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## Introduction

- 1 Over the past three decades, climate change mitigation has become a prominent topic in national and international policy agendas. An important focus lies in transitioning the current energy system from fossil- and carbon-based energy sources towards renewable sources (Geddes *et al.*, 2018; Steffen & Schmidt, 2019). In Europe, this energy transition is embedded in, and pushed forward by, the European Green Deal, which aims to have 45% of all European energy coming from renewable sources by 2030 and climate neutrality by 2050 (European Commission, 2022; Kougias *et al.*, 2021).
- 2 Whereas renewable energy sources are promoted as environmentally friendly because of their reduced CO<sub>2</sub> footprint and their renewability, their implementation on the territory is not unchallenged. In fact, renewable energy projects may give rise to local conflicts, pose dilemmas for land use policies, or generate an unequal social and geographical distribution of burdens and benefits (Sovacool, 2021; Crowe & Li, 2020;

Forman, 2017). They may also adversely affect marginalised or culturally and ecologically significant territories and groups (Sovacool, 2021).

- 3 Nevertheless, the mentioned energy transition policies and targets have increased the demand for renewable energy sources, leading to solar and wind parks massively popping up in European urban peripheries and rural spaces. The critical situation of agriculture in some rural and peri-urban regions, caused by rising input prices, falling output prices and a lack of generational replacement, is paving the way for these processes of land use change (White, 2012; Adamowicz & Szpeluk, 2016; Götz & Grethe, 2007; Perpiña Castillo *et al.*, 2020). Urban peripheries are a preferred location for energy projects due to their proximity to urban centres of energy demand and the availability of both existing energy transport infrastructures and land areas to host (large-scale) installations (Rauws & De Roo, 2011). Thus, rural and peri-urban areas are intrinsically entwined with the energy transition: firstly, because these areas are cheap and (in theory) extensively available sites to produce energy. And secondly, because renewable energy projects may potentially stimulate economic development in rural and peri-urban areas (Naumann & Rudolph, 2020).
- 4 Therefore, implications of the energy transition for rural and peri-urban areas are a topical subject that is widely discussed in scholarship (Drouilles *et al.*, 2017; O'Sullivan *et al.*, 2020; Clausen & Rudolph, 2020), media reports and public-political debates (*Le Monde*, 2022; Popkin, 2022; Ritter, 2023). Especially in the field of political ecology, different scholars have analysed the responses to renewable energy projects all around the world (see e.g. Sovacool, 2021; Schönauer & Glanz, 2023; Stock & Sovacool, 2023; Stock, 2022). They do not only shed light on the different responses to the renewable energy transition, but also show how these responses are embedded within wider societal processes that are influenced by the renewable energy transition (Boateng *et al.*, 2023; Jenkins *et al.*, 2016), such as an exacerbation of racialised and gendered dispossessions (Stock & Sovacool, 2023). Whereas these studies have made an important contribution to drawing attention to the dilemmas and potential injustices of energy projects, on-the-ground realities and nuances are sometimes lost, commonly resulting in a simplified 'not-in-my-backyard' portrayal of affected citizens (see e.g. Komendantova *et al.*, 2018; Wolsink, 2007). With this paper, we intend to challenge such simplifications and show how the debates, responses and dynamics unfolding around renewable energy projects are often much more complex and multi-faceted (Batel & Devine-Wright, 2015; Guo *et al.*, 2015). It is not a matter of *one* rural-peri-urban population with *one* unified opinion, nor is it about a straightforward yes-or-no position. Rather, responses to energy projects are complicated and multi-layered: they are interconnected with, and shaped by, past histories and present particularities of the place in question, as well as broader socio-political dynamics and changes. Hence, it is crucial to unpack who is contesting processes of peri-urban reconfiguration and why.
- 5 This is precisely what this paper sets out to do. It explores and analyses why actors contest solar plant construction and how that is related to other dynamics in the area. Thereby, this research positions the energy transition as a multi-scalar dynamic and contributes to the debate on the impact of, and responses to, the energy transition on peri-urban socio-physical reconfiguration processes (see e.g. Gailing, 2016; Rauws & De Roo, 2011), by analysing specifically the wide spectrum of responses that ranges from outright contestation to accommodation (Duarte-Abadía *et al.*, 2022; Lakhanpal, 2019). Furthermore, the paper does not only analyse local responses but also broadens the

academic debate to include the practices, processes and strategies of solar plant companies and governmental bodies (van de Grift & Cuppen, 2022).

- 6 The focus of this paper are solar plant installations in a peri-urban Spanish area, the Vall d'Albaida (Valencia Region). Spain is one of the leading countries in renewable energy production, having a new national framework for a “fair and inclusive energy transition” (MITERD, 2020; cf. Mileusnic, 2023; Peña-Ramos *et al.*, 2021). The National Energy and Climate Change Plan, in which Spain aims to exploit untapped renewables and become climate neutral by 2050 (Peña-Ramos *et al.*, 2021), is aligned with the European Green Deal and gives solar energy a central role. Accordingly, between September 2022 and January 2023, the Spanish government approved 152 large-scale solar projects, which will occupy 42,500 ha and more than double the current capacity of solar energy production (Planelles *et al.*, 2023). At the same time, regional governments have authorised a myriad of small-scale projects.
- 7 However, the materialisation of these policies and projects is encountering local resistance and has generated conflicts in rural and peri-urban areas. The magnitude of these socio-territorial conflicts has led to the emergence of numerous local and regional organisations and even a national coordination body, ALIENTE (Spanish acronym for Alliance for Energy and Territory), which is trying to put a stop to many of these initiatives and to avoid “damage to the balance and cohesion of the territory, to biodiversity and to sustainable local development” (ALIENTE, 2022).
- 8 This paper’s analysis is based on an in-depth study of grey literature, media reports and social media accounts, as well as 21 open and semi-structured interviews that were conducted in June 2022 in the area of Vall d'Albaida with key stakeholders such as farmers, activists, municipalities, a solar plant company, and a small landowner. The interviewees were identified through snowball and purposeful sampling, with the aim to include a wide variety of stakeholders and different responses to the energy transition in the peri-urban area of Albaida. This has allowed to obtain a multifold, though not exhaustive, understanding of local perspectives that can be contextualised in broader socioeconomic development considerations. Details of the interviewees can be found in Table 1. The interviews were coded with theory-informed coding and data was analysed based upon the generated codes.

Table 1. Interviewee details.

Type	Organisation	In-text reference
<i>Municipality</i>	Municipality of Castelló de Rugat	Municipality 1
	Municipality of l'Olleria	Municipality 2
	Municipality of Bufali	Municipality 3
<i>Farmers</i>	<i>Winefarmer</i> Age > 70 yrs; does not rent out land to solar plant companies.	Farmer 1
	<i>Orangefarmer</i> Age plusminus 50 years, larger farmer, rents out land to solar plant companies	Farmer 2
	<i>Small holder farmer</i> Age plusminus 50 years; smallholder farmer (4 ha); Rents out all land to solar plant companies	Farmer 3
	<i>Retired farmer</i> Age > 70 years; does not rent out land to solar companies	Farmer 4
	<i>Environmental NGO</i> Nationally environmental group; larger organisation with >300 active groups in Spain	Activist group 1
<i>Activist groups</i>	<i>Neighbourhood Association</i> Local NGO group based upon volunteers, active in influencing municipality on municipality level	Activist group 2
	<i>Environmental NGO</i> Local organisation focused on the solar plantations, small organisation with less than 30 involved	Activist group 3
	<i>Renewable Energy Activist Association</i> Association active on provincial level, subdivided into smaller organisations that are active on one specific topic	Activist group 4
	<i>Student</i> 17 years old	Student 1
<i>Citizens</i>	<i>Small landholder</i> Librarian; <1 ha of land, family inherited	Small landholder 1
	<i>Firefighter</i> Not an area resident; involved in discussions	Firefighter 1
	<i>Agricultural Cooperatives</i> Agricultural Cooperative	Agri-coop 1
<i>Solar plants companies</i>	International company active in Spain and South America, based in several local offices throughout these countries, >10 years of experience.	Energy company 1
<i>Research institutes</i>	Regional Department of Agriculture. Research centre	Research institute 1
<i>Other</i>	Irrigation company	Other 1
	Facebook post	Other 2
	Regional Agriculture Office	Other 3
	Political party youth wing	Political organisation 1

- 9 Following this introduction, we will first describe the characteristics of the study area. The third section provides the theoretical background, followed by the presentation of the research results in the fourth section. The last part discusses the findings and provides concluding remarks.

## Study area: Vall d'Albaida

- 10 The study area is the Vall d'Albaida, a tectonic trench filled with fertile marls, located south of the metropolitan area of Valencia. The southern end of the Valencia urban area bifurcates into two axes, one coastal and the other inland (Figure 1). Both axes are occupied by small or medium-sized towns and numerous industrial areas, which cross a space that was eminently agrarian until well into the 20th century. The coastal axis presents an almost uninterrupted urban continuum, due to the high density of tourism infrastructure, while the interior presents small hiatuses as it crosses some mountainous alignments.



Table 2. Solar plants in the study area (both constructed and in progress by July 2022).

Municipality	Nr. in Fig. 1	Installation name	Title owner	Area [ha]	Capacity [MW]	Status July 2022
Aielo de Malferit	1	PFV Montesa III	Valfortec Renovables	64.5	49.99	Planned
Albaida	2	PS Albaida 1	IM2 Energia Solar	78.0	49.92	Planned
Albaida	3	PS Albaida 2	IM2 Energia Solar	80.4	49.92	Planned
Albaida	4	PFV Albaida	Energia, Innovación y Desarrollo Fotovoltaico SA	1.5	1.00	Planned
Alfarrasi	5	PF Alfarrasi	Valfortec Renovables	26.3	10.60	Constructed (2012)
Alfarrasi	6	PF Alfarrasi II	Valfortec Renovables	1.2	1.00	Planned
Belgida	7	Bombeo solar CR Belgida	Comunidad de Regantes Belgida	1.0	0.59	Planned
Bufali	8	PS Bufali-Palomar I y II	IM2 Energia Solar	25.1	11.23	Planned
Castelló de Rugat	9	PFV Castelló de Rugat	IM2 Energia Solar	40.8	28.57	Planned
Castelló de Rugat	10	ISF Castelló de Rugat	Polux Venture Energy	41.7	19.99	Planned
L'Olleria	11	FV L'Olleria	Reciclados Integrados	17.0	11.40	Planned
L'Olleria	12	Parque solar de L'Olleria (y Garrofera)	V3J Ingeniería y Servicios SL	20.0	7.2	Constructed (2009)

Solar company 1; Visor Generalitat, n.d.; Valfortec, n.d; Pavener, n.d.; El Periódic, 2009

- 12 Whereas the region was once shaped by very profitable smallholding agri-businesses (cultivating for example citrus), these have increasingly been subject to competition with international markets where production costs are significantly cheaper (Heider *et al.*, 2021). Farmers in the Vall d'Albaida, and the Mediterranean as a whole, are struggling economically, despite the implementation of protectionist mechanisms like subsidies from the regional or national governments or the European Union (Cipollina & Salvatici, 2020; Cerdà *et al.*, 2019). This development has been causing a shift of the younger population from the Vall d'Albaida towards the tourism, industrial and service sectors, and migration towards the urbanised coastline (ESPON, 2021). These dynamics have opened the doors for a new kind of 'industrial' crop: solar panels. The same Mediterranean climate conditions that once favoured specific agriculture now drive energy companies to try acquiring farmers' lands for solar panel 'plantations'. The existing high-voltage infrastructure to distribute power to the rural settlements already passes mainly through the agricultural areas, easing the transmission of electricity to nearby cities. At the same time, the Valencian Regional Government has created a favourable legal framework for achieving the objectives defined by the EU Green Deal goals.<sup>1</sup> The Decree-Law 14/2020 declares solar plants as "investments of strategic interests" that facilitate the emergence of numerous employment opportunities and stimulate regional growth, notably within regions with sparse population density or territories contending with the ramifications of deindustrialisation. The Decree-Law smoothens permit procedures and regulates land zoning in such a way that energy projects are more easily deemed compatible with the territory. Concurrently, the Decree-Law provides ample economic incentives (e.g. subsidies) for the adoption of renewable energy infrastructure for local or personal use



and Regional Government are leading, unless the municipal zoning plan specifically prohibits the construction of solar panels on certain land. The responsibility falls upon the private sector or individuals to propose and initiate solar parks. The regional administration then ascertains if the plans conform to the established criteria (DOGV, 2020; Osborne Clarke, 2020; Valencia Martín, 2022).

## The political ecology of energy transition projects: Multi-faceted processes

- 13 This study is embedded in the field of political ecology, which – generally speaking – puts concerns about politics and unequal power relations in environmental issues central. In fact, the basic premise of political ecology is that society and environment(s) mutually co-produce each other, and that they are thus inseparable (Perreault *et al.*, 2015; Robbins, 2012).
- 14 Since more than a decade already, political ecology has been one of the perspectives with which scholars have made important and critical contributions to discussions about energy transitions and energy justice. Mulvaney (2019), for example, provides a detailed study about unequal benefits, burdens and collateral effects implicated in solar power projects, whereas Stock & Birkenholtz (2021) analyse solar park development in rural India as a new form of ‘green grabbing’ and ‘energy dispossession’. McCarthy (2015), on the other hand, takes a more global and systemic look at energy transitions and posits them as a “socio-ecological fix to capitalist crisis tendencies” that may involve “powerful new rounds of investments in and claims on, rural areas” (Bridge *et al.*, 2013). Sovacool & Brown (2010) also provide the context for the different responses by farmers, local citizens, municipalities, and other stakeholders, shown to be crucial for gaining a better understanding of the multi-faceted implications of the energy transition. Schönauer & Glanz (2023) reveal that conflicts frequently occur in regions that are allocated for new wind farm installations. Conversely, when it comes to repowering existing turbines or expanding existing wind farms, the findings of Schönauer & Glanz (2023) suggest a habituation effect, wherein municipalities that host a larger number of wind parks tend to experience less conflict and contestation. The conceptual review on energy justice by Jenkins *et al.* (2016) outlines that three tenets of justice – distribution, recognition, and procedure – in the sequence of identifying concerns, affected parties, and remediation strategies underscore the holistic approach to addressing injustices in the context of energy justice. Their approach not only allows for identifying injustices, such as wind power developments, and gender and ethnic minority imbalances in governing bodies, but also proposes remediation methods, including redistributing benefits, acknowledging marginalised social groups, and enhancing local knowledge mobilisation and institutional representation. The review highlights energy justice’s dual role in academic discourse and policy, emphasising its potential to serve as a unifying framework for present and future research on energy production and consumption, offering a comprehensive understanding of energy’s social, economic, and environmental impacts across global energy systems.
- 15 This paper draws on the political ecology and political geography scholarship about low-carbon transitions first developed by Sovacool *et al.* (2015) and expanded in Sovacool’s (2021) meta-analysis, with which he developed a framework to conceptualise and understand common implicated political-spatial processes. This framework is



particularly useful as it helps to visualise and understand four distinct, yet interrelated, processes associated with low-carbon transitions, which unfold across the economic, political, ecological, and social spheres. The first process that Sovacool (2021) identifies is *enclosure*, whereby public lands or other public resources are transferred to private entities, or a private actor's role is extended into a previously public domain. Private institutions, particularly corporate actors, are thus central: aiming to appropriate and penetrate remote or peripheral areas to generate revenue (McCarthy, 2015). In energy transitions, enclosure processes are closely related to the 'wasteland narrative', which portrays remote and economically 'unproductive' areas as available for development, disregarding their existing functions and meanings for the environment, communities, and cultures (Baka, 2017). Such narratives are powerfully materialised in specific political and geographical-material projects, such as those associated with the energy transition. Enclosure is thus importantly a discursive and material process (Baka, 2017; Blomley, 2007).

- 16 Enclosure is frequently accompanied by *exclusion*, referring to a political process of biased or exclusionary planning and policymaking, and inadequate representation, recognition, and legal procedures (Sovacool, 2021). Exclusion is a powerful way to prevent or manage certain stakeholders' involvement and favour other interests that are aligned with the status quo. Importantly, exclusion can also take place in subtle ways, such as through pressuring for rapid choices that, in turn, give way to decision-making that disregards informing or including all stakeholders, or that takes shortcuts concerning the assessment of potential social and ecological impacts (Sovacool, 2021; Sovacool, 2015). Exclusion is thus about politically marginalising inconvenient human and non-human groups and visions. In the context of energy transitions, state authorities and private companies frequently exclude certain (local) communities and decision-makers from access to and/or representation in the decision-making process (Robbins, 2012).
- 17 The third process is *encroachment*, which draws attention to the ecological dimension of energy projects and, specifically, potentially negative effects on the natural environment (Sovacool, 2021). For example, areas that are regarded as ecologically less valuable may be 'sacrificed' to save other environments or to supposedly 'save the world as a whole' by reducing carbon emissions (Brock *et al.*, 2021; Sovacool, 2021; Sovacool, 2015). Of course, such assessments about which ecology or environment is more valuable and which one can be sacrificed in the name of climate change mitigation raise important dilemmas and questions (e.g., Who is to decide, and how, about which places can be sacrificed? What direct or indirect effects may energy generation projects have on ecological resilience – on a local but also on a global scale?).
- 18 The last process is *entrenchment*, which looks at the outcomes of energy transitions projects in terms of engraining (i.e. entrenching) structural inequalities and 'development pathways' (Sovacool, 2021): Projects may further concentrate wealth with already better-off segments of society, and consolidate the marginalisation of others, already before less privileged groups and actors. For instance, miners mining for minerals to create photovoltaic cells for solar plants are generally not in a position to refuse the opportunity to work and are then, in turn – as so-called 'unskilled labourers' – locked in an unequal power position vis-à-vis those managing the mine,

reducing their ability to negotiate or interfere with political decision-making (Brock *et al.*, 2021; Sovacool, 2021).

- 19 The four outlined processes cut across economic, political, ecological, and social dimensions and are interwoven with each other due to their multidimensional nature (Sovacool & Brown, 2010). They condition each other in practice but will, in this paper, be analysed separately in order to dissect the economic, political, ecological, and social facets of the processes that unfold around the solar plant projects in the Vall d'Albaida. These processes mostly take place locally, although they are conditioned by, and in turn condition, broader regional and national dynamics. This is shown in this paper.

## Contestations in the Vall d'Albaida

### Entrenchment and enclosure: Visions about the future of agriculture and public-private entanglements

- 20 *"I do not want to rent out my land for solar plants. I would have loved that solar plants were unnecessary. However, it is necessary. Agriculture costs a lot of money and hard work, and the costs have been higher than the revenues over the past years"* (Farmer 2).
- 21 *"Solar plants are basically modern crops. They bring money from the fields. It is actually an opportunity: making money while doing nothing"* (Farmer 1).
- 22 Solar plant development comes to the Vall d'Albaida at a moment when agricultural profitability is continuously decreasing, and land abandonment is increasing. This challenging situation for agriculture is a consequence of multiple factors, such as increased competition with international markets and the associated pressure to reduce prices, leading to reduced profit margins (Other 3). Also, many farmers in the valley are approaching retirement without having a younger generation interested to take over. In this context, some farmers see land rental to solar and energy companies as an economic opportunity that offers them a minimum income for the years to come, a retirement pay (Small landholder 1).
- 23 Interviewees report that renting out land (instead of selling or abandoning it) is also made appealing through the recently introduced Law 5/2019 that obliges landowners to invest in the maintenance of their land regardless of its productivity. Otherwise, they may run the risk of losing their land use rights and having their land temporarily reassigned to someone else through a hypothecary system that works as a public 'bank of lands' (Other 3; BOE, 2019). However, maintaining non-productive land makes – economically speaking – little sense; whereas selling it is also not always the preferred choice of farmers who wish to maintain the ownership of their land for cultural or emotional reasons.
- 24 Renting land to solar plant companies can therefore be seen as an attractive opportunity or a pragmatic choice for farmers in a difficult situation (Other 3). In a slightly different reading, which is sometimes mobilised by those contesting solar park development, the already difficult position of farmers is precisely what pushes them to abandon agriculture and accept solar plants as a new 'crop', because they do not have much choice (Farmer 2; Farmer 3). In other words: their already marginalised position is further entrenched, leaving them in a spot where it is difficult to make a free choice about *if* to rent to solar plant companies and *on what terms*.

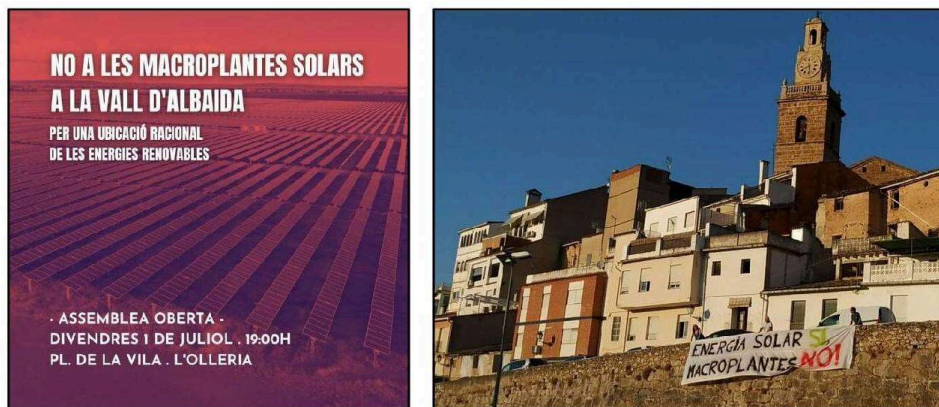
- 25 In fact, the terms of rental are one of the issues that are key to the discussions in the Vall d'Albaida. Especially those opposing solar plant construction point to the unequal relationship between landowners and solar plant companies. The contract between the solar plant company and the landowner often values land with a fixed annual price of 500 to 1000 euros per hectare, depending on the productivity and previous investment costs covered by the owner (Small landholder 1; Farmer 3; Activist Group 4). The fixed nature of these contracts does not account for the fluctuation of energy prices, so that when energy profits increase for companies, the farmers' income does not change. Activists argue (Activist group 3) that in this context the 'rich' companies become richer, and the 'poor' smallholders remain poor in means and choices – a typical mechanism of entrenchment. At the same time, the average rent contract between landowners and solar plant companies lasts between 20 to 30 years (Solar company 1). This temporal scale, together with the geographical scale in which solar plant companies seek for individual contracts but on a large-scale, makes solar park development a public issue, in the eyes of some:
- 26 *"The land of the comarca is not only of privates but also of people that live there"* (Activist group 3).
- 27 *"You can't take agriculture from Valencians, as it is a big part of a lot of people's life. Companies sacrifice people's jobs but also a way of life... Companies want our land and our territories in exchange for nothing"* (Activist group 4).
- 28 Solar plant companies approach farmers individually (therefore constructing land as an *individual* resource rather than a public one); whereas activists challenge this scale and associated ideas about property. Contestations are mainly articulated by some concerned citizens and (mostly young) activists who draw attention to the implications of solar park construction plans on *landscape scale*, where numerous individual rent contracts and solar parks add up and substantially reconfigure landscapes – which are in turn seen as a public good. From their perspective, both abandoned and non-abandoned agricultural land, although private, are part of a common landscape and cultural heritage with which some concerned citizens of the valley identify today, and upon which they project their possible futures. By immobilising the land of Vall d'Albaida with long-term privately negotiated contracts, solar plant companies enclose the future of the valley and exclude it from public debate: Processes of enclosure, exclusion and entrenchment happening at once.
- 29 *"The municipality of Albaida is on the edge of bankruptcy and the mayor will just approve the solar plants to be built to make the municipality survive"* (Farmer 2).
- 30 At municipal level, solar plant companies offer immediate monetary benefits through a land tax, and a long-term promise of localised development through the creation of jobs and related professional trainings (BOE, 2022; Solar company 1). There are several solar companies active in the area, although some are bigger than others (Activist group 4). They sometimes also invest in public infrastructures, such as playgrounds and sports centres (Municipality 2; Solar company 1). The solar companies thus have a very specific way of operating, which they use to make the building of solar plantations attractive for the local actors the companies are dependent on (the municipalities for approval of projects, the individual landowners for renting out their land). Such tactics are only possible because the solar companies active in the Vall d'Albaida (of which some are, in fact, operating in the whole of Spain as well as other countries) disposed over the necessary financial and political resources, for example through the

collaboration with energy and solar plant companies and the financing by subsidiaries from major multinational investors and investment funds (Solar company 1; Cebrià, 2022; Sanvíctor, 2022).

- 31 However, opponents are suspicious about these offered benefits because they might pressure municipalities to accept energy projects uncritically or because they can represent a partial privatisation of public responsibilities and infrastructures.
- 32 *“It is surprising and ‘amusing’ that they [solar plant companies] are building the sport centre, even though it’s not their job [...] We don’t need a company to save us economically, we need public planning”* (Activist group 3).
- 33 Thus, those opposing solar farm projects in the area are concerned about enclosures on different scales: enclosure of traditional agriculturalist landscapes that includes both a transfer of use rights into the hands of ‘outside’ private corporations and a transformation of the use (and thus aesthetics) itself; and enclosure through the expansion of private corporation’s role and influence in the public municipal sector. This, together with the worries about entrenchment processes (locking-in of farmers in a marginalised position and further concentration of wealth) motivates contestations among several citizen groups (Activist group 3; Activist group 4).
- 34 Also, multiple interviewees expressed discontent – or even anger – about the distribution of costs and benefits, specifically that solar plant projects create a flow of monetary and energy benefits from Vall d’Albaida to the rest of the Valencian region, while negative externalities are experienced mainly locally (Activist group 3).
- 35 *“Solar plants should not be placed on productive agricultural land in Albaida or elsewhere. The benefits will neither go to people, nor to the city of Albaida, nor to farmers. It will only benefit investors. This is a case of brutal extraction of natural resources”* (Small landholder 1).
- 36 In this view, the Vall d’Albaida is sacrificed for the energetic needs of Valencia and urban-industrial Spain more generally (Activist group 2; Activist group 1). Some citizens even fear that Spain, together with Portugal and northern Africa, may become an ‘energy colony’ of Northern Europe: exploited and suppressed for its resources without any local benefits (Activist group 4; Activist group 1, Activist group 3). Solar parks are here understood as part of ‘green’ extractivism projects that reinforce existing inequalities and produce ‘sacrifice zones’ whose inhabitants “are bearing all of the risks and reaping few of the rewards” (Scott & Smith, 2017, p. 867; Castán Broto & Sanzana Calvet, 2020).
- 37 This unequal distribution of costs and benefits is also related to a criticism on the modus operandi of the planned solar plant projects in Vall d’Albaida. While most interviewees agree with the need for a change in the energy system, they do not agree with how it is done. They see the perpetration of an ‘old’ and centralised energy model, in which energy companies maintain and expand their monopoly on electricity generation and profits. In contrast, opponents advocate for a small-scale and decentralised local production and consumption of energy. For example, they support the installation of solar plants on households’ roofs and advocate for public access to local power stations where energy is currently controlled and managed by energy companies (Activist group 1; Activist group 4; Student 1; Research institute 1). The goal, they argue, should be to facilitate independent local production and consumption of energy to meet energy needs, rather than further monopolising energy production and distribution for private profits’ sake.

- 38 “[...] Energy companies do not allow citizens to use the [...] [locally produced solar energy] for self-consumption [...] In 2013, in Spain there was a legal ordinance that says that legally you can take out the monopoly of companies for public use. But in practice, they are too powerful, and you cannot” (Activist group 4).
- 39 Thus, according to activists’ discourse, interlinked processes of enclosure and entrenchment are taking place, together with exclusion and encroachment (on which we will focus in the next section). Importantly, at the base of the contestations are in fact two diverging ideas about what the future of Vall d’Albaida should look like and the role solar plants should or should not play in it (and who should decide about these futures). On the one hand, there is the vision that sees municipalities, energy and solar plants companies and landowners as allies in the transformation of unproductive and unprofitable agricultural land into productive solar farms, with an overall continuation of energy consumption patterns. On the other hand, ‘traditional’ agriculture and associated landscapes are regarded as common cultural heritage worth conserving for future generations. In this vision, the necessary energy transition should be taken as a moment to discuss and breakaway from the status quo energy consumption and production arrangements, moving to decentralised, more equal and democratic models instead.

Figure 2. Left: poster from citizen group for an information meeting against large-scale solar parks in the Vall d’Albaida <sup>2</sup>; Right: citizen group protesting in the town of Albaida in favour of solar energy, but against large-scale parks<sup>3</sup>.



- 40 The different concerns about solar plant development in the area are expressed through banners in affected towns, on social media such as activist groups’ Facebook and Instagram pages or on radio interviews, as well as through organised open assemblies (see Figure 2) (Activist group 3; Activist group 4). At the same time, participation in these protest actions seems to be limited: activists themselves mention the struggle to mobilise larger crowds. In response, to further raise local awareness and mobilise people, some activists and political organisations increasingly organise informative campaigns and assemblies at municipal level (see Figure 2) (Political organisation 1; Activist group 3).



## The encroachment of nature

- 41 Since Decree-Law 14/2020 was adopted in 2020 to accelerate the promotion of renewable energy, companies are required to comply with environmental guidelines that aim to identify ‘optimal’ locations for solar parks and limit potential ecological harm (DOGV, 2020; Solar company 1). However, among those opposing the solar plant plans in Vall d’Albaida, concerns about potential negative impacts, especially on biodiversity, persist. Some fear, for example, that an expected intense use of herbicides to reduce plant shading on solar panels would reduce spontaneous vegetation in the long term, thus altering local ecosystems (Activist group 1; Political organisation 1; Activist group 4). Others claim a lack of proper environmental assessments of the long-term impacts of solar plant construction and of the waste they generate locally (Small landholder 1; Activist group 1). Some expect that companies will break the landscape in small, fenced plots to overcome bureaucratic limits, and fear that this fragmentation of nature will bring negative effects to existing ecosystems. This fragmentation has two causes. On the one hand, the existence of a predominance of micro-ownership of land, which forces companies to negotiate with many landowners to buy or rent land. Some accept and others do not, which generates a landscape of scattered plots with solar panels (see plants 3, 10, 11 and 12 in Figure 1). The other reason is that, for strategic bureaucratic reasons, companies prefer to negotiate with the administration to install several small plants than one large one:
- 42 *“Companies tend to create very fragmented projects so that they can stay under the 50MW limits to manage projects within the administration of the Generalitat Valenciana instead of at national government level. By doing so companies have access to subsidies and can do localised environmental assessments”* (Activist group 3).
- 43 A general lack of trust characterises the discourses of concerned citizens, some of whom are part of or support environmental and political activist groups. While opponents do not provide direct counterarguments to the environmental criteria selected by the regional authority and applied by solar plant companies, they denounce that a unilateral encroachment and damaging of nature, its diversity, functioning, and resilience is taking place. Their suspicions are based on the idea that ‘nature’ is discounted and commodified, enrolled as a resource in a capitalist system of production and profits (Sovacool, 2021). On a larger scale, they also question the narrative about the *need* to undertake a national transition to renewable energy sources, which neglects the necessity or possibility to reduce energy consumption, and sacrifices land’s ecological value for the sake of an increase or maintenance in energy production (Firefighter 1). These strands of criticism on the encroachment of nature align with the manifest desire of some interviewees to be part of the decision-making process about solar plants projects and, more in general, about the national renewable energy transition.

## Exclusionary planning processes

- 44 A central concern of those who oppose solar plant projects in the valley is about the process with which these are pushed forward, specifically the lack of transparency. Solar plant companies normally identify optimal locations for solar plants in the valley, then submit the project either to the national government for plants larger than



50MW, or to the regional government for smaller plants, who will verify the compliance of projects with urban planning rules (Solar company 1; Activist group 3). They can thus do a sort of forum shopping between two options and choose whatever option is more convenient. For example, some companies pursue strategies of fragmentation of projects in the same area to avoid national processing. Once the project is approved, solar plant companies usually approach landowners to privately negotiate the possibility of renting or buying the land. Neighbours and citizens are usually neither informed nor involved in this process (Small landholder 1; Farmer 3; Activist group 3). This exclusion is often mentioned by activists' organisations as a driving reason for their opposition to solar plants projects.

- 45 *"At least they [municipalities] have a responsibility of complicity. They should make the conflict visible; but instead, they are collaborating with companies and hiding projects. [...] People should decide about the what, how and when of solar projects, under the coordination of the municipality. Now the company contacts people after choosing the convenient spot. It should work the other way round. People should decide the spot, then contact a company"* (Activist group 3).
- 46 During the 30-day public information process, which starts with a publication in the state bulletin, information on the planned solar plants is made publicly available upon request at the involved municipalities and the digital headquarters of the regional government (DOGV, 2020). However, there is no clarity on who is responsible for actively communicating the project plans to citizens, and if this has been done or not in the case of the currently already implemented projects (Municipality 3; Municipality 2). Furthermore, in the absence of active communication from the municipalities or energy companies, citizens often do not look for information on their own, as they are not aware of the need to do so, according to some of the interviewed activists (Activist group 3; Activist group 4). It follows that when some citizens learn about the solar projects 'by coincidence', they are often too late to present allegations or to articulate an informed opinion (Activist group 3). The lack of transparency and active communication in the planification process – be it due to unclear responsibilities and/or as part of a conscious strategy to avoid possible resistance or other complications – thus leads to the exclusion of citizens from the decision-making process. Projects are announced and negotiated only at *individual* level, which makes it difficult to 'see the bigger picture' (for example the impact on the landscape on a larger scale) and to engage in open public discussion.
- 47 These politics of scale are crucial: they give way to exclusionary planning processes as well as to land encroachments, as analysed in a previous section. While plans for the transformation of the territory of Vall d'Albaida through the construction of large-scale solar plants are regulated at national level (see DOGV, 2020: 32881) and negotiated at municipal or provincial level between solar plant companies and government authorities, ultimately the right of land use is governed as a private issue between the solar plant companies and the landowner. This action of breaking down the transformation of a regional landscape into multiple isolated and almost invisible private-business negotiations, emerges as a deliberate choice to re-scale the decisional space to the private space of the individual, rather than the shared landscape of the public. Thereby, the general public's agency to participate in the decision-making process over the future of Vall d'Albaida is constrained, whereas others (such as the solar companies) are empowered by these scalar arrangements (Green, 2016).

- 48 This exclusionary planning processes may result both in an active contestation from those who are aware, as well as in an ‘accommodation’ by those who get to know too late or insufficiently about the plans (Cleaver, 2018). It seems that ‘becoming aware’ is often related to earlier involvement in networks of socio-environmental resistance and/or a general suspicion towards the Valencian government because of previous experiences with large-scale projects (such as new highways, dam construction or port expansions). These previous experiences or positions make that people are more easily informed about solar plant plans – either by word of mouth or because of being more attentive to announcements in the state bulletin.
- 49 However, ‘being aware’ about plans does not automatically lead to active contestation. In fact, only a relatively small part of people that are aware and critical about solar parks actively mobilises. This may be due to different reasons, such as a preference to not get involved in politics in general or a perceived or experienced lack of power (Activist group 4; Firefighter 1; Political organisation 1):
- 50 *“Some people, like students, feel like they do not have time and power. Everyone has their own problems and no time”* (Activist group 4).
- 51 *“A large part of pressure in decision making happens in politics so I cannot help much”* (Small landholder 1).
- 52 Lack of time, the perception that an unspecified ‘someone else’ will address the issue, and the lack of a sense of urgency or connection with the problem, can be understood as what Cleaver (2018) defines as ‘pragmatism’. Some people also seem to accept the hegemonic interests following a rational evaluation of costs of contestation. Comparable to what Cleaver (2018) suggests, the interests, or more specifically the discourse over the dominance of the interests of ‘the powerful’, are accepted and perceived as given, thus not challenged. Similarly, some people are disempowered by the idea of ‘politics’ being a place for decision-making in which non-politicians’ participation is hardly encouraged nor possible. In a way, this normalisation of exclusionary politics reinforces the very same exclusion and facilitates people’s accommodation of hegemonic decisions.

## Discussion

### From farmers to lessors: de-agriculturalisation in the rural-urban interface

- 53 Farmers in the Vall d’Albaida, like so many others in the Mediterranean, have been witnessing a marked loss of profitability of their farms and a lack of generational replacement for several decades (Götz & Grethe, 2007). This decline of family farming is leading to land abandonment and places farmers in situations of great vulnerability to possible changes in land use. The energy transition has crossed the paths of these farmers and has demonstrated an enormous capacity to restructure rural and peri-urban spaces. Many farmers perceive the advent of renewable energies as an escape route from their challenging situations, which leads them to move from being farmers to becoming simply landowners, or mere lessors. This can be seen as part of a process initiated years ago, when many farmers in the region, unable to make a living from the

land alone, had to look for work in other sectors and farm part-time only. Now they are moving from part-time farming to inactivity.

- 54 The social effects of the energy transition have been analysed elsewhere in the world, such as in India, where highly racialised (through caste) and sexist state-driven processes have led to dispossession of land and means of production (Stock & Birkenholtz, 2020; Stock, 2022, 2023; Stock & Sovacool, 2023). Stock & Birkenholtz (2021) have defined these socio-economic changes as a “partial proletarianisation” as they create many landless peasants, most of whom do not find employment in the energy sector that occupies their land. The case of the Vall d’Albaida is different. The situation is more favourable for the farmers, as they retain their status as landowners and only cede, and most of them voluntarily, their land use rights. It is true that, in Marxist terms, they (temporarily) lose their means of production, but far from being proletarians they become small rentiers. However, they rent their means of production through long-term contracts that influence the future marginal value of their land (reversing the solar installation requires large investments). This makes them comply with future contract renewal agreements. In essence, they become entrenched as small landowners at the service of the solar company. In going from being farmers to lessors, they follow a similar path to many other small farmers in the country, who seem self-employed and independent but actually have become increasingly dependent on large corporations. Farmers associations and mass media have called this, in short, an agriculture without farmers (COAG, 2019).
- 55 As effect, the energy transition accelerates a process of de-agriculturalisation that has been going on for decades in rural and peri-urban areas in Europe (Anderson & Ponnusamy, 2023). These areas, which have traditionally hosted energy facilities designed to meet urban demands, are now seeing this process enhanced by the arrival of energy transition projects and related infrastructure. As we have shown in this paper, there are authors and actors who denounce these changes as part of a process of “green” urban extractivism (Andreucci & Zografos, 2022), and as a way of subjugating rural spaces to the city. Others present the energy transition as a form of urban neo-colonialism (Borras *et al.*, 2022).
- 56 The case of the Vall d’Albaida shows that the concepts of “sacrifice zones” and neo-colonialism in the context of local small-scale agriculture and urban-rural dynamics are useful to understand only some facets of the complex and close interactions between these two spheres and even the very concept of urban and rural. There is no doubt that the creation of solar parks in rural and peri-urban areas has a conflictive character and may generate an unfair distribution of burdens and benefits. This injustice is at the root of social discontent and makes activists to conceptually dress up their discourse with concepts such as ‘energy colonialism’, which, although they may not seem rigorous from an academic point of view, describe a sentiment that is increasingly common in rural and peri-urban areas in Spain (Del Romero, 2023).

### **A wide range of responses: from contestations to accommodation**

- 57 International organisations have promoted the energy transition as a fair and sustainable process (IRENA, UNEP & UN ESCAP., 2021; European Commission, 2021) – a narrative that large energy companies have appropriated for their marketing. However, processes of territorial change, especially when they occur quickly, inevitably

run the risk of generating winners and losers, and potentially contestations. This is particularly the case in the absence of transparent regulatory mechanisms, participatory governance processes and compensatory mechanisms or accompanying policies. In this context, political ecology studies have had the tendency to spotlight existing contestations and overlook more favourable responses (Cleaver, 2018; Ortner, 1995). While we have aimed to dissect the full spectrum of responses – from accommodation to contestation and the different shades of grey in between – we also believe that there is much potential to further dive into the dynamics of accommodation specifically – its reasons, structural causes, linked subjectivities, and role in the energy transition and the associated peri-urban transformations. As Cleaver (2018) posits, certain actors may actually often accept unfair situations as part of their daily life. Some might not regard them as unfair in the first place; others might do but choose to accept them, nevertheless. Cleaver (2018) identifies two key factors to explain the latter: hegemony and pragmatism. Hegemony refers to the embeddedness of power and dominant interests in norms, institutions, and discourses in such a way that the interests of powerful groups or specific injustices are normalised (Gramsci, 1971; Sneddon *et al.*, 2015). Once normalised, contestation is simply not an option anymore as the situation is normal; thus, there is no reason to act or change. Conversely, pragmatism suggests that the costs and efforts required to challenge unjust or unequal relationships may be too high, leading individuals to accept the status quo. Some individuals or groups may even try to accommodate themselves in unequal relationships and actively reproduce them to eventually achieve a slightly better position (Cleaver, 2018).

- 58 Whereas we have pointed to the range of responses that exist in the Vall d'Albaida and how they relate to wider socio-economic trends in the region, it would be highly useful and relevant to further explore the possible complementarity between Sovacool's (2021) framework and Cleaver's (2018) considerations. Such combination could allow researchers to dissect the processes, discussions and sometimes-unexpected responses to energy transition projects, paying specific attention to concerns about inequality and injustice, but without drifting into a black-and-white, good-or-bad analysis.

## The controversial role, value and future of agriculture

- 59 In the Vall d'Albaida, people's positioning between contestation and accommodation importantly depends on their perception of, and relation to, agriculture. The personal decision of farmers to rent their land for the construction of solar plants hinges, besides economic reasons, on their commitment to the feeling of being a farmer, while the position of citizens is linked to the value that they attach to this traditional activity. Thus, while some perceive agriculture as a purely productive activity, others understand it as having important environmental, cultural and landscape values.
- 60 In line with the latter, academics and administrations have increasingly highlighted the multifunctional and multivalued character of European agriculture (Knickel *et al.*, 2004; Santos-Martín, 2019). However, these values are generally not being compensated by consumers through prices (Benhin, 2006), nor are they being sufficiently supported by administrations through subsidies (Scown *et al.*, 2020). Therefore, when the opportunity arises to develop another activity on farms, farmers opt to abandon agricultural activities, as happened en masse in Spanish peri-urban areas during the real estate

bubble at the beginning of the 21st century (Burriel, 2016; Palau *et al.*, 2019), or as is currently happening with the boom in renewable energies. Both then and now, as this case study shows, parts of rural and urban society mobilise in favour of the protection of agricultural land, with the aim of preserving its productive value -embedded in a discourse of defending food sovereignty- and of conserving the public benefit generated by its landscape and cultural values (Del Romero, 2023).

- 61 These distinct perceptions between productive agriculture and multifunctional agriculture, which marks the distance between contestation and accommodation, depends in part on spatio-temporal factors or scales. At the spatial level, farmers who accept the arrival of renewable energies argue at the scale of the farm, while activists focus on the existence of a territorial or landscape ensemble that can be damaged by the sum of multiple independent individual decisions in favour of renewable energy projects. In addition, it is important to note that some of the farmers who accept to lease their land do not even live in the valley, and therefore do not share the identity value that the agricultural landscape may have for others, nor do they share the “claim to place” (Castells, 2000) that residents wield. On a temporal scale, farmers see solar plants as a short- to medium-term solution to their income problems, while concerned citizens and activists see it as a non-reversible process with severe long-term effects.
- 62 It is true that there are some compensation mechanisms, such as the increase in tax revenues received by municipal administrations due to the construction of solar plants, which could potentially be indirectly passed on to residents. These compensation mechanisms sometimes position municipalities in favour of the construction of large renewable energy installations, but they have not prevented opposition from those who value the landscape or depend economically on activities associated with it. Other possible ways of compensation, such as cheaper green energy contracts for residents, have not been considered in any of the solar parks built or projected. There is thus a thread of injustice that manifests itself in farmers not being adequately remunerated for the environmental and cultural services they provide, and other citizens not being rewarded for the negative effects of the (necessary) new energy model. At the same time, a lack of transparency and an exclusionary form of decision-making further complicate the dynamics.

## Conclusion

- 63 The energy transition has suddenly burst into Europe’s rural and peri-urban areas, altering agrarian landscapes and disrupting territorial dynamics. The speed and extend with which these new land uses are arriving is inevitably generating socio-territorial conflicts. In this paper, we have unpacked the multi-layered processes, perceived impacts and responses to solar park development in the Vall d’Albaida – one of many places in which the energy transition materialises with full force. We have specifically identified four interlinked processes of encroachment, entrenchment, exclusion, and enclosure, which provide the context of diverse responses from affected farmers, citizens and municipalities. The responses vary and are intrinsically connected to past histories and experiences as well as broader socio-political dynamics, such as the crisis of traditional Mediterranean agriculture.
- 64 Importantly, in the Vall d’Albaida, there are two diverging visions about what the future of the valley should look like and about the role solar plants (vis-à-vis traditional

agriculture) should or should not play in it. As we have shown, these diverging ideas are grounded on diverse cultural, natural, and landscape values attached to the lands in which the renewable energy transition materialises.

- 65 The diverse local responses to solar park projects indicate how the residents of rural and peri-urban areas are neither homogenous nor neutral. This diversity seems to be often side-lined in public debate, and partially also in political ecology scholarship, for the sake of (clearer, albeit simplified) all-or-nothing narratives. Therefore, we hope that this paper serves as a call for researchers, societal stakeholders, and governments alike to take into account local heterogeneity of positions and viewpoints. It is necessary to promote processes of participatory territorial planning and governance in order to build shared visions that allow for an ecologically responsible and socially just energy transition.

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## NOTES

1. The region of Valencia has the target to produce 6000 MW in solar energy and 4000 MW in wind energy by 2030 (DOGV, 2022). At the moment of publishing Decree-Law 14/2020, the renewable energy production was 364 MW and 1255 MW respectively.
2. Ens vegem esta vesprada, salaos! Message by Plataforma Defensa Territori de la Vall d'Albaida, 01/07/2022.
3. No ens dona la gana hipotecar la nostra terra i la nostra vida en benefici d'uns estafadors, i sembla que per Albaida ho tenen ben claret! Twitter message by Plataforma Defensa Territori de la Vall d'Albaida, 22/07/2022.

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## ABSTRACTS

The European transition to renewable energy sources is increasingly reconfiguring land use in rural and peri-urban areas. These processes of change have diverse local social, ecological, and economic implications, and trigger divergent responses that range from outright contestation and protest, to welcoming and accommodating renewable energy projects. This paper analyses the dynamics and responses to the construction of large-scale solar plants in the peri-urban and rural landscape of Vall d'Albaida (Valencia, Spain). Through the analysis of grey literature, media reports and semi-structured interviews with diverse actors involved in, or affected by, photovoltaic power stations, this study dissects how processes of enclosure, encroachment, exclusion, and entrenchment take place simultaneously, conditioning a wide range of responses from stakeholders. While some activists openly challenge the projects, numerous local residents and farmers accommodate the construction. The reasons for the latter include economic motivations that relate to the wider context of the agricultural sector in the region; untransparent project trajectories and decision-making; a lack of resources to contest or a limited responsibility felt to openly contest. Through the analysis of both contestations and accommodations, as well as the underlying processes, the paper expands the current debate on local implications of the renewable energy transition in peri-urban areas.

La transition vers les sources d'énergie renouvelables reconfigure l'utilisation des terres dans les zones rurales et périurbaines européennes. Ces processus ont diverses implications sociales, écologiques et économiques au niveau local et déclenchent des réactions divergentes qui vont jusqu'à la contestation pure et simple et au refus de l'accueil des projets d'énergie renouvelable. Cet article analyse les dynamiques et les réponses à la construction de centrales solaires à grande échelle dans le paysage périurbain et rural de Vall d'Albaida (Valence, Espagne). Grâce à l'analyse de la littérature grise, des rapports des médias et des entretiens semi-structurés avec divers acteurs impliqués dans les centrales photovoltaïques ou affectés par celles-ci, cette étude examine la manière dont les processus d'enfermement, d'empiètement, d'exclusion et d'enracinement se déroulent, conditionnant un large éventail de réponses de la part des parties prenantes. Alors que certains activistes contestent ouvertement les projets, de nombreux résidents locaux et agriculteurs s'accommodent de leur implantation. Les raisons de cette dernière attitude incluent des motivations économiques liées au contexte plus large du secteur agricole dans la région, des trajectoires de projet et des prises de décision peu transparentes, un manque de ressources ou une aptitude limitée ressentie pour une contestation ouverte. Grâce à l'analyse des contestations et des accommodements, ainsi que des processus sous-jacents, l'article élargit le débat actuel sur les implications locales de la transition vers les énergies renouvelables dans les zones périurbaines.

La transición europea hacia fuentes de energía renovables está reconfigurando cada vez más el uso del suelo en zonas rurales y periurbanas. Estos procesos de cambio tienen diversas implicaciones sociales, ecológicas y económicas a escala local, y desencadenan respuestas divergentes que van desde la contestación y la protesta, hasta la acogida y el acomodo de los proyectos de energías renovables. Este artículo analiza la dinámica y las respuestas a la construcción de plantas solares a gran escala en el paisaje periurbano y rural de la Vall d'Albaida (Valencia, España). Mediante el análisis de literatura gris, noticias de los medios de comunicación y entrevistas semiestructuradas con diversos agentes implicados o afectados por las centrales fotovoltaicas, este estudio analiza cómo procesos de cercamiento, invasión, exclusión y



atrincheramiento tienen lugar simultáneamente, condicionando una amplia gama de respuestas de las partes interesadas. Muestra cómo algunos activistas rechazan abiertamente los proyectos, mientras que numerosos residentes locales aceptan su construcción. Entre las razones de esta aceptación se encuentran motivaciones económicas que también guardan relación con el contexto de crisis del sector agrícola en la región; la falta de transparencia en el desarrollo y en la toma de decisiones de los proyectos; la falta de recursos para responder a los proyectos; o un limitado sentimiento de responsabilidad para impugnarlos abiertamente. Mediante el análisis de las oposiciones y las acomodaciones, el artículo amplía el debate actual sobre las implicaciones locales de la transición a las energías renovables en las zonas periurbanas.

## INDEX

**Palabras claves:** energías renovables, parques solares, reconfiguración periurbana, ecología política, contestación, acomodación, Vall d'Albaida, España

**Keywords:** renewable energy, solar parks, peri-urban reconfiguration, political ecology, contestation, accommodation, Vall d'Albaida, Spain

**Mots-clés:** énergies renouvelables, parcs solaires, reconfiguration périurbaine, écologie politique, contestation, accommodement, Vall d'Albaida, Espagne

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