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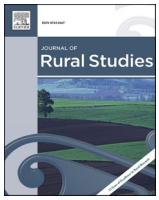

# Conceptualising rural environmental justice in Europe in an age of climate-influenced landscape transformations

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## 1. Just transformations of rural spaces in a net-zero policy landscape

The European Union (EU) aims to be the world's first climate neutral continent. Through its European Green Deal, the EU has committed to reach net-zero emissions by 2050 (European Council, 2019). But climate policy measures are land-intensive and scenarios for reaching net-zero emissions hence are reliant on large-scale appropriation of land for mitigation (Dooley et al., 2018; Anderson and Peters, 2016). In recent years, an ambitious policy agenda has developed, ranging from 'nature-based solutions' to carbon offsets and to the rollout of renewable energy infrastructures. We would expect to see an increase in the number and scale of programmes of above- and below-ground carbon sequestration (e.g. afforestation, peatland restoration) in rural areas. Alongside this, there are international policy goals to address global biodiversity loss and to promote landscape restoration, with the number of area-based conservation initiatives expected to rapidly accelerate, notably driven by the ambition to protect 30% of global land and sea by 2030 (the so-called '30 × 30' target) set by the UN's Convention on Biological Diversity's Kunming-Montreal Global Biodiversity Framework (Gurney et al., 2023). Moreover, the Nature Restoration Law recently adopted by the EU has set binding targets to restore degraded ecosystems, covering "at least 20% of the EU's land and sea areas by 2030, and ultimately all ecosystems in need of restoration by 2050" (European Commission, 2024).

Based on these drivers, rural landscapes are set to be profoundly repurposed (Newell, 2022) and thus rural populations may disproportionately bear the burdens of climate action and environmental policies (e.g. Borras Jr and Franco, 2018). Without close attention, extensive land-based mitigation strategies are likely to produce trade-offs with other land-uses, notably reducing space for agricultural production (Dooley et al., 2018). Given their higher dependence on natural resources, rural areas are particularly exposed to both the impacts of climate change and of climate mitigation policy responses (Austin et al.,

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2020; Borras Jr. et al., 2022; Mittenzwei et al., 2023). There is a significant risk of injustices occurring in rural places in response to these sweeping changes where the impacts of reconfiguring rural landscapes and economies will be unevenly distributed and contested, affecting already marginalised social groups whose voices and values are excluded in the process (Bennett et al., 2019; Larson et al., 2021). Notably, the expansion of renewable energies, a key driver of rural landscape transformation in the context of climate action, has been linked to land-grabbing, displacement of rural populations, and land-based conflicts (e.g. Stock, 2023).

It is therefore vital for policy-makers and implementers to better understand the local justice claims and contestations emerging from responses to the climate crisis, which we suggest will pose significant barriers to climate change and biodiversity targets being met (Martin et al., 2020). In 2024, farmer protests have taken place across Europe -forming part of a so-called 'greenlash'- in opposition to a range of environmental and climate regulations, disrupting policies relating to, for instance, restricted pesticide usage, biodiversity protection on farmland and targets for emissions reductions in the agricultural sector (Chapron, 2024; Mamonova, 2024). The protests cannot be understood without reference to wider farmers' marginalisation and social malaise borne out of the modernisation of European agriculture since the 1950s, marked by high-input, large-scale industrial practices and significant economic and spatial disparities (Calvário, 2023; Van der Ploeg, 2020; Mincyte, 2011).

In light of concerns about creating winners and losers, and about creating resistance to environmental action, there has been a trend in global policy and scholarship towards anchoring responses to environmental problems in commitments to social justice, for instance the commitment of the UN's Sustainable Development Goals to ensure that 'no one is left behind'. This is linked to calls for a 'just transition' to sustainability based on a managed, inclusive and equitable shift towards a green economy (Morena et al., 2020; Newell and Mulvaney, 2013). Yet, despite the central role of rural land-use change in climate policy agendas, just transition policies and scholarship have tended to focus on urban areas and on the energy sector (Bennett et al., 2019; Healy and Barry 2017). In more recent years, just transition literature has expanded to rural areas, with continued emphasis on transitions away from coal extraction (e.g. Cha, 2020; Evans and Phelan, 2016) but also transitions towards more sustainable forms of 'climate-smart' agriculture (e.g. Murphy et al., 2022; Puupponen et al., 2022), forest protection (Lo, 2021), renewable energy siting (e.g. Cambou, 2020) and ecological restoration (Osborne et al., 2021; Erbaugh et al., 2020; Anguelovski and Corbera 2023). Despite this, we lack a structured understanding of how rural places and people fit into just and sustainable futures (Borras Jr and Franco, 2018).

Scholars propose that transformations to sustainability will not be successfully achieved without increased attention to social justice (Bennett et al., 2019; Martin et al., 2020; Newell et al., 2021). While recognising social justice as a goal in its own right, we suggest that there are 'justice barriers' to successfully implementing sustainable transformations and to achieving climate change targets. Environmental policies and climate action are likely to be undermined and contested at the local level if they are widely perceived to be unfair or illegitimate or if people's needs or voices are not adequately taken on board by decision-makers (Pascual et al., 2014; Patterson et al., 2018).

While environmental policy approaches have tended to adopt a more narrowly defined understanding of equity based on the distribution of economic costs and benefits (Pickering et al., 2022), calls for just transformations to sustainability highlight the importance of a multi-dimensional conception of environmental justice (Martin et al., 2020) which incorporates distributive, procedural and recognition aspects of justice (Schlosberg 2007). Relatedly, distinctions have been made between a socio-technical approach to just transitions based on green capitalism and a more transformative approach involving systemic shifts and fundamental reorganisation of society (Newell, 2021; Stevis and Felli, 2020; Selwyn, 2021). As Borras and Franco (2018) argue, the climate-driven transition of landscapes in rural areas interacts with already existing social relations and power structures, deepening conflicts over the land. Seeking to disrupt depoliticised framings of equity, Temper et al. (2018) suggest adopting a 'conflict transformation' approach in order to make injustices visible and confront the root causes of socio-ecological conflicts.

In this paper, we explore how rural citizens and communities in Europe perceive the (in)justices arising from potential land-use transformations in the face of climate change. We suggest that multiple, sometimes competing cases for justice may underpin social conflicts and resistance around sustainable transformations (e.g. Mason and Milbourne, 2014; Jacobsen and Linnell, 2016) and may act as a barrier to a shared vision of a just and sustainable future. We adopt an empirical social science approach to the study of just transformations to sustainability by investigating the key justice claims (e.g. Sikor et al., 2014) made by diverse rural stakeholders across three case studies in Europe: Scotland, France and the Czech Republic. In doing so, we contribute to current understandings of rural environmental justice in Europe in an age of climate-influenced landscape transformations.

The paper is structured as follows. Firstly, we begin with a discussion of the conceptual framework of rural environmental justice and of key trends in emerging research on environmental justice in rural areas. Secondly, we outline the research methods utilised and the profiles of each of the three case study sites. Thirdly, we provide a detailed account of the empirical cross-case environmental justice findings, centred around four key analytical themes. Finally, we consider the implications of the findings for conceptualising rural environmental justice and realising just transformations to sustainability.

## 2. Rural environmental justice

A 2016 special issue called for rural environmental justice to be adopted as an important concept and framework (Pellow, 2016: 381), seeking to "bring the rural to the centre of EJ studies" and make explicit connections between environmental justice scholarship and rural studies. The argument is that environmental justice studies have been long conducted in rural settings, not least on waste dumping practices in African American communities (e.g. Bullard, 1990) or the ongoing colonisation of Indigenous peoples' lands across the world (e.g. Whyte, 2018), yet there is a dearth of research which critically engages with rurality as an analytical category that shapes environmental justice conflicts and struggles (Pruitt and Sobczynski, 2016; Pellow, 2016).

With the concept of rural environmental justice, rurality is understood as a site of struggle (Woods, 2012) and a critical axis of vulnerability which intersects with other dimensions of environmental injustice across lines of race, class, gender and Indigeneity (Ashwood and McTavish, 2016). Scholars have argued that understandings of environmental justice should be adapted to account for the particular nature of the grievances, conflicts and claims of (in)justice emerging from rural places (Carolan, 2020), connecting to recent conceptualisations of rural spatial justice (e.g. Mahon et al., 2023). Through engagement with empirical environmental justice literature, we have some insights into the particular justice demands that are reported in rural areas across dimensions of distribution, procedure and recognition (Schlosberg, 2007).

Research (e.g. Masterman-Smith et al., 2016; Sayan, 2017; Walker et al., 2018) has indicated the spatial dimensions of environmental (in) justice where environmental harms from resource extraction and industrial production (e.g. intensive agriculture, mining operations) are disproportionately sited in rural areas, activities which principally benefit urban centres, reflecting socio-historically embedded core-periphery dynamics. Rural places become 'sacrifice zones' for pollution, waste and land degradation, out of sight of urban populations (Peluso, 2017; Borras Jr. et al., 2022), where bucolic imaginaries of rural places obscure the multifaceted vulnerabilities of local people (Pruitt

and Sobczynski, 2016). Ashwood and MacTavish (2016) argue that rural communities, particularly low-income, minority communities, are targeted for the siting of these activities due to their smaller populations and relative lack of power. Moreover, research has documented the range of exclusionary effects and social injustices produced by 'fortress conservation' approaches in varied contexts (e.g. Van Sant et al., 2021; Martin et al., 2016; Dahlberg et al., 2010) and the environmental justice struggles and conflicts forming around natural resources in rural communities (e.g. Martinez-Alier et al., 2016; Shah et al., 2021).

Regarding procedural injustices, it is argued that those in sparsely populated rural areas often bear the greatest environmental burdens in society, with structural barriers for their voices to be heard (e.g. Otsuki, 2016). The 'tyranny of the majority' concept posits that minority rights may be encroached upon in a functioning democracy by the unequal premise of majority rule, offering a critique of the idea that institutional processes of democratic participation can adequately address systemic environmental injustices (Ashwood and MacTavish, 2016). In terms of political representation, low population densities in rural areas make it more challenging to create inclusive deliberative spaces and for elected representatives to gain traction for local claims and agendas. Rural communities are also situated at a geographical and political distance from decision-making centres (Masterman-Smith et al., 2016) and tend to have limited involvement in policy developments. However, while there is a global trend towards shrinking populations in rural places, this is not the case everywhere where urbanisation and counter-urbanisation combine to produce more complex demographic change. Ashwood and MacTavish (2016: 272) caution against primarily defining rural areas based on sparse, ever-decreasing populations, which "can play into a singularly doomsday view of rural decline" and can overlook other important ideological and material characteristics of rural places which intersect with environmental justice struggles and claims.

A feature of rural places is that inhabitants are likely to have closer attachments to the land (Ashwood and MacTavish, 2016), attachments which may be disrupted by industrial developments, extraction and environmental degradation, as well as environmental and climate policy measures, resulting in recognition-based injustices relating to ways of life, knowledge of the land and senses of place (Coolsaet, 2016). Notably, the socio-ecological and cultural practices of Indigenous peoples have been obstructed by colonisation of native land and appropriation of native resources (Bray, 2021). Environmental policies and interventions across the world tend to result in an in imposition of Western values upon marginalised rural communities. Moreover, environmental justice conflicts within rural places are interweaved with competing imaginaries and values of the landscape (Mason and Milbourne, 2014), alongside people's cultural, place-based identities (e.g. Bell and York, 2010; Banerjee and Steinberg, 2015).

A review of environmental justice research focused on rural areas (n = 176) (see Appendix A for review protocol) highlighted important research trends and gaps (see Appendix B for key review findings). Firstly, in the majority of papers (90%), rurality is present as a background setting of the study but without an explicit consideration of how rurality shapes environmental justice as an analytical category alongside more established categories of social difference such as race, class and gender. Thus, supporting the claims made by Pellow (2016), we currently lack a structured rural environmental justice framework. Secondly, only 13% of papers specifically focus on climate change as the main context of environmental justice (e.g. Sekine, 2021; Puupponen et al., 2022). While emerging just transitions research is looking at rural areas, there remains a need for closer examination of the environmental justice implications of rural land-use transformations in the face of net-zero climate agendas. Thirdly, most papers examined North American cases (e.g. Van Sant et al., 2021; Walker et al., 2018), reflecting the origins of environmental justice movements and scholarship, with only 16% of literature based on European cases (e.g. Dahlberg et al., 2010; Jacobsen and Linnell, 2016). Within this subset of European-based environmental justice studies, there was little analytical engagement with neither rurality nor the impacts of climate policies.

Through this review, we bring together the otherwise scattered environmental justice literature in rural areas, highlighting the significant scope for further expanding our understanding of the rural dimensions of environmental justice. Rural studies scholars have highlighted the importance of more explicit analytical engagement with the intersections of rurality and multi-dimensional environmental justice (e.g. Pellow, 2016; Pruitt and Sobczynski, 2016) and of raising the voices of rarely heard rural inhabitants on environmental issues (Masterman-Smith et al., 2016). Despite the central role of rural land in green transitions and climate policy measures and the important environmental justice questions these raise, we do not have a significant evidence base for environmental justice challenges in rural Europe. What does environmental (in)justice look like in rural Europe in an age of climate-influenced landscape transformations? How do justice claims emerge and manifest in rural areas responding to environmental and climate agendas? How do rurality and environmental justice intersect in this context? Thus, our research investigates experiences of environmental (in)justice across three case studies, each of which are outlined in the following section.

## 3. Material and methods: a multi-site approach

### 3.1. Case studies

Our paper draws on three case studies in rural Europe: the Affric Kintail region in Scotland, the Arac valley in the French Pyrénées, and South and East Moravia in the Czech Republic. This is a multi-site approach to investigating environmental justice in rural European areas. Each of the case study sites are distinct, yet share overlapping social and environmental challenges. Commitments have been made to reach net-zero emissions by 2045 in Scotland and by 2050 in France, while the Czech Republic government has pledged an 80% reduction of GHG emissions by 2050, compared to 1990 levels.

### 3.2. Affric Kintail, Scotland

Scotland has one of the most highly concentrated patterns of landownership in Europe (Wightman, 2013). Land inequalities in Scotland are strongly tied to the Highland clearances (1750–1850) when rural communities were forcibly removed from long-inhabited land (Toogood, 2003), and subsequent domination by large private estates based on farming sheep and since Victorian times, recreational deer and grouse hunting, fishing and other leisure pursuits (referred to as 'sporting estates') (Dolton-Thornton, 2021). This domination by sheep and then sporting estates has left Scotland with one of the lowest rates of forest cover in Europe (Burton et al., 2018).

Today, there are growing numbers of landowners with environmental aims in the Highlands, both private individuals and NGOs, engaging in landscape restoration and rewilding practices, driven by the government's net-zero climate targets and financial incentives through the rapidly growing carbon market in Scotland (Sharma et al., 2023; McIntosh, 2023). Restoration plans in Scotland centre around tree-planting, peatland restoration and stricter deer controls. At the same time, a strong land reform agenda has developed in Scotland in recent decades, notably through the legal framework of the community 'right-to-buy' model and growing numbers of community woodlands. There are also emerging policy discussions around socially responsible investment in natural capital (Scottish Land Commission, 2023), while restoration agendas are increasingly being linked to a 'repeopling' of the landscape in Scotland (Martin et al., 2021).

Our case study is in the Affric Kintail, a loosely-defined area surrounding the Affric-Kintail way and adopted by the environmental NGO Trees for Life for their 'Affric Highlands' rewilding initiative (Trees for Life, 2020). Covering around 195,000 ha of land of land, the region stretches from Loch Ness in the East to Kintail and the West coast of

Scotland. While there has been out-migration from rural Scotland since the 1950s (Martin et al., 2021), the population of the area has steadily increased in recent years, with incoming retired citizens, commuters and second homeowners. The area is dominated by large sporting estates, characterised by heathland or moorland. There are significant parcels of state-owned forestry land, mainly conifer plantations to serve the forestry sector but increasingly native, broadleaved woodlands. The area also includes some conservation areas, including a national nature reserve, smallholder farms (mainly cattle or mixed farms), and estates owned by environmental NGOs (Trees for Life, RSPB, National Trust) and private individuals (Trees for Life, 2020).

### 3.3. Arac Valley, French Pyrénées

In the mountains of the French Pyrénées, in Southwest France, extensive livestock farming has shaped over centuries open landscapes of grassland and moorland (Galop et al., 2013). Since the 1950s, however, a rural exodus and the decline of livestock farming has led to massive land abandonment and spontaneous forest regeneration in former grasslands, especially in the steep slopes (Gibon et al., 2010). From the 1970s, this reforestation process began to be negatively perceived, first as a loss of cultural landscapes, and later on as a loss of biodiversity (Le Floch et al., 2005). As a result, mountain livestock farming has been supported through government and EU subsidies to farmers, through a scheme that explicitly supported agriculture in less-favoured areas for their multiple contributions to society (Eychenne 2018). Later on, in the mid-1990s, in the context of the greening of the Common Agricultural Policy (CAP), agri-environmental measures started to support extensive grazing practices for their positive impact on grassland biodiversity (Eychenne, 2012). All in all, there has been a consensus around the idea that we should support livestock farming and fight against spontaneous reforestation in these mountains (Barnaud and Couix, 2020). However, in recent years, this dominant paradigm is being questioned by increasing numbers of ecologists (Barnaud et al., 2021). The emergent rewilding ideas highlight the positive impact of spontaneous forestation on biodiversity. In addition, the climate mitigation agenda is pointing out the negative impact of livestock farming on GHG emissions, and the positive role of reforestation for carbon storage. Although mountain livestock farmers continue to receive strong EU policy support, they feel threatened by ecological discourses. Some scholars highlight that global assessments of methane emissions do not sufficiently incorporate the specificities of extensive livestock farming, as it is practiced in the mountains, that provides greater environmental and social benefits than some intensive livestock farming practices in the lowlands (Scoones, 2023)

Our case study, the Arac valley, is located in the Natural Regional Park of the Pyrénées Ariégeoises. In this region, despite overall population decline, there have been multiple waves of newcomers since the 1970s. The early newcomers were often referred to as “hippies” who left cities in search of alternative lifestyles in the mountains. Nowadays, newcomers with agroecological projects often focus on vegetable farming or small-scale fruit farming, which require smaller land areas compared to livestock farming, but also benefit from significantly fewer subsidies. However, since most of the land is occupied by livestock farming, there are tensions around land access. The region is thus characterised by the co-existence of populations with very different lifestyles and worldviews that sometimes conflict with each other.

### 3.4. South and East Moravia, Czech Republic

The Czech case study takes place in South and East Moravia (Slovácko, Valašsko and Horňácko regions), representing some of the key agricultural areas of the Czech Republic where agriculture and agricultural production continue to play a significant socio-economic role. Moreover, especially in the case of South Moravia, climate change impacts have become increasingly visible compared to the rest of the Czech Republic (Štěpánek et al. 2019). Prior to the 1950s, land in the Czech Republic had been primarily owned by smallholders with widespread subsistence agriculture. The socialist political regime after World War II gave rise to forced collectivization, with farmers giving up their land and equipment and entering agricultural cooperatives (in Czech “jednotné zemědělské družstvo”, JZD) under the threat of sanctions (Homolac and Tomsik, 2016).

By the end of the socialist era in 1989, several aspects of rural relationships to the land emerged, key to the current state of agriculture in the Czech Republic, including a dominant landscape pattern of large monoculture fields, high-input industrial agricultural practices, deep detachment of people from the land, as well as dominance of large agricultural businesses, often established as legacy organisations by the leaderships of the former agricultural cooperatives (Kušková, 2013). As a result, local agriculture, its landscape-creating role and its potential contribution to (and tension with) rural climate change adaptation are contested by historical path dependencies as well as by the current regulatory and subsidy set-up. In this respect, rural landscapes in the Czech Republic have been substantially influenced by agricultural subsidies related to the EU Common Agricultural Policy, which have resulted in a downturn in several agricultural sectors, partly due to the uneven distribution of agricultural subsidies between the old and new EU member states, negotiated prior to the EU enlargement in 2004 (Věžník et al., 2013.).

Nowadays, both south and east regions are dominated by large monocultural fields and forests, including several protected areas. In South Moravia, there is also a strong emphasis on wine production. The regions are densely populated, consisting of several large cities and hundreds of municipalities. Research was conducted in five of the municipalities (four located in South Moravia and one in East Moravia), with the population of each village ranging between 400 and 2000 inhabitants.

### 3.5. Data collection and analysis

In-depth, semi-structured interviews (n = 118) were undertaken across the sites between 2021 and 2023, comprised of 30 interviews in Scotland, 40 in the Czech Republic and 48 in France. A range of stakeholders were interviewed including conventional land-users (e.g. livestock farmers, hunters), forest managers, environmental and conservation NGOs, local action groups and community organisations, local residents, local government members, and national policy-makers and policy bodies focused on land and environmental governance. The selection of interviewees was based on targeted contacts and snowball sampling. Through these interviews, we were able to access a diversity of perspectives on land governance and land-use change. Interviews generally lasted 1–2 h where stakeholders were asked about their views on the main landscape and land-use changes in the area that they had experienced and changes that they expected to see in the future, including those relating to climate change mitigation, and the social conflicts and challenges around these.

Following transcription, qualitative, thematic analysis of the interview data was undertaken by case study teams through an empirical environmental justice lens, with a focus on key narratives and embedded justice claims around land-use change. Through collaborative analytical work at a workshop in 2021, a common analytical framework was inductively developed for assessing the key environmental justice issues emerging across the three sites. Subsequently, four cross-case environmental justice themes were identified, as follows: 1) *Unequal access to land*; 2) *Urban-rural burden shifting*; 3) *Political disempowerment and marginalisation*; 4) *Misrecognition and misrepresentation*.

## 4. Results

### 4.1. Unequal access to land

Unequal access to land is a prominent justice claim across the three cases, understood through Ribot and Peluso's (2003) theory of access which centres our focus on the ability of local communities to derive benefits from land, thereby covering both land ownership and wider governance. Unequal land access is not only discussed as a barrier to social justice but also in relation to the potential for sustainability. In Scotland, land is concentrated in the hands of estate owners (lairds); in France, larger livestock farmers; and in the Czech Republic, large agricultural cooperatives. Other stakeholders seek to disrupt the status quo with new visions and ideas for organising the land, yet there remain profound structural barriers to addressing land-based grievances and to sustainable landscape transformations, with the findings pointing to the role of subsidy regimes in sustaining unequal access to land and in generating perverse outcomes.

In Scotland, powerful sporting estate landowners tend to contest or limit the speed of the transition from high deer densities to more sustainable land governance. However, financial incentives for tree planting and carbon sequestration are providing an opportunity both to diversify income and to strengthen green credentials, a proactive response to political debates about land reform that re-asserts claimed stewardship functions and reinforces their financial and political means to keep hold of the land. Thus, some landowners are seeking to drive- and benefit from- the green transition in Scotland: "if trees get planted, does it ultimately matter about the system of land ownership?" (landowner interviewee). This question is equally posed at the rising number of landowners focused on restorative practices- for some 'a green laird is still a laird'. However, many stakeholders, including some environmental NGOs, view significant advances in land reform to be politically unfeasible. As such, the politics of landscape restoration remains heavily focused on the government seeking compromise with large landowners and much less on ensuring equitable inclusion for other groups of local people.

Smallholder farmers in South and East Moravia also face significant institutional and financial barriers to gain access to land, primarily due to the dominance of agricultural cooperatives in the rural Czech Republic. The cooperatives with larger plots of land are supported by the state through agricultural subsidies and generally have significant control and influence over land management. This is because of the large amount of local land that they own or lease but also due to their know-how of exerting strong influence over municipal decision-making and legislation through political lobbying, allowing them to gain access to further plots of land. For decades, the agricultural cooperatives have undertaken large-scale, high-input practices, driven by market demand and incentivised by the state.

In a similar way, tensions around land access are closely connected to the CAP subsidy regime in the French case. The extensive livestock farmers in the Pyrénées receive higher CAP subsidies based on having large amounts of land and bigger flocks, and the land institutions favour their access to land on the basis that their agricultural activities are more economically viable than other kinds of farming. And yet, in a context where mountain farming is at a stark competitive disadvantage compared to lowland farming, the economic viability of these farms is dependent on CAP subsidies, as expressed by one farmer "if the CAP was to end one day, it [his farming practice] would be over". On the other side, the CAP subsidy regime provides little support for incomers pursuing other kinds of agricultural projects, including small-scale vegetable farming. There is thus a vicious cycle where access to land and subsidies reinforce each other, which is disempowering for small-scale diversified agriculture. However, while conventional livestock farmers have easier access to subsidies and to land, primarily through their heritage and institutional capital, it is noteworthy that newcomers to the area, or neo-rurals, often arrive with more economic capital.

Under existing land structures, a small number of large estate owners in the Scottish Highlands are controlling the process of ecological restoration and are capturing its financial rewards, including indirectly from rising land values. The majority of stakeholders agreed that restoration initiatives should be closely connected to community needs. However, what that looks like in practice remains unclear. There is potential for community funds to be derived from carbon financing, yet many local residents raised concerns that if community benefits from restoration initiatives are defined narrowly in financial terms, other aspects important to the community may be ignored or not adequately taken on board by restoration programs, notably including access to land, amenities and well-being.

A transition to sustainable land management in the Czech Republic remains peripheral in the landscape and encounters substantial structural constraints. The large agricultural cooperatives rarely adopt sustainableapproaches and through political lobbying often delay or block the progress of environmental initiatives and other land management processes. This includes the land consolidation process which is intended to resolve unclear land ownership as a precondition for more sustainable land management, including the creation of bio-corridors and the transition to sustainable farming under municipal ownership. While legislation has been recently introduced to protect the landscape and to promote more sustainable agriculture, these are often bypassed by the large cooperatives in practice.

State financial support for sustainable land approaches in the Czech Republic tends to be more targeted towards the operations of the large agricultural players. In theory, the state promotes landscape greening and diversity and there are funding streams to support smallholder farmers, yet in reality, the incentives and rules linked to these are unclear, fluid and challenging to meet, while associated subsidies are difficult to access. Smallholder farmers in South and East Moravia encounter barriers in implementing more sustainable forms of agriculture, partly because of difficulties in gaining access to larger pieces of land and partly because of the extra financial burdens related to, for instance, tree-planting. Planting trees on agricultural land and landscape greening result in additional costs for crop management (e.g. due to animals attracted onto the land). As the farmers do not feel confident that they would be adequately compensated for these extra costs, tree-planting on agricultural land is rarely practiced. Additionally, with the size of their arable land reduced, farmers engaging with agroforestry receive lower subsidy payments.

In South and East Moravia, a landscape characterised by vast monocultural fields, intensive agricultural practices and confusions over land ownership, conventional farming practices and smallholder farmers' relationship to the land have been disrupted, historically rooted in communist-era expropriation of people from the land. In Scotland, the legacies of the Highland clearances and persistent land inequalities result in many local people feeling disconnected from the land and affect how they perceive the motivations of environmental programs driven by external organisations. Some respondents expressed a level of mistrust of rewilding projects, fearing that these may lead to a renewed depopulation of the landscape or further reduction in land access, and call for these initiatives to explicitly address historical injustices related to the land. Environmental NGOs have adapted to emphasise that rewilding can contribute to 're-peopling', though many still question the evidence for this 'win-win' narrative.

In the French Pyrénées, there were indicated to be conflicts between the CAP subsidy regime, which supports extensive livestock farming and the maintenance of open landscapes, and the subsidies encouraging agro-forestry practices. The latter support tree-planting but do not give financial rewards to livestock farmers who foster spontaneous reforestation. Some stakeholders suggested that public funds for tree-planting implicitly encourage the removal of natural regeneration and replanting, often targeting large cooperatives which follow industrial forest management practices. There are concerns that these subsidies primarily benefit the forestry sector rather than necessarily sequestering more

carbon. Moreover, the environmental subsidy 'label bas-carbone' intends to reward farmers who shift to less carbon-intensive practices and sequester carbon on their land. However, $CO^2$ emissions are calculated before and after the start of the scheme, meaning that those operations which already emit relatively low levels of $CO^2$, including extensive livestock farmers, are excluded from the benefits of the subsidy. Thus, some livestock farmers perceive public environmental measures such as these to be unfair, untrustworthy, and as not being designed or implemented with their interests in mind.

Our cross-case findings point to the role of subsidy regimes- related to agriculture, forestry and the carbon market -in sustaining unequal access to land through provision of financial support and incentives for the larger and wealthier landowners, while there are institutional and financial barriers for those pursuing other kinds of land-uses (e.g. community forests, small-scale diversified farming). Subsidies were also found to generate perverse outcomes, in some contexts rewarding environmentally harmful operations (in the Czech case) or inadequately rewarding low polluters (in the French and Czech cases). In the views of some respondents, an approach to transitions that reinforces prevailing forms of power over land, constitutes a failure of restorative justice, a failure to address historical injustices that remain barriers to just transformations of the landscape. However, local feelings about power dynamics are not straightforward. In the French and Scottish cases in particular, those who enjoy power from their landownership are worried that this is being eroded by the new environmental agendas and by the growing voice of neo-rurals.

### 4.2. Urban-rural burden shifting

Concerns about distributive injustices are prominent in our cases and reveal rural-urban dynamics. Despite the ability to benefit from land-based subsidies, some conventional land-users including livestock farmers (France) and deer stalking communities (Scotland) perceive that they are bearing the burdens of environmental policies that primarily benefit urban centres. They fear that their livelihoods will become increasingly restricted and that their landscape values and priorities will be displaced as rural spaces become used for recreational purposes, as 'refuges' from urban settlements, or to meet environmental policy goals. There was a sense of unfairness from some that rural areas would disproportionately take on climate action that would allow for carbon-intensive operations and lifestyles to continue in urban areas. Meanwhile, the co-benefits from environmental interventions (such as changed aesthetics and recreation potential) are primarily valued by urban dwellers and recent incomers.

In the French and Scottish cases, there are growing tensions about what is socially and ecologically desirable in the landscape, intersecting with demographic shifts involving outflow of local youth and influx of inhabitants from cities and social problems, such as loss of rural services and rising house prices. Increasing numbers of second homes are pushing house prices beyond affordability for many which is forcing locals, particularly young people, out of the area. The longstanding citizens and the neo-rurals tend to adopt divergent perspectives on land-use and attachments to the landscape. The neo-rurals, including commuters, retired citizens and second homeowners, generally adopt what many 'local' people perceive as a more urban conception of being green or sustainable and of human-nature relations, seeking to become closer to nature and tending to favour rewilding, tree-planting, local food sovereignty and destocking of grazing lands. In the Scottish Highlands, urban-based environmentalists alongside many neo-rurals, generally support a combined landscape restoration agenda of tree-planting, carbon sequestration and reduction in deer numbers, with the latter in particular conflicting with the views and values of many conventional land-users and those who own or work on sporting estates.

In the Pyrénées, land-use tensions centre on neo-rural preference for developing small-scale vegetable gardening projects and local food autonomy, conflicting with the prevailing extensive livestock farming. The livestock farmers contest neo-rural claims to legitimacy, self-sufficiency and environmental sustainability, arguing that these initiatives are not professional because they are dependent on prior wealth or financial support from family or state welfare. Some long-standing citizens expressed fears that the new vision for the region is as a "green lung" and recreational space for urbanites ("a playground"), a space primarily for 'consuming' nature whilst urbanites neither fully participate in nor understand local life. These fears over what the area might become were evoked by a locally elected person: "The mountains and the countryside are beautiful when they are maintained [by livestock farming]. If it is to become a sort of Yellowstone, we will soon see people throwing peanuts at the last livestock farmer in Ariège, a cigarette stuck between his lips and a beret screwed on his head". With the expansion of environmental policies, some livestock farmers fear an increasing restriction of their practices, exacerbated by feelings that neo-rurals and city dwellers who have secondary homes in the area hold too much weight during local elections.

In South and East Moravia, rural people carry a disproportionate burden because they inhabit a landscape that has, for decades, been managed intensively and unsustainably in a way that has made it more vulnerable to climate change impacts (e.g. through soil erosion and drying). While affecting everyone living and working in these rural areas in the long-term, these climate change impacts are disproportionately felt by the smallholder farmers who bear little responsibility for the state of the landscape and have little or no power to change the situation. Moreover, those living in remote areas are disconnected from centres of power, encountering infrastructural and social barriers in accessing legislative centres and information centres, yet the large agricultural cooperatives have the financial resources to overcome these barriers (e.g. hiring employees to deal with bureaucratic legislative processes). Social tensions around land-use in South and East Moravia relate less to dynamics of newcomers and long-established land-users and more to unequal power relations between the large cooperatives and some private smallholder farmers seeking to implement more sustainable agricultural practices.

### 4.3. Political disempowerment and marginalisation

We find concerns about political inclusion and voice as being prominent in our rural cases. Broadly, many local citizens felt that their voices had limited influence on land-use decision-making processes, owing to lack of opportunity to participate or through rather tokenistic forms of consultation that are not linked into decision-making procedures. A common theme across the cases is a lack of meaningful engagement with local citizens on environmental policies and land governance (e.g. agriculture, forests), connecting to processes driven by a range of influential actors and scales (state bodies, municipalities, environmental NGOs). Underlying these concerns is the feeling that, with the exception of those controlling large areas of land, rural communities are poorly represented in terms of political power.

In South and East Moravia, many stakeholders, particularly farmers and vineyard owners, felt that, in general, state laws and regulations on land management are formulated in a top-down manner without adequate engagement on local views or knowledge systems. There are sometimes open meetings at the municipal level, yet the input from the public only has limited influence on local-level decision-making around land management. Moreover, there is little if any opportunity for rural communities to participate in discussions at the national level, for instance related to agricultural regulations or subsidies. The land management decision-making processes carried out by governmental bodies are detached from the local realities of rural areas and the perspectives and know-how of direct land-users. Additionally, living in remote areas, many local stakeholders, particularly older people, have a limited ability to access information on laws and regulations around land governance or to contact officials in regional government offices, compounding their restricted participation in legislative processes.

In the Scottish Highlands, this lack of meaningful participation was also experienced in community consultations on rewilding initiatives which had been organised by environmental NGOs and private 'green' landowners. There was a sense that the fundamental decisions on these incoming projects had already been made before opening up the conversation with the communities. In the Ariège Pyrénées, citizens have historically experienced top-down policies related to biodiversity, most acutely felt with the reintroduction of the brown bear into the area where a lack of local consultation resulted in strong feelings of procedural injustice. More recently, the development of a climate change public policy known as PCAET ('plan climat-air-energie territorial') was indicated to have involved limited forms of local consultation, resulting in low public awareness of and engagement with the policy. Accordingly, there is the feeling among some stakeholders that the state is ignorant about local realities and knowledge bases.

Connections can be made between procedural injustices and broader issues of inequity, notably relating to urban seats of power and unequal land distribution where large private, state and NGO landowners hold disproportionate influence over the land-use decisions and actions being made. In Scotland and the Czech Republic, smallholders and non-landed residents feel disconnected from decision-making processes on land-use change, as expressed by a smallholder farmer in South Moravia: "I am the land manager, and I have a real connection to the land since I work with it every day. Yet I am the least in the whole process of formulating the incentives and managing the land legislatively. This has been done by people sitting by the table, never working with soil a day in their life." However, in the French Pyrénées, links between procedural injustices and land ownership are less clear where, for instance, local environmental NGOs hold the power to undermine or block rural development projects due to their administrative literacy and close familiarity with land management legislation.

While many stakeholders in the three cases evoke a sense of political disempowerment in meaningfully engaging on environmental policies and land-based decision-making, the findings highlighted significant seeds of empowerment in terms of civil society initiatives to establish rights and to enact local-level change. In the Scottish Highlands, growing numbers of community woodlands offer potential for bottom-up action on woodland management and an alternative to the status quo. Meanwhile, in France, initiatives have developed around local food sovereignty and small-scale, community-based farming. Thus, these kinds of actions represent local-level empowerment for those stakeholders who otherwise feel closed out of regional and state-level electoral politics.

### *4.4. Misrecognition and misrepresentation*

Our cases highlight that struggles against misrecognition are foundational to people's sense of injustice and act as a barrier to simplistic conflict resolution involving e.g. economic incentives or more superficial forms of consultation. In essence, strong feelings of injustice arise from perceptions that those introducing new normative visions for the landscape fail to value, or misrepresent, existing visions and the place-based identities that are bound to these. A common complaint, for example, is that outsiders-which includes state bodies, environmental NGOs, urban populations-simply do not recognise what a landowner has done to care for nature, or worse, misrepresents them as being destroyers of nature. This could be seen as a struggle over the narrative of sustainability- over whose version of stewardship for nature and whose version of local development are recognised and respected, and ultimately about conflicting claims to holding the moral and cultural high ground.

These concerns about recognition appear through divergent responses to key pillars of ecological restoration agendas, including tree-planting and de-stocking targets, and divergent visions of the landscape. Conventional land users perceive their practices and livelihoods to be threatened by external drivers of land use change, including climate policy. In the Scottish Highlands, a de-stocking of the landscape involves a transition to lower deer populations linked to new or adapted nature-based revenue streams (e.g. eco-tourism) which some respondents view as threatening to their livelihoods, traditions and identities. In the French Pyrénées, there are similar disputed visions of the agricultural identity of the landscape, notably relating to conflicts between conventional livestock farming and small-scale diversified forms of agriculture.

We found broad concerns across the three cases that local experiential knowledge and know-how around land management has been overlooked or misrepresented by 'external' actors and not adequately integrated into environmental policies and initiatives. The findings suggest a misrecognition of conventional land-users' stewardship and closeness to nature. Many position themselves as sustainable land managers, drawing from long-running experiential knowledge of the local landscape and ecology, caring for the land, but distinct from the environmental sustainability discourses of external actors. This often manifests itself in a defensive stance where the conventional land users are responding to perceived misconceptions about their livelihoods and priorities from the urban world.

In the Pyrénées, some conventional livestock farmers perceive that their practices are misunderstood and misrepresented as environmentally harmful by neo-rurals and by broader society. They argue that their extensive farming practices (e.g. pastoralism in the mountains) creates permanent open pastures that sequester carbon and support specific forms of biodiversity, meaning that they should be considered as more environmentally sustainable than the intensive livestock farming practised in the lowlands. Contrary to being labelled as opposing environmentalism, the conventional livestock farmers in the Pyrénées see themselves as being landscape stewards and as close to nature. While this stewardship role is used to justify CAP subsidies, some livestock farmers claimed that they are motivated not by money but by their contribution to maintaining biodiversity conservation and landscape aesthetics, and by livestock farming forming a core part of the identity of the valley. While the majority of stakeholders are in favour of open pasture landscapes, some neo-rural stakeholders contest the livestock farmers' narrative around stewardship, instead looking to develop local food sovereignty through small-scale, diversified agriculture with fewer livestock. Other neo-rural narratives are centred around the idea of the valley as a biodiversity hotspot and a green lung, thus supporting spontaneous forest restoration.

In a similar way, some of the Scottish Highland estates employ a rhetoric of stewardship to claim moral authority and legitimacy within the country's unequal land system. Claims to stewardship are made on the basis of superior knowledge of the local landscape, sometimes arguing that environmental NGOs lack this local knowledge leading to what they consider to be an ill-conceived blanket approach to native tree-planting and arbitrary targets for reductions in deer numbers. They posit that they have been sustainably managing the land for decades prior to the recent tree-planting drive and push back against accusations that their land management practices damage the local environment. It is important to note that the ways in which more powerful, land-owning actors construct justice claims about misrecognition is itself a source of concern for other local stakeholders. Here, powerful actors strategically deploy claims to moral legitimacy to take charge of the agenda without the same requirements for evidence that others need to support their claims, for example claims to tradition when current land systems only date back to Victorian times.

With the state's top-down approach to land governance, many smallholder farmers in South and East Moravia feel that regulations and subsidies related to land management are being developed without acknowledging their stewardship role and know-how. Some farmers and vineyard workers, particularly those from the older generation, perceive the current turn to more sustainable practices as something that they were already doing, including planting trees in their own fields and in the wider area, as the "good steward does that". The misrecognition of

smallholder farmers' identities as knowledge keepers and local land managers is wrapped up with longer histories of the Czech Republic where over the years, the connections between farmers and the land have been disrupted. During the communist era, the farmers managed the land for the state's demand rather than as private landowners, while subsequently with the domination of the rural landscape by agricultural cooperatives, the land-connected farmers had to fight or adapt to a system solely oriented on profit.

## 5. Discussion

Through the empirical environmental justice analysis, four overarching themes across the three European cases were identified: 1) *Unequal access to land*; 2) *Urban-rural burden shifting*; 3) *Political disempowerment and marginalisation*; 4) *Misrecognition and misrepresentation*. Contributing to the small, emerging base of literature on rural environmental justice (e.g. Pellow, 2016; Ashwood and MacTavish, 2016; Bray, 2021), this cross-case research explores the particular contours of environmental justice in rural areas and the ways in which rurality- as a multi-dimensional vulnerability -intersects with injustices across distributive, procedural and recognition dimensions. Through a specific focus on three European rural landscapes undergoing contested change in the face of net-zero climate policy agendas, this research highlights that the multifaceted marginalisation of rural places shapes how just transformations of the landscape are perceived and experienced by local communities.

Existing scholarship on rural environmental justice has centred on a parasitic relationship between the urban core and the rural periphery (e.g. Ashwood and MacTavish, 2016; Sayan, 2017; Chandrasekaran, 2021), while sociological studies have highlighted the rural-urban divide surrounding perceptions of climate policies (e.g. Devine-Wright et al., 2015; Mittenzwei et al., 2023). Our findings show that rural populations may disproportionately bear the burdens of climate and environmental policies set by urban-based decision-makers and have their voices and values excluded in the process, echoing other rural studies contributions (e.g. Masterman-Smith et al., 2016). However, while urban-rural conflicts around landscape transformations are present in the findings, these were unevenly perceived and experienced across our case studies, with substantially less emphasis on these dynamics in the Czech Republic context. Moreover, intra-rural social inequalities were of greater prominence in local perspectives, narratives and justice claims, supporting recent empirical findings in rural studies (Pruitt and Sobczynski, 2016; Banerjee and Steinberg, 2015). Climate-driven landscape transitions are characterised by a high degree of contention and inequalities within the rural areas we studied. With all three case studies, our findings highlight the significance of understanding justice claims in rural areas not only as they relate to the urban sphere, but as situated within internally contested spaces and shaped by power asymmetries among rural actors.

Intra-rural social divisions especially arise from unequal land access, a point of convergence for understanding aspects of burden-shifting, marginalisation and misrecognition. Across the three cases, unequal access to land- referring to not only land ownership but also who benefits from it (Ribot and Peluso, 2003)- was indicated to underlie the other three environmental justice themes: the distribution of costs and benefits arising from environmental agendas, the capacity to influence decision-making and to act in accordance with one's own ways of valuing nature. Land inequalities have historical dimensions and past injustices that shape local conceptions of what would now constitute a just transformation and, on the other hand, what would reproduce structural harms. Indeed, our findings suggest that plans for ecological and social restoration must involve a reckoning with historical injustices within specific rural contexts. As summarised by a respondent in Scotland, first sheep and then deer served to concentrate land and power with the few – "we need to ensure that carbon does not serve to bake in that model once again". Climate interventions have been linked to land dispossession and resource-grabbing in the rural world (Borras Jr. et al., 2022), yet our findings highlight how such interventions in the net-zero policy landscape- through generating new opportunities for capital accumulation- may strengthen existing large-scale owners' hold on the land and entrench local power inequalities, while there are profound structural barriers to addressing land-based grievances, notably the influence of subsidy regimes.

Thus, our cross-case findings highlight the centrality of the land question to a conceptualisation of rural environmental justice, providing a foundational, historically-situated account of social divisions and power imbalances in rural areas. We suggest that people's sense of injustice in rural areas is shaped and informed by their relatively closer connections to the land and to direct observations and experiences of land access and control in their everyday lives. Having distant actors decide to release bears in your backyard, or switch subsidies from food production to trees are relatively intense compared to everyday urban experience of land-use decisions. While land access is a key dimension of environmental injustice in rural areas across the world and has been well-studied globally (e.g. Busscher et al., 2020), it has not been foregrounded in existing discussions on rural environmental justice in Europe as a key justice concern and axis of social division.

There is the danger that rural environmental justice essentialises rural places as being in perpetual decline (Ashwood and MacTavish, 2016), yet the European cases explored in this study- particularly in France and Scotland -offer examples of more complex demographic change, with social conflicts forming between longstanding residents and more recent arrivals around divergent visions of the landscape, of sustainability and of society-nature relationships, which shaped their justice claims. Our findings do not suggest a straightforward narrative of urban 'elites' imposing an environmentalist agenda upon marginalised rural communities as part of a parasitic relationship, but rather complex, nuanced perceptions of (in)justice from a diverse set of rural stakeholders.

Some of the strongest urban-rural injustice claims were invoked by conventional land-users, at least in the French and Scottish cases, who feel that their livelihoods and heritage are threatened by urban-based environmentalists or neo-rurals and that their stewardship roles and experiential knowledge of the land have been mischaracterised or overlooked. These highlight the cultural factors which impede just transitions, as observed in other contexts (e.g. Della Bosca and Gillespie, 2018; Murphy et al., 2022). However, these claims are largely made by the dominant local landowners, bolstered by institutional and financial support from government and the EU. With the Scotland case specifically, it can be suggested that discourses of tradition and cultural heritage are being deliberately drawn upon by sporting estate landowners in response to perceived threats from ongoing land reform and to justify their continued existence in Scotland's unequal land system, as other scholars have suggested (Lorimer, 2000; McKee, 2015). Such responses from conventional land-users can be situated in the context of rural elite resistance to climate policies (Van der Ploeg, 2020). Thus, while a range of rural stakeholders expressed = justice claims in our case studies, local conflicts around sustainable transformations of rural areas must be contextualised within the historically-constituted power structures shaping patterns of (mis)recognition, and as part of a wider set of land-based struggles (Newell, 2022).

Aligning with political economy approaches to green transformations (e.g. Clapp et al., 2018; Selwyn, 2021; Newell, 2021) and recent work seeking to combine climate justice with agrarian justice (see Newell, 2022; Borras Jr. et al., 2022; Borras Jr and Franco, 2018), this paper highlights the importance of access to and control over land and natural resources, as embedded within local power structures and material histories, in realising just transformations towards sustainability and foregrounds unequal access to land as a fundamental justice barrier in these rural areas. Indeed, there are a range of sustainable transitionary paths that can be taken which can be more or less transformative on the basis of scale, scope and inclusiveness (Stevis and Felli, 2020),

with more transformative approaches (e.g. Temper et al., 2018; Newell et al., 2023; Rodríguez et al., 2024) emphasising the importance of confronting unequal power relations in sustainability shifts and of addressing the underlying root causes of injustice and environmental problems as these exist within as part of historically-embedded political-economic systems. Thus, this paper contributes to emerging debates around just transformations to sustainability and what these transformations might include.

## 6. Conclusion

This research empirically investigated claims of environmental (in) justice in three rural European sites in the context of a net-zero policy landscape and the wider drive for sustainable land management. The substantive contribution is to focus on the claims and tensions arising from solutions to climate change, enriching our understanding of how perceptions and claims about justice lead to conflicts that can ultimately act as barriers to the kind of collective action needed for transformations to sustainability. Whilst environmental justice has become a well-established analytical framing of environmental issues, its application to solutions (for example the study of just transitions and just transformations) is comparatively recent and within this emerging literature, a focus on the rural and European cases are few.

Our multi-site analysis contributes to conceptualisations of rural environmental justice, adding important empirical data on perceptions of justice in rural Europe in an age of climate-influenced landscape transformations. The paper explores rurality as a significant multi-faceted dimension of vulnerability to be incorporated into analyses of intersectional environmental justice, thereby building on the small, emerging base of literature on rural environmental justice. However, countering straightforward parasitic urban-rural dynamics and narratives of rural decline, our findings emphasise the prominence of intra-rural social inequalities in local people's justice claims around landscape change, notably foregrounding the land question as a historically-rooted injustice.

We suggest that unequal land access is central to conceptualising rural environmental justice, particularly in the context of net-zero policies and expected large-scale change in rural areas where holds on the land may be further strengthened. In essence, a just transformation towards sustainability in rural areas requires confronting historically-constituted political-economic structures and land-based injustices. Failure to confront the wider systemic drivers of social injustices through narrowly-defined environmental and climate policies will contribute to further social polarisation and reinforce the "dominant visions of the powerful" (Borras Jr. et al., 2022: 6), thereby restricting the just transformations of rural spaces.

## CRediT authorship contribution statement

**David Brown:** Conceptualization, Data curation, Formal analysis, Methodology, Validation, Writing – original draft, Writing – review & editing. **Benjamin Bégou:** Conceptualization, Data curation, Formal analysis, Methodology, Validation, Writing – review & editing. **Floriane Clement:** Conceptualization, Data curation, Formal analysis, Methodology, Validation, Writing – review & editing. **Brendan Coolsaet:** Conceptualization, Data curation, Funding acquisition, Investigation, Methodology, Validation, Writing – review & editing. **Lisa Darmet:** Conceptualization, Data curation, Formal analysis, Methodology, Validation, Writing – review & editing. **Mathilde Gingembre:** Conceptualization, Data curation, Formal analysis, Methodology, Validation, Writing – review & editing. **Zuzana V. Harmáčková:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Validation, Writing – review & editing. **Adrian Martin:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Validation, Writing – review & editing. **Barbora Nohlová:** Conceptualization, Data curation, Formal analysis, Methodology, Validation, Writing – review & editing. **Cécile Barnaud:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Validation, Writing – review & editing.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Data availability

The data that has been used is confidential.

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## Appendix A. Literature Review Protocol

A search of the literature on environmental justice in rural areas was carried out using Web of Science databases. A set of keywords were used (see Table 1) to search for papers which related to both environmental justice/climate justice/just transition and rural areas. Recognising that authors do not always explicitly refer to the 'rural' in their research and to ensure a more comprehensive review, keywords were included which referred to land-use activities and livelihoods typically found in rural areas, e.g. agriculture, mining. The papers were screened using the following criteria: 1) explicitly draws from an environmental justice framework; 2) empirically examines cases(s) of an environmental problem or intervention; 3) focuses in large part on exploring a rural area or rural areas. Data was then extracted from the final selection of papers on the following dimensions: 1) geographical focus; 2) environmental justice issue(s) and dimension(s); 3) relation to climate change; 4) conceptual engagement with rural environmental justice.

**Table 1**
List of keywords used in the rural environmental justice literature search

| | |
|---|---|
| Environmental justice AND | Rural areas |
| | Conservation OR Rewilding OR Biodiversity |
| | Forests OR Deforestation OR Afforestation |
| | Mountains |
| | Protected areas OR National parks |
| | Farming OR Agriculture OR Agrarian |
| | Mining OR Extraction |
| | Energy OR Renewable Energy |

(*continued on next page*)

**Table 1** (*continued*)

| | |
|---|---|
| Climate justice AND | Rural areas |
| | Conservation OR Rewilding OR Biodiversity |
| | Forests OR Deforestation OR Afforestation |
| | Mountains |
| | Protected areas OR National parks |
| | Farming OR Agriculture OR Agrarian |
| | Mining OR Extraction |
| | Energy OR Renewable Energy |
| Just transition OR transformation AND | Rural areas |
| | Conservation OR Rewilding OR Biodiversity |
| | Forests OR Deforestation OR Afforestation |
| | Mountains |
| | Protected areas OR National parks |
| | Farming OR Agriculture OR Agrarian |
| | Mining OR Extraction |
| | Energy OR Renewable Energy |

## Appendix B. Summary of key literature review findings (n = 176)

**Table 2**
Literature review findings-analytical engagement with rural EJ

| Does this paper theorise around rural environmental justice? | Number of papers | Percentage of total papers |
|---|---|---|
| Yes | 16 | 9% |
| No | 160 | 91% |

**Table 3**
Literature review findings-relation to climate change

| Does the paper relate to climate change? | Number of papers | Percentage of total papers |
|---|---|---|
| Yes | 22 | 13% |
| No | 154 | 88% |

**Table 4**
Literature review findings- European basis of the studies

| Is this paper European-based? | Number of papers | Percentage of total papers |
|---|---|---|
| Yes | 28 | 16% |
| No | 148 | 84% |

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