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The dark side of the energy transition: Extractivist violence, energy (in) justice and lithium mining in Portugal

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ABSTRACT

Focusing on a case study in Northern Portugal, this research mobilizes an energy justice lens to unpack multiple forms of violence reproduced by lithium mining projects, advanced as urgent and necessary for the energy transition. Framed under 'green transition' discourses, a 'corporate energy transition' follows a mineral-intensive pathway which increases demand for critical raw materials and expands extractivism to new commodities and marginal territories. Lithium (Li) is central to this transition, with an estimated 1500 % rise in the global demand of this rare earth mineral by 2050. Yet, the socio-ecological impacts of Li-mining remain largely overlooked, despite driving significant environmental conflicts in Portugal and elsewhere. Based on empirical research, this article examines how Li-mining projects in Portugal reproduce distributive, recognition and procedural (in) justices which assist the 'green grabbing' and infrastructural colonization of peripheral territories, turned into new 'green sacrifice zones'. By attending to the voices and experiences of those resisting Li-mining projects, the results present the energy transition as a 'trojan horse' for extractivism, with Li-mining driving multiple energy injustice(s), reproducing violence against local communities and disrupting wider multispecies relationalities in traditionally sustainable rural territories. The research contributes to: (1) unravel the empirical contradictions of a corporate energy transition, problematizing hegemonic socio-technical responses to address the climate crisis, which expand extractivism through depletion, segregation and exclusion; and (2) reveal links between energy (in)justices and the constitution of 'green sacrifice zones', highlighting how territorial struggles embed a clash between different relational ontologies in more-than-human territories.

1. Introduction

This article explores the dark side of the energy transition, presenting an empirical study of the socio-ecological impacts of lithium mining projects in Portugal, drawing on the theoretical framework of energy justice [1,2]. Portugal has allegedly one of the largest lithium (Li) reserves in Europe[1] and, under the European Green Deal [4,5], lithium is presented as a critical raw material to attain an energy transition at European level. Although the Portuguese government and major private sectors draw on discourses of "green transition" and "carbon neutrality", presenting Li-mining as necessary and urgent to tackle climate change, local populations are mobilizing against these projects that threaten to turn their regions into "green sacrifice zones" [6] — driving significant environmental conflicts and grassroots resistance in Portugal [7,8]. By attending to the voices, narratives and experiences of those resisting Li-mining, this article seeks to unpack the sociotechnical controversies of the so-called "green transition", combining the lens of energy justice with notions of "green sacrifice zones", "infrastructural colonization" and "social engineering", by examining a case study in Northern Portugal.

The energy transition entails multiple 'sociotechnical imaginaries', embedding competing materialities and meanings [9], to which the Portuguese case is no exception [10]. Debates on the energy transition emerged in the late 1970s, proposing renewable sources in alternative to nuclear energy developments [11]. Yet, as the climate crisis intensifies and is linked to greenhouse gas emissions, the energy transition centered efforts on reducing emissions and replacing fossil fuels [11,12]. Visions and pathways to this transition are multiple, reflecting distinct socio-economic interests and desired cultural, ecological, political and technological futures. However, under a 'corporate energy transition', based

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[1] With resources estimates of 270,000 tons of lithium, Portugal sits behind Germany (2,7 Mt), Czechia (1,3 Mt), Serbia (1,2 Mt) and Spain (300,000 t) in Europe, and well behind Bolivia (21 Mt), Argentina (19 Mt), Chile (10 Mt), US (8 Mt), Australia (6 Mt), China (5 Mt) and Canada (3 Mt) [3].

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on hegemonic capitalist-technocratic perspectives [12,13], the energy transition follows a mineral-intensive pathway which expands the extractive industry towards new commodities and peripheral territories [14–16] — as illustrated by the materialities of the European 'green transition' [5,15], including Li-mining in Northern Portugal [17]. These materialities (e.g. infrastructures) imply the social construction of resources and landscapes as both biophysical and socio-political categories [9,14].

Addressing the climate crisis merely by cutting emissions (i.e. 'carbon reductionism') disregards its systemic conjuncture within a crisis of global capitalism, allied to ecological breakdown and rampant social inequalities [18,19]. A 'corporate energy transition' promotes weak sustainability measures, generally adopting authoritarian techno-economic perspectives, where 'green-growth' discourses foster the accumulation of wealth and power, thus expanding extractivism [12,16] — in order to supply a mineral-intensive pathway [5,15]. Such transition stands in opposition to counter-hegemonic people-centered pathways based, for example, on post-development and degrowth perspectives [20–22], urging a close examination of how a 'corporate energy transition' reproduces power asymmetries and manifold injustices.

Indeed, the energy transition has fostered the accumulation and centralization of energy sources rather than their replacement [14,23,24]. Both global energy consumption and fossil fuels demand increased by nearly 5 % in 2021 [24], while fossil fuels still supplied over 80 % of global energy in 2019 — presenting a net decrease of only 6 % since 1973 [25]. Simultaneously, 'green energy' infrastructures and technologies drive a demand for several critical raw materials, which is estimated to increase by nearly 1500 % by 2050 [5]. This motivates an expansion of corporate and state control over resources [26], including mining industries, driving an energy transition based on "a continuum of green grabbing practices (…) which reinforce and even extend pre-existing processes of commodification of nature" [14]. Hence, a 'corporate energy transition' legitimizes a dispossession by the private sector for alleged ecological reasons [14,23], fostering new forms of "green extractivism" [17] —the appropriation of natural resources premised on power centralization and capital accumulation [27–29]. In articulation with "green grabbing" practices, resource extraction entails the construction of peripheral territories as disposable "green sacrifice zones" [6,30], often through deploying violence and social engineering techniques [31–33], driving depletion, segregation and dispossession [30–32],

Among the critical raw materials to assist decarbonization of the global economy, lithium is propounded for the development of 'green' energy storage technologies, namely Li-ion batteries [26,35]. Demand for this metal is estimated to rise between 500 % [15] and 6000 % [5,16] by 2050. With global resource estimates of 89 million tons [3], Li-ion batteries represented over 50 % of global Li-demand in 2019 [14] and, since 2000, led a yearly 20 % increase in global Li-production [26], increasing its economic value by nearly 500 % in 2021 [36]. Under 'green discourses' which portray this transition as "inevitable and positive" [14] while promoting 'smart' and 'green' mining activities [15], the socio-ecological impacts of Li-extraction remain largely overlooked [26] — despite extractive industries being known for their devastating impacts, disproportionately affecting local populations [16,33,37,38]. Despite research focusing on its socioeconomic benefits [35], recent studies on Li-mining impacts support concerns with biodiversity, hydrological, sociocultural and socioeconomic issues, both abroad [16,26] and in the Portuguese context [17,39,40]. In that sense, Li-mining epitomizes major sociotechnical contradictions of a 'corporate energy transition', raising critical environmental, climate and energy justice concerns [14,26,41].

By examining a case study in Northern Portugal, this article explores how Li-mining projects may reproduce distributive, recognition and procedural injustices, enacting violent practices of extraction supported by 'corporate transition' discourses. As claimed by Jenkins et al. [1], "if injustice is to be tackled you must (a) identify the concern – distribution, (b) identify who it affects – recognition, and only then (c) identify strategies for remediation – procedure". Drawing on an energy justice framework, this article seeks to investigate how Li-mining in Portugal may foster 'green grabbing' practices, deploying social engineering and counterinsurgency techniques to enforce the 'infrastructural colonization' of peripheral territories, constructed as new 'green sacrifice zones' (see also [17]). By articulating notions of (in)justice with colonization and sacrifice, the article averts an energy justice's focus on policy-making, which may tend to reproduce hegemonic power relations [42] such as those embedded in institutional 'just transition' discourses[2] [4,41], focusing instead on how a 'corporate energy transition' embeds and shapes socio-political power relations which reproduce (in)justices, by fostering depletion, segregation and dispossession. Ultimately, fighting injustice is not equivalent to defining contested notions of justice [42] nor sufficient to ensure a 'just transition' [41], as this requires place-based approaches which respect local values, concerns and desires.

The article starts by providing a critical overview of the energy justice literature, followed by a contextualization of the Portuguese case-study and the methodological approach. The following sections present and discuss the empirical results, disclosing various dimensions of injustice reproduced by Li-mining projects in Portugal. Based on the empirical research, this article argues that the territorial struggles driven by Li-mining embed ontological struggles over the materialities and meanings of 'green transitions', contesting the appropriation of nature and territorialization of power relations which reproduces a techno-capitalist legacy.

2. Theory, materials & methods

2.1. Energy justice, infrastructural colonization and green sacrifice

Along with economic and technological infrastructures, energy systems incorporate matters of social justice, political and power structures and ecological, ethical and moral concerns [2,43]. The energy transition, conceived to attain carbon neutrality, has been predominantly devised as a purely technical task — i.e. framed by 'science' and applied by 'policy' [44] — despite seeking to address major social, cultural, political and economic challenges [45]. As argued by Sovacool et al. [2], energy infrastructures are often framed in a 'moral vacuum' when, actually, these may reproduce systems of depletion, by grabbing land and resources; segregation, by isolating the production's externalities from its consumption's benefits; and exclusion, by furthering marginalization from decision-making processes. Energy justice goes beyond concerns over energy security and affordability, seeking to understand how energy systems embed and shape specific socio-political power configurations [42], while contributing to unpack "overlapping layers of marginality" within energy systems [45], which intersect diverse class, gender, ethnic and even nonhuman identities whose voices and aspirations are often silenced.

As new patterns of resource appropriation emerge, energy justice invites consideration of how 'clean energy' infrastructures may renew historical power dynamics, within Global North–South but also

[2] The concept of a 'just transition' emerged in the 1980s, advanced by global trade unions to promote 'green jobs' throughout the replacement of fossil fuels industries [41]. This notion was incorporated in the 'Just Transition Mechanism' proposed by the European Commission [4], through the creation of a social climate fund to promote new jobs, mitigate energy costs and support energy investments. As this article suggests, the dominant "energy transition" discourse is actively mobilized by hegemonic actors to enforce various forms of injustice, indicating that the institutionalization of a 'just transition' allows for the reproduction of the same techno-capitalist forces at the root of the climate crisis.

urban–rural relations. First, these may be renewed through the infrastructural colonization[3] of marginal landscapes and ways of living, where coercive control is employed to reshape territories and impose socio-cultural changes in order to advance the extractive processes of natural forces and resources [17,46,47]. Second, in articulation with "green extractivism", such infrastructures may enact "green grabbing" practices, where "the appropriation of land and resources for environmental ends" forces the transfer of ownership, binding both capital and primitive accumulation with dispossession [24: 238]. Third, these infrastructures often rely on creating "green sacrifice zones" [6], to render extraction and absorb externalities, by constructing certain peoples and territories as peripheral and, thus, disposal to be 'sacrificed' [17,30] — reinforcing marginalization through depletion and segregation. And, finally, the feasibility of such energy and extractive projects often relies on social engineering and counterinsurgency techniques, where "corporate actors and their allies obstruct, condition and attempt to shape (re)actions 'from below'" [32], including explicit and violent repression but also more subtle and long-term ways deployed to forge human minds, hearts and behaviors in order to prevent opposition, 'manage' dissent and 'manufacture' consent [32,48,49]. Thus, covert by 'green discourses', 'clean energy' developments may raise numerous distributive, recognition and procedural justice concerns which this article seeks to analyze.

As Fraser argues [50], social justice must accommodate both social equality and cultural difference, seeking both redistribution and recognition. Yet, attaining any form of justice requires a focus on decision-making processes [51] to respect both universal justice interpretations and demands from local values and norms [52]. Indeed, "justice is an inherently complex and contested concept" with varying meanings depending on its social, cultural and political contexts [53] — i.e. particular forms of justice, relying on the recognition of different values and preferences, inform and challenge interpretations of universal justice [52]. Energy justice "attempts to apply principles and concepts from social justice to the global energy system" [45] while, along with environmental and climate justice, enquiring about the social dimensions of transition pathways [44] and contributing to unveil inequalities across whole energy systems, from resource extraction to energy production, consumption and waste [1,41].

Energy justice may be defined as "a global energy system that fairly disseminates both the benefits and costs of energy services, and one that contributes to more representative and impartial energy decision-making" [2]. The concept emerged recently as an interdisciplinary research agenda, rendering insights from political economy, geography, energy policy, climate science, legal studies and environmental sciences [1,44,54]. The term was first applied in the early 2000s by US and UK-based NGOs and, from 2010s, further defined and developed in academic literature [54]. By focusing on whole energy systems, energy justice frameworks enable the full-cost valuation of energy infrastructures, drawing "attention to different actors of concern and most pertinently, different scales of justice" [1]. These include actors either responsible for or victims of energy injustices [45], lending questions of 'justice by whom' along with 'justice for whom' [43].

However, by assuming that justice can be delivered through policy, energy justice often downplays the socio-political contexts within which energy policy operates, potentially generating "a process that neutralizes, erases, and/or disavows contentious politics" by incorporating dissent and opposition into hegemonic structures [42]. Indeed, reducing injustices may be sought for instrumental reasons, i.e. to avoid conflicts that hinder the project's implementation [44], being often assumed to increase energy costs [45]. Moreover, energy justice concerns may embed myriad trade-offs where, as justice is contingent on particular socio-cultural contexts, including local values and knowledge systems [42,52,53], some forms of justice may foster other forms of inequality [45,55]. Then, without engaging with the political ontologies of territorial struggles to move beyond a positivist frame, energy justice may "tend to reproduce rather than transform hegemonic power relations" [42].

Nonetheless, energy justice provides evaluative and normative contributions to challenge dominant technical and socioeconomic perspectives, such as those embedded on 'low-carbon' transitions [44]. First, energy justice has been framed around three central tenets, following a "what, who and how" approach [1] to (1) distributive justice, revealing emergent inequities in the uneven distribution of costs and benefits; (2) recognition justice, disclosing whose groups are most vulnerable, misrepresented or ignored; and (3) procedural justice, denouncing unfair decision-making processes; with some authors adding dimensions of cosmopolitan justice, to account for global externalities [44], and restorative justice, to assist remediation [43,54]. Second, energy justice has been framed around ten core principles [2,45], ranging from availability, transparency and sustainability to equity and intersectionality.[4] Therefore, energy justice offers a conceptual, analytical and decision-making tool that integrates diverse dimensions of justice to better understand how energy systems may reproduce injustices and hegemonic power relations, contributing to inform energy policy and overcome key limitations of environmental and climate justice, by providing a more targeted and potentially effective approach [41,45,53].

Although improving participation in decision-making processes is fundamental, the transformative potential of energy justice rather stems from its ability to assess how energy systems reproduce current and historical power relations [42,55], unraveling the ontological struggles and political legacies underlying their spatial territorialization. A 'just transition' requires a joint reflection on environmental, climate and energy justice issues to promote fairness and equity [41], addressing relevant case studies at the new extractive frontiers of energy infrastructures, where most research has either too broad or narrow scopes [26,43,56]. Research also needs to go beyond notions of proximity [41], exposing injustices across various spatial and temporal scales [45], unpacking unjust 'green discourses' and exploring the social production of inequality [1]. Moreover, despite critical approaches to justice from a decolonial perspective [42,57], the infrastructural colonization of rural spaces in the Global North has been far more neglected [46,47], with energy justice being still rooted in Western perspectives and holding a strong anthropocentric focus [45,53]. Therefore, as the 'green transition' materializes new extractive frontiers [6,34,58], a close examination of how it may deplete and exclude 'other' place-based ontologies becomes urgent, requiring also further engagement with pluriversal and nonhuman ontologies as part of marginalized groups [42,45,53].

2.2. The Portuguese case-study: Barroso and the lithium race

Lithium resources in Portugal are estimated at 270 thousand tons [3]. Currently, Li-extraction contracts in Portugal cover a total of 2615 ha and Li-prospection contracts over 25 thousand ha, with 27 pending requests for Li-prospection and/or extraction, comprising another 726 thousand ha [59]. In December 2021, the government's Lithium Prospection and Research Plan (PPP) went into public consultation, extending over 304 thousand ha. Together, these projects cover over 1 million ha, affect 9 out of the 18 Portuguese administrative regions and comprise nearly 12 % of national territory. Despite the signed contracts, most Li-mining projects are still awaiting approval from the Portuguese

[3] Distinct from *colonialism*, infrastructural colonization "looks at the microcosm of territorial control, landscape and socio-cultural change" employed to advance extractivism [17].

[4] The eight core principles [2] are (i) availability, (ii) affordability, (iii) due process, (iv) transparency, (v) sustainability, (vi) intragenerational equity, (vii) intergenerational equity, and (viii) responsibility, with latter frameworks adding two other principles [45] for (ix) resistance, and (x) intersectionality.

Environmental Agency (APA), while received strong opposition from local populations [7,8,60].

Around 56 % of Li-extraction contracts are located in the Barroso region, in Northern Portugal, where four distinct Li-mining projects extend over 1460 ha [59] — the mines of Barroso, Romano, Lousas and Gondiães. Since November 2021, the APA faces a complaint process posed to the Aarhus Convention, for withholding information on the Barroso's mine [61,62] while, in July 2022, it asked for the reformulation of this Li-mining project in order to issue the environmental impact declaration [63,64]. Dunlap and Riquito [17] present a detailed overview of its implementation process so far.

Lyrically known as the 'wonderful kingdom', the Barroso is a mountainous region (Gerês-Queixa Sierran biogeography) mostly covered by semi-natural (48 %), forest (30 %), agroforestry and farming areas (18 %) [65]. The region's economy strongly relies on agriculture, stockbreeding, beekeeping and ecotourism [65,66] — despite historical quarrying activities, such as the Borralha Mine (from 1902 to 1986), whose socio-ecological impacts left profound scars both in the landscape and people's memories [17]. These rural communities still preserve extensive agro-sylvo-pastoral practices, based on complex communal land and water management systems [67]. With important autochthonous species, cultural heritage sites and a great natural biodiversity [68,69], Barroso is one of seven places in Europe recognized by the United Nations as a 'World Agricultural Heritage Site' [65]. This recognizes the significance of Barroso's ways of living, known for their long-term resilience and sustainability, now threatened by 'green transition' developments.

2.3. Methodology

This article is based on the qualitative and quantitative analysis of 21 in-depth semi-structured interviews conducted between November 2021 and January 2022 with members of local communities in the Barroso region (52 %), other regions affected by Li-mining, including Guarda, Viana do Castelo and Viseu (29 %) and scholars researching energy transition and climate justice (14 %) — see SM, Table A1. Complementing the interviews, since August 2021, recurring periods of participant observation were held with local communities in Barroso and during gatherings, protests and events promoted by local organizations opposing Li-mining projects, allowing an in-depth understanding of local views and the establishment of relationships of trust and reciprocity with members of local communities [70,71].

Research participants were selected through both a purposive and snowball sampling strategy [70] — starting by identifying active members of local communities, the mayors of relevant municipal councils and scholars working on significant subjects — to better understand how Li-mining projects may reproduce injustices and invoke resistance from local communities. While pursuing the representation of different local perspectives and experiences, focusing on those resisting Li-mining may offer counter-hegemonic perspectives to 'green transition' discourses. Respondents' validation was sought in diverse contexts while triangulating information from interviews with primary and secondary sources, including newspaper articles and institutional publications. Research objectives were discussed with participants and, by considering their views and concerns throughout the research process, this study sought promoting collaborative and 'participatory action research' [70,72].

The analytical framework focuses on three central tenets of energy justice: distributive, recognition and procedural justice [1,54]. Interviews were organized around six themes: (1) motivations for supporting/opposing Li-mining; (2) perceived socio-ecological impacts; (3) strategies used by mining companies; (4) strategies used by governmental institutions; (5) local ways of living and cultural identities; and (6) perspectives on climate change and the energy transition. The analysis was carried out through NVivo and followed an iterative process, informed by a grounded theory approach [72], allowing the emergence of relevant thematic codes for each energy justice tenet.

Additionally, a comprehensive online questionnaire was distributed through social media and direct email to local municipal governments and civil organizations in the affected regions, obtaining 101 responses. These results will be presented elsewhere and, here, we only include responses on the plant and animal species with higher natural, cultural or economic significance in the affected regions.

Following an interpretive approach, the study recognizes the researchers' role in the co-production of research places, pursuing the understanding rather than explanation of local people's perspectives. Moreover, acknowledging sociocultural phenomena as always under construction, the results necessarily present a specific rather than universal understanding of reality [71,72]. Findings are not generalizable to entire populations but, being representative of particular instances, enable empirical and theoretical inferences which contribute to disclose how the energy transition has been mobilized to legitimate violent extractivist practices, by both mining companies and governmental institutions alike [17,31,32].

3. Results

Results are based on the analysis of 21 in-depth semi-structured interviews. The figures presented in this section are intended to illustrate the diversity and/or resemblance of participants perspectives and experiences, rather than being representative of populations' views or seeking to quantify any energy injustices. To protect research participants, the authors had to conceal their identities and omit some relevant data.

3.1. Li-mining: 'fake solutions' to the energy transition

> "*First, everything must change and it's not just lifestyles, it's politics, economics, the relationship with nature, the relationship with people. It really has to change the whole way we think about society, and there's no commitment in this sense*" (P14)

Motivations to oppose Li-mining are multi-faceted, not necessarily conveying an opposition to the energy transition, but rather questioning its sociotechnical premises. Most interviewees considered the energy transition urgent and necessary but questioned the need for Li-mining, perceived as an ineffective technological solution to the broader socio-economic, cultural, ecological and political issues underlying the climate crisis. Highlighting the contradictions of current "techno-fixes", a local environmental engineer asserts, "The solution is not solely technical (…) [Technology] can help, of course… but mostly we have to change the whole model of society we live in" (P9), while another local man claims, "Lithium is not a solution, let's stop chasing fake solutions when there is so little time. Let's build real solutions" (P21). Clarifying opposing stances, a local activist further argues:

> "*The energy transition is very important, it's urgent, but like everything, not at any cost, not at any price. It is important, above all, that it's done — and this is what we defend — protecting the people, the animals and nature*" (P18)

Indeed, although Li-mining projects are often framed within a rhetoric of 'green mining' and marketed by mining companies and governmental institutions alike, as leading to job creation, economic development and ecological restoration (e.g. [17]), interviewees meet these narratives with distrust and scepticism. As illustrated by a local activist, "The truth is there's no green mining. There isn't, period. It is not worth to insist on a scam, so to speak" (P21), while a local man argues,

> "*[T]he 'green mining', as the government and the European Union want to sell us… — trying to deceive people, as if this will be all roses, with no impacts at all — it's a big fallacy. Mining can never be green and clean.*" (P9)

This contrasts with the notion that those opposing Li-mining projects are 'climate deniers' or 'against progress', pointing instead to wider socio-ecological concerns. As further detailed in the next section, those opposing Li-mining broadly agree these projects carry socio-ecological impacts that threaten their regions and local ways of living:

> "*I consider this type of destructive development completely incompatible with our region, with what we value in our region [Barroso], which is our greatest wealth here… our water, the clean air, the whole nature we have here, which is unique.*" (P9)

Then, opposing Li-mining further stems from indignation with the lack of public participation in decision-making processes, evident in local demands for autonomy regarding such decisions: "our discourse is not an environmentalist discourse, it is not an activist discourse, it's simply, we are the ones who decide our own future" (P17). Still, Li-mining opposition is not necessarily rooted in 'NIMBY' standpoints (i.e. 'Not in My Back-Yard'), which seek to externalise costs towards other regions, but more often rather questions the reproduction of hegemonic socioeconomic systems dominated by centralized political and economic powers. As argued by a local man, "We can't be against lithium mining just on our doorstep (…) We need to be coherent… [and] that means we need to question the whole model of consumerist society we live in" (P9), while a local woman further clarifies,

> "*We don't need to just paint things 'green' with the climate flag, we need real solutions and that means not accepting the mines here, but also not accepting the mines on the other side of the world.*" (P16)

Local perspectives are critical of 'green discourses' which seek to legitimize Li-mining, highlight its long-standing socio-ecological impacts and suggesting that these projects reproduce the same extractivist stances towards the environment which underpin the climate crisis. Yet, the lack of local agency regarding sociotechnical projects marginalises opposition and opens pathways for extractivist developments, further isolating — both politically and economically — marginal territories and populations, now targeted by the 'green transition'. As such, Li-mining may be understood as new modes of infrastructural colonization [17], where procedural injustices enable the reproduction of distributive and recognition-based injustices, turning peripheral regions into "green sacrifice zones" — as fully detailed in the following sections.

3.2. Distributive justice: again 'the burden of most, for the benefit of few'

> "*It seemed unfair, right? They were asking us, who live sustainably after all, to pay for this energy transition… [which] will not benefit us. So there was this sense of injustice, first. And then, this realization [that] this wasn't even justified.*" (P2)

All interviewees mentioned aspects of distributive justice linked to Li-mining projects — see Fig. 1. With 251 references to the unequal distribution of burdens and benefits, participants highlight tensions between the 'urban' and 'rural' populations alongside increased inequalities between the 'wealthy' and the 'poor'.

Regarding the temporal and spatial distribution of burdens and benefits, participants voiced concerns with short-term solutions that hold heavy impacts on future generations, also stressing how Li-mining impacts may extend beyond the vicinity of mining sites, affecting not only rural but also urban populations. This is illustrated by a local mayor in Barroso asserting, "when exploitation is carried out at the expense of Nature (…) any benefits or socio-economic developments are but short-term", further adding:

> "*By threatening World Heritage Sites for a few tons of lithium, I don't think we are contributing to fight climate change, on the contrary, we are destroying the planet even more and compromising all future generations who could build their lives here*" (P4)

Moreover, as toxic flows may contaminate water bodies and agrarian soils which supply major urban centres, a local farmer argues: "We are the first to suffer but it won't be just us, because the water flows and then… [experts] say, at the level of the waste heaps, impacts can go up to 200 km" (P1). Another local resident, mentioning the water supply of major cities in northern Portugal, reinforces, "This struggle is not just for Barroso, it's a struggle for all the people who drink the water from Barroso. And we mean thousands of people" (P9).

Participants highlight Li-mining ecological impacts, including threats to ecosystems, freshwater bodies and biodiversity, along with water, soil and air contamination, further stressing the environmental hazards, increased deforestation and changes on landscape aesthetics. A local woman laments:

> "*I can't even imagine the future (…) I'm aware this represents the destruction of our landscape, the ecosystems, the water, which is our biggest wealth, the clean air, the quiet, the peace. It will become impossible to live here.*" (P3)

Indeed, concerns with hydrological systems are prevalent among mentions to Li-mining ecological impacts, highlighting the vital importance of Barroso's rivers and freshwater bodies. As a local man explains:

> "*Our region is very rich in water. We have several dams*[5] *(…) [which] supply water for human consumption. We are talking about very important water reserves here which, if the mines goes forward, would almost certainly be contaminated*" (P6)

As stressed by interviewees, Li-mining ecological impacts will also negatively impact local economies, threatening the future of regional agriculture, stock breeding, beekeeping and ecotourism — all vital economic activities in Barroso. Such socioeconomic impacts will also be driven by major land-use changes and, if mining companies apply for the "public utility" of Li-extraction, the impending threat of land expropriation will enforce a dispossession of communal land and deeply affect pastoral and forestry management practices. Indeed, Li-mining projects in Barroso intend to occupy communal lands crucial to local economic activities, as a local farmer complains: "[It's] more than a third of our communal land that will disappear, of our mountains, of our land… there are many fertile and cultivated lands (…) [The mines] will destroy everything" (P1). A local man further explains:

> "*The communal lands*[6] *are a very old tradition here. All parishes have their commons, which is what makes agriculture viable. Without communal land, most agriculture that exists today in Barroso wouldn't be economically viable (…) [The mines] will simply jeopardize the viability of most agricultural production.*" (P9)

As such, participants foresee further impacts on local natural and cultural heritage, leading to the destruction of what characterizes their region — including their cultural identity and potential for sustainable development — jeopardizing the region's traditionally sustainable ways of living. Related to notions of autonomy and self-sufficiency, such concerns are voiced by a local farmer, "It's our unique identity, which we have here, that defines us. That's part of our heritage… our landscape, our soils' quality, our water, this microclimate, that's what makes us so rich, so self-sufficient." (P1). A local mayor adds,

> "*The Barroso's population lives mainly from agriculture, pastoralism, cattle raising and, to a lesser extent, beekeeping. It is this traditional and healthy way of life that we want to preserve, that makes so much of our unique identity. It is our duty to protect all the natural and cultural heritage of our land, that gives us so much, and to continue passing it on from generation to generation*" (P4)

Additionally, participants further denounce the direct impacts of Li-

[5] For example, Alto Rabagão and Venda Nova dams.
[6] Communal lands are locally referred to as 'baldios'.

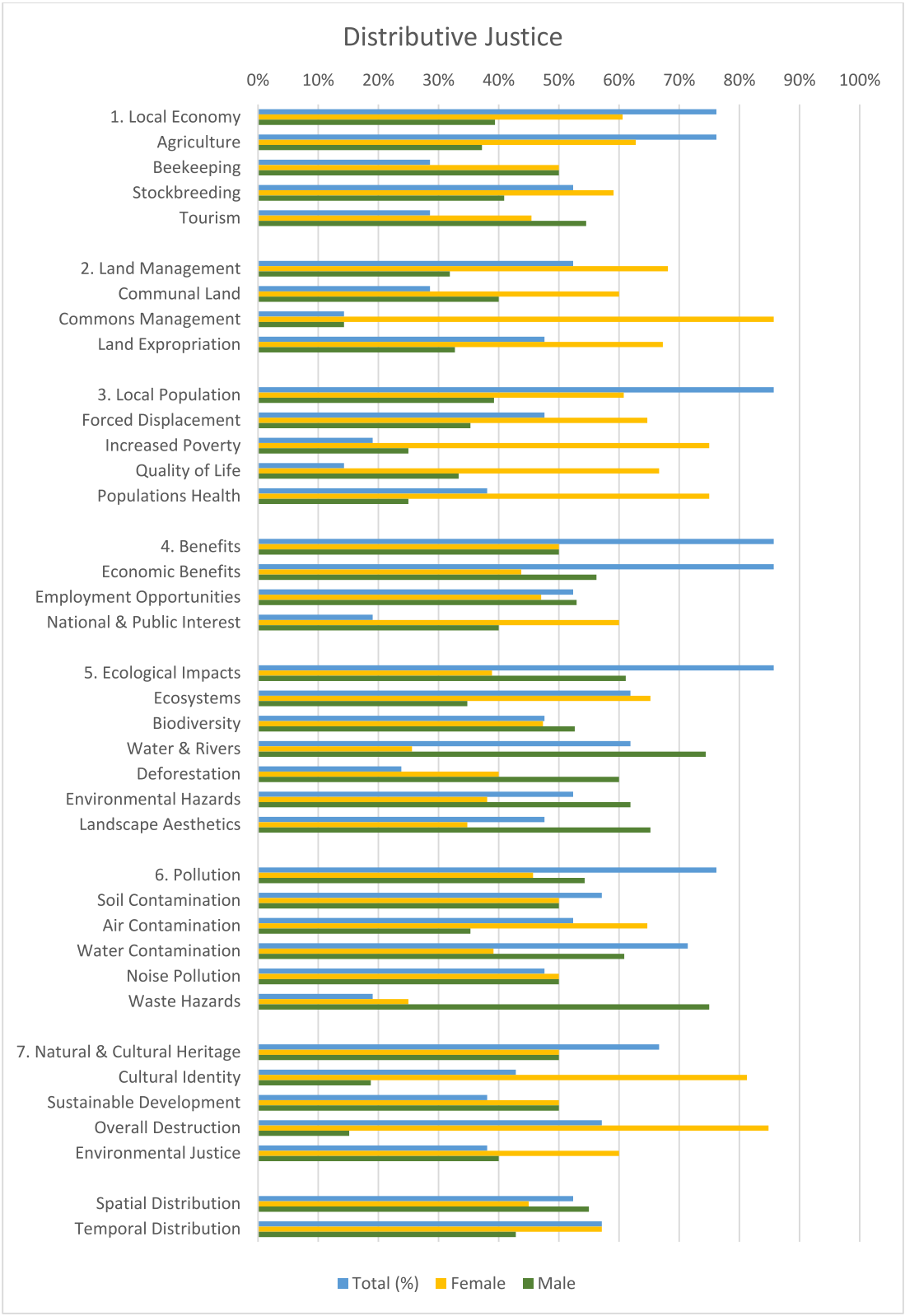

Fig. 1. Frequency of mentions to distributive justice issues, as percentage of single mentions per total participants (blue, $n = 21$) and percentage of total references per genre (yellow/green, $n = 251$) (see SM - Table B1).

mining on local populations, including health hazards, due to mining sites' proximity to villages, along with increased poverty, diminished quality of life and the forced displacement of populations. As put by a local woman, "people are afraid and it's natural, we can't blame them for that. They lived here all their lives and now… [experts] say people will not be able to continue living here" (P1), while another one adds:

"*They say it's going to be fantastic for the community, but everybody knows it's not. That's all a lie. This means the destruction of our life, our community, our environment, our ways of living.*" (P3)

Indeed, local views highlight the devastation behind the misleading claims of Li-mining proponents, remaining sceptical about hegemonic narratives and promises. Interviewees assert that potential economic gains will not benefit local communities but rather the mining companies, municipalities and/or the central government, as increased job opportunities will not provide jobs for local inhabitants but mostly for displaced and/or technical workers; and the alleged public interest in Li-mining will, ultimately, only bring short-term benefits and not pay-off the damage. As a local cowherdess argues, "they say it will create jobs, but jobs to whom? Are we going to stop doing what we do to work there? Isn't even true, because now it's all done with machinery" and, backed by the Barroso's mining history, adds "[like] during the ore's time, those who were poor, poor stayed" (P1).

Denouncing the misleading 'green mining' narratives, participants voice concerns with the potential "destruction" and "devastation" of affected regions — stressing the unfair distribution of Li-mining burdens and benefits. Moreover, despite both genders emphasizing Li-mining socio-ecological impacts, the uneven distribution of burdens may also be gendered and affect disproportionally the most vulnerable. In fact, women tend to emphasize land-use changes' impacts, particularly on communal land management systems, highlighting also impacts on local economies and populations. Conversely, men tend to make most references to ecological impacts, particularly on water and rivers, along with environmental hazards linked to waste dams.

3.3. Recognition justice: deception, coercion and misrepresentation

"*What I know is that they are not protecting neither the population's interest nor the environment. That's clear.*" (P1)

Nearly all participants refer issues of recognition justice, tied to dominant socio-political power dynamics, built upon the misrepresentation of both rural territories and communities, along with a general disregard for their real concerns and aspirations — see Fig. 2. With a total of 297 references, recognition-based (in)justices unevenly affect distinct identities, being predominantly voiced by women, and denounce how Li-mining renews hegemonic power relations. As a local female activist argues:

"*I think they're taking advantage of the countryside's economic fragility and desertification to go forward with these projects (…) They're taking advantage of our vulnerability and, thus, I think this is discriminatory*" (P18)

Indeed, mining companies, governmental institutions and the news media tend to justify Li-mining projects by misrepresenting affected regions and populations, with participants stressing tensions between central and peripheral elements of society, such as urban and rural territories. The misrepresentation of rural territories and ways of living,

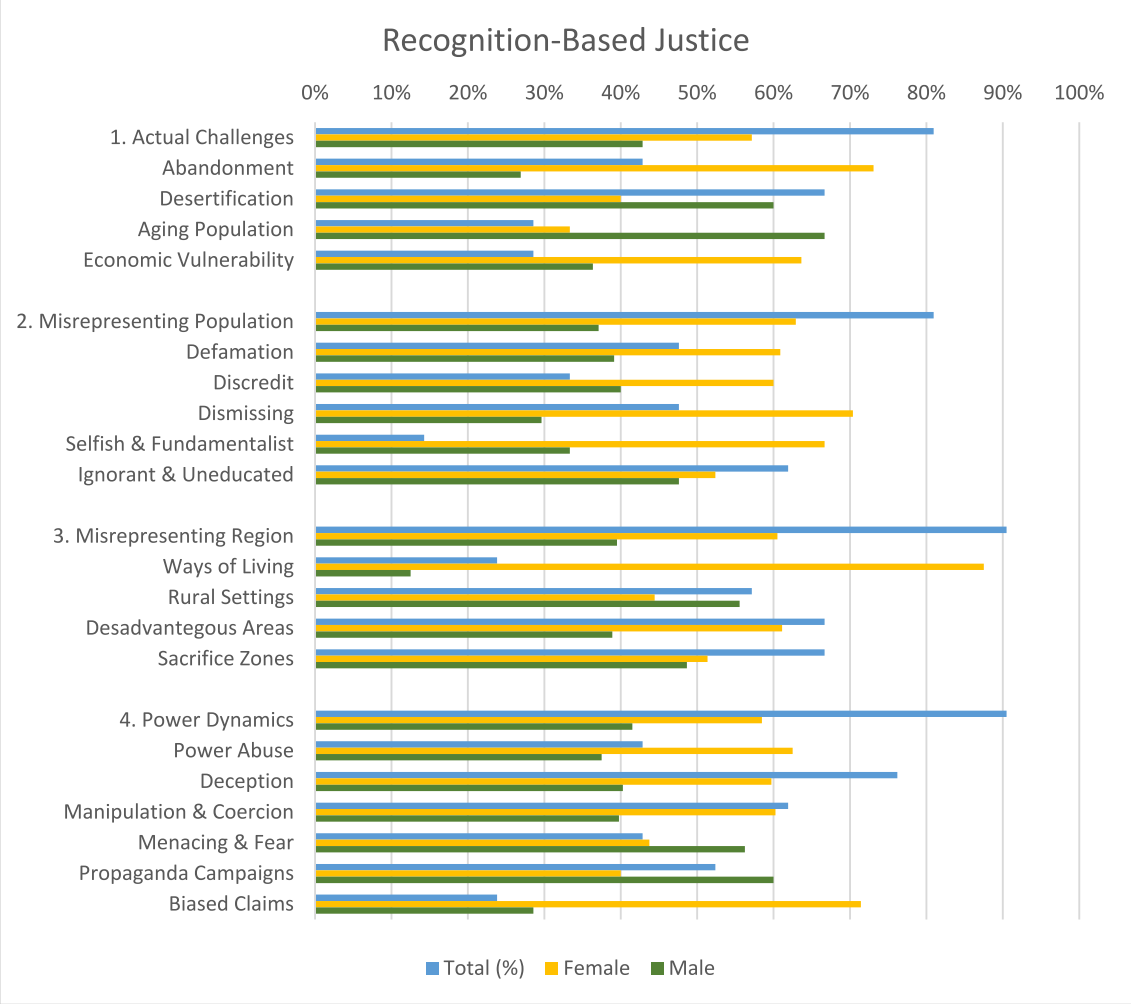

Fig. 2. Frequency of mentions to recognition-based justice issues, as percentage of single mentions per total participants (blue, $n = 21$) and percentage of total references per genre (yellow/green, $n = 297$) (see SM - Table B2).

as 'disadvantageous areas', has turned these regions into imposed 'sacrifice zones'. The manager of a local ecotourism asserts, "if there's something they ignore is our wealth, I think, on a natural level, [and] they ignore our traditions, the population's positioning, what people want for their territory" (P9). In Barroso, this misrepresentation reproduces historical power relations, already used to impose a wide range of 'clean energy' infrastructures, as explained by a local man:

> "*We have already been too despoiled of our resources (…) They implanted here half a dozen dams that flooded the most fertile lands; then covered the mountains with wind turbines; then, the hills filled with high voltage lines; and now the mines (…). We have already given enough to the country. We don't have to be the eternally sacrificed.*" (P6)

Simultaneously, participants expose the misrepresentation of local communities and those opposing Li-mining projects, often portrayed as ignorant or uneducated, treated with contempt or disregarded, or depicted as selfish and fundamentalist. Such contempt is well illustrated by the statement of a municipal mayor, "I see mining as an opportunity. I'm not one of those denialists who don't believe in science, I believe in science" (P11). Yet, a local man asserts, "For them, they think they know 'what is good for us', we are like children, we are treated like children" (P9), while a local cowherdess complains:

> "*We were being deceived every day and we complained but they continued as if nothing [happened] (…) I don't know how they perceive us, but… one of the reasons I don't conform is the way they treat us, you know? It's outrageous, we feel anger, revolt… as if we aren't people or there's nobody here (…) [W]e aren't just savages living here*" (P1)

On top of this, recognition injustices tend to ignore or misrepresent the real problems faced by local communities, leaving participants concerned with the region's ongoing desertification, the community's lack of support, the local population's aging and their economic vulnerability. As claimed by a local man:

> "*I think the Barroso's ways of living are disappearing, as we know them. The small, traditional farms are disappearing and I think this is quite serious because, these were simple people, who lived with little, with what the land gives, and that should be an example for us all.*" (P9)

Indeed, highlighting the region's potential role inspiring sustainable solutions to current socio-ecological challenges, he further argues:

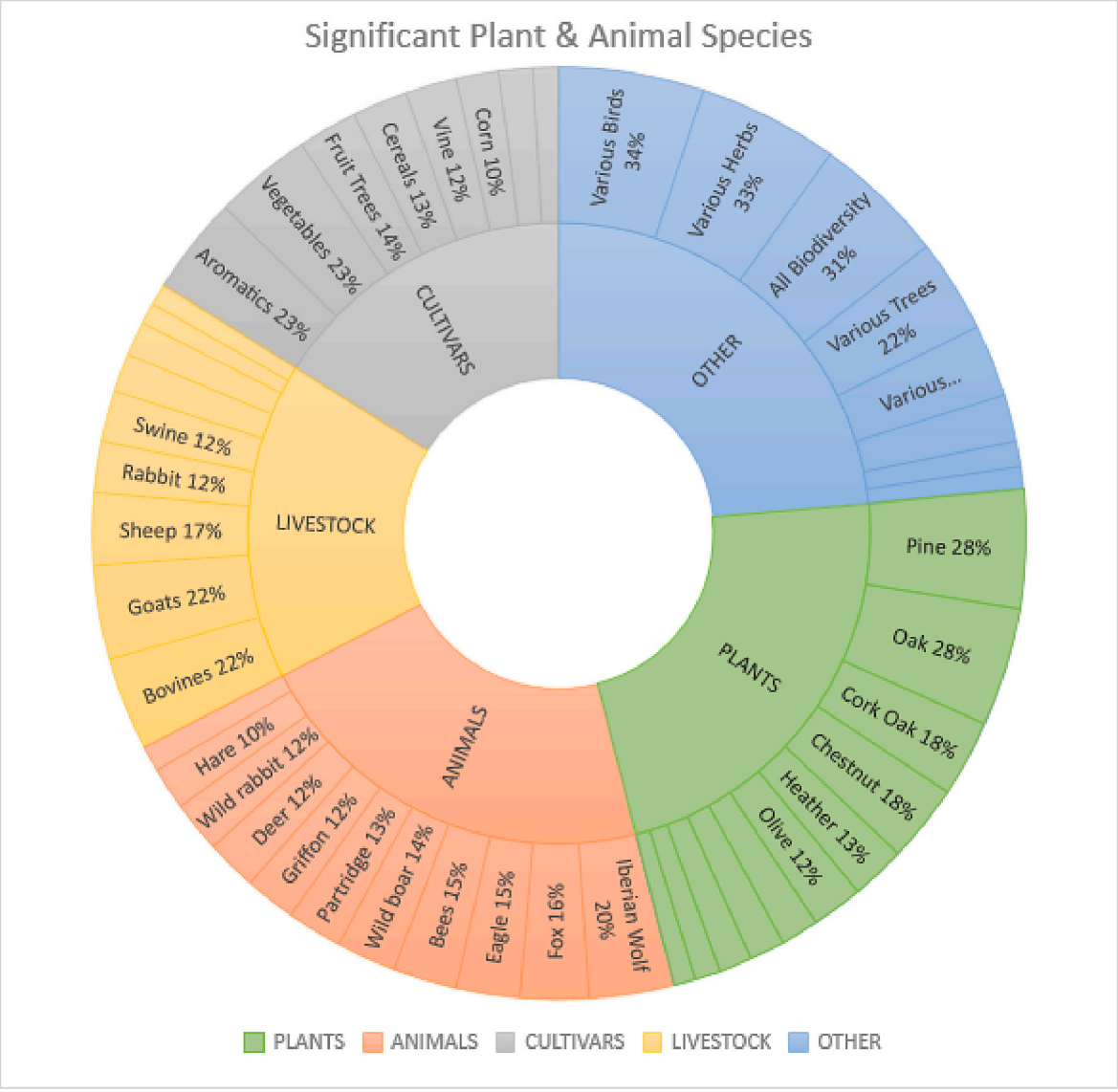

Fig. 3. Plant and animal species with natural, cultural or economic significance in the regions affected by Li-mining, as mentioned by respondents to the online questionnaire ($n = 101$) (see SM – Table B3).

> "Resilience is how people live here every day, adapting to our region. They survive with little and manage to be completely autonomous (…) This model of society should be encouraged and supported, so it continues, because I really believe it's the most adapted to overcome the major climate and environmental challenges we face." (P9)

In this regard, recognition-based injustices may be further extended to the multispecies assemblages which co-produce local landscapes and support local livelihoods. Similarly affected and disregarded by Li-mining projects, native plant and animal species with natural, cultural or economic significance include autochthonous varieties and local cattle breeds (e.g. Barrosã), among a total of 118 species (63 plant and 55 animal species) identified by participants — as illustrated in Fig. 3.

Misrepresentation builds upon power imbalances, with participants denouncing power abuses and misfeasance by mining companies, local municipalities and/or the central government, which are further reproduced by the news media. These institutions enact social engineering and counterinsurgency strategies to impose Li-mining projects on local populations (e.g. see also [17]), with interviewees referring their use of deception and attempts of manipulating or coercing populations, including through bribing, menacing and installing fear. As illustrated by a local elderly woman complains, "[We received] warnings… 'do such, if not such'; 'If you want to stay there, don't talk'; 'Don't go there alone. Never go there by yourself'." (P3). A local man further explains, "Nobody wants the mines. Yet, people do not express it because they are afraid." (P8), while his wife adds:

> "*And those who remain undaunted, it's because they either benefit in some way or live in pure ignorance. And when they benefit, means they were bribed either by the local municipalities, or the mining companies*." (P7)

Women tend to denounce most power abuses, namely deception and coercion, along with their misrepresentation and economic vulnerability. Yet, as participants argue, this institutional misconduct is covert by intense Li-mining propaganda campaigns (e.g. see also [17]), based upon biased claims:

> "*They make a brutal propaganda campaign, saying lithium is crucial for the digitization and decarbonization of the economy, which is a monumental fallacy. We know that, but they keep repeating it. They always say we have the largest lithium reserves in Europe, and that's another huge fallacy too*." (P9)

Exposing the contradictions of a 'corporate transition' supported by 'low-carbon' discourses, Li-mining is actually threatening pre-existent 'low-carbon' communities, strongly based on resilient and sustainable ways of living. Indeed, the misrepresentation of rural territories assists their 'infrastructural colonization' by mining and 'clean energy' industries, which deploy a variety of counterinsurgency (e.g. coercion, intimidation, etc.) and social engineering techniques (e.g. misrepresentation, manipulation, propaganda campaigns, etc.) to discourage opposition, manufacture consent and produce new 'green sacrifice zones'.

3.4. Procedural justice: access to information and public participation

All participants reported issues of procedural justice, including inadequate public participation, difficult access to information and misinformation, while describing the project's implementation process and its impacts on local communities — see Fig. 4. Participants link procedural issues with the behaviour of governmental institutions, mining companies and the news media. In total, 259 references were made to procedural justice issues, with women tending to report the most on the lack of access to information and its impacts on local communities.

Indeed, allied to the already mentioned propaganda campaigns, since the onset of Li-mining projects, the lack of information and misinformation were rampant (e.g. see also [17,61,62]):

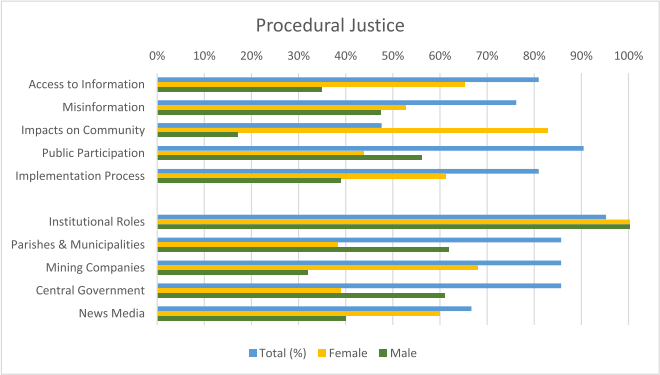

Fig. 4. Frequency of mentions to procedural justice issues and institutional roles, as percentage of single mentions per total participants (blue, $n = 21$) and percentage of total references per genre (yellow/green, $n = 259$) (see SM - Table B4).

> "[S]he told me: 'Look, they want to make an open pit mine there to extract lithium'. I confess I didn't even know what it was (…) And in the meantime, we discovered the name of the company, which until then we didn't even know." (P1)

Built upon the lack of information, public participation was only nominal and the environmental impact assessment arguably limited and biased (e.g. see also [63,64]). A local man complains, "they completely ignore all this [the population's positioning], they didn't even ask the question: 'What kind of development do you want for your region?'. That was never asked." (P9), while a local woman argues:

> "If they cared about the land, they wouldn't do what they do or, at the very least, would do a proper environmental impact assessment… Not one like this, trying to deceive, to hide, omit and only writing what suits them. That would be to care for this land and people… to listen to the people, which they never did nor cared for." (P1)

As distinct dimensions of justice are interdependent, procedural injustices are also tightly linked to distributive and recognition-based (in) justices — see Table 1. In this regard, procedural issues strengthen distributive injustices, with the lack of information, widespread misinformation and inadequate public participation being linked to threats of land expropriation, the alleged Li-mining 'public utility' and covert information on Li-mining real socio-ecological impacts. The connection to recognition-based injustices is even stronger, with procedural issues assisting the reproduction of hegemonic power relations and the misrepresentation of local territories and communities.

3.5. The role of institutions

Governmental institutions, mining companies and the news media are assigned responsible for the injustices underlying Li-mining projects — see Table 1. In 309 references made to these institutions, women tend to refer the most to mining companies and the news media, while men often refer local municipalities and the central government.

Procedural injustices are assigned to the government and, to a lesser degree, municipalities for insufficient public participation and lack of access to information; while mining companies and the news media are held responsible for not providing sufficient information and spreading misinformation throughout the implementation process.

Distributive injustices are linked to mining companies, particularly for imposing land-use changes and seeking economic benefits, while governmental institutions are assigned responsible for prioritizing economic interests, disregarding environmental protection and threatening communal land-use systems.

Finally, participants expose recognition-based injustices reproduced by mining companies, through deception, manipulation and a general

Table 1
Energy justice matrix, showing the intersections between different dimensions of energy justice and the roles played by institutions, as single mentions per total participants ($n = 21$).

Participants	Distrib.	Recogn.	Proced.	Local Govern.	Mining Comp.	Central Govern.	News Media
Distributive justice	**100 %**	**76 %**	**71 %**	**33 %**	**48 %**	**48 %**	**5 %**
Local Economies	76 %	33 %	29 %	5 %	0 %	5 %	0 %
Land-Use Changes	52 %	38 %	33 %	14 %	38 %	14 %	0 %
Local Populations	86 %	43 %	33 %	5 %	14 %	10 %	0 %
Economic Benefits	86 %	57 %	33 %	19 %	19 %	24 %	0 %
Ecological Impacts	86 %	48 %	38 %	0 %	14 %	10 %	5 %
Environ. Pollution	76 %	29 %	38 %	5 %	14 %	14 %	0 %
Nat. & Cult. Heritage	67 %	38 %	14 %	5 %	0 %	14 %	0 %
Spatial Distrib.	52 %	24 %	10 %	0 %	0 %	10 %	0 %
Temporal Distrib.	57 %	24 %	24 %	0 %	5 %	5 %	0 %
Recognition justice	**76 %**	**100 %**	**90 %**	**57 %**	**67 %**	**62 %**	**43 %**
Actual Challenges	38 %	81 %	38 %	14 %	10 %	10 %	0 %
Misrepresent Populat.	24 %	81 %	48 %	19 %	19 %	24 %	10 %
Misrepresent Region	57 %	90 %	33 %	10 %	0 %	24 %	5 %
Power Dynamics	57 %	90 %	86 %	52 %	67 %	43 %	38 %
Procedural justice	**71 %**	**90 %**	**100 %**	**71 %**	**67 %**	**76 %**	**52 %**
Access to Information	24 %	52 %	81 %	38 %	43 %	38 %	24 %
Misinformation	38 %	76 %	76 %	19 %	38 %	38 %	19 %
Community Impacts	14 %	29 %	48 %	14 %	19 %	0 %	0 %
Public Participation	29 %	67 %	90 %	33 %	33 %	62 %	19 %
Implementation	29 %	38 %	81 %	29 %	57 %	48 %	10 %

disregard for local communities' rights; by local municipalities siding with mining companies, through manipulative and coercive behaviors while misrepresenting local perspectives; and by the central government, mostly through misrepresenting rural areas and populations. The news media are held responsible for further reproducing hegemonic power relations, by conveying Li-mining propaganda.

4. Discussion

This section articulates the empirical findings with the theoretical and scholarly concerns elicited in the literature review, focusing on four major topics: a) energy transition as a trojan horse for extractivism; b) Li-mining as a driver of energy (in)justices and 'green sacrifice' by other means; c) violence as the modus operandi of Li-mining; and d) Li-mining as disrupting wider relationalities and place-based ontologies.

First, Li-mining is emblematic of the contradictions of the 'green transition', presented as a technological solution to address the perils of climate change which, instead, reproduces the same extractivist and techno-capitalist logic that led to the climate crisis in the first place [14,16]. Companies, governments and the news media claim the extraction of critical resources is necessary and urgent to achieve carbon neutrality [5,15,16], asserting it will lead to job creation and rural economic development — in line with the European Just Transition Mechanism [4]. Yet, our results suggest the "green transition" is being mobilized as a rhetorical device to expand extractivism, with Li-mining legitimizing land expropriation and the plunder of both human (local ways of living, cultural identities, local economies and traditional knowledge systems) and more-than-human entities (fauna, flora, rivers and soils). As argued by interviewees, Li-mining will only bring "short-term benefits" which "do not pay-off the damage". And, indeed, contradicting its noble claims, this 'green transition' enacts a 'green grabbing' of traditionally sustainable and resilient ecological communities — in rural territories such as Barroso, among other places —, reproducing a model of power centralization and capital accumulation which relies on the sacrifice of communal livelihoods and more-than-human landscapes.

This illustrates how 'corporate transition' discourses may legitimate depletion and dispossession, shaping how reality is perceived and what is considered possible and desirable. A corporate energy transition becomes a 'trojan horse' to expand extractivism towards new marginal territories [16,24,26] where, instead of advancing new societal models, Li-mining epitomizes a "fake solution" to current global socio-ecological challenges — illustrating how the "climate crisis" has been co-opted, by corporate and public institutions, to renew techno-capitalist perspectives.

Second, our results suggest Li-mining drives multiple forms of energy injustices, reproducing distributive, recognition and procedural issues, imposed upon new 'green sacrifice zones' [6]. These dimensions of (in) justice are interlinked and mutually reinforcing [1,2,43]. Exclusion from decision-making processes (e.g. through nominal public participation and limited access to information) reproduces structural power dynamics, between core/urban and peripheral/rural regions, which assist the 'green grabbing' and 'infrastructural colonization' of marginal territories [34,46] — promising their 'salvation' while enacting their 'disposal'. This relies on the misrepresentation of local concerns, desires and values through a variety of social engineering and counterinsurgency techniques, deployed to impose a coercive control of peripheral regions [17,49], turned into 'green sacrifice zones' by the unfair distribution of Li-mining burdens and benefits [6,30]. Indeed, reinforcing marginalization and segregation, interviewees argue Li-mining aggravates ongoing vulnerabilities by driving the depletion of local economies, cultural identities and ecological communities, for the short-term benefit of wealthy urban populations and the private profit of mining and energy industries.

The data indicate that Li-mining in Portugal fails to enact a "just transition" — as promoted by the European Green Deal [4] — reinforcing instead long-standing injustices and inequalities upon peripheral regions at both national and European levels. This research contributes to current scholarship on energy justice [1,41,45], exposing how the energy transition reproduces distributive, recognition and procedural injustices, tied to processes of 'green grabbing' [34], infrastructural colonization [46,47] and social engineering [31,32,49], underlying the emergence of new 'green sacrifice zones' [6].

Third, research shows Li-mining reproduces multiple forms of violence — an unfortunate common practice led by extractivist [17,31–33] and energy infrastructures' projects [2,45] which, although not exclusive to low-carbon transitions, is legitimized and expanded by 'green discourses'. This includes violence upon local populations, particularly those opposing Li-mining, and their wider ecological communities. Interviewees report social engineering and counterinsurgency tactics deployed through deception, defamation, manipulation and coercion, including menacing, bribing, misinforming and other forms of intimidation, actively mobilized by mining companies and governmental agents (see also [17]). Indeed, violence can be understood as

structuring Li-mining, encompassing not only the practice of extractivism itself (its "visible" face) [27,29,48] and distinct modes of power abuse (its "modus operandis") [31,33] but also how discourses are subverted (e.g. in notions of "green mining") [45], communities are disrupted, coerced and excluded [32,33] and certain territories are grabbed, depleted, and sacrificed [6,34] — driving the dispossession of local communities and their more-than-human ecologies.

Moreover, contributing to energy justice research [1,26,45], results show how extractivist violence is gendered and intersectional, further marginalizing and segregating rural populations, specially woman — their regions deemed as culturally and economically "underdeveloped", their populations portrayed as "uneducated" and their stances coined as "fundamentalist" — to legitimize the land appropriation and infrastructural colonization of their territories. This suggests that extractivist violence intersects issues of gender, class and culture, but also extends towards wider ecological communities, advancing the appropriation and commodification of nature — including wind, water, soil and life — as "resources" amenable to be plundered and depleted in the name of "green progress".

Finally, Li-mining disrupts wider human and nonhuman relationalities. This research extends the concept of energy justice to wider ecological communities, by also considering nonhuman entities as marginalized groups, contributing to overcome the anthropocentric focus of most current research [45,53]. Humans do not exist in isolation from their environments, but rather co-produce their own identities and ways of living through processes of 'becoming-with' more-than-human communities [73,74]. Indeed, those resisting Li-mining enroll a wide list of nonhuman entities — including water, soil, air, fauna and flora — whose existences not only sustain their livelihoods, but also frame concerns for their own cultural identity, natural heritage and self-sufficiency, now threatened by extractivist projects. Webs of interdependence are embedded in communal lands and commoning practices, intertwining humus, animals, plants and humans on ancestral activities, such as beekeeping, cattle herding, forestry and farming. These living relationalities are being disrupted in the name of a "green transition", suggesting Li-mining is jeopardizing broader ontological associations which support ecological communities, especially those epitomizing land-based sustainability and resilience. As claimed by a local woman, "love for the land" is what inspires her resistance. In that sense, resistance to extractivism animates wider ecological communities at risk of being destroyed and, one could argue, Li-mining illustrates a clash between two very distinct relational ontologies: one, based on commoning ecologies supporting multispecies coexistences; and another, based on extractivist violence, driving depletion, segregation and exclusion.

Li-mining controversies are still ongoing in Portugal. This paper — as well as others on the same topic (e.g. [17,35,40]) — was written while major debates, protests and political deliberations are still taking place, and new developments may occur in the near future. This empirical work is mostly focused in the Barroso region and other regions may present distinct configurations of power, violence and resistance. In any case, this paper does not intend to generalize neither local nor opposing perspectives, but rather to disclose how a corporate energy transition may renew hegemonic power dynamics, legitimizing violence against humans and nonhumans alike.

Indeed, the extractivist violence of a 'corporate green transition' urges consideration for alternative pathways to mitigate climate change, namely place-based, pluriversal and decolonial ones as put forward by post-development and degrowth perspectives [20–22]. Furthermore, to counteract segregation and exclusion, a 'just transition' should not only foster participatory decision-making processes, but consider local values, knowledges and preferences [42,51,52,55] to address environmental, climate and energy justice concerns [41].

5. Conclusion

This research unveils the dark side of the energy transition, focusing on Li-mining in Portugal. The article advances evidence of three main forms of energy injustice driven by Li-mining projects: distributive, recognition and procedural. The scholarly contribution of this research is threefold: first, through an emblematic case study, it unravels major contradictions of a "green transition", problematizing corporate and hegemonic socio-technical responses to address the climate crisis; second, it relates Li-mining energy injustices to ongoing processes of 'green grabbing', infrastructural colonization and social engineering, which assist the construction of new 'green sacrifice zones'; and, third, it sheds light on how extractivist violence embeds a clash between different relational ontologies — as distinct ways of engaging and 'becoming–with' more-than-human territories.

Under the current climate crisis, future research should address how different forms of injustice, violence(s) and resistance(s) emerge and are articulated by distinct actors in diverse regions. This includes, but is not limited to, developing a longitudinal analysis of Li-mining controversies in Portugal, and contextualizing Li-mining within broader environmental conflicts and sociotechnical controversies, such as other mining industries (e.g. copper), renewable energy infrastructures (e.g. hydroelectric, solar and wind) and agroindustry developments. Since extractivism is a global driver of manifold injustices, further research should be conducted on how green transition ontologies mobilize distinct discursive and material devices to justify violent practices of extraction.

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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.

Appendix A. Supplementary Materials

Supplementary materials to this article can be found online at https://doi.org/10.1016/j.erss.2023.103096.

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