farmers here? (. . .) There are very few of them, they don't create any jobs. It's incredible, 350 000 euros of subsidies for them every year and no job creation.*
>
> — a locally elected representative

Although many of the people we interviewed did not go as far as to promote spontaneous reforestation as a desirable evolution of the landscape, some still put forward a similar feeling of contradiction between the amount of subsidies given to livestock farming which happens to be the agricultural sector that is considered to be the highest net contributor to climate change. During a discussion in one of the Just-Scapes workshops, a person for example said

> *It's not to criticize livestock farming, but we see that meat and dairy products have the highest impact in terms of carbon, yet it is also the agricultural sector receiving the most subsidies.*
>
> — a member of a local nonprofit organization

In this discourse, the **communities of justice** that are put forward are non-human species (especially forest biodiversity), as well as humanity as a whole and future generations (mountains as carbon sinks allow to mitigate climate change on a global scale).

6 Discussion and conclusion

In this study, three main discourses regarding mountain agriculture in the context of climate change were identified: i) reaffirming the environmental functions of pastoralism as including climate functions; ii) advocating for agricultural diversification; and iii) putting forward the decline of mountain agriculture as an

opportunity for reforestation. While the first two discourses were upheld publically by many people, the last discourse was never expressed in the collective workshops led in the context of the Just-Scapes research project, and was only expressed by a small minority of people during the individual interviews.

These results confirm those of a previous study in the Pyrenees that analyzed the strong consensus around the importance of maintaining pastoral livestock farming, with different patrimonial, economic and environmental justifications, and highlighted that rewilding discourses were a local taboo (Barnaud & Couix, 2020). The novelty of the study presented in this article is to analyze how climate change intersects with these representations of livestock farming. We show that climate change discourses were rarely central in people's justification of the legitimacy or non legitimacy of pastoral livestock farming, but were rather integrated as an additional argument to these discourses that already existed. Scholars studying the effects of climate change discourses on other rural issues, such as forest conservation, have found similarly that in some circumstances, climate change discourses are used to legitimize already existing discourses and interests (de Koning et al., 2014).

We see in these results that, so far, the open landscape paradigm is not directly put into question by climate change discourses, which are rather integrated to legitimize existing discourses. The second discourse, affirming the importance of local food sovereignty and agricultural diversification, however decenters the importance of the open landscape paradigm. Indeed, people who uphold this discourse tend to focus less on the effects of such an agricultural shift on the openness of the landscape, but rather on arguments revolving around food security, rural repopulation and environmental benefits of diverse agriculture. Academic work regarding mountain areas and landscapes has tended to focus on pastoralism solely (Barnaud & Couix, 2020; Eychenne, 2018; Granjou & Mauz, 2009). Scholars have only recently started to look into the discourses and representations around agricultural diversification in mountain areas (Pachoud et al., 2024). This paper addresses this gap by analyzing how diversification discourses are emerging in local places, mostly among civil society actors, farmers and a few town hall elected people. Such issues and discourses could be further investigated.

This article also addresses several gaps identified within environmental justice literature. First, environmental justice scholars emphasize the need to go beyond the dominant focus on rural inequality compared to urban spaces, and to focus also on intra-rural inequalities (Brown et al., 2024). Adopting the empirical environmental justice framework of Sikor et al. (2014) to examine more closely the diversity of discourses and justice claims among local land users and inhabitants allowed us to draw out the complexity of issues that impact rural populations. Our results particularly show how various environmental injustices are experienced by different communities of justice.

Second, our article echoes environmental justice scholars' call to go beyond distributional justice to integrate recognition of local values, practices and knowledges (A. Martin et al., 2016). Among our findings, the strong feeling of lack of recognition felt by pastoral livestock farmers despite the strong institutional and financial support they receive, comforts this idea. This echoes the work of scholars who showed that the public policies supporting pastoralism for its environmental functions (i.e. maintaining open landscapes) relegated to the background the identity of livestock farmers as food producers (Eychenne, 2018). While our interviews and other scholars have shown since then an appropriation of this role of "landscape gardeners" by some livestock farmers (Barnaud & Couix, 2020), our findings show that the context of climate change is used to put the identity of pastoralists as food producers forward.

Third, by highlighting the importance of justice claims related to inequalities in land access and distribution, this article addresses the calls from scholars who argue that the literature has mostly focused on land grabbing in the global South, while land concentration also occurs in the Global North and should be further explored academically (Van Der Ploeg et al., 2015). Although land issues vary widely in Europe given the national differences in historical and political context around land ownership, it has been shown that overall in Europe subsidy regimes tend to favor larger landowners (institutionally and financially) at the expense of those pursuing different kinds of land use (such as small scale diversified farming, as we have shown in this case study) (Brown et al., 2024). Land inequality is thus considered as a key component of rural environmental injustice in Europe, that needs to be further documented.

Finally, environmental justice scholars call to center rural residents' voices on environmental issues (Masterman-Smith et al., 2016). This article has sought to do so by empirically analyzing discourses of environmental justice concerning the evolution of pastoral livestock farming in mountainous areas. It showed that beyond the idea of rurality as a homogenous whole in opposition to elitist urban environmentalists,

which we can find put forward in public discourses, there exists a social complexity within rural populations with a diversity of ways in which environmental injustices play out locally. All in all, we believe that examining the complexities of local justice claims is essential to work to support efforts to build a pathway towards just rural transformations in the face of climate change. This article is an original contribution to this wider effort, that addresses the critical question of the future of mountainous pastoral livestock farming in the context of climate change.

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