



Planning for just relocations in Europe in times of climate change: a comparative study

Elisa Calliari^{1,2} · Michele Dalla Fontana³ · Hilde Vink³ · Thomas Thaler⁴ · Thomas Schinko⁴ · Ingrid Boas³

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Abstract

Planned relocation is gaining traction as a preventive adaptation measure to protect communities from the impacts of climate change. While its justice implications are increasingly recognised, empirical studies often focus on single dimensions such as distributive outcomes or procedural fairness. This paper proposes a more comprehensive approach that identifies multiple forms of justice—distributive, corrective, procedural and recognitional—as relevant for planning and implementing planned relocation. It further operationalises them through the lenses of the utilitarian, libertarian, egalitarian and prioritarian philosophical traditions, and offers a framework for uncovering the implicit assumptions about justice that shape relocation policy and practice. The framework is applied to four case studies of preventive relocation in the context of flood risk in Europe (Portugal, Italy, Austria, UK). The application shows that utilitarian understandings of distributive justice dominate policy framings at national and regional levels, while prioritarian concerns emerge at community level, suggesting that different criteria can coexist across scales. An egalitarian approach characterises the sharing of costs and responsibilities, with cross-country difference in financial coverage and compensation models. Procedural justice is motivated on egalitarian grounds but practised performatively or with the utilitarian aim to promote acceptability, and it is often constrained by a reliance on technical expertise which sidelines local knowledge. Recognitional justice oscillates between exclusion based on property rights and attempts to prioritise the most vulnerable. By offering a framework to identify and clarify implicit justice assumptions in relocation decisions, this paper paves ways to support more transparent and accountable policymaking.

Keywords Planned relocation · Climate change adaptation · Climate justice · Comparative case study research

Introduction

Scholarly and policy debates are increasingly turning their gaze to planned relocation as a preventive adaptation measure to ensure the safety of people and their habitats in the face of climate change impacts (Warner 2022; IPCC 2023).

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Elisa Calliari
calliari@iiasa.ac.at

Michele Dalla Fontana
michele.dallafontana@wur.nl

Hilde Vink
hildevink8@gmail.com

Thomas Thaler
thaler@iiasa.ac.at

Thomas Schinko
schinko@iiasa.ac.at

Ingrid Boas
ingrid.boas@wur.nl

¹ Advancing Systems Analysis (ASA) Program, International Institute for Applied Systems Analysis, Schloßplatz 1, 2361 Laxenburg, Austria

² Euro-Mediterranean Centre On Climate Change, Via Della Libertà, 12–30175 Venice, Italy

³ Environmental Policy Group, Wageningen University, Hollandseweg 1, 6706KN Wageningen, Netherlands

⁴ Population and Just Societies Program, International Institute for Applied Systems Analysis, Schlossplatz 1, A-2361 Laxenburg, Austria

Planned relocation refers to the government-led resettling of households and communities to another location to reduce exposure to climate and environmental hazards (Weerasinghe et al. 2014). It can rely on a variety of preventive or reactive tools, from property acquisitions (e.g. buyouts) to land use planning and zoning regulations (e.g. rezoning of residential land and abandonment). Relocations vary in scale and timing (Yarina and Wescoat 2023), may target households, communities, villages and cities, and be voluntary or mandatory for those involved.

Planned relocations are often considered options of last resort when protecting socio-ecological systems appears no longer possible, either technically, socially or economically (Thaler et al. 2020; Charan et al. (2017). They have been described as political minefields for public authorities (Ferris and Bower 2023) due to the complex and contested processes involved in declaring areas uninhabitable (Farbotko and Campbell 2022; Wiegel et al. 2021; Sterly et al. (2025) and the public opposition they can face (Dalla Fontana 2025). Relocations can also involve high social costs and negative outcomes for the people affected (UNHCR 2015). Research on development-forced displacement and resettlement has extensively documented the impoverishment risk that relocated communities face, which includes homelessness, joblessness and social disintegration (Cerneia 1997). Similar negative outcomes are now being observed in climate-related relocations (Piggott-McKellar et al. 2020; Arnall 2019), alongside with adverse psychosocial consequences, including impacts on anxiety, well-being and perceived safety (Abu et al. 2024). This has led adaptation research to start interrogating how relocation planning decisions shape livelihood outcomes with the aim of preventing maladaptation (Bower et al. 2023) and what 'success' looks like in the context of relocation programmes (Ajibade et al. 2022).

In this context, recent adaptation scholarship engages with the justice implications of planned relocation, raising questions about who benefits from and bears its costs, who participates in decision-making, how historical and ongoing injustices can be addressed and how to account for the needs of future generations (Siders and Ajibade 2021; Gini et al. 2024). For instance, research on US voluntary buyout programmes shows that bought-out properties are concentrated in poorer, less dense, more marginalised areas (Mach et al. 2019); that decisions by government officials on where to acquire properties can exacerbate existing inequities (Siders 2019); and that property owners do not always perceive their choice as voluntary (De Vries and Fraser 2021). These empirical studies tend to focus on single justice dimensions, such as distributive outcomes or procedural fairness (Tubridy et al. 2022). However, we claim that understanding what makes a relocation 'just' requires a more comprehensive approach that examines the

role of different forms of justice in policy and practice. We further acknowledge that understandings of justice vary according to the assumptions embedded in different philosophical traditions, and this can lead to different outcomes when implemented on the ground.

This paper therefore asks: 'What different forms of justice are relevant for planned relocation and how do different understandings of justice eventually shape planned relocation design, implementation, and outcomes?' To answer this question, we develop a framework that identifies distributional, recognitional, corrective and procedural justice aspects pertinent to the planning and implementation of relocation and discuss them through the lenses of four dominant philosophical perspectives—utilitarian, libertarian, egalitarian and prioritarian—including the potential pitfalls these may involve.

We then apply the framework to four case studies of preventive relocation in the context of riverine and coastal flood risks in Europe—hazards that are projected to increase because of climate change (Kovats et al. 2014). Preventive planned relocations present distinct challenges compared to post-disaster cases, as they entail radical decisions before visible harm occurs—making them particularly difficult to implement—and raise distinct justice questions, including who decides when relocation is necessary, based on what criteria and information base, and whose voices and values are acknowledged. The cases we chose represent different governance modes, stages of development, scales, scope and responses to different types of flood risk, thus offering comparative breadth and depth. We delve into the case of Portugal and the top-down plans for community relocations in the coastal settlements of Pedrinhas and Cedovém; the buyout scheme designed by the Piemonte Region in Northern Italy for the voluntary relocation of households at high hydro-geological risk; the relocation of neighbours via zoning regulations coupled with financial incentives in the Danube basin in Austria; and the uncertainty of relocation plans in the coastal village of Fairbourne, Wales (UK), facing coastal flooding and sea level rise.

Our paper is structured as follows. We start by discussing the justice implications of planned relocation as a risk management strategy and by introducing the analytical framework, which operationalises different forms of justice in light of distinct philosophical traditions. The 'Methods and materials' section introduces our case studies and methods used for data collection and analysis, while the 'Results: Justice implications of relocation' section compares the results derived from the application of our framework to the cases. We conclude by discussing key insights and policy implications for advancing transparent and accountable policymaking around planned relocation.

Climate justice as analytical framework for studying relocations

A distinction can be made between the justice implications by the risk itself (e.g. who is impacted positively or negatively by flood risk?) and by the proposed management strategy (e.g. who is impacted positively or negatively by the management strategy?). Here, we are concerned with the latter.

Building on the work by Goer de Herve et al. (2023) and Goer de Herve (2022) on justice in the context of flood risk management, Schinko et al. (2023) in wildfire risk management, Zimm et al. (2024) within climate research and Hanger-Kopp et al. (2024) within research and policymaking, we identify four main forms of justice that are relevant to planned relocation as a risk management strategy: procedural, recognitional, distributive and corrective. Procedural justice asks the question of which stakeholders are heard when implementing planned relocation measures and how planned relocation policy design allows for inclusively considering diverse stakeholder perceptions (e.g. via co-creation methodologies) and sources of information (e.g. local knowledge). In the context of managing climate-related risks, recognitional justice asks for recognising the heterogeneity of stakeholders in decision-making processes to identify who the legitimate claimants of justice are. Thus, it can additionally be seen as a precondition for procedural justice. Distributive justice is concerned with how direct and indirect benefits and burdens of planned relocation are shared between stakeholders and who is responsible for taking action. In risk management, corrective justice—and in the case of planned relocation, more specifically, compensatory justice¹—is often closely intertwined with distributive justice, focusing on responsibilities for addressing harms from risk measures and how these impacts are distributed across communities. We are interested in identifying responsibilities for compensating households affected by the negative impacts of the relocation measure per se, such as compensatory support for households who had to leave their home and buy a new one. Corrective justice also includes a restorative dimension which focuses on the recovery and healing process from harm, in this case, the possible negative impacts that the relocation measure can have on the households and

communities as well as the environment (Goer de Herve et al. 2023).

It is important to highlight that the meaning and scope of distributive, corrective, recognitional and procedural justice are not fixed, but are contingent upon the philosophical theories and related principles applied. Different philosophical traditions—like utilitarian, libertarian, egalitarian and prioritarian—embody distinct assumptions about fairness, responsibility and moral worth, and lead to divergent interpretations of what each form of justice entails in practice. In the following paragraph, we briefly introduce the different theories of justice in the context of distributive aspects for risk management.

Utilitarianism, as a kind of consequentialism, seeks to maximise the overall good by benefiting the greatest number of people. In the case of classical utilitarians, such as Jeremy Bentham (1789) and John Stuart Mill (1861), the value to be promoted is pleasure. In risk management, this leads to strategies that maximise risk reduction per resource used, often prioritising areas where societal benefits are highest. Cost-benefit analysis (CBA) is commonly used to decide which areas and assets to protect. Libertarians take individual freedom as the paramount political value and their positions on justice are based on free market principles, emphasising competition, full information availability and individual economic freedom (e.g. Nozick 1974). The state's role is limited to setting predefined rules and ensuring their enforcement, allowing market forces to regulate individual actions and interactions. In flood risk management, libertarianism promotes minimal government intervention. It advocates for market-driven solutions, such as insurance schemes and information dissemination about flood hazards, while encouraging non-governmental activities over public flood risk management. An egalitarian theory of justice, in its purest form, focuses on minimising differences among people by ensuring everybody receives the same amount (e.g. Rousseau 1755). Building on Rawls's Theory of Justice (Rawls 1971), which comprises practically complex egalitarian principles (equal basic liberties, fair equality of opportunity, the difference principle), distributive egalitarianism argues that equality and thus justice is reached when parties have equal amounts of some good (e.g. Anderson 1999). For egalitarians, unconstrained markets are neither free nor just and achieving (outcome) justice requires public policies that remedy social and economic disadvantages. In the context of flood risk management, this theory implies that everyone exposed to risk gets the same level of protection, independent of their socio-economic characteristics. Prioritarianism (e.g. Temkin 2003), which is again connected to Rawls' Theory of Justice and in particular to the difference principle, allows for some level of inequality if 'social and economic inequalities are to the greatest benefit of the least advantaged members of society'. (Rawls 2001: 42–43).

¹ Restorative justice would require setting a situation back to status quo before the planned relocation measure was implemented. Since this is by definition not possible in the case of planned relocation, we are here focusing on compensatory justice as subform of corrective justice. Compensatory justice is providing alternative means for achieving ends ('means displacement') or addressing the losses involved in adopting new ends ('ends displacement') (Wallmann-Helmer et al. 2019).

Such a prioritarian approach in flood risk management calls for providing those most in need or the most vulnerable with the most protection and help (Kaufmann et al. 2018; Ciullo et al. 2020; Goer de Herve et al. 2023; Jafino et al. 2022; Hudson and Thaler 2023). Table 1 summarises these thoughts on distributive justice through the lens of different philosophical theories and extends this discussion to synthesise what these different theories would imply for the other forms of justice considered in this article, i.e. procedural, recognitional and corrective justice.

Methods and materials

We explore the justice understandings and implications of planned relocation through comparative case study research (Knight 2001). This section elaborates on the case selection strategy as well as our methods for data collection and analysis.

Case selection

Relocation experiences are increasingly observed across Europe, with examples from Ireland (Tubridy and Lennon 2021b, a), Germany (Walsh et al. 2023; Mayr et al. 2020), and Austria (Thaler et al. 2020; Seebauer and Winkler 2020). However, these documented cases are predominantly reactive in nature (O'Donnell 2022). We identified four cases of preventive planned relocation in Europe in the context of flood risk—the Piemonte Region (IT), Upper Austria (AT), Pedrinahs and Cedovém (PT) and Fairbourne (UK)—to address the empirical gap on anticipatory relocations in Europe. We selected these cases for their relevance as pioneering examples of preventive relocation across diverse governance contexts and because they form part of ongoing empirical research within EU-funded projects led by some of the authors.

We focus on floods, as they are the most frequent and costliest disasters in Europe, with their occurrence expected to rise due to climate change (EEA 2021). Notably, the EU Floods Directive (2007/60/CE) includes relocation among the prevention measures available to Member States for managing flood risk at the river basin level (European Parliament and Council of the European Union 2007). Our case studies reflect a range of flood-related challenges: riverine flooding in Italy and Austria, and coastal erosion and flooding in Wales and Portugal—capturing both sudden- and slow-onset events. They also illustrate different governance modes, implementation practices and impacts on (to be) relocated households and communities. Table 2 provides an overview of the main features of the four case studies, including type of risk, policy instruments, relocation details and the scale of the relocation.

Data collection and analysis

Each case study was conducted independently by the researchers within the scope of four different projects using a combination of policy analysis, interviews, focus group discussions (FGD), field observations and spatial analysis.

Research in Piemonte aimed at investigating the way planned relocation in the region is governed and implemented. Process tracing was employed to reconstruct how the governance of planned relocation evolved over time, based on the analysis of regulatory and planning documents at the Basin and Regional level and on four semi-structured interviews with key informants from public authorities and two FGDs with relocated households in two of the involved municipalities. To analyse how the policy has been implemented since 2009, a database collecting information on the 52 finalised buyout schemes was compiled and spatialised in collaboration with the Piemonte Region, containing information such as origin and landing zones for beneficiaries, municipalities involved and resources disbursed.

In Upper Austria, twenty-one semi-structured interviews were conducted between 2012 and 2022 with national, regional and local authorities, both face-to-face and online. Participants were selected using snowball sampling, focusing on individuals directly involved in the design or implementation of planned relocation. Some interviewees were interviewed multiple times. A policy analysis was also performed to assess the governance of planned relocation in Upper Austria.

Fieldwork in Pedrinahs and Cedovém was conducted from September to November 2023. The researcher lived for 6 weeks in Cedovém, immersing in the daily life of the settlement to observe the effects of coastal erosion and extreme weather events. Using snowball sampling, twenty-six semi-structured interviews were conducted with various stakeholders, including residents, fishermen, restaurant managers, authorities and technical experts in coastal management planning. Spatial planning documents were analysed to understand the strategic visions of governmental authorities, while newspaper articles were reviewed to capture the perspectives of second-home owners.

The Fairbourne case study involved multiple qualitative methods during a 5-week fieldwork trip from February to April 2023. The researcher conducted twenty-two semi-structured interviews with community members and seven with stakeholders, including a representative from the local government. Additionally, on-location observations were made. Seven policy documents were analysed to supplement the interview data.

Table 1 The framework discusses distributive, corrective, procedural and recognitional justice aspects pertinent to planning and implementing relocations through the lenses of the utilitarian, libertarian, egalitarian and prioritarian philosophical perspectives. *PAs*= public authorities

Distributive justice	Corrective justice			Procedural justice			Recognitional justice	
	Benefits	Burdens	Compensation	Restoration	Participation	Information	Claimants	Heterogeneity
Who are the direct and indirect beneficiaries of the intervention? How are they identified?	Who is responsible for action, and how are roles divided between PAs and those affected? Who pays for relocation, and who bears its negative impacts?	To what extent are households compensated for relocation losses and new housing costs?	Are households supported in post-relocation recovery and healing (e.g. counselling)?	Who gets to participate and whose voices are heard? How are stakeholder perspectives integrated into final outcomes?	What types of knowledge inform decisions? How accessible and understandable is it to stakeholders?	Who is recognised as a legitimate claimant? Who is excluded or denied recognition? Do they address past and ongoing injustices?	Do decisions account for the diversity of affected stakeholders? Do they address past and ongoing injustices?	
Utilitarian (largest societal benefit/maximal utility)	Communities or individuals at risk located in areas where the greatest overall reduction of societal risk can be achieved per unit of resources invested (based on cost-benefit analysis)	Responsibilities are distributed to maximise societal benefits. PAs are best positioned to organise/implement relocations, based on capacity and resources, but affected communities and individuals have a role if this improves the outcome	Provided if it enhances overall societal well-being (e.g. social cohesion or productivity)	Participation valued instrumentally, i.e. if involving stakeholders and including their views leads to better outcomes	The most reliable and efficient forms of knowledge (e.g. technical) likely to produce best aggregate outcomes. Local knowledge considered if it improves technical knowledge.	Individuals whose inclusion in decision-making provide the largest benefit to society	Acknowledging diversity or addressing injustices is valuable if it provides benefits to society	
Libertarian (focus on individual capacity)	Only those who can afford and have the capacity to implement relocation measures on their own (based on ability to pay)	Individuals are responsible for organising and paying for their own relocation	No compensation is provided to communities and households by PAs	Recovery and healing are the responsibility of individuals	No participatory process led by PAs envisioned as relocation is an individual responsibility	Individuals are responsible for informing themselves and making their own decisions	Being an individual initiative, recognition by PAs or others is not necessary, as long as individual rights are protected	Individuals decide whether to relocate, based on individual preferences, resources and opportunities

Table 1 (continued)

	Distributive justice		Corrective justice		Procedural justice		Recognition justice	
	Benefits	Burdens	Compensation	Restoration	Participation	Information	Claimants	Heterogeneity
Egalitarian (equal access/same potential capacity)	All communities and individuals irrespective of socio-economic characteristics (based on exposure)	PAs are responsible for ensuring that everybody has access to relocation measures. They provide financial resources to support those that wish to implement relocations but do not have sufficient capacity	(Almost) equal level of compensation granted to everyone affected, independent of socio-economic status	All individuals have equal access to recovery and healing support	Every affected entity has the same opportunity to participate and be heard	Both technical and local knowledge are legitimate. PAs ensure equal access to information, considering different educational and socio-economic attributes	Every affected entity	The decision-making process ensures greatest diversity and that every affected entity is considered and represented
Prioritarian (focus on the most vulnerable groups)	Communities and individuals most in need for support are prioritised (based on vulnerability)	PAs have a moral duty to take the lead in organising relocation. The most vulnerable should not bear their own relocation costs, while wealthier households may bear (a share of) their costs	Grounded on a needs-based principle, e.g. low-income entities receive the highest compensation	Vulnerable groups receive the greatest support and are prioritised in the recovery and healing process	The most vulnerable are prioritised, and their effective and meaningful participation enabled	Emphasis on voices and experiences of the most vulnerable. Information is made understandable and accessible to the most vulnerable	The most vulnerable are prioritised	Decision-making focuses on the most vulnerable and addressing injustices that shape their disadvantaged position

Table 2 Overview of the case studies

	Italy <i>Piemonte Region</i>	Austria <i>Machland-Nord and Eferdinger Basin</i>	Portugal <i>Pedrinhas and Cedovém</i>	UK <i>Fairbourne, Wales</i>
Type of risk	Hydrogeological (landslides and floods). 6% of the region is at high/very high landslide risk, 8% at medium flood risk; 95% of municipal areas are affected (ISPRA 2021)	Riverine flooding (Danube and Enns rivers). Extensive flood history, including major Danube floods (1899, 1954, 2002, 2013) and multiple minor local events (Blöschl et al. 2013; Thaler et al. 2020)	Coastal erosion, flooding, sea level rise, ineffective protective measures (APA 2021a)	Coastal flooding due to sea level rise. (Bennett-Lloyd et al. 2019)
Policy instruments	<ul style="list-style-type: none"> - Relocation identified as risk prevention policy since 2003 in a Regional Council deliberation (Piemonte Region 2003) - Began with regional subsidies for municipal relocation plans; later evolved into a voluntary buyout scheme with relocation grants 	<ul style="list-style-type: none"> - Zoning regulations plus financial compensation (no buyout) - Control and approval by the Ministry of Finance (Schindelegger 2019; Thaler et al. 2020) 	<ul style="list-style-type: none"> - 2021 Coastal Zone Management Program Caminha-Espinho (APA 2021a) identifies Critical Areas - The 'Project for Environmental Regeneration and Valorisation of Traditional Activities in Pedrinhas and Cedovém' (Município de Espoende 2023) proposes restoring the dune-store system, removing existing buildings, while relocating and preserving economic activities 	<ul style="list-style-type: none"> - 2011 Shoreline Management Plan 2 deemed defending Fairbourne beyond 2054 unsustainable (Guthrie 2011) - Panning horizon set for managed realignment and shoreline retreat (Committee on Climate Change (2018)) - Relocation proposal without finalised policy
Relocation details	<ul style="list-style-type: none"> - Maximum grant: €1034/m² × surface area (up to 200 m²). €1034 euros/m² corresponds to the maximum cost per m² for the construction of new subsidised social housing as defined by regional resolution - Residence type adjustment: <i>Primary residence</i>: 100% of calculated amount <i>Secondary residence</i>: 75% - Indemnity option: 50% of the amount granted for purchasing/building a new property - Condition: original property must be demolished, regardless of option chosen 	<ul style="list-style-type: none"> - 80% compensation of the building value (estimated by an independent expert) - 80% of the demolition costs - Rezoning the plot to grassland - Construction ban in the land register - Owners retain ownership of the plot 	<ul style="list-style-type: none"> - Removal of at-risk/illegal buildings to restore dunes - Pedrinhas: heritage buildings assessed; others to be demolished; Cedovém: all structures to be demolished; restaurants to be moved in new removable facilities inland; new shelters for fishermen - No relocation details; authorities state no resident will be left homeless (Público 2024) - No compensation for illegal second houses - No demolition or relocation implemented to date 	<ul style="list-style-type: none"> - Uncertainty around implementation - Initial 'decommissioning' announcement later retracted - Negative impact of media attention on inhabitants and house values (Crump 2019; Gerretsen 2022; Wall 2019) - No relocation or demolition implemented to date
Scale of relocation	At the time of writing, 52 buyouts have been implemented: 26 targeted primary residents and 25 secondary residents	~320 households (250 in Machland-Nord, 70 in Eferdinger Basin) relocated (Thaler et al. 2020; State of Upper Austria (2025))	Potentially community-wide in two settlements (Pedrinhas and Cedovém). Pedrinhas: 40 seasonal dwellings, 7 fishermen's shelters; Cedovém: 49 secondary houses, ~19 permanent residences, 9 fishermen's shelters, 7 restaurants, ~50 outbuildings (APA 2021b)	Potentially entire village (~700 residents); notably, 83% of inhabitants are homeowners (Fairbourne Moving Forward Partnership 2019)

Results: Justice implications of relocation

Through our analytical framework, we interrogate how different notions of justice across the distributive, corrective, procedural and recognitional dimensions are embedded in planned relocation policies in the four case studies (Fig. 1) and eventually translate into different criteria for decision-making, policy designs and implications for households and communities.

Distributive justice

The analysis across our case studies highlights different concepts of distributive justice underpinning risk management decisions and spanning from a purely utilitarian perspective (UK) to an egalitarian one (Austria) and a mix of the utilitarian and prioritarian (Italy and Portugal).

Benefits: the targets of the relocation measure

In our cases, relocation measures target direct beneficiaries ranging from individual households to whole communities. Our results show how the choice of relocation as a risk reduction option within national and local policy frameworks is rooted in different understandings of the 'right' course of action, whether from the standpoint of the wider society or the people directly at risk.

The case of Fairbourne exemplifies the focus on societal benefits, emphasising the greater risk reduction achieved

per unit of economic resource invested. This underscores the utilitarian rationale underlying the policy. The managed realignment of the village stood out against other options based on CBA, considering the whole of the Welsh coastline under sea level rise scenarios (Guthrie 2011). Estimations indicated that the sea defences for the village would not be secure without major investment (Guthrie 2011; Vink 2023). The predicted costs of defending the coastline were estimated as unsustainable to maintain. However, these estimations have been disputed by local people in independent studies (Hall 2021) and opinion pieces in the regional newspaper (Hall 2023), who argue that the costs of defending Fairbourne in the long term are reasonable.

While the choice to protect most of the coastline by giving up on some of it might make sense from a societal point of view, this is having a significant effect on the people that live in Fairbourne. Inhabitants report anxiety about the uncertain future of their home and about the decision-making process (Interviews 8–29 UK). Due to the uncertainty, house values have decreased significantly, and mortgages are not granted in the area due to the estimated high flood risk. These factors have made it impossible for some inhabitants to move, even if they wanted to (Vink 2023).

The case of Austria shows instead the application of a more egalitarian approach whereby the choice of relocation is not formally motivated by CBA but rather by a focus on the actual people exposed, independently from socio-economic status, age, length of residence in the region and ownership. The scheme targeted primary residents with both

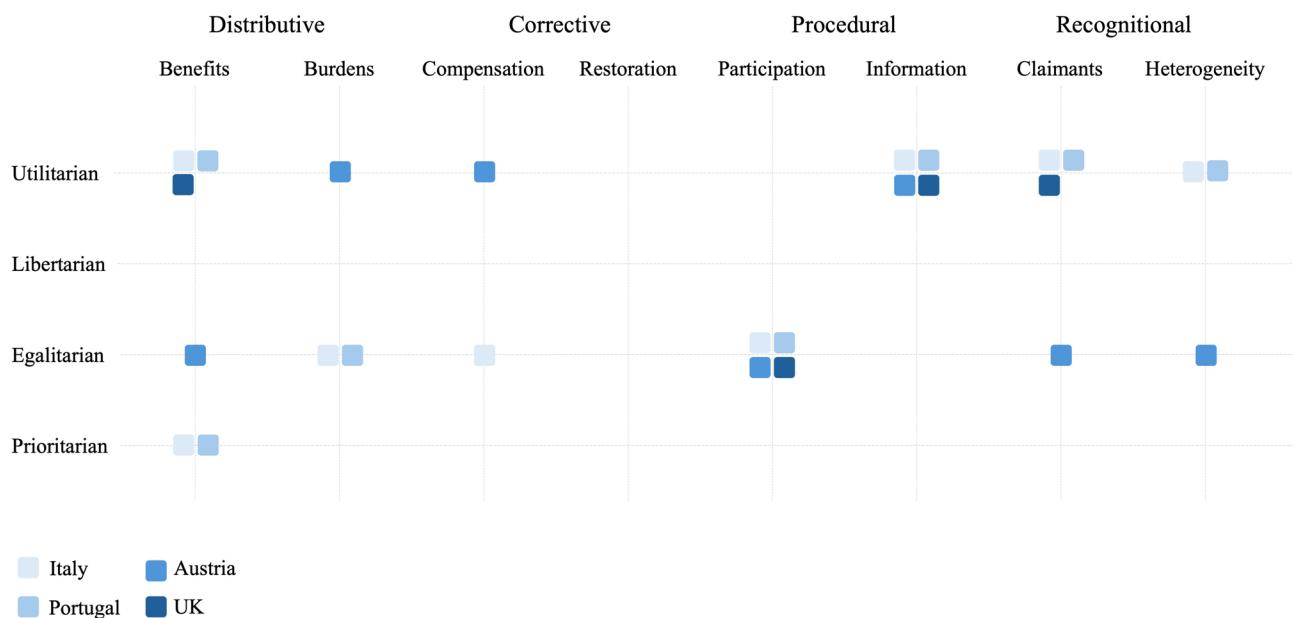


Fig. 1 Placement of the four case studies across the main philosophical traditions and dimensions of justice. Italy and Portugal appear twice under benefits within distributive justice, as different principles were applied at different spatial scales. The absence of a square in a given category indicates that the corresponding country has not explicitly addressed that particular justice dimension

principles were applied at different spatial scales. The absence of a square in a given category indicates that the corresponding country has not explicitly addressed that particular justice dimension

farming and non-farming backgrounds, and a very small number of small businesses. The selection process was based on experience from past flood events (2002 in the case of Machland-Nord and 2013 in the case of Eferdinger Basin) as well as hydrological modelling. The decision was motivated by the lack of technological feasibility to implement technical mitigation measures in both areas. The target groups differed in terms of composition: in Machland-Nord, more farmers were offered the scheme, while in Eferdinger Basin, the target group included both farmers and residents. Most of the target groups owned their buildings; only in rare cases were renters offered the relocation scheme.

The cases of Italy and Portugal combine both utilitarian and prioritarian principles. In Piemonte, the policy is motivated in utilitarian terms, particularly in terms of cost-effectiveness: relocating people from high-risk areas is seen as less costly than protecting a few homes or repeatedly compensating for damages. As one official put it, 'when there was a lot of money, it was wasted because you had kilometers of riverbanks being constructed to make four houses safe and from a cost-benefit ratio it didn't make any sense' (Interview 5 IT). The Region justifies its focus on both permanent residents and secondary homeowners (mainly holiday-house owners) through a cost-benefit rationale, anticipating compensation claims for damages. Additionally, from a risk reduction perspective, demolition of the buildings is deemed necessary regardless (Interview 5 IT). However, the relatively high adherence to the measure by secondary residents (25 out of 51) is prompting regional authorities to question the ability of the programme to reach those households that, having their primary residence in high-risk areas, are exposed the most. Discussions are underway to modify the scheme so as to reduce the relocation grant for secondary residents while finding ways to further involve and prioritise primary residents.

In Portugal, the costs of coastal protection measures have historically been almost exclusively borne by the central administration with significant help from EU funds (Marinho et al. 2019). Recognising the economic unsustainability of protection measures over the medium and long term, relocation strategies are coming to the forefront. The Portuguese Environment Agency identifies high-risk areas at the regional level that require relocation. Although it remains unclear whether a cost-benefit analysis was conducted for the North Coast region, utilitarian principles are evident in strategic planning documents (APA 2021b; Município de Espoende 2023) and interview analysis. In fact, planned relocation is mainly suggested for areas with high risk, low population and infrastructure density, and the presence of buildings of uncertain legal status (Interview 1 PT). This should ensure greater feasibility and lower costs than protective measures. At the local level in Pedrinhas

and Cedovém, the municipality appears to follow principles beyond cost-benefit logic, aiming to prioritise the relocation of permanent residents to safer and improved housing, regardless of the legal status of their homes. In contrast, second-home owners without proof of legal construction are not expected to receive compensation or alternative housing.

Burdens: responsibility for taking action and bearing the costs

Responsibilities in Portugal and Italy rests completely with public authorities, thus aligning with an egalitarian understanding of distributive justice. In Italy, the municipality plays a key role in the implementation phase, being both in charge of carrying out the demolition of the building at risk as well as providing relocated households with a plot for building a new house. The demolition costs and the relocation grant for the households are both fully covered through regional resources. In Portugal, the Portuguese Environment Agency will be responsible for demolishing the existing infrastructure and the subsequent maintenance and restoration of the coast and dunes, with funding from the central government and the EU (APA 2021a). The municipality is responsible for engaging and communicating with residents and providing the new houses, using central government funding through the Local Housing Strategy Programme. At the time of writing, the municipality has borne the costs of preparing the preliminary project and community involvement activities (Interview 27 PT).

In Austria, the relocation process was mainly organised and supported by regional and local authorities, but some responsibilities and costs were left to affected households, consistent with utilitarian thinking. Regional authorities were primarily responsible for designing the relocation zone, communicating to the affected householders and organising the compensation process. Local authorities were mainly responsible for designing new building zones outside the hazard area for the relocators. Financial compensation was provided by national and regional authorities based on taxpayer payments. Households were nevertheless asked to provide 20% of the overall demolition costs and take care of the owned plot as well as find new living places.

In Wales, the allocation of responsibility remains unclear. It is generally assumed that the government would cover the costs of demolishing the village and convert it into a wetland or uninhabited land. However, plans for future relocations and discussions about related funding remain vague. As one resident noted, they have already cut back on spending 'just in case [they]need to find somewhere else to live', expressing concern that support will be limited to 'old people and people with children', while others will be 'left to fend for [themselves]' (Interview 28 UK).

Indirect benefits and burdens

The indirect benefits and burdens of planned relocation tend not to be elaborated by relevant regulations or policies and were not directly recalled in interviews. However, reflecting on a policy's indirect impacts can shed light on its broader distributional implications.

In Portugal, the restoration of the area is expected to enhance the landscape for residents, visitors and tourists while preserving its natural, architectural and cultural values. Additionally, improved beach access will help regulate tourist flows more effectively during peak seasons (Município de Espoende 2023). In Italy, regional authorities considered the broader implications of disaster risk reduction beyond the households directly affected by relocation. They stressed that demolishing a specific apartment block, whose foundations are right in a riverbed, could make downstream residents safer (Interview 5 IT). Fairbourne provides an interesting example of how relocation plans can make some people indirectly and unintentionally benefit from it. The uncertainty surrounding the village's future has led to a decline in property values and made mortgages unavailable in the area (Interviews 4, 5, 6 UK). This allowed retirees from England, locally known as 'cash buyers', to purchase properties at significantly lower costs and without the need for a mortgage (Interviews 4, 5, 8, 13, 16 UK).

With respect to those who could be negatively impacted, both the Austrian and the Italian cases reveal actual or potential negative implications for local actors. In Austria, some local authorities faced financial pressure following relocation (Interviews 15, 16, 17, 18, 19, 20, 21 AT). As one official explained: 'The economic situation before the planned relocation was already stressful. Afterward, the loss of citizens caused even more financial pressure, as it reduced our tax income while we still had to maintain infrastructure—such as water, roads and lighting—for those who remained...' (Interview 21 AT). Although similar concerns could arise in Italy—e.g. reduced income from waste and property taxes—this issue was not raised in interviews, possibly due to the smaller scale of relocation.

Another category of potential losers includes those who are left out of the relocation policies. In Italy, the scheme only focuses on residential buildings and not firms, although there was a discussion on whether to include them in the scheme (Interview 5 IT). In Portugal, owners of second homes who cannot prove the legality of their house will not receive any compensation. In all cases, renters are overlooked as the relocation schemes are offered to property owners only.

A final group of those adversely affected includes individuals who choose or are forced to stay. In Austria, a wide range of people still live within the relocation zone. However, householders who reject the relocation offer are

restricted within their use of the property. For example, they are allowed to adapt their building towards future flood events but cannot increase the physical vulnerability of the building (Interview 10 AT). In Wales, the very prospect of relocation has unintentionally made it harder for many residents to move. Property values in Fairbourne have dropped, leaving homeowners unable to sell at a price that would allow them to relocate. As one resident explained, 'We lost 40% of the value of our property... if we would sell up, we would not have enough money to buy somewhere else. I would not be able to move, as are a lot of people' (Interview 13 UK).

Corrective justice

Our case studies show different approaches to corrective justice, from full compensation to households impacted by the relocation in Italy (egalitarianism) to partial compensation as in Austria (utilitarianism). In Italy, the cost of the relocation process is entirely borne by public authorities—from the relocation grant given to households to the demolition costs of the building at risk. Households are not required to integrate the 'relocation grant' unless they want to go for a more expensive house. Interviews and FGD with relocated households revealed a general satisfaction with the amount received (FGD 1 IT; FGD 2 IT), as in many cases got very close to or even exceeded the market price (Interviews 3, 4 IT). This is different from Austria, where households are required to contribute to the measure. The main financial burden rests primarily on public authorities, who cover up to 80% of the costs. Householders had to provide 20% of the compensation costs and also had to buy a new land plot and cover the costs of building a new house or buying a new apartment. Nevertheless, local authorities provided 'affordable' building zones for the relocators. In the case of Machland-Nord, householders accepted the new areas, while in the Eferdinger Basin many households rejected the proposal (Interviews 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 AT).

Approaches to compensation in Portugal and the UK are still to be fully discussed, if at all. In the case of Pedrinhas and Cedovém, the illegality of some of the dwellings complicates the matter. In the case of legal first homes, residents will be offered a replacement apartment in a nearby area or economic compensation (to be negotiated on a case-by-case basis). If the first residence is illegal, the owners will only be offered the replacement apartment. Owners of secondary residences will receive economic compensation only in cases where they can prove the legality of the construction. Restaurant owners will be provided with replacement premises in detachable wooden structures in nearby areas. Fishermen will have new storage facilities for equipment, boats and transport (Interview 27 PT). At the time of writing, the value of the compensation and the type of replacement housing

are unknown. In the case of Fairbourne, there have been no statements from local government on whether and to what extent people would be compensated. While the local government has recognised that the foreseen relocation plans have had a negative impact on the community (Fairbourne Moving Forward 2022), no compensation or restoration has been announced.

None of our case studies has substantively addressed considerations of restorative justice, such as the provision of counselling services. However, in the case of Fairbourne, a 2015 policy document (*Fairbourne: A Framework for the Future*) mentions that the Fairbourne: Moving Forward partnership would have offered 12 months of counselling for residents experiencing mental health issues, upon community request. This initiative was not mentioned in interviews; nonetheless, its inclusion in the policy discourse suggests at least some consideration of restorative support.

Procedural justice

Participation in the case studies was motivated by egalitarian principles, aiming to provide all affected actors with an opportunity to be involved and heard. In practice, however, participation largely took the form of consultation or information sharing, revealing a gap between the inclusivity envisioned in principle and the limited engagement implemented in practice. Ultimately, the implementation of participation appeared largely instrumental, if not performative, serving primarily to foster public acceptability and reduce potential conflicts, thereby aligning more closely in its essence with a utilitarian rather than an egalitarian conception of justice. As for the information used for decision-making, the latter relied primarily on technical and expert-based assessments informed by CBA and sidelined local understandings and experiences, thereby reflecting a predominantly utilitarian rationale (as illustrated in Fig. 1).

Participation

In Italy, some of the municipalities involved undertook extensive consultations with affected households to enhance their participation in the scheme (Interviews 3, 4 IT). In one of them, sharing the problem with relevant stakeholders and giving households time to process was identified as a key element for the success of the intervention.

In Portugal, stakeholders were both consulted for the development of the Coastal Management Plan and the 'Environmental requalification project and valorisation of traditional activities in Pedrinhas e Cedovém'. They could submit comments and suggestions after the public presentation of the preliminary projects, but it is unclear how they will be incorporated. Moreover, in the months preceding the presentation of the project, residents, restaurant owners, fishermen,

owners of second homes and representatives of the relevant civil society organisations were invited by the municipality to attend meetings to inform them of the municipality's intentions and to exchange views (Interviews 3, 27 PT). However, some stakeholders reported dissatisfaction with the way their views and comments were not considered by the relevant authorities. In particular, residents complained about the lack of involvement in identifying sites for new housing and defining the characteristics of new housing (Interviews 7, 13, 14, 15 PT).

The Austrian case was characterised by a top-down decision-making approach, which limited the opportunity for meaningful involvement of the affected communities (Interviews 1, 2, 10, 11, 12, 15, 16, 17 AT). However, regional (and to some extent local) authorities extensively informed the affected householders and businesses (Interview 10 AT). This included large information campaigns within the area as well as face-to-face negotiations with the target group. In the case of Machland-Nord, the engagement process started as early as 1992, initially receiving almost no acceptance from the homeowners (Interview 1 AT). However, most homeowners accepted the planned relocation scheme after the 2002 flood event. In the case of Eferdinger Basin, the engagement process began directly after the 2013 flood without any prior notification to local authorities or householders, which led to significant rejection from both local authorities and residents (Interview 10 AT). Additionally, the Eferdinger Basin relocation zone was expanded after the initial engagement process, nearly doubling the area and resulting in even more protests against the relocation scheme. Besides, a bottom-up grassroots organization protested the planned relocation scheme in the Eferdinger Basin. However, most grassroots organisation members were not affected by it (Interviews 10, 15, 16, 17 AT).

Similarly, in Fairbourne, the shoreline management plan was drafted in a top-down way by a consultancy without consultation with local inhabitants. Instead, most of them first heard about the seemingly 'doomed' future of their village when the BBC released an episode on TV about Fairbourne (Hilson and Arnall 2024; Arnall and Hilson 2023, Interviews 12, 19, 26 UK). As a response to the media attention, local government organised 'town meetings' for inhabitants, mostly aimed at informing the local people instead of consulting them. Since 2013, local government actors meet with a representative of the local community council a few times a year. In 2022, the local government set up a 'Health Impact Assessment' performed by an independent research group and aiming at determining the impact of the policy plans on the community. The assessment also collected ideas from the community to improve the current situation, thereby giving local people the chance to 'have a say' (Gwynedd Council 2023).

Information

The information underpinning the relocation process exclusively relied on technical and expert-based assessments informed by CBA (utilitarianism) with no consideration of local knowledge. In some cases, this information is not even known by local stakeholders (Italy) or contested (Portugal, UK).

In Italy, publicly available information on at-risk areas is used to identify households eligible for relocation schemes. However, citizens are often unaware of their risk exposure and of the resources available to reduce it. In practice, it is up to municipalities (as prompted by regional officers) to identify properties located in high-risk areas, get in touch with the households and inform them about the possibility of relocating. The region is working to increase awareness about the scheme among municipalities while recognising that more needs to be done to make citizens aware of this possibility (Interview 5 IT). In one case, a study conducted by a public research body, along with researchers' participation in community meetings, successfully helped households understand the risks (FGD 2). The municipality called it 'the winning element' in making relocation offers acceptable (Interview 4 IT). This highlights an attempt to make information more understandable by the Italian Authorities which points towards a more egalitarian approach.

Similarly, in Portugal, risk assessment and the definition of the proposed solutions are based on experts' knowledge from different areas (e.g. hydraulic engineering, geology, geography, architecture, civil engineering, biology). However, most residents and local business owners tend to be sceptical of these assessments. Although people generally recognise the problem of coastal erosion, they attribute it to inappropriate human intervention rather than to climate change. In particular, they blame the construction of a series of groynes in the 1980s to protect tourist areas in the north, drastically reducing sand deposits in the south (Interviews 5, 7, 12 PT). Moreover, since the permanent residents do not live directly on the dune's edge, but more in the interior, they do not immediately feel threatened (Interviews 7, 12, 13 PT). As one long-term resident explained: 'For me, it's safe. Everyone talks about the sea, the sea... But I've lived here my whole life and I've never been afraid the sea would reach here. Sure, now it's eating away a bit. But I've never been afraid the sea would come this far'. (Interview 13 PT).

Expert knowledge is also contested in the case of Fairbourne, where a consultancy firm conducted the initial risk assessment based on climate change scenarios and models. The accuracy of the predicted flood risks was challenged by local residents, who pointed out that several recent storms had minimal impact on Fairbourne (Hilson and Arnall 2024), Interviews 12, 16, 18, 20 UK). In response, a Welsh

geographer conducted an independent study out of interest in the case. His findings suggested that Fairbourne could be effectively protected in the future with a few simple interventions (Hall 2021, 2022). Following this, the local government commissioned an independent peer review to evaluate both the initial risk assessments and the geographer's study (YGC 2022). This highlights the challenges and contested nature of predicting climate change impacts on Fairbourne, sparking debates among experts and residents, and raising questions on when predicted impacts become 'certain enough' to justify relocation plans.

The Austrian flood risk management system is predominantly characterised by institutionalised, top-down decision-making. Final decisions regarding risk assessments and strategies for risk reduction are typically grounded in engineering expertise. Risk reduction measures frequently emphasise technical mitigation strategies. This approach parallels the decision-making process surrounding the use of planned relocation as a risk reduction strategy, including considerations of why, how, when and where to implement it. In many cases, citizens are unaware that public authorities opt for planned relocation schemes over technical mitigation measures to address potential risks. Community engagement primarily focuses on informing citizens about the planned relocation process, with limited integration of individual needs and interests.

Recognitional justice

Ascribing the findings on recognitional justice to the philosophical traditions we considered is challenging, as they tend to focus on distributional and procedural aspects and have not systematically elaborated on the conditions through which individuals and groups are acknowledged and valued. Our results point to an underlying libertarian emphasis on property rights in the way legitimate stakeholders are recognised. Property ownership is a prerequisite for being involved in relocation programmes, meaning that renters are systematically overlooked (as also found by Dundon and Camp 2021 in the US). As people with lower income are less likely to own a home (Eurofound 2023), this raises questions on whether relocation schemes might eventually benefit those with higher economic means and exacerbate existing inequalities, contrary to prioritarian principles.

However, policies in Portugal and Italy also include elements that account for the diverse circumstances of affected stakeholders. In Portugal, permanent residents—despite lacking formal legal titles—are granted new housing, acknowledging their vulnerability and long-term presence. By contrast, second-home owners without legal proof of ownership are excluded entirely. Similarly, the Italian policy differentiates between first house and second house

owners by recognising the need to prioritise the former as constantly exposed to risk. Discussions in Fairbourne also focus on ‘vulnerable’ elderly residents over the age of 55, who make up approximately 62% of the population (Fairbourne Moving Forward 2019), although it is unclear how any differentiation for this or other groups will be made in practice. By contrast, the Austrian policy does not recognise the heterogeneity of affected stakeholders and applies an egalitarian one-fits-all approach.

Discussion and conclusions

We developed a framework to examine how different forms of justice—distributive, corrective, procedural and recognitional—and their different understandings through different theoretical lenses matter when planning for and implementing planned relocation initiatives. Making these understandings and their normative assumptions explicit helps explain why policymakers and stakeholders often speak past one another when invoking ‘justice’ and reveals the trade-offs inherent in different approaches. Recognising these underlying logics can foster more transparent and reflexive decision-making, clarify whose values and interests are being prioritised and support fairer, more accountable debates about the ethical implications of relocation policies.

We applied the framework to four case studies of preventive planned relocation in Europe. An original finding from our analysis is that different notions of distributive justice may come into play when moving from the national and regional level to the households and community one, suggesting that different criteria can coexist and complement each other at different scales. In Italy, the choice of planned relocation against other adaptation options is informed by cost-benefit reasoning (utilitarianism) but does not necessarily result in decisions that disproportionately affect the most vulnerable groups. On the contrary, the Piemonte Region prioritises primary residents over secondary residents, thus demonstrating an effort to better align with prioritarian understandings of distributive justice. Similarly, in Portugal, the local administration’s decision to offer replacement homes exclusively to permanently residing families—who are often socio-economically disadvantaged—suggests an effort to address pre-existing inequalities.

Our results reveal a predominantly utilitarian understanding of distributive justice in how beneficiaries of relocation are identified at the national and regional levels. The case of Fairbourne is arguably the most radical manifestation of this approach, as competing adaptation options are solely dismissed for being uneconomic and unaffordable within a wider societal perspective—thus confirming Thaler and Hartmann’s (2016) observation that flood risk management

in the UK rests on strong utilitarianism. An egalitarian approach instead characterises the burden-sharing component of distributive justice, with cross-country differences in cost coverage and compensation models—full in Italy and Portugal and partial in Austria. This finding positions the approach to relocations in continental Europe closer to the centralised end of the risk management responsibility spectrum (McLennan and Handmer 2012) and in contrast to the shift in responsibilities from the government to individuals and communities at risk often driven by neoliberal policies in other western countries like Australia, New Zealand and the USA (Crosweller and Tschakert 2021).

On procedural justice, we found that participation was motivated by egalitarian principles of inclusion but in practice was limited in scope and depth. The dynamics we identified particularly in the UK and Portugal cases reflect a pattern of symbolic rather than substantive engagement, which not only undermines procedural justice but also intersects with issues of recognitional and distributive justice (Bryson et al. 2013). When participation fails to acknowledge lived experience or shape outcomes, it risks reinforcing existing inequalities and eroding the legitimacy of relocation as a just adaptation strategy. The Italian case was successful in shaping the perceived legitimacy and effectiveness of planned relocation processes, but reflects an instrumental function attributed to participation (fostering acceptance and minimising conflict) that tends to reflect more a utilitarian rather than egalitarian reasoning. This aligns with the value recognised by some adaptation research to active stakeholder involvement for enhancing the acceptability of adaptation measures (Adger et al. 2005; Owen 2020; Bragg et al. 2021; Steg 2023). However, recent literature on deliberative forms of democratic engagement emphasises the value of participation *per se* to enhance legitimacy, fairness and reflexivity in decision-making (Dryzek et al. 2019). This includes co-design forums and collaborative planning processes that are increasingly tested in climate adaptation efforts (Willis et al. 2022) and could be further explored in the context of the radical and difficult choices entailed by planned relocation.

All our cases showed how decisions were based almost exclusively on technical and expert-driven assessments, with minimal integration of local or experiential knowledge. These findings confirm a dominant technocratic logic in adaptation governance where risks are framed as technical challenges best addressed by experts (Tubridy et al. 2022b, a) and alternative ways of knowing are marginalised (Nightingale et al. 2022). They also point to what has been named the ‘climate gap’ (Gaillard 2012), to refer to the persistent divide between expert-driven assessments and community perspectives on risk, vulnerability and adaptation priorities, which was particularly striking in our Portuguese and Welsh cases. Future research could

explore how this divide might be bridged through participatory knowledge co-production, inclusive assessment frameworks and institutional mechanisms that enable local perspectives to meaningfully inform relocation planning and decision-making.

With respect to recognitional justice, we faced challenges in ascribing the findings to specific philosophical traditions, given the limited elaboration of the philosophical traditions we considered on the conditions through which individuals and groups are acknowledged and valued. However, we managed to identify patterns of exclusion based on property rights as well as attempts to prioritise the most vulnerable or at risk. Future research could examine how different philosophical and theoretical perspectives, such as critical, postcolonial or feminist approaches, conceptualise recognition and its absence in the context of climate adaptation. Such work could help clarify the normative foundations that shape whose identities, experiences and claims are legitimised or marginalised. Empirical studies can also explore how social identity, property relations and historical marginalisation influence recognition in practice.

Finally, the framework we developed advances ethical debates on planned relocation by encompassing multiple forms of justice and explicitly distinguishing among philosophical traditions and their underlying principles. However, it presents some limitations that could be taken up by future research. First, and similarly to Biermann and Kalfagianni's (2020) research framework on planetary justice, our framework focuses on understandings of justice that are rooted in mainstream western philosophical traditions. This might affect its applicability to non-western contexts and indigenous communities (Jones et al. 2024; Yumagulova et al. 2023). Second, it does not include justice considerations between humans and non-humans, and among different non-human entities (see for instance, Goerde Herve 2022). We recognise that ecological and social justice should proceed 'hand-in-hand' (Washington et al. 2024) and we call future research to address this limitation by incorporating theories of multispecies justice (Celermajer et al. 2021).

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